

Karen L. Wilson • Deborah Bekken • Editors



# WHERE KINGSHIP DESCENDED FROM HEAVEN

Studies on Ancient Kish



INSTITUTE FOR THE STUDY OF ANCIENT CULTURES  
OF THE UNIVERSITY OF CHICAGO  
STUDIES IN ANCIENT CULTURES • NUMBER 1

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KAREN L. WILSON AND DEBORAH BEKKEN

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Stucco bust FM K.1427 (FM 236400b) from Palace 2, Square Court (see page 129);  
Late Akkadian cylinder seal FM 156668 (X.387) and impression (see pages 288–89);  
Isin-Larsa / Old Babylonian seal impression FM 156031 (see pages 294–95);  
Early Houses Stratum in Ingharra, Trench Y, looking northeast (see page 2)  
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Trench Y, Burial 685, found within Early Houses Stratum (see page 6)

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## ACKNOWLEDGMENTS

After the invasion of Iraq and the looting of the Iraq Museum on April 10–12, 2003, President George W. Bush instructed the National Endowment for the Humanities (NEH) to set aside monies to sponsor projects related to Iraq and Iraqi culture under the program title “Recovering Iraq’s Past.” Bennet Bronson (then curator of Asian Archaeology and Ethnology), Stephen Nash (then head of collections for Anthropology), and William J. Pestle (then collections manager for Old World Archaeology and Human Remains) submitted a proposal to fund a reevaluation of all the Field Museum’s holdings from the site of Kish and, to the extent possible given geopolitical circumstances, to reconcile those collections with material from the same excavations held in England and Iraq. Their proposal was successful—the NEH awarded a grant of \$99,985, roughly half the amount requested, and in fall 2004 the Kish Project formally began.

In 2005, the US Department of Defense awarded the Field Museum a grant of \$976,000 under its Iraq Cultural Heritage Assistance Project, which was designated, at least in part, to continue mitigating the disastrous effects of the looting of the Iraq Museum. Later in 2005, the American Association of Museums selected the Kish Project to be part of its International Partnerships Among Museums (IPAM) program, through which professional connections were made with museum staff throughout Iraq, not just in Baghdad. Because of delays due to the ongoing war with Iraq, the IPAM partnerships did not take off for several years, but in 2009–11, selected museum professionals from Iraq joined the Kish Project in Chicago for several months.

Over the course of seven years, the support of several grantors—including the NEH (2004–6), the US Department of Defense (2006–11), and several anonymous donors—greatly enhanced the project. From 2004 to 2009, varying combinations of Nash (who left the Field Museum in late 2006), Pestle (who left in 2009), and Deborah Bekken (then director of government affairs and sponsored programs) supervised or administered a wide range of personnel and volunteers focused on studying, recording, and conserving the Kish materials. The hiring of Karen Wilson as senior research associate was one of the first steps they took in this project and one that, given her expertise in Iraqi archaeology, made possible many of the efforts to follow. Along with Sarah Coleman (then collections assistant), they concentrated on a range of tasks that aimed to assemble a database synthesizing such varied records as field cards, catalog cards, publications, and excavators’ notes.

The successful completion of the Kish Project could not have been accomplished without the generous participation of numerous Field Museum staff members, including Jamie Kelly (now head of collections for Anthropology), J. P. Brown (conservator), Leslie Schramer (intern), and many others. In addition, the Field Museum supported the development and organizational tasks required to host the symposium. Partners at the Ashmolean Museum, principally Roger Moorey and Stephanie Dalley, and the late Donny George of the Iraq Museum were crucial to accomplishing, at least in part, the goal of reuniting the three long-divided Kish collections.

As noted in the introduction, the symposium in 2008 drew together a community of researchers who brought diverse perspectives on the history and relevance of the site of Kish. We thank all the symposium participants for their contributions to this volume. Special thanks are also due to the Institute for the Study of Ancient Cultures of the University of Chicago for its support in publishing this volume.

WHERE KINGSHIP DESCENDED FROM HEAVEN

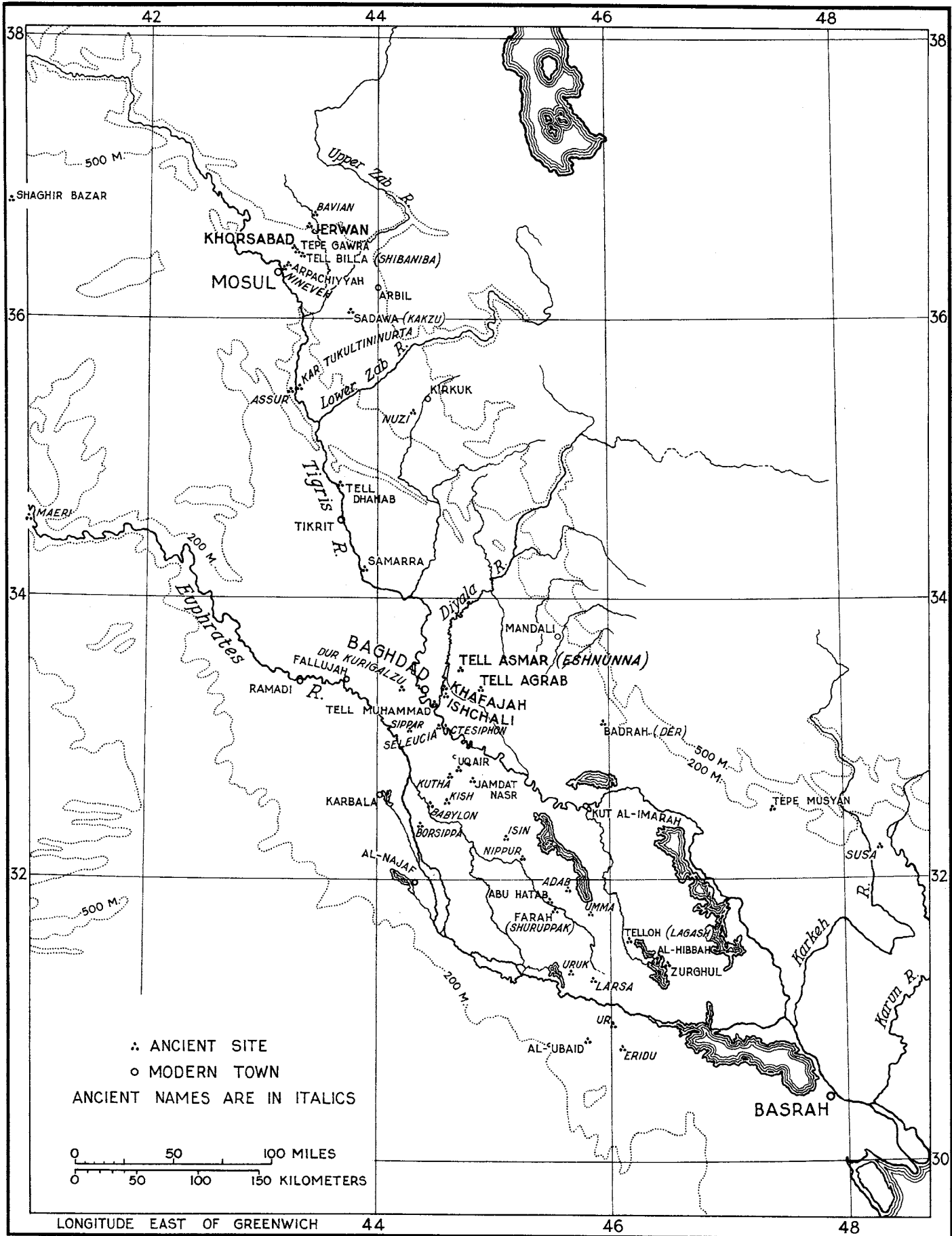


Figure 0.1. Map showing the location of major sites in Mesopotamia (sites excavated by the Iraq Expedition are shown in larger type).

## INTRODUCTION

The site of Kish is located on the floodplain of the Euphrates River in modern Iraq, 12 km east of ancient Babylon and 80 km south of Baghdad (fig. 0.1).

The ancient remains consist of more than forty mounds scattered over a 24 km<sup>2</sup> area divided by the ancient course of the Euphrates River into eastern and western portions (fig. 0.2). The eastern complex (known in ancient times as Hursagkalama) is dominated by a series of mounds known as Ingharra, whereas the ziggurat of Uhairir towers over the western portions of the city. The earliest remains on the site date back at least as far as 3000 BC; the latest probably can be dated to the seventh century AD.

The ancient city of Kish held an extraordinary position during the formative periods of Mesopotamian history. At that time, it seems to have been the only important city in the northern part of the alluvium, whereas there were several major centers in the south. According to the Sumerian King List, Kish was the first city in which “kingship descended from heaven” after the great flood that destroyed the world. During the third millennium BC, rule over Kish appears to have implied dominance over the entire northern part of the plain, and the title “King of Kish” bestowed prestige analogous to that of the medieval Holy Roman Emperor.

From 1923 to 1933, the Field Museum of Natural History and the University of Oxford conducted archaeological excavations on the site under the absentee directorship of Stephen Langdon of Oxford. Ernest Mackay, protégé of the famed archaeologist Sir Flinders Petrie, served as field director through the season of 1925–26. He was succeeded by Louis Charles Watelin, who supervised excavations for the duration of the expedition. Over the course of ten years of work, the Field Museum–Oxford University expedition explored seventeen different mounds, both inside and outside the ancient boundaries of Kish. As was the custom of the day, the excavations were enormous in scale. Hundreds of men and boys worked at breakneck pace to remove soil to depths of 15 m or more in trenches tens of meters in length on a side.

Initial excavations at Kish centered on the ziggurat and adjacent structures at Uhairir. These represented a series of temple buildings and rebuildings that ranged in date from the Old Babylonian to the Neo-Babylonian period (ca. 1750–550 BC), with possible traces of earlier remains of the third millennium BC. Later work on Ingharra revealed a massive Neo-Babylonian temple complex, roughly 130 m<sup>2</sup> in area, with walls preserved to a height of more than 4 m. This temple stood on an Early Dynastic plano-convex brick platform that also supported two adjoining ziggurats or temple towers of the mid-third millennium BC. Broad areas adjacent to the Neo-Babylonian temple were cleared down to plain level in a series of trenches, designated by a veritable alphabet soup of letters, over the course of the excavations. This work revealed habitation levels stretching back to the beginning of the third millennium BC and a cemetery that extended south toward Mound A. Included in this cemetery were a series of remarkably rich burials, each of which contained multiple human skeletons and a wheeled vehicle drawn by a team of bovines or equids. These are often referred to as “chariots” and the burials as “chariot burials,” although the term “cart” more aptly describes these four-wheeled means of conveyance. These graves appear to date to Early Dynastic I/IIIa (ca. 2700–2600 BC) and are the direct predecessors of the richer royal burials at Ur.

Mound A contained a palace of the Early Dynastic III period (ca. 2500 BC), over which was another extensive cemetery. The 154 graves in the A Cemetery were rich in ceramic vessels, copper (weapons, tools, pins, and vessels), and luxury items (e.g., ostrich-eggshell vessels and, in one case, an iron dagger). They date to the end of the Early Dynastic and the beginning of the Akkadian period (the end of the third millennium BC). Graves of the same date found on the adjacent portion of Ingharra appear to have been even more richly furnished, attesting to a stratified society in which wealthier individuals were buried closer to the sacred complex with its ziggurats than were the less well-to-do.

North of Ingharra was a second, somewhat earlier, Early Dynastic palace, dubbed the “Plano-Convex Building” after the shape of the bricks used in its construction. Mound W, to the west of Ingharra, yielded

## INTRODUCTION

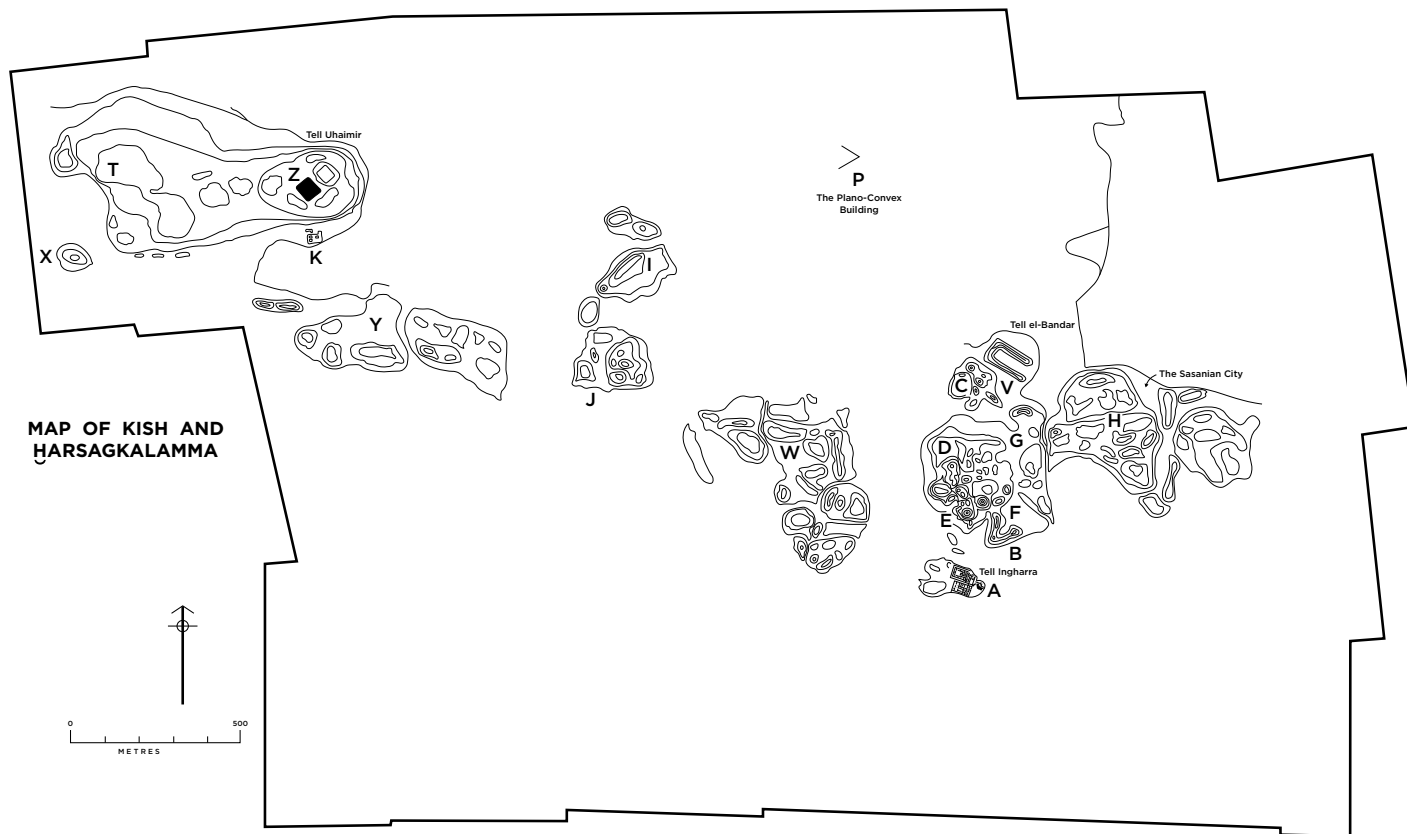


Figure 0.2. The tells at Kish (after Mackay 1925).

hundreds of texts of the Neo-Assyrian and Neo-Babylonian periods (first half of the first millennium BC), as well as graves of the fifth and fourth centuries BC. Tell H, to the east, seems to have been a city of the Sasanian period and included a series of eight “palaces” or elite residences. These were richly decorated with elaborate patterned and figural stucco, datable to the late seventh or first half of the eighth century AD. The expedition also excavated in several other locations—including Jamdat Nasr (type site of the eponymous fourth millennium BC chronological period), located 30 km northeast of Kish—that were deemed to be of interest by sponsors or field directors or both. Here a monumental building, probably administrative in nature, yielded early clay tablets, seal impressions, and richly polychromed pottery vessels.

Pursuant to guidelines established before the first season in 1923, the finds were divided at the end of each season, with the Iraq Museum retaining half of the objects and any one-of-a-kind pieces and the two excavating institutions splitting the remainder; Oxford retained all the inscribed objects, and the Field Museum received most of the archaeological, skeletal, and scientific materials. In a similar fashion, the records of the excavation were dispersed among the three institutions. Duplicate sets of the field registers, cards, and photographs went to the Ashmolean Museum of Art and Archaeology and the Field Museum. Such records as the field directors’ reports to Langdon eventually ended up in Chicago, whereas Mackay’s detailed notes on his discoveries are part of the Ashmolean Museum’s archives. While this was standard operating procedure for the time, note-keeping at this project was, as with many other elements of the excavation, subpar. Seton Lloyd perhaps described it best, stating that the site “was badly excavated, the excavations were badly recorded and the records were correspondingly badly published.”<sup>1</sup> The result of the project was thus a single coherent assemblage of material culture arbitrarily divided into three collections separated by thousands of miles. This division occurred not just on the scale of individual contexts (e.g., graves or rooms) but also on the level of individual artifacts, pieces of which were dispatched to the four corners of the globe without note of their common origin.

<sup>1</sup> Lloyd 1969, p. 48.

## INTRODUCTION

Beginning in the fall of 2004, the Field Museum undertook a reevaluation of all holdings from Kish. Over the next seven years, with support from the National Endowment for the Humanities (2004–6), the US Department of Defense (2006–11), and three private donors, Field Museum curators, collections managers, and conservators worked to improve our understanding of the site and its contents.

One of the key goals of the effort was to produce a final site report covering the eleven seasons of excavation. This was envisioned as a complex undertaking, assembling the pieces provided by the various records and data sets left—but largely undigested and uninterpreted—by the excavators.

Over the next several years, efforts concentrated on assembling a database that synthesized such varied records as field cards, catalog cards, publications, and excavators' notes to provide as complete a record as possible for everything that had been excavated. A principal goal was the production of a full synthetic catalog of the Kish holdings of the three institutions among which the finds had been divided (Ashmolean Museum, Field Museum, and Iraq Museum) aimed at reconstructing assemblages (with objects from all three locations) by provenience. To this end, teams of up to ten interns worked on data entry and scanning of records and photographs during the summers of 2004 and 2005. The Ashmolean Museum generously sent all their Kish archival material to Chicago so that it could be incorporated into the database. These 16 cubic feet of documents included everything from original expedition field cards, notes, correspondence, and photographs to the entire corpus of Kish documentation compiled over a period of three decades by longtime Kish scholar and Keeper of Antiquities at the Ashmolean Museum, P. R. S. Moorey. All the collections-related records from the Kish holdings of the Field Museum and Ashmolean Museum were databased (some 20,000 object records), and all the photographs produced by the expedition, numbering more than 5,000 images, were scanned. It is unfortunate that circumstances in Iraq following the invasion in 2003 prevented us from working there. We did, however, profit greatly from the fastidious lists of the Iraq Museum's material compiled by Moorey when he studied the Kish material in Baghdad in the 1970s. It soon became obvious, however, that although the resulting database was of immense value in terms of documenting the artifact collections, it was not going to add significant further information concerning the history of the site to the pioneering studies of McGuire Gibson and Roger Moorey.<sup>2</sup>

To highlight new research and insights into the material culture from Kish and the importance of the site to Mesopotamian archaeology, the Field Museum held a symposium in November 2008 that brought together an international group of scholars, who presented papers on various aspects of ancient Kish. This volume grew out of that symposium, gathering new work that has been conducted on the material from Kish.

In his contribution (chapter 1), Guillermo Algaze focuses on Trench Y's Early Houses Stratum (EHS), dating to the early third millennium BC (Early Dynastic I), and emphasizes that the EHS provides evidence for intramural burials. These intramural burials at Kish represent one of the earliest instances of an urban mortuary practice that would continue throughout the third and early second millennia BC, and a marked break from burial practices common in the preceding millennia.

In chapter 2, Deborah Bekken examines the 360 animal figurines from Kish at the Field Museum and their variability in style, completeness, and context. She draws comparisons with zoomorphic figurines from other Near Eastern sites and examines how they might have been used—as toys, objects of worship, decorative objects, or magical images, among other uses.

In chapter 3, Stephanie Dalley provides a masterly synthesis of what we know of the history and cults of Kish in the light of the numerous cuneiform sources. She explains which texts throw light on particular aspects of the history and culture and fill in gaps in the archaeological record of the twin cities Kish (Uhai-mir) and Hursagkalama (Ingharra).

In chapter 4, Laure Dussubieux stresses the critical importance of defining the composition of Sasanian glass to advance our understanding of how the glass industry was organized in the Sasanian empire. She suggests that Sasanian glass production may have been centralized at an as-yet-unknown site and that production would have been distributed from this site to different secondary glass workshops, which then transformed the glass into containers that were distributed throughout Iraq and beyond.

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<sup>2</sup> Gibson 1972; Moorey 1978.

## INTRODUCTION

In chapter 5, McGuire Gibson presents a long-anticipated report on his efforts at cleaning a portion of the profile of the Y trench in the fall of 1978. Gibson's report represents a substantive contribution to our understanding of the Kish excavations and Watelin's interpretation of the results of his work in the Y trench.

Mark Golitko reports in chapter 6 on the X-ray fluorescence analysis of thirty-two obsidian pieces, the majority of them bladelets or tools on bladelets, in the Field Museum's collections from Jamdat Nasr and Kish. This analysis shows that most of the obsidian from the two sites derives from sources near Bingöl or Lake Van in eastern Turkey.

In chapter 7, Trudy S. Kawami presents a thorough and detailed study of the stuccos from the "Sasanian" palaces uncovered on Mound H. Kawami concludes that the stuccos from Kish—as well as those from other sites in and around Ctesiphon—are post-Sasanian and probably date to the late seventh or early eighth century. She suggests that the Lakhmids, rather than the Umayyids, built, or at least decorated, the Mound H buildings.

In chapter 8, Thomas J. Loebel reports the results of use-wear analysis of thirty chipped stone artifacts from the Field Museum's Kish collections. High-powered magnification of the utilized edges of chipped stone tools has the potential to show polishes, striations, and edge damage arguably indicative of the tools' use on different materials.

In chapter 9, William J. Pestle, Christina Torres-Rouff, and Blair M. Daverman provide a reassessment of the human skeletal remains from Kish. Their invaluable work provides what is probably the only detailed look at the ancient human population of the northern Mesopotamian floodplain currently available.

In chapter 10, James L. Phillips and Michelle E. Ekwall present the results of a study of nearly 11,000 chipped-stone objects and more than 400 ground-stone objects.

Finally, in the "Catalog of Ancient Near Eastern Seals Now in the Collection of the Field Museum," McGuire Gibson, with Margaret Brandt and Leslie Schramer, presents the seals organized by period and subject matter. The catalog provides provenience, details such as material and size, and comparanda for the seals in this important and previously unpublished collection.

# ABBREVIATIONS

## BIBLIOGRAPHIC

|       |  |
|-------|--|
| ABL   | R. F. Harper, <i>Assyrian and Babylonian Letters Belonging to the Kouyunjik Collections of the British Museum</i> . 14 vols. Chicago: University of Chicago Press, 1892–1914                         |
| Ashm. | Ashmolean Museum of Art and Archaeology, Oxford  |
| Bab   | Babylon (excavation number of the Deutsche Orient-Gesellschaft expedition to Babylon)  |
| BM    | British Museum, London   |
| CAD   | I. J. Gelb et al., <i>The Assyrian Dictionary of the Oriental Institute of the University of Chicago</i> . 21 vols. Chicago: Oriental Institute, 1956–2010   |
| Camb. | J. N. Strassmaier, <i>Inschriften von Cambyses, König von Babylon (529–521 v. Chr.), von den Thontafeln des Britischen Museums (= Babylonische Texte 8–9)</i> . Leipzig: Eduard Pfeiffer, 1890       |
| FM    | Field Museum of Natural History, Chicago   |
| ISAC  | Institute for the Study of Ancient Cultures, University of Chicago   |
| LB    | Liagre Böhl Collection, Leiden   |
| MLC   | Morgan Library Collection (siglum of the Yale Babylonian Collection, New Haven)  |
| Nbk.  | J. N. Strassmaier, <i>Inschriften von Nabuchodonosor, König von Babylon (604–561 v. Chr.), von den Thontafeln des Britischen Museums (= Babylonische Texte 5–6)</i> . Leipzig: Eduard Pfeiffer, 1889 |
| PhBab | Photo Babylon (photo of the Deutsche Orient-Gesellschaft expedition to Babylon, 1899–1917)   |
| RIME  | <i>The Royal Inscriptions of Mesopotamia: Early Periods</i> . Toronto: University of Toronto Press, 1990–  |
| RLA   | E. Ebeling et al., <i>Reallexikon der Assyriologie und vorderasiatischen Archäologie</i> . 15 vols. Berlin: de Gruyter, 1932–2018  |
| STT   | O. R. Gurney and J. J. Finkelstein, <i>The Sultantepe Tablets</i> . 2 vols. London: British Institute of Archaeology at Ankara, 1957–64  |
| TCL   | Textes cunéiformes du Louvre. Paris: Geuthner, 1910–   |
| VAT   | Vorderasiatische Abteilung, Tontafeln (siglum of the Vorderasiatisches Museum, Berlin)   |

## GENERAL

|                   |   |         |  |
|-------------------|---|---------|--|
| A                 | adult                                     | EHS     | Early Houses Stratum                         |
| Akk               | Akkadian                                  | esp.    | especially                                   |
| BCR               | basalt, Columbia River                    | et al.  | <i>et alii</i> , and others                  |
| BL                | buccolingual                              | etc.    | <i>et cetera</i> , and so forth              |
| c.                | century                                   | eV      | electronvolt(s)                              |
| Ca                | calcium                                   | Fe      | iron   |
| ca.               | <i>circa</i> , approximately              | ff.     | and following                                |
| CaCO <sub>3</sub> | calcium carbonate                         | fig(s). | figure(s)                                    |
| CaSO <sub>4</sub> | calcium sulfate (gypsum)                  | FWHM    | full width at half maximum                   |
| cat.              | catalog                                   | g       | gram(s)                                      |
| cf.               | <i>confer/conferatur</i> , compare        | ha      | hectare(s)                                   |
| ch.               | chapter                                   | HCl     | hydrochloric acid                            |
| cm                | centimeter(s)                             | I       | infant                                       |
| CO                | cribra orbitalia                          | ICP-MS  | inductively coupled plasma mass spectrometry |
| d.                | died                                      | i.e.    | <i>id est</i> , that is                      |
| df                | degrees of freedom (statistics)           | I-L     | Isin-Larsa                                   |
| dl                | detection limit                           | IM      | Iraq Museum, Baghdad                         |
| ECe               | electrical conductivity of saturated soil | indet.  | indeterminate                                |
|                   | extract                                   | JN      | Jamdat Nasr                                  |
| ED                | Early Dynastic                            | JU      | juvenile                                     |
| e.g.              | <i>exempli gratia</i> , for example       | K       | potassium                                    |



## ABBREVIATIONS

|        |                               |                |   |
|--------|-------------------------------|----------------|---|
| keV    | kiloelectronvolt(s)           | P              | phosphorus                                |
| Kg     | kurtosis                      | p              | probability (statistics)                  |
| km     | kilometer(s)                  | p(p).          | page(s)                                   |
| KOH    | potassium hydroxide           | PCB            | Plano-Convex Building                     |
| LA     | laser ablation                | PH             | porotic hyperostosis                      |
| LEH    | linear enamel hypoplasia      | pH             | potential of hydrogen (acidity measure)   |
| M      | molar                         | pl(s).         | plate(s)                                  |
| m      | meter(s)                      | PN             | personal name                             |
| μA     | microampere(s)                | ppm            | parts per million                         |
| MA     | middle adult                  | PPNB           | Pre-Pottery Neolithic B                   |
| mand.  | mandibular                    | r.             | reigned, ruled                            |
| max.   | maxillary                     | r <sup>2</sup> | coefficient of determination (statistics) |
| MG     | McGuire Gibson                | Rb             | rubidium                                  |
| mm     | millimeter(s)                 | rev.           | reverse                                   |
| MMD    | mean measure of divergence    | RN             | royal name                                |
| Mn     | manganese                     | sig            | significant (statistics)                  |
| mo(s). | month(s)                      | Sk             | skewness                                  |
| Mz     | mean grain size               | So             | sorting                                   |
| N      | normality (chemistry)         | sp.            | species                                   |
| n      | sample size (statistics)      | Sr             | strontium                                 |
| n(n).  | note(s)                       | s.v.           | <i>sub verbo</i> , under the word         |
| NA     | Neo-Assyrian                  | SW             | southwest                                 |
| N/A    | not available, not applicable | t              | test (statistics)                         |
| NB     | Neo-Babylonian                | Ti             | titanium                                  |
| Nb     | niobium                       | vol(s).        | volume(s)                                 |
| NE     | neonate                       | vs.            | versus                                    |
| nm     | not measured                  | XRF            | X-ray fluorescence                        |
| no(s). | number(s)                     | YA             | young adult                               |
| OA     | old adult                     | Zn             | zinc                                      |
| OB     | Old Babylonian                | Zr             | zirconium                                 |

## BIBLIOGRAPHY

- Abdullaev, K. A., E. V. Rtveladze, and G. V. Shishkina, eds.  
1991 *Culture and Art of Ancient Uzbekistan: Exhibition Catalogue*. 2 vols. Moscow: Vneshtorgizdat.
- Abka'i-Khavari, Manijeh  
2000 *Das Bild des Königs in der Sasanidenzeit: Schriftliche Überlieferungen im Vergleich mit Antiquaria*. Texte und Studien zur Orientalistik 13. Hildesheim: Georg Olms.
- Abraham, Kathleen, and Karel van Lerberghe  
2017 *A Late Old Babylonian Temple Archive from Dūr-Abiešuḫ: The Sequel*. Cornell University Studies in Assyriology and Sumerology 29. Bethesda: CDL Press.
- Achrarov, I. A., A. I. Bočkarev, and Lazar I. Rempel  
1971 *Reznoj štuk Afrasiaba*. Tashkent: n.p.
- Acsádi, György, and János Nemeskéri  
1970 *History of Human Life Span and Mortality*. Budapest: Akadémiai Kiadó.
- Adams, Robert McC.  
1981 *Heartland of Cities: Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates*. Chicago: University of Chicago Press.
- Al-Aḏami, Khalid Ahmad  
1968 "Excavations at Tell es-Sawwan (Second Season)." *Sumer* 24: 57–94.
- Alekshin, V. A.  
1983 "Burial Customs as an Archaeological Source." *Current Anthropology* 24, no. 2: 137–49.
- Algaze, Guillermo  
1983–84 "Private Houses and Graves at Ingharra: A Reconsideration." *Mesopotamia* 18–19: 135–93.
- Algaze, Guillermo, G. Dinckan, B. Hartenberger, T. Matney, J. Pournelle, L. Rainville, S. Rosen, E. Rupley, D. Schlee, and R. Vallet  
2001 "Research at Titris Höyük in Southeastern Turkey: The 1999 Season." *Anatolica* 27: 23–106.
- Algaze, Guillermo, P. Goldberg, D. Honça, T. Matney, A. Miller Rosen, D. Schlee, and L. Somers  
1995 "Titris Höyük, a Small Early Bronze Age Urban Center in Southeastern Anatolia: The 1994 Season." *Anatolica* 21: 13–64.
- Alster, Bendt, and Christopher B. F. Walker  
1989 "Some Sumerian Literary Texts in the British Museum." In *DUMU-E<sub>2</sub>-DUB-BA-A: Studies in Honor of Åke W. Sjöberg*, edited by Hermann Behrens, Darlene Loding, and Martha T. Roth, pp. 7–19. Occasional Publications of the Samuel Noah Kramer Fund 11. Philadelphia: University Museum.
- Amiet, Pierre  
1972 *Glyptique susienne des origines à l'époque des Perses achéménides: Cachets, sceaux-cylindres et empreintes antiques découverts à Suse de 1913 à 1967*. 2 vols. Mémoires de la Délégation en Perse 43. Paris: Paul Geuthner.
- Anderson, David G., and Joseph Schuldenrein  
1983 "Mississippian Period Settlement in the Southern Piedmont: Evidence from the Rucker's Bottom Site, Elbert County, Georgia." *Southeastern Archaeology* 2, no. 2: 98–117.
- Andrae, Walter  
1922 *Die archaischen Ishtar-Tempel in Assur: Ausgrabungen der Deutschen Orient-Gesellschaft in Assur*. Vol. A, *Baudenkmäler aus assyrischer Zeit*. Part 4, *Die archaischen Ishtar-Tempel*. Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft 39. Leipzig: Hinrichs.
- Andrae, Walter, and Heinrich Jakob Lenzen  
1933 *Die Partherstadt Assur*. Wissenschaftliche Veröffentlichungen der Deutschen Orient-Gesellschaft 57. Leipzig: Hinrichs.
- Andrews, Peter, Theya Molleson, and Başak Boz  
2005 "The Human Burials at Çatalhöyük." In *Inhabiting Çatalhöyük: Reports from the 1995–99 Seasons*, edited by Ian Hodder, pp. 261–78. Çatalhöyük Research Project 4. British Institute of Archaeology at Ankara Monographs 38. Cambridge: McDonald Institute for Archaeological Research.
- Annus, Amar  
2002 *The God Ninurta in the Mythology and Royal Ideology of Ancient Mesopotamia*. State Archives of Assyria Studies 14. Helsinki: Neo-Assyrian Text Corpus Project.

## BIBLIOGRAPHY

- Arcari, Elena  
1988 "The Administrative Organization of the City of Ebla." In *Wirtschaft und Gesellschaft von Ebla*, edited by Hartmut Waetzoldt and Harald Hauptmann, pp. 125–29. Heidelberg: Studier zum Alten Orient 2. Heidelberg: Orientverlag.
- Archi, Alfonso  
1987a "Les titres de en et lugal à Ebla et des cadeaux pour le roi de Kish." *MARI: Annales de recherches interdisciplinaires* 5: 37–52.  
1987b "More on Ebla and Kish." *Eblaitica* 1: 125–40.
- Archi, Alfonso, and Maria Giovanna Biga  
2003 "A Victory over Mari and the Fall of Ebla." *Journal of Cuneiform Studies* 55: 1–44.
- Arnaud, Daniel  
1986 *Recherches au pays d'Aštata: Textes sumériens et accadiens*. Vol. 3, *Textes*. Emar 6/3. Paris: Éditions Recherche sur les civilisations.  
1987 *Recherches au pays d'Aštata: Textes sumériens et accadiens*. Vol. 4, *Textes de la bibliothèque: transcriptions et traductions*. Emar 6/4. Paris: Éditions Recherche sur les civilisations.  
1992 "Tablettes de genres divers du Moyen-Euphrate." *Studi Micenei ed Egeo-Anatolici* 30: 195–245.
- Astour, Michael C.  
1988 "The Geographical and Political Structure of the Ebla Empire." In *Wirtschaft und Gesellschaft von Ebla*, edited by Hartmut Waetzoldt and Harald Hauptmann, pp. 139–58. Heidelberg: Studier zum Alten Orient 2. Heidelberg: Orientverlag.
- Azarnoush, Massoud  
1987 "Sassanian Art in Eastern Fars: The Excavation of a Manor House at Hajiabad, Darab, Iran." PhD diss., University of California, Los Angeles.  
1991 "The Manor House of Hajiabad and the Chronology of the Sasanian Governors of Kušanšahr." In *Histoire et cultures de l'Asie centrale préislamique: Sources écrites et documents archéologiques*, edited by Paul Bernard and Frantz Grenet, pp. 79–83. Actes du Colloque international du CNRS. Paris: Éditions du Centre nationale de la recherche scientifique.  
1994 *The Sasanian Manor House at Hājīābād, Iran*. Monografie di Mesopotamia 3. Florence: Le Lettere.
- Bacharach, Jere L.  
1996 "Marwanid Umayyad Building Activities: Speculations on Patronage." *Muqarnas* 13: 27–44.
- Badalì, Enrico  
1985 "Una festa in onore di Zababa, CTH 612." *Studi epigrafici e linguistici sul Vicino Oriente* 2: 53–80.
- Baer, Eva  
1999 "The Human Figure in Early Islamic Art: Some Preliminary Remarks." *Muqarnas* 16: 32–41.
- Baker, Heather D.  
2001 *Prosopography of the Neo-Assyrian Empire*. Vol. 2, part 2: L–N. Helsinki: Neo-Assyrian Text Corpus Project.
- Baltrušaitis, Jurgis  
1938 "Sasanian Stucco. A. Ornamental." In *A Survey of Persian Art from Prehistoric Times to the Present*, vol. 2, *Text: Islamic Architecture, the Ceramic Arts, Calligraphy and Epigraphy*, edited by Arthur Upham Pope and Phyllis Ackerman, pp. 601–30. London: Oxford University Press.
- Barberon, Lucile  
2012 *Les religieuses et le culte de Marduk dans le royaume de Babylone*. Mémoires de NABU 14. Paris: Société pour l'étude du Proche-Orient ancien.
- Bartelmus, A.  
2017 "Die Götter der Kassitenzeit: Eine Analyse ihres Vorkommens in zeitgenössischen Textquellen." In *Karduniaš: Babylonia under the Kassites*, pp. 245–312. Berlin: de Gruyter.
- Bass, William M.  
2005 *Human Osteology: A Laboratory and Field Manual*. 5th ed. Springfield: Missouri Archaeological Society.
- Baxter, Jane Eva  
2005 *The Archaeology of Childhood: Children, Gender, and Material Culture*. Gender and Archaeology Series 10. Walnut Creek: AltaMira.
- Beaulieu, Paul-Alain  
1992 "New Light on Secret Knowledge in Late Babylonian Culture." *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 82: 98–111.
- Behrens-Abouseif, D.  
1997 "The Lion-Gazelle Mosaic at Khirbat al-Mafjar." *Muqarnas* 14: 11–18.

## BIBLIOGRAPHY

- Berry, A. Caroline, and R. J. Berry  
1967 "Epigenetic Variation in the Human Cranium." *Journal of Anatomy* 101, no. 2: 361–79.
- Bier, Lionel  
1993 "The Sasanian Palaces and Their Influence in Early Islam." *Ars Orientalis* 23: 57–66.
- Biggs, Robert D.  
1969 "An Old Babylonian Oracle from Uruk." In *Ancient Near Eastern Texts Relating to the Old Testament*, 3rd ed. with supplement, edited by James B. Pritchard, pp. 604–5. Princeton: Princeton University Press.  
1974 *Inscriptions from Tell Abū Ṣalābikh*. Oriental Institute Publications 99. Chicago: University of Chicago Press.  
1981 "Ebla and Abu Salabikh: The Linguistic and Literary Aspects." In *La lingua di Ebla*, edited by Luigi Cagni, pp. 121–33. Series Minor 14. Naples: Istituto Universitario Orientale.
- Binder, Didier, Bernard Gratuze, Damase Mouralis, and Nur Balkan-Atlı  
2011 "New Investigations of the Göllüdağ Obsidian Lava Flows System: A Multidisciplinary Approach." *Journal of Archaeological Science* 38: 3174–84.
- Birkeland, Peter W.  
1974 *Pedology, Weathering, and Geomorphological Research*. New York: Oxford University Press.
- Biro, Maurice  
1974 Review of *Late Old Babylonian Documents and Letters*, by Jacob J. Finkelstein. *Bibliotheca Orientalis* 31: 271–72.
- Bivar, A. D. H.  
1969 *Catalogue of the Western Asiatic Seals in the British Museum: Stamp Seals*. Vol. 2, *The Sassanian Dynasty*. London: Trustees of the British Museum.
- Black, Jeremy, Graham Cunningham, Eleanor Robson, and Gábor Zólyomi  
2004 *The Literature of Ancient Sumer*. Oxford: Oxford University Press.
- Black, Jeremy, and Anthony Green  
1992 *Gods, Demons and Symbols of Ancient Mesopotamia: An Illustrated Dictionary*. London: British Museum Press.
- Blackman, M. James  
1984 "Provenance Studies of Middle Eastern Obsidian from Sites in Highland Iran." In *Archaeological Chemistry—III*, edited by Joseph B. Lambert, pp. 19–50. Washington, DC: American Chemical Society.
- Bloch, Maurice  
1971 *Placing the Dead: Tombs, Ancestral Villages and Kinship Organization in Madagascar*. Seminar Studies in Anthropology 1. New York: Seminar Press.
- Blocher, Felix  
1988 "Einige altbabylonische Siegelabrollungen aus Kiš im Louvre." *Revue d'Assyriologie et d'archéologie orientale* 82: 33–46.
- Boehmer, Rainer Michael  
1965 *Die Entwicklung der Glyptik während der Akkad-Zeit*. Untersuchungen zur Assyriologie und Vorderasiatischen Archäologie 4. Berlin: de Gruyter.
- Boehmer, Rainer Michael, Friedhelm Pedde, and Beate Salje  
1995 *Uruk: Die Gräber*. Ausgrabungen in Uruk-Warka, Endberichte 10. Mainz am Rhein: von Zabern.
- Boiy, Thomas  
2004 *Late Achaemenid and Hellenistic Babylon*. *Orientalia Lovaniensia Analecta* 136. Leuven: Peeters.
- Bongenaar, A. C. V. M.  
2000 "Private Archives in Neo-Babylonian Sippar and Their Institutional Connections." In *Interdependency of Institutions and Private Entrepreneurs: Proceedings of the Second MOS Symposium*, edited by A. C. V. M. Bongenaar, pp. 73–94. *MOS Studies* 2. Publications de l'Institut historique-archéologique néerlandais de Stamboul 87. Leiden: Nederlands Instituut voor het Nabije Oosten.
- Bowersock, G. W.  
2006 *Mosaics as History: The Near East from Late Antiquity to Islam*. *Revealing Antiquity* 16. Cambridge: Belknap.
- Brill, Robert H.  
2005 "Chemical Analyses of Some Sasanian Glasses from Iraq." Appendix 2 in *Sasanian and Post-Sasanian Glass in the Corning Museum of Glass*, by David Whitehouse, pp. 65–88. *Corning Museum of Glass Catalog Series*. New York: Hudson Hills Press.
- Brinkman, John A.  
1984 *Prelude to Empire: Babylonian Society and Politics, 747–626 B.C.* Occasional Publications of the Babylonian Fund 7. Philadelphia: University of Pennsylvania Museum.

## BIBLIOGRAPHY

- Brinkman, John A., and Stephanie Dalley  
1988 "A Royal *kudurru* from the Reign of Aššur-nādin-šumi." *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 78: 76–98.
- Broman Morales, Vivian  
1983 "Jarmo Figurines and Other Clay Objects." In *Prehistoric Archaeology along the Zagros Flanks*, edited by Linda S. Braidwood, Robert J. Braidwood, Bruce Howe, Charles A. Reed, and Patty Jo Watson, pp. 369–423. Oriental Institute Publications 105. Chicago: Oriental Institute.  
1990 *Figurines and Other Clay Objects from Sarab and Cayönü*. Oriental Institute Communications 25. Chicago: Oriental Institute.
- Buchanan, Briggs  
1966 *Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum*. Vol. 1, *Cylinder Seals*. Oxford: Oxford University Press.  
1981 *Early Near Eastern Seals in the Yale Babylonian Collection*. New Haven: Yale University Press.
- Buchanan, Briggs, and P. R. S. Moorey  
1984 *Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum*. Vol. 2, *The Prehistoric Stamp Seals*. Oxford: Oxford University Press.
- Buikstra, Jane E.  
1977 "Biocultural Dimensions of Archaeological Study." *Proceedings of the Southern Anthropological Society* 11: 67–84.
- Buikstra, Jane E., and Lane A. Beck  
2006 *Bioarchaeology: The Contextual Analysis of Human Remains*. New York: Elsevier.
- Buikstra, Jane E., and Douglas H. Ubelaker  
1994 *Standards for Data Collection from Human Skeletal Remains*. Arkansas Archeological Survey Research Series 44. Fayetteville: Arkansas Archeological Survey.
- Bullard, Reuben G.  
1985 "Sedimentary Environments and Lithologic Materials at Two Archaeological Sites." In *Archaeological Geology*, edited by George Robert Rapp and John A. Gifford, pp. 103–33. New Haven: Yale University Press.
- Bunting, Brian T.  
1967 *The Geography of Soil*. 2nd ed. Chicago: Aldine.
- Buringh, Pieter  
1956 "Soils of the Oldest Cultivated Area in the World." In *VI<sup>e</sup> Congrès International de la Science du Sol, Paris 1956: Rapports*, vol. E, pp. 89–91. Paris: n.p.
- Buringh, Pieter, and C. H. Edelman  
1955 "Some Remarks about the Soils of the Alluvial Plain of Iraq, South of Baghdad." *Netherlands Journal of Agricultural Science* 3: 40–49.
- Butzer, Karl W.  
1982 *Archaeology as Human Ecology: Method and Theory for a Contextual Approach*. Cambridge: Cambridge University Press.
- Buxton, L. H. Dudley  
1924 "On the Human Remains Excavated at Kish." Appendix in *Excavations at Kish*, vol. 1, 1923–1924, edited by Stephen Langdon, pp. 115–25. Herbert Weld (for the University of Oxford) and Field Museum of Natural History (Chicago) Expedition to Mesopotamia. Paris: Geuthner.
- Buxton, L. H. Dudley, and D. Talbot Rice  
1931 "Report on the Human Remains Found at Kish." *Journal of the Royal Anthropological Institute of Great Britain and Ireland* 61: 57–119.
- Buzon, Michele R., Jacqueline T. Eng, Patricia M. Lambert, and Phillip L. Walker  
2005 "Bioarchaeological Methods." In *Handbook of Archaeological Methods*, edited by Herbert D. G. Maschner and Christopher Chippendale, vol. 2, pp. 871–918. Lanham: Altamira.
- Byrd, Brian F., and Christopher M. Monahan  
1995 "Death, Mortuary Ritual, and Natufian Social Structure." *Journal of Anthropological Archaeology* 14, no. 3: 251–87.
- Cann, Johnson R., and Colin Renfrew  
1964 "The Characterization of Obsidian and Its Application to the Mediterranean Region." *Proceedings of the Prehistoric Society* 30: 111–33.
- Carbonell, Virginia M.  
1958 "The Dentition of the Kish Population, 3000 B.C." Master's thesis, University of Chicago.  
1960 "The Tubercle of Carabelli in the Kish Dentition, Mesopotamia, 3000 B.C." *Journal of Dental Research* 39: 124–28.  
1966 "The Paleodontal Pathology of Ancient Mesopotamians." *Journal of Dental Research* 45: 413.
- Carboni, Stefano, and David Whitehouse  
2001 *Glass of the Sultans*. New York: Metropolitan Museum of Art.

## BIBLIOGRAPHY

- Carter, Tristan, Stéphan Dubernet, Rachel King, François-Xavier Le Bourdonnec, Marina Milić, Gérard Poupeau, and M. Steven Shackley  
2008 "Eastern Anatolian Obsidians at Çatalhöyük and the Reconfiguration of Regional Interaction in the Early Ceramic Neolithic." *Antiquity* 82: 900–909.
- Carter, Tristan, and M. Steven Shackley  
2007 "Sourcing Obsidian from Neolithic Çatalhöyük (Turkey) Using Energy Dispersive X-Ray Fluorescence." *Archaeometry* 49, no. 3: 437–54.
- Cauvin, M.-C., A. Gourgaud, B. Gratuze, N. Arnaud, G. Poupeau, J.-L. Poidevin, and C. Chataigner, eds.  
1998 *L'obsidienne au Proche et Moyen Orient: Du volcan à l'outil*. Oxford: Archaeopress.
- Cavigneaux, Antoine  
1981 *Textes scolaires du temple de Nabû ša Harê*. Texts from Babylon 1. Baghdad: State Organization of Antiquities and Heritage.
- Cavigneaux, Antoine, and Manfred Krebernick  
1998–2001 "Nin-eanna." *RIA* 9: 341.
- Chamaza, G. W. Vera  
1992 "Sargon II's Ascent to the Throne: The Political Situation." *State Archives of Assyria Bulletin* 6: 21–33.
- Charpin, Dominique  
1978a "Recherches sur la 'dynastie de Mananâ' (I): Essai de localisation et de chronologie." *Revue d'assyriologie et d'archéologie orientale* 72: 13–40.  
1978b "Nouveaux textes de la 'Dynastie de Mananâ' (I)." *Revue d'assyriologie et d'archéologie orientale* 72: 139–50.  
1986a *Le clergé d'Ur au siècle d'Hammourabi (XIX<sup>e</sup>–XVIII<sup>e</sup> siècles av. J.-C.)*. Hautes études orientales 22. Paris: Librairie Droz.  
1986b "Transmission des titres de propriété et constitution des archives privées en Babylonie ancienne." In *Cuneiform Archives and Libraries*, edited by Klaas R. Veenhof, pp. 121–40. Publications de l'Institut historique-archéologique néerlandaise de Stamboul 57. Leiden: Nederlands Instituut voor het Nabije Oosten.  
1997 "La version mariote de 'l'insurrection générale contre Narâm-Sîn.'" In *Florilegium marianum III: Recueil d'études à la mémoire de Marie-Thérèse Barrelet*, edited by Dominique Charpin and Jean-Marie Durand, pp. 9–18. Mémoires de NABU 4. Paris: Société pour l'Étude du Proche-Orient ancien.
- 2005 "Chroniques bibliographiques 5: Économie et société à Sippar et en Babylonie du nord à l'époque paléo-babylonienne." *Revue d'assyriologie et d'archéologie orientale* 99: 133–76.  
2006 "Chroniques bibliographiques 7: Les inscriptions royales suméro-akkadiennes d'époque paléo-babylonienne." *Revue d'assyriologie et d'archéologie orientale* 100: 131–60.
- Charpin, Dominique, Marten Stol, and Dietz Otto Edzard  
2004 *Mesopotamien: Die altbabylonische Zeit*. Orbis Biblicus et Orientalis 160/4. Fribourg: Academic Press and Göttingen: Vandenhoeck & Ruprecht.
- Chataigner, C.  
1994 "Les propriétés géochimiques des obsidiennes et la distinction des sources de Bingöl et du Nemrut Dag." *Paléorient* 20: 9–17.
- Chataigner, C., R. Badalian, G. Bigazzi, M.-C. Cauvin, R. Jrbashian, S.G. Karapetian, P. Norelli, M. Oddone, and J.-L. Poidevin  
2003 "Provenance Studies of Obsidian Artefacts from Armenian Archaeological Sites Using the Fission-Track Dating Method." *Journal of Non-crystalline Solids* 323: 167–71.
- Chen, Mei-Ling  
2006 "The Importation of Byzantine and Sasanian Glass into China during the Fourth to Sixth Centuries." *Reading Medieval Studies* 32: 47–52.
- Cherry, John F., Elissa Z. Faro, and Leah Minc  
2010 "Field Survey and Geochemical Characterization of the Southern Armenian Obsidian Sources." *Journal of Field Archaeology* 35: 147–63.
- Cheverud, James M., and Jane E. Buikstra  
1981a "Quantitative Genetics of Skeletal Non-metric Traits in the Rhesus Macaques on Cayo Santiago: I. Single Trait Heritabilities." *American Journal of Physical Anthropology* 54, no. 1: 43–49.  
1981b "Quantitative Genetics of Skeletal Non-metric Traits in the Rhesus Macaques on Cayo Santiago: II. Phenotypic, Genetic, and Environmental Correlations between Traits." *American Journal of Physical Anthropology* 54, no. 1: 51–58.  
1982 "Quantitative Genetics of Skeletal Non-metric Traits in the Rhesus Macaques on Cayo Santiago: III. Relative Heritability of Skeletal Nonmetric and Metric Traits."

## BIBLIOGRAPHY

- American Journal of Physical Anthropology 59, no. 2: 151–55.
- Chiera, Edward  
1929 *Sumerian Lexical Texts from the Temple School of Nippur*. Oriental Institute Publications 11. Chicago: University of Chicago Press.
- Christensen, Arthur  
1944 *L'Iran sous les Sassanides*. Copenhagen: Munksgaard.
- Civil, Miguel  
1999–2000 “Reading Gilgameš.” *Aula Orientalis* 17–18: 179–89.
- Civil, Miguel, Oliver R. Gurney, and Douglas S. Kennedy  
1986 *The Sag-Tablet: Lexical Texts in the Ashmolean Museum, Middle Babylonian Grammatical Texts, Miscellaneous Texts*. Materials for the Sumerian Lexicon, Supplementary Series 1. Rome: Pontifical Biblical Institute.
- Clayden, Timothy  
1992 “Kish in the Kassite Period.” *Iraq* 54: 141–55.
- Cohen, Yoram  
2013 *Wisdom from the Late Bronze Age*. Atlanta: Society of Biblical Literature.
- Cole, Stephen W., and Hermann Gasche  
1998 “Second- and First-Millennium B.C. Rivers in Northern Babylonia.” In *Changing Watercourses in Babylonia: Towards a Reconstruction of the Ancient Environment in Lower Mesopotamia*, vol. 1, edited by Hermann Gasche and Michel Tanret, pp. 1–64. *Mesopotamian History and Environment, Series 2, Memoirs 5/1*. Ghent: University of Ghent and Chicago: Oriental Institute.
- Colledge, Malcolm A. R.  
1976 *The Art of Palmyra*. London: Thames & Hudson.  
1977 *Parthian Art*. Ithaca: Cornell University Press.
- Collon, Dominique  
2001 *Western Asiatic Seals in the British Museum: Cylinder Seals*. Vol. 5, *Neo-Assyrian and Neo-Babylonian Periods*. London: British Museum.
- Cooper, Jerrold S.  
1983 *The Curse of Agade*. Johns Hopkins Near Eastern Studies. Baltimore: Johns Hopkins University Press.  
1986 *Presargonic Inscriptions*. Sumerian and Akkadian Royal Inscriptions 1. New Haven: American Oriental Society.
- Creswell, K. A. C.  
1989 *A Short Account of Early Muslim Architecture*. Revised ed. Aldershot: Scolar.
- Cripps, Eric L.  
2007 *Land Tenure and Social Stratification in Ancient Mesopotamia: Third Millennium Sumer before the Ur III Dynasty*. BAR International Series 1676. Oxford: Archaeopress.
- Cronyn, J. M.  
1990 *The Elements of Archaeological Conservation*. London: Routledge.
- Cross, Ian, and Ghofur Eliot Woodruff  
2009 “Music as a Communicative Medium.” In *The Prehistory of Language*, edited by Rudolf P. Botha and Chris Knight, pp. 77–98. *Studies in the Evolution of Language* 11. Oxford: Oxford University Press.
- Dalley, Stephanie  
1979 *A Catalogue of the Akkadian Cuneiform Tablets in the Collections of the Royal Scottish Museum, Edinburgh, with Copies of the Texts*. *Art and Archaeology* 2. Edinburgh: Royal Scottish Museum.  
2005a “The Language of Destruction and Its Interpretation.” *Baghdader Mitteilungen* 36: 275–85.  
2005b *Old Babylonian Texts in the Ashmolean Museum, Mainly from Larsa, Sippar, Kish, and Lagaba*. *Oxford Editions of Cuneiform Texts* 15. Oxford: Clarendon Press.  
2009 *Babylonian Tablets from the First Sealand Dynasty in the Schøyen Collection*. *Cornell University Studies in Assyriology and Sumerology* 9. Bethesda: CDL Press.  
2010 “Old Babylonian Prophecies at Uruk and Kish.” In *Opening the Tablet Box: Near Eastern Studies in Honor of Benjamin R. Foster*, edited by Sarah C. Melville and Alice L. Slotsky, pp. 85–97. *Culture and History of the Ancient Near East* 42. Leiden: Brill.  
2021 “An Early Old Babylonian Legal Record from Kish in the Field Museum, Chicago.” In *Of Rabid Dogs, Hunchbacked Oxen, and Infertile Goats in Ancient Babylonia: Studies Presented to Wu Yuhong on the Occasion of His 70th Birthday*, edited by Sven Günter, Wayne Horowitz, and Magnus Widell. Changchun: Institute for the History of Ancient Civilizations.
- Dalley, Stephanie, and Norman Yoffee  
1991 *Old Babylonian Texts in the Ashmolean Museum: Texts from Kish and Elsewhere*. *Oxford Editions of Cuneiform Texts* 13. Oxford: Clarendon Press.

## BIBLIOGRAPHY

- Da Riva, Rocio  
2009 "The Nebuchadnezzar Rock Inscription at Nahr el-Kalb." In *Le site de Nahr el-Kalb*, edited by Anne-Marie Maïla-Afeiche, pp. 255–301. Bulletin d'Archéologie et d'Architecture Libanaises Hors-Série 5. Beirut: Ministère de la Culture: Direction Générale des Antiquités.
- Davidson, Donald A.  
1973 "Particle Size and Phosphate Analysis: Evidence for the Evolution of a Tell." *Archaeometry* 15: 143–52.  
1976 "Processes of Tell Formation and Erosion." In *Geoarchaeology: Earth Science and the Past*, edited by Donald A. Davidson and Myra L. Shackley, pp. 255–66. London: Duckworth.
- Delaporte, Louis  
1920 *Catalogue des cylindres, cachets et pierres gravées de style oriental du Musée du Louvre*. Vol. 1, *Fouilles et missions*. Paris: Hachette.  
1923 *Catalogue des cylindres, cachets et pierres gravées de style oriental du Musée du Louvre*. Vol. 2, *Acquisitions*. Paris: Hachette.
- Delougaz, Pinhas  
1952 *Pottery from the Diyala Region*. Oriental Institute Publications 63. Chicago: University of Chicago Press.
- Delougaz, Pinhas, Harold D. Hill, and Seton Lloyd  
1967 *Private Houses and Graves in the Diyala Region*. Oriental Institute Publications 88. Chicago: University of Chicago Press.
- Delver, P.  
1962 "Properties of Saline Soils in Iraq." *Netherlands Journal of Agricultural Science* 10: 194–210.
- Dirven, Lucinda  
1997 "The Exaltation of Nabû: A Revision of the Relief Depicting the Battle against Tiamat from the Temple of Bel in Palmyra." *Welt des Orients* 28: 96–116.
- Dixon, John E.  
1976 "Obsidian Characterization Studies in the Mediterranean and Near East." In *Advances in Obsidian Glass Studies: Archaeological and Geochemical Perspectives*, edited by R. E. Taylor, pp. 288–333. Park Ridge, NJ: Noyes.
- Donbaz, Veysel, and Norman Yoffee  
1986 *Old Babylonian Texts from Kish Conserved in the Istanbul Archaeological Museums*. Bibliotheca Mesopotamica 17. Malibu: Undena.
- Dunbar, Robin  
2009 "Why Only Humans Have Language." In *The Prehistory of Language*, edited by Rudolf P. Botha and Chris Knight, pp. 12–98. Studies in the Evolution of Language 35. Oxford: Oxford University Press.
- Durand, Jean-Marie, and Michaël Guichard  
1997 "Les rituels de Mari." In *Florilegium marianum III: Recueil d'études à la mémoire de Marie-Thérèse Barrelet*, edited by Dominique Charpin and Jean-Marie Durand, pp. 19–78. Mémoires de NABU 4. Paris: Société pour l'étude du Proche-Orient ancien.
- Dussubieux, Laure, Peter Robertshaw, and Michael D. Glascock  
2009 "LA-ICP-MS Analysis of African Glass Beads: Laboratory Inter-comparison with an Emphasis on the Impact of Corrosion on Data Interpretation." *International Journal of Mass Spectrometry* 284: 152–61.
- Edzard, Dietz Otto  
1957 *Die "Zweite Zwischenzeit" Babylonien*. Wiesbaden: Harrassowitz.  
1997 *Gudea and His Dynasty*. Royal Inscriptions of Mesopotamia, Early Periods 3/1. Toronto: Toronto University Press.
- Eidt, Robert C.  
1984 *Advances in Abandoned Settlement Analysis: Application to Prehistoric Anthrosols in Colombia, South America*. Milwaukee: University of Wisconsin–Milwaukee.
- Eliot, H. W.  
1950 *Excavations in Mesopotamia and Western Iran: Sites of 4,000–500 B.C.* Special Publication of the Peabody Museum of American Archaeology and Ethnology, Harvard University. Cambridge: Peabody Museum.
- El-Wailly, Faisal, and Behnam Abu es-Soof  
1965 "The Excavations at Tell es-Sawwan, First Preliminary Report (1964)." *Sumer* 21: 17–32.
- Englund, Robert K., and Jean-Pierre Grégoire  
1991 *The Proto-cuneiform Texts from Jemdet Nasr*. Materialien zu den frühen Schriftzeugnissen des Vorderen Orients 1. Berlin: Gebr. Mann.
- Erdal, Ö. D.  
2010 "A Possible Massacre at Early Bronze Age Titriş Höyük, Anatolia." *International Journal of Osteoarchaeology* 22, no. 1: 1–21. doi: 10.1002/oa.1177.



## BIBLIOGRAPHY

- Essad-Arseven, Sophie  
1947 "Stucs post-sassanides." *Bulletin des Musées de France* 12, no. 10: 15–18.
- Evans, Jean M.  
2007 "The Square Temple at Tell Asmar and the Construction of Early Dynastic Mesopotamia, ca. 2900–2350 B.C.E." *American Journal of Archaeology* 111: 599–632.
- Falkenstein, Adam  
1931 *Literarische Keilschrifttexte aus Uruk*. Berlin: Staatlichen Museen.
- Farrand, William R.  
1985 "Rockshelter and Cave Sediments." In *Archaeological Sediments in Context*, edited by Julie K. Stein and William R. Farrand, pp. 21–39. Orono: University of Maine.
- Fazekas, István Gyula, and F. Kósa  
1978 *Forensic Fetal Osteology*. Budapest: Akadémiai Kiadó.
- Field, Henry  
1929 *The Field Museum–Oxford University Expedition to Kish, Mesopotamia, 1923–1929*. Field Museum of Natural History, Anthropology Leaflet 28. Chicago: Field Museum of Natural History.  
1930 "Child Sacrifice at Kish." *Field Museum News* 1, no. 10: 1.  
1932 "Human Remains from Jemdet Nasr, Mesopotamia." *Journal of the Royal Asiatic Society of Great Britain and Ireland* 4: 967–70.  
1936 "Fish in Mesopotamian 'Flood' Deposits." *Man* 36: 56.  
1946 Unpublished catalog of 1925–26 and 1927–28 field season human remains from Kish excavations. On file in archives of Field Museum of Natural History.
- Finkelstein, Jacob J.  
1972 *Late Old Babylonian Documents and Letters*. Yale Oriental Series, Babylonian Texts 13. New Haven: Yale University Press.
- Fish, Thomas  
1936 *Letters of the First Babylonian Dynasty in the John Rylands Library, Manchester*. Manchester: Manchester University Press.
- Folk, Robert L.  
1974 *Petrology of Sedimentary Rocks*. 2nd ed. Austin: Hemphill's.
- Folk, Robert L., and William C. Ward  
1957 "Bazos River Bar: A Study in the Significance of Grain Size Parameters." *Journal of Sedimentary Petrology* 27: 3–26.
- Forest, Jean-Daniel  
1980 "Kheit Qasim I: Un cimetière du début du troisième millénaire dans la vallée de Hamrin, Iraq." *Paléorient* 6: 213–20.  
1983 *Les pratiques funéraires en Mésopotamie du cinquième millénaire au début du troisième: Étude de cas*. Éditions Recherche sur les civilisations, Mémoire 19. Paris: Éditions Recherche sur les civilisations.
- Frahm, Ellery  
2012a "Fifty Years of Obsidian Sourcing in the Near East: Considering the Archaeological Zeitgeist and Legacies of Renfrew, Dixon, and Cann." *IAOS Bulletin* 47: 7–18.  
2012b "Validity of 'Off-the-Shelf' Handheld Portable XRF for Sourcing Near Eastern Obsidian Chip Debris." *Journal of Archaeological Science* 40, no. 2: 1080–92.  
2012c "Distinguishing Nemrut Dağ and Bingöl A Obsidians: Geochemical and Landscape Differences and the Archaeological Implications." *Journal of Archaeological Science* 39: 1436–44.
- Frame, Grant  
1992 *Babylonia 689–627 B.C.: A Political History*. Publications de l'Institut historique-archéologique néerlandais de Stamboul 69. Leiden: Nederlands Instituut voor het Nabije Oosten.
- Francaviglia, Vincenzo  
1994 "L'origine des outils en obsidienne de Tell Magzalia, Tell Sotto, Yarim Tepe et Kül Tepe, Iraq." *Paléorient* 20: 18–31.
- Frankena, Rintje  
1974 *Briefe aus dem Berliner Museum*. Altbabylonische Briefe in Umschrift und Übersetzung 6. Leiden: Brill.
- Frankfort, Henri  
1939 *Cylinder Seals: A Documentary Essay on the Art and Religion of the Ancient Near East*. London: Macmillan.  
1955 *Stratified Cylinder Seals from the Diyala Region*. Oriental Institute Publications 72. Chicago: University of Chicago Press.
- Frayne, Douglas  
1990 *The Old Babylonian Period (2003–1595 BC)*. Royal Inscriptions of Mesopotamia, Early Periods 4. Toronto: University of Toronto Press.  
1992 *The Early Dynastic List of Geographical Names*. American Oriental Series 74. New Haven: American Oriental Society.  
1993 *Sargonic and Gutian Periods, 2334–2113 BC*. Royal Inscriptions of Mesopotamia, Early

## BIBLIOGRAPHY

- Periods 2. Toronto: University of Toronto Press.
- 1997 *Ur III Period (2112–2004 BC)*. Royal Inscriptions of Mesopotamia, Early Periods 3/2. Toronto: University of Toronto Press.
- 2008 *Presargonic Period (2700–2350 BC)*. Royal Inscriptions of Mesopotamia, Early Periods 1. Toronto: University of Toronto Press.
- 2010 “Gilgamesh in Old Akkadian Glyptic.” In *Gilgamesch: Ikonographie eines Helden*, edited by Hans Ulrich Steymans, pp. 165–208. Orbis Biblicus et Orientalis 245. Fribourg: Academic Press and Göttingen: Vandenhoeck & Ruprecht.
- Friedman, Gerald F.  
1967 “Dynamic Processes and Statistical Parameters Compared for Size Frequency Distribution of Beach and River Sands.” *Journal of Sedimentary Petrology* 37: 327–54.
- Friedman, Gerald F., and John E. Sanders  
1978 *Principles of Sedimentology*. New York: Wiley.
- Fuchs, Andreas, and Simo Parpola  
2001 *The Correspondence of Sargon II. Part 3, Letters from Babylonia and the Eastern Provinces*. State Archives of Assyria 15. Helsinki: Helsinki University Press.
- Galter, Hannes D.  
1984 “Der Tempel des Gottes Zababa in Assur.” *Annual Review of the Royal Inscriptions of Mesopotamia Project* 2: 1–2.
- Gelb, Ignace J.  
1970 *Sargonic Texts in the Ashmolean Museum, Oxford*. Materials for the Assyrian Dictionary 5. Chicago: University of Chicago Press.  
1992 “Mari and the Kish Civilization.” In *Mari in Retrospect: Fifty Years of Mari and Mari Studies*, edited by Gordon Douglas Young, pp. 121–202. Winona Lake: Eisenbrauns.
- Gelb, Ignace J., Piotr Steinkeller, and Robert M. Whiting  
1991 *Earliest Land Tenure Systems in the Near East: Ancient Kudurrus*. Oriental Institute Publications 104. Chicago: Oriental Institute.  
1992 “Mari and the Kish Civilization.” In *Mari in Retrospect: Fifty Years of Mari and Mari Studies*, edited by Gordon D. Young, pp. 145–51. Eisenbrauns.
- Genouillac, Henri de  
1924 *Fouilles françaises d’El-ʿakhymer: Premières recherches archéologiques à Kish*. Vol. 1, *Rapport sur les travaux et inventaires*. Paris: Champion.  
1930 *Textes religieux sumériens du Louvre II*. Musée du Louvre, textes cunéiformes, 16. Paris: Geuthner.
- George, Andrew R.  
1992 *Babylonian Topographical Texts*. *Orientalia Lovaniensia Analecta* 40. Leuven: Peeters.  
1993 *House Most High: The Temples of Ancient Mesopotamia*. Mesopotamian Civilizations 5. Winona Lake: Eisenbrauns.  
1997 “Babylon, the Cosmic Capital.” In *Die orientalische Stadt: Kontinuität, Wandel, Bruch*, edited by Gernot Wilhelm, pp. 125–45. *Colloquien der Deutschen Orient-Gesellschaft* 1. Saarbrücken: Saarbrücker Druckerei und Verlag.  
2000 “Four Temple Rituals from Babylon.” In *Wisdom, Gods and Literature: Studies in Assyriology in Honour of W. G. Lambert*, edited by Andrew R. George and Irving L. Finkel, pp. 259–99. Winona Lake: Eisenbrauns.  
2007 “The Civilizing of Ea-Enkidu: An Unusual Tablet of the Babylonian Gilgameš Epic.” *Revue d’assyriologie et d’archéologie orientale* 101: 59–80.
- Gesche, Petra D.  
2000 *Schulunterricht in Babylonien im ersten Jahrtausend v. Chr.* *Alter Orient und Altes Testament* 275. Münster: Ugarit-Verlag.
- Ghirshman, Roman  
1962 *Persian Art: Parthian and Sassanian Dynasties, 249 B.C.–A.D. 651*. New York: Golden.
- Ghorabi, Sohila, Farhang Khademi Nadooshan, Michael D. Glascock; Alireza Hejabari Noubari, and Mansuor Ghorbani  
2010 “Provenance of Obsidian Tools from Northwestern Iran Using X-Ray Fluorescence Analysis and Neutron Activation Analysis.” *IAOS Bulletin* 43: 14–26.
- Gibson, McGuire  
1970 *Review of Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum*, vol. 1, *Cylinder Seals*, by Briggs Buchanan and P. R. S. Moorey. *Journal of Near Eastern Studies* 29: 59–64.  
1972 *The City and Area of Kish*. Miami: Field Research Projects.
- Gladfelter, Bruce G.  
1985 “On the Interpretation of Archaeological Sites in Alluvial Settings.” In *Archaeological Sediments in Context*, edited by Julie K.

## BIBLIOGRAPHY

- Stein and William R. Farrand, pp. 41–52. Orono: University of Maine.
- Glascock, Michael D.  
1999 “An Inter-laboratory Comparison of Element Compositions for Two Obsidian Sources.” *International Association for Obsidian Studies Bulletin* 23: 13–25.
- Glassner, Jean-Jacques  
2004 *Mesopotamian Chronicles*. Writings from the Ancient World 19. Atlanta: Society for Biblical Literature.
- Goddeeris, Anne  
2002 *Economy and Society in Northern Babylonia in the Early Old Babylonian Period (ca. 2000–1800 BC)*. Leuven: Peeters.  
2005 “The Emergence of Amorite Dynasties in Northern Babylonia during the Early Old Babylonian Period.” In *Ethnicity in Ancient Mesopotamia: Papers Read at the 48th Rencontre Assyriologique Internationale, Leiden, 1–4 July 2002*, edited by W. H. van Soldt, pp. 138–46. Publications de l’Institut historique et archéologique néerlandais de Stamboul 102. Leiden: Nederlands Instituut voor het Nabije Oosten.
- Goldberg, Paul  
1979 “Geology of Late Bronze Age Mudbrick from Tell Lachish.” *Tel Aviv* 6: 60–67.
- Goldstein, Lynne  
1981 “One-Dimensional Archaeology and Multi-dimensional People: Spatial Organization and Mortuary Analysis.” In *The Archaeology of Death*, edited by Robert W. Chapman, Ian Kinnes, and Klavs Randsborg, pp. 53–69. New Directions in Archaeology. Cambridge: Cambridge University Press.
- Gorelick, Leonard, and A. John Gwinnett  
1981 “The Origin and Development of the Ancient Near Eastern Cylinder Seal: A Hypothetical Reconstruction.” *Expedition* 23: 17–29.
- Gould, Stephen Jay  
1981 *The Mismeasure of Man*. New York: Norton.
- Grabar, Oleg  
1970 “Three Seasons of Excavations at Qaşr al-Ḥayr Sharqi.” *Ars Orientalis* 8: 65–85.  
1973 *The Formation of Islamic Art*. New Haven: Yale University Press.  
1993 “Umayyad Palaces Reconsidered.” *Ars Orientalis* 23: 93–108.
- Gratuze, B.  
1999 “Obsidian Characterization by Laser Ablation ICP-MS and Its Application to Prehistoric Trade in the Mediterranean and the Near East: Sources and Distribution within the Aegean and Anatolia.” *Journal of Archaeological Science* 26: 869–81.
- Gratuze, B., S. Boucetta, D. Mouralis, H. Guillou, D. Binder, L. Bellot-Gurlet, and N. Balkan-Atli  
2003 “New Investigations of the Göllü-Dağ Obsidian Lava Flows System: A Multi-disciplinary Approach.” Paper read at the International Specialized Workshop “Recent Advances in Obsidian Dating and Characterization,” Melos Island, 2–6 July. Volume of abstracts edited by Ioannis Liritzis and C. Dillian, p. 21. Milos: University of the Aegean and International Association for Obsidian Studies.
- Grayson, A. Kirk, and Edmond Sollberger  
1976 “L’insurrection générale contre Narām-Suen.” *Revue d’assyriologie et d’archéologie orientale* 70: 103–28.
- Grégoire, Jean-Pierre  
1996–2001 *Contribution à l’histoire sociale, économique, politique et culturelle du Proche-Orient ancien*. Archives administratives et inscriptions cunéiformes de l’Ashmolean Museum et de la Bodleian Collection d’Oxford 1. Les Sources 4. Paris: Geuthner.
- Griffith, M. A.  
1980 “A Pedological Investigation of an Archaeological Site in Ontario, Canada: I. An Examination of the Soils in and Adjacent to a Former Village.” *Geoderma* 24: 327–36.
- Groneberg, Brigitte  
1980 *Die Orts- und Gewässernamen der altbabylonischen Zeit*. Répertoire géographique des textes cunéiformes 3. Wiesbaden: Reichert.
- Günbattı, Cahit  
1997 “Kültepe’den Akadlı Sargon’a âit bir tablet.” *Archivum Anatolicum* 3: 131–55.
- Gurney, Oliver R.  
1977 “Inscribed Cylinders and Cylinder Fragments in the Ashmolean Museum, Oxford.” In *Essays on the Ancient Near East in Memory of Jacob Joel Finkelstein*, edited by Maria deJ. Ellis, pp. 93–100. Memoirs of the Connecticut Academy of Arts and Sciences 19. Hamden: Archon Books.

## BIBLIOGRAPHY

- 1982 "Three Contracts from Babylon." In *Societies and Languages of the Ancient Near East: Studies in Honour of I. M. Diakonoff*, edited by M. A. Dandamayev, I. Gershevitch, H. Klengel, G. Komoróczy, M. T. Larsen and J. N. Postgate, pp. 120–28. Warminster: Aris & Phillips.
- 1989 *Literary and Miscellaneous Texts in the Ashmolean Museum*. Oxford Editions of Cuneiform Texts 11. Oxford: Clarendon Press.
- Gurney, Oliver R., and Samuel N. Kramer  
1976 *Sumerian Literary Texts in the Ashmolean Museum*. Oxford Editions of Cuneiform Texts 5. Oxford: Clarendon Press.
- Haas, Volkert  
1994 *Geschichte der hethitischen Religion*. Handbuch der Orientalistik, Section 1, Nahe und Mittlere Osten 15. Leiden: Brill.
- Haase, Claus-Peter  
2007 "The Development of Stucco Decoration in Northern Syria of the 8th and 9th Centuries and the Bevelled Style of Samarra." In *Facts and Artefacts: Art in the Islamic World; Festschrift for Jens Kröger on His 65th Birthday*, edited by Annette Hagedorn and Avinoam Shalem, pp. 439–60. Islamic History and Civilization 68. Leiden: Brill.
- Hamilton, R. W.  
1959 *Khirbat al-Majjar: An Arabian Mansion in the Jordan Valley*. Oxford: Clarendon.
- Hansen, Donald  
1965 "The Relative Chronology of Mesopotamia, Part II: The Pottery Sequence at Nippur from the Middle Uruk to the End of the Old Babylonian Period (3400–1600 B.C.)." In *Chronologies in Old World Archaeology*, edited by Robert W. Ehrich, 201–13. Chicago: University of Chicago Press.
- Harper, Prudence O.  
1914 *Assyrian and Babylonian Letters Belonging to the Kouyunjik Collections of the British Museum*. 14 vols. London and Chicago.  
1978 *The Royal Hunter: Art of the Sasanian Empire*. New York: Asia Society.  
1981 *Silver Vessels of the Sasanian Period*. Vol. 1, *Royal Imagery*. New York: Metropolitan Museum of Art.
- Harris, Edward F., Rosario H. Potter, and Jiuxiang Lin  
2001 "Secular Trend in Tooth Size in Urban Chinese Assessed from Two-Generation Family Data." *American Journal of Physical Anthropology* 115: 312–18.
- Harris, Rivkah  
2000 *Gender and Aging in Mesopotamia: The Gilgamesh Epic and Other Ancient Literature*. Norman: University of Oklahoma Press.
- Harris, S. A.  
1971 "Podsol Development on Volcanic Ash Deposits in the Talamanca Range, Costa Rica." In *Paleopedology: Origin, Nature, and Dating of Paleosols*, edited by Dan H. Yaalon, pp. 191–209. Jerusalem: International Society of Soil Science.
- Hartenberger, Britt  
2003 "A Study of Craft Specialization and the Organization of Chipped Stone Production at Early Bronze Age Titriş Höyük, Southeastern Turkey." PhD diss., Boston University.
- Hartenberger, Britt, Steven Rosen, and Timothy Matney  
2000 "The Early Bronze Age Blade Workshop at Titriş Höyük: Lithic Specialization in an Urban Context." *Near Eastern Archaeology* 63: 51–58.
- Hassan, Fekri A.  
1978 "Sediments in Archaeology: Methods and Implications for Palaeoenvironmental and Cultural Analysis." *Journal of Field Archaeology* 5: 197–213.
- Hasselbach, Rebecca  
2005 *Sargonic Akkadian: A Historical and Comparative Study of the Syllabic Texts*. Wiesbaden: Harrassowitz.
- Hauser, Rick  
2007 *Reading Figurines: Animal Representations in Terra Cotta from Royal Building AK. Urkesh/Mozan Studies 5*. Bibliotheca Mesopotamica 28. Malibu: Undena.
- Hawting, G. R.  
2000 *The First Dynasty of Islam: The Umayyad Caliphate, A.D. 661–750*. 2nd ed. London: Routledge.
- Heibert, Fredrik T., and Pierre Cambon, eds.  
2008 *Afghanistan: Hidden Treasures from the National Museum, Kabul*. Washington, DC: National Geographic.
- Heimpel, Wolfgang  
2003 *Letters to the King of Mari: A New Translation, with Historical Introduction, Notes, and Commentary*. Mesopotamian Civilizations 12. Winona Lake: Eisenbrauns.

## BIBLIOGRAPHY

- Heinrich, Ernst  
1931 *Fara: Ergebnisse der Ausgrabungen der Deutschen Orient-Gesellschaft in Fara und Abu Hatab, 1902/03*. Berlin: Staatliche Museen zu Berlin.
- Heinrich, Ernst, and Adam Falkenstein  
1935 *Sechster vorläufiger Bericht über die von der Deutschen Forschungsgemeinschaft in Uruk-Warka unternommenen Ausgrabungen*. Abhandlungen der Preussischen Akademie der Wissenschaften, Philosophisch-Historische Klasse 2. Berlin: Akademie der Wissenschaften.
- Henrickson, Elizabeth F., and Mary M. A. McDonald  
1983 "Ceramic Form and Function: An Ethnographic Search and an Archaeological Application." *American Anthropologist* 85: 630–43.
- Herrmann, Georgina  
1977 *The Iranian Revival. The Making of the Past*. Oxford: Elsevier-Phaidon.
- Herskovitz, Israel, Helen D. Donoghue, David E. Minnikin, Gurdyal S. Besra, Oona Y.-C. Lee, Angela M. Gernaey, Ehud Galili, Vered Eshed, Charles L. Greenblatt, Eshetu Lemma, Gila Kahila Bar-Gal, and Mark Spigelman  
2009 "Detection and Molecular Characterization of 9,000-Year-Old *Mycobacterium tuberculosis* from a Neolithic Settlement in the Eastern Mediterranean." *PLOS ONE* 3, no. 10: e3426. DOI: 10.1371/journal.pone.0003426.
- Herzfeld, Ernst E.  
1935 *Archaeological History of Iran*. 1934 Schweich Lecture on Biblical Archaeology. London: British Academy.
- Hillenbrand, Robert  
1999 "Umayyad Woodwork in the Aqsa Mosque." In *Bayt al-Maqdis*, vol. 2, *Jerusalem and Early Islam*, edited by Jeremy Johns, pp. 271–310. Oxford Studies in Islamic Art 9. Oxford: Oxford University Press.
- Hillson, S. W.  
1992 "Dental Enamel Growth, Perkymata and Hypoplasia in Ancient Tooth Crowns." *Journal of the Royal Society of Medicine* 85: 460–66.
- Hodder, Ian  
2003 *Archaeology Beyond Dialogue*. Salt Lake City: University of Utah Press.
- Hole, Frank  
1989 "Patterns of Burial in the Fifth Millennium." In *Upon This Foundation: The Ubaid Reconsidered*, edited by Elizabeth F. Henrickson and Ingolf Thuesen, pp. 149–80. Carsten Niebuhr Institute Publications 10. Copenhagen: Carsten Niebuhr Institute of Ancient Near East Studies.
- Honça, Deirdre, and Guillermo Algaze  
1998 "Preliminary Report on the Human Skeletal Remains at Tiris Höyük: 1991–1996 Seasons." *Anatolica* 24: 101–41.
- Hopkins, Clark  
1942 "The Parthian Temple." *Berytus* 7: 1–18.
- Horsnell, Malcolm J. A.  
1999 *The Year-Names of the First Dynasty of Babylon*. 2 vols. Hamilton: McMaster University Press.
- Hunger, Hermann  
1968 *Babylonische und assyrische Kolophone*. Alter Orient und Altes Testament 2. Kevelaer: Butzon & Bercker and Neukirchen-Vluyn: Neukirchener Verlag.
- Hrouda, B., and K. Karstens  
1967 "Zur inneren Chronologie des Friedhofs 'A' in Ingharra/Chursagkalama bei Kiš." *Zeitschrift für Assyriologie* 58: 256–98.
- Ionides, Michael George  
1937 *The Régime of the Rivers Euphrates and Tigris*. London: Spon.
- Ismail, Farouk, Walther Sallaberger, Philippe Talon, and Karel van Lerberghe  
1996 *Administrative Documents from Tell Beydar (Seasons 1993–1995)*. Subartu 2. Turnhout: Brepols.
- Jackson, Marion LeRoy  
1958 *Soil Chemical Analysis*. Englewood Cliffs: Prentice-Hall.
- Jacobsen, Thorkild  
1939 *The Sumerian King List*. Assyriological Studies 10. Chicago: University of Chicago Press.  
1987 *The Harps That Once . . . : Sumerian Poetry in Translation*. New Haven: Yale University Press.
- Jacobsen, Thorkild, and Robert McC. Adams  
1958 "Salt and Silt in Ancient Mesopotamian Agriculture." *Science* 128, no. 3334: 1251–58.
- Jasim, S. A.  
1989 "Structure and Function in an 'Ubaid Village." In *Upon This Foundation: The Ubaid Reconsidered*, edited by Elizabeth F. Henrickson and Ingolf Thuesen, pp. 79–90. Carsten Niebuhr Institute Publications

## BIBLIOGRAPHY

10. Copenhagen: Carsten Niebuhr Institute of Ancient Near East Studies.
- Jean-Marie, Marylou  
1999 *Tombes et nécropoles de Mari*. Mission archéologique de Mari 5. Beirut: Institut français d'archéologie du Proche Orient.
- Jeanty, Philippe  
1983 "Fetal Limb Biometry." *Radiology* 147, no. 2: 601–2.
- Joannès, Frances  
2000 "Une chronique judiciaire d'époque hellénistique." In *Assyriologica et Semitica: Festschrift für Joachim Oelsner anlässlich seines 65. Geburtstages am 18. Februar 1997*, edited by Joachim Marzahn and Hans Neumann, pp. 193–211. *Alter Orient und Altes Testament* 252. Münster: Ugarit-Verlag.
- Jursa, Michael  
1995 *Die Landwirtschaft in Sippar in neubabylonischer Zeit*. *Archiv für Orientforschung Beiheft* 25. Vienna: Institut für Orientalistik.  
1999 *Das Archiv des Bēl-rēmāni*. *Publications de l'Institut historique-archéologique néerlandais de Stamboul* 86. Leiden: Nederlands Instituut voor het Nabije Oosten.  
2005 *Neo-Babylonian Legal and Administrative Documents: Typology, Contents and Archives*. *Guides to the Mesopotamian Textual Record* 1. Münster: Ugarit-Verlag.
- Kaim, Barbara  
2002 "Un temple de feu sassanide découvert à Mele Hairam, Turkménistan méridional." *Studia Iranica* 31: 215–30.
- Kataja, Laura, and Robert M. Whiting  
1995 *Grants, Decrees and Gifts of the Neo-Assyrian Period*. *State Archives of Assyria* 12. Helsinki: Helsinki University Press.
- Katz, Dina  
2003 *The Image of the Netherworld in the Sumerian Sources*. Bethesda: CDL Press.  
2005 "Death They Dispensed to Mankind: The Funerary World of Ancient Mesopotamia." *Historiae* 2: 55–90.
- Kawami, Trudy S.  
1984 "Āhak—Lime. ii: Early Uses of Lime Mortar." *Encyclopaedia Iranica*. <https://www.iranicaonline.org/articles/ahak-lime#pt2>.
- 1987 "Kuh-e Khwaja, Iran, and Its Wall Paintings: The Records of Ernst Herzfeld." *Metropolitan Museum Journal* 22: 13–52.  
2005 "Ernst Herzfeld, Kuh-e Khwaja, and the Study of Parthian Art." In *Ernst Herzfeld and the Development of Near Eastern Studies, 1900–1950*, edited by Ann C. Gunter and Stefan R. Hauser, pp. 181–214. Leiden: Brill.
- Keall, Edward J., Margaret A. Leveque, and Nancy Willson  
1980 "Qal'eh-i Yazdigird: Its Architectural Decorations." *Iran* 18: 1–41.
- Keel-Leu, Hildi, and Beatrice Teissier  
2004 *Die vorderasiatischen Rollsiegel der Sammlungen „Bibel+Orient“ der Universität Freiburg Schweiz*. *Orbis Biblicus et Orientalis* 200. Fribourg: Academic Press and Göttingen: Vandenhoeck & Ruprecht.
- Keeley, Lawrence H.  
1980 *Experimental Determination of Stone Tool Uses*. *Prehistoric Archeology and Ecology*. Chicago: University of Chicago Press.
- Keller, J., R. Djerbashian, S. G. Karapetian, E. Pernicka, and V. Nashedkin  
1996 "Armenian and Caucasian Obsidian Occurrences as Sources for the Neolithic Trade: Volcanological Setting and Chemical Characteristics." In *Archaeometry 94: The Proceedings of the 29th International Symposium on Archaeometry, Ankara, 9–14 May 1994*, edited by S. Demirci, A. M. Özer, and G. D. Summers, pp. 69–86. Ankara, Tübitak.
- Kenoyer, Jonathan Mark  
2008 "Indus and Mesopotamian Trade Networks: New Insights from Shell and Carnelian Artifacts." In *Intercultural Relations between South and Southwest Asia: Studies in Commemoration of E. C. L. During Caspers (1934–1996)*, edited by Eric Olijdam and Richard H. Spoor, pp. 19–28. *BAR International Series* 1826. Oxford: Archaeopress.
- Khalidi, L., B. Gratuze, and S. Boucetta  
2009 "Provenance of Obsidian Excavated from Late Chalcolithic Levels at the Sites of Tell Hamoukar and Tell Brak, Syria." *Archaeometry* 51: 879–93.
- Kienast, Burkhard, and Konrad Volk  
1995 *Die sumerischen und akkadischen Briefe des III. Jahrtausends aus der Zeit vor der III. Dynastie von Ur*. *Freiburger altorientalische Studien* 19. Wiesbaden: Steiner.

## BIBLIOGRAPHY

- Kirkby, A., and M. J. Kirkby  
1976 "Geomorphic Processes and the Surface Survey of Archaeological Sites in Semi-arid Areas." In *Geoarchaeology: Earth Science and the Past*, edited by Donald A. Davidson and Myra L. Shackley, pp. 229–53. London: Duckworth.
- Klein, Jacob  
1991 "A New Nippur Duplicate of the Sumerian Kinglist in the Brockmon Collection, University of Haifa." In *Velles paraules: Ancient Near Eastern Studies in Honor of Miguel Civil on the Occasion of His Sixty-Fifth Birthday*, edited by Piotr Michalowski, Piotr Steinkeller, Elizabeth C. Stone, and Richard L. Zettler, pp. 123–29. *Aula Orientalis* 9. Barcelona: Editorial AUSA.
- Kleiss, Wolfram  
1973 "Qal'eh Zohak in Azerbaidjan." *Archaeologische Mitteilungen aus Iran* 6: 163–88.
- Klengel, Horst  
1983 *Altbabylonische Texte aus Babylon*. Vorderasiatische Schriftdenkmäler der Staatlichen Museen zu Berlin 22. Berlin: Akademie.
- Koch, Johannes  
1995 "Der Dalbanna Sternkatalog." *Welt des Orients* 26: 43–85.
- Koldewey, Robert  
1925 *Das wiedererstehende Babylon*. 4th enlarged ed. Leipzig: Hinrichs.
- Kraus, Fritz R.  
1972 *Briefe aus dem Istanbul Museum*. Altbabylonische Briefe in Umschrift und Übersetzung 5. Leiden: Brill.  
1977 *Briefe aus dem British Museum*. Altbabylonische Briefe in Umschrift und Übersetzung 7. Leiden: Brill.  
1985 *Briefe aus kleineren westeuropäischen Sammlungen*. Altbabylonische Briefe in Umschrift und Übersetzung 10. Leiden: Brill.
- Krebernik, Manfred  
1998 "Die Texte aus Fāra und Tell Abū Ṣalābīḥ." In *Mesopotamien: Späturuk-Zeit und Frühdynastische Zeit*, edited by Josef Bauer, Robert K. Englund, and Manfred Krebernik, pp. 237–427. *Orbis Biblicus et Orientalis* 160/1. Freiburg: Universitätsverlag and Gottingen: Vandenhoeck & Ruprecht.
- Kröger, Jens  
1982 *Sasanidischer Stuckdekor: Ein Beitrag zum Reliefdekor aus Stuck in sasanidischer und frühislamischer Zeit nach den Ausgrabungen von 1928/9 und 1931/2 in der sasanidischen Metropole Ktesiphon (Iraq) und unter besonderer Berücksichtigung der Stuckfunde vom Taht-i Sulaiman (Iran), aus Nizamabad (Iran) sowie zahlreicher anderer Fundorte*. *Baghdader Forschungen* 5. Mainz am Rhein: von Zabern.  
1995 *Nishapur: Glass of the Early Islamic Period*. New York: Metropolitan Museum of Art.
- Kühnel, E.  
1933 *Die Ausgrabungen der zweiten Ktesiphon-Expedition (Winter 1931/32)*. Berlin: Islamische Kunstabteilung der Staatlichen Museen.
- Kupper, Jean-Robert  
1959 "Lettres de Kiš." *Revue d'assyriologie et d'archéologie orientale* 53, no. 1: 19–38, and 53, no. 4: 177–82.
- Kutscher, Raphael  
1989 *The Brockmon Tablets at the University of Haifa*. Part 1, *Royal Inscriptions*. Shay Series of the Zinman Institute of Archaeology. Haifa: Haifa University Press.
- Lambe, T. William  
1951 *Soil Testing for Engineers*. New York: Wiley.
- Lambert, Wilfred G.  
1989 "A Late Babylonian Copy of an Expository Text." *Journal of Near Eastern Studies* 48: 215–21.
- Laneri, Nicola  
2007 "Burial Practices at Titriş Höyük, Turkey: An Interpretation." *Journal of Near Eastern Studies* 66, no. 4: 241–66.  
2010 "A Family Affair: The Use of Intramural Funerary Chambers in Mesopotamia during the Late Third and Early Second Millennia B.C.E." *Archeological Papers of the American Anthropological Association* 20: 121–35.
- Langdon, Stephen  
1912 *Die neubabylonischen Königsinschriften*. Vorderasiatische Bibliothek 6. Leipzig: Hinrichs.  
1913 *Babylonian Liturgies: Sumerian Texts from the Early Period and from the Library of Ashurbanipal*. Paris: Geuthner.  
1923a *The H. Weld-Blundell Collection in the Ashmolean Museum*. Vol. 1, *Sumerian and Semitic Religious and Historical Texts*.

## BIBLIOGRAPHY

- Oxford Editions of Cuneiform Texts 1. London: Oxford University Press.
- 1923b *The H. Weld-Blundell Collection in the Ashmolean Museum*. Vol. 2, *Historical Inscriptions*. Oxford Editions of Cuneiform Texts 2. London: Oxford University Press.
- 1924 *Excavations at Kish*. Vol. 1, 1923–1924. Herbert Weld (for the University of Oxford) and Field Museum of Natural History (Chicago) Expedition to Mesopotamia. Paris: Geuthner.
- 1927 *Babylonian Penitential Psalms*. Oxford Editions of Cuneiform Texts 6. Paris: Geuthner.
- 1928 *The Herbert Weld Collection in the Ashmolean Museum: Pictographic Inscriptions from Jemdet Nasr, Excavated by the Oxford and Field Museum Expedition*. Oxford Editions of Cuneiform Texts 7. London: Oxford University Press.
- 1930 “The Biblical Deluge: An Ascertained Fact.” *Illustrated London News*, February 8, pp. 206–07.
- Langdon, Stephen H., and D. B. Harden  
1934 “Excavation at Kish and Barghuthiat 1933.” *Iraq* 1: 113–36.
- Larsen, Clark Spencer  
1997 *Bioarchaeology: Interpreting Behavior from the Human Skeleton*. Cambridge Studies in Biological Anthropology. Cambridge: Cambridge University Press.
- Lawler, Andrew  
2012 “Near Eastern Archaeology Works to Dig Out of a Crisis.” *Science* 18: 796–97.
- Leisten, Thomas  
2005 “Mshatta, Samarra, and Al-Hira: Ernst Herzfeld’s Theories concerning the Development of the Hira-Style, Revisited.” In *Ernst Herzfeld and the Development of Near Eastern Studies, 1900–1950*, edited by Ann C. Gunter and Stefan R. Hauser, pp. 371–84. Leiden: Brill.
- Leopold, Luna B., M. Gordon Wolman, and John P. Miller  
1964 *Fluvial Processes in Geomorphology*. San Francisco: Freeman.
- Limet, Henri  
1971 *Les légendes des sceaux cassites*. Brussels: Palais des Académies.
- Litke, Richard L.  
1998 *A Reconstruction of the Assyro-Babylonian God-Lists, An:<sup>d</sup>A-nu-um and An:Anu ša amēli*. Texts from the Babylonian Collection 3. New Haven: Yale University Press.
- Littleton, Judith, and Bruno Frohlich  
1993 “Fish-Eaters and Farmers: Dental Pathology in the Arabian Gulf.” *American Journal of Physical Anthropology* 92: 427–47.
- Liverani, Mario  
1993 “Model and Actualization: The Kings of Akkad in the Historical Tradition.” In *Akkad: The First World Empire*, edited by Mario Liverani, pp. 41–68. Padua: Sargon.
- Livingstone, Alasdair  
1989 *Court Poetry and Literary Miscellanea*. State Archives of Assyria 3. Helsinki: Helsinki University Press.
- Lloyd, Seton  
1963 *Mounds of the Near East*. Rhind Lectures, 1961–1962. Edinburgh: Edinburgh University Press.  
1969 “Back to Ingharra: Some Further Thoughts on the Excavations at East Kish.” *Iraq* 31: 40–48.
- Lyman, R. Lee  
1994 “Quantitative Units and Terminology in Zooarchaeology.” *American Antiquity* 59, no. 1: 36–71.
- Mackay, Ernest  
1925 *Report on the Excavation of the “A” Cemetery at Kish, Mesopotamia*. Field Museum of Natural History, Anthropology Memoirs 1/1. Chicago: Field Museum of Natural History.  
1929 *A Sumerian Palace and the “A” Cemetery at Kish, Mesopotamia*. Field Museum of Natural History, Anthropology Memoirs 1/2. Chicago: Field Museum of Natural History.
- Maeda, Tohru  
1981 “‘King of Kish’ in Pre-Sargonic Sumer.” *Orient* 17: 1–17.
- Marchesi, Gianni  
2010 “The Sumerian King and the Early History of Mesopotamia.” In *Ana turri gimilli: Studi dedicati al Padre Werner R. Mayer, S.J., da amici e allievi*, edited by Maria Biga and Mario Liverani, pp. 231–248. Vicino Oriente, Quaderno 5. Rome: Università di Roma La Sapienza.
- Marchetti, Nicolò  
2006 *La statuaria regale nella Mesopotamia proto-dinastica*. Rome: Bardi.  
2010 “A Preliminary Report on the 2007 and 2008 Excavations and Restorations at Tilmen Höyük.” In *Proceedings of the 6th International Congress of the Archaeology*



## BIBLIOGRAPHY

- of the Ancient Near East. Vol. 2, *Excavations, Surveys and Restorations: Reports on Recent Field Archaeology in the Near East*, edited by Paolo Matthiae, Frances Pinnock, Lorenzo Nigro, and Nicolò Marchetti, pp. 369–83. Wiesbaden: Harrassowitz.
- Martin, Harriet P.  
1988 *Fara: A Reconstruction of the Ancient Mesopotamian City of Shuruppak*. Birmingham: Chris Martin.
- Martin, Harriet P., Jane Moon, and J. Nicholas Postgate  
1985 *Abu Salabikh Excavations. Vol. 2, Graves 1 to 99*. London: British School of Archaeology in Iraq.
- Marzahn, Joachim  
1999 “Ašduniarim von Kiš—eine unbekannte Inschrift.” In *Munuscula Mesopotamica: Festschrift für Johannes Renger*, edited by Barbara Böck, Eva Cancik-Kirschbaum, and Thomas Richter, pp. 267–76. *Alter Orient und Altes Testament* 267. Münster: Ugarit-Verlag.
- Matney, Timothy  
2002 “Urban Planning and the Archaeology of Society at Early Bronze Age Titris Höyük.” In *Across the Anatolian Plateau: Readings in the Archaeology of Ancient Turkey*, edited by David C. Hopkins, pp. 19–34. *Annual of the American Schools of Oriental Research* 57. Boston: American Schools of Oriental Research.
- Matney, Timothy, Guillermo Algaze, M. C. Dulik, Ö. D. Erdal, Y. S. Erdal, O. Gokcumen, J. Lorenz, and H. Mergen  
2010 “Understanding Early Bronze Age Social Structure through Mortuary Remains: A Pilot aDNA Study from Titriş Höyük, Southeastern Turkey.” *International Journal of Osteoarchaeology* 22, no. 3: 338–51. doi: 10.1002/oa.1213.
- Matthews, Roger  
2002 *Secrets of the Dark Mound: Jemdet Nasr 1926–1928*. Iraq Archaeological Reports 6. Warminster: British School of Archaeology in Iraq.  
2003 *The Archaeology of Mesopotamia: Theories and Approaches*. Approaching the Ancient World. London: Routledge.
- Maul, Stefan M.  
1988 “Herzberuhigungsklagen”: Die sumerisch-akkadischen Eršahunga-Gebete. Wiesbaden: Harrassowitz.  
1991a Review of *Literary and Miscellaneous Texts in the Ashmolean Museum*, by Oliver R. Gurney. *Bibliotheca Orientalis* 48: 852–59.  
1991b “Wenn der Held (zum Kampfe) auszieht . . .”: Ein Ninurta-Eršemma.” *Orientalia* n.s. 60: 312–34.
- McClellan, Thomas L.  
2004 “Funerary Monuments and Pastoralism.” In *Nomades et sédentaires dans le Proche-Orient ancien: Compte rendu de la XLVI<sup>e</sup> Rencontre Assyriologique Internationale, Paris, 10–13 juillet 2000*, edited by Christophe Nicolle, pp. 63–67. *Amurru* 3. Paris: Éditions Recherche sur les civilisations.
- McEwan, Gilbert J. P.  
1980 “A Seleucid Augural Request.” *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 70: 58–69.  
1982 *Texts from Hellenistic Babylonia in the Ashmolean Museum*. Oxford Editions of Cuneiform Texts 9. Oxford: Clarendon Press.  
1984 *Late Babylonian Texts in the Ashmolean Museum*. Oxford Editions of Cuneiform Texts 10. Oxford: Clarendon Press.
- Meek, Theophile James  
1943 “Ancient Oriental Seals in the Royal Ontario Museum.” *Berytus* 8: 1–16.
- Meinecke, Michael  
1985 “Qasr al-Hayr al-Gharbi.” In *Ebla to Damascus: Art and Archaeology of Ancient Syria*, edited by Harvey Weiss, pp. 484–87, cat. nos. 251–53. Washington, DC: Smithsonian Institution Traveling Exhibition Service.
- Meisami, Julie Scott  
1995 *The Haft Paykar: A Medieval Persian Romance*. Oxford World’s Classics. Oxford: Oxford University Press.
- Mellaart, James  
1967 *Çatal Hüyük: A Neolithic Town in Anatolia*. London: Thames & Hudson.
- Menze, Bjoern H., and Jason A. Ur  
2012 “Mapping Patterns of Long-Term Settlement in Northern Mesopotamia at a Large Scale.” *Proceedings of the National Academy of Sciences of the United States of America* 109.14: E778–87.
- Menzel, Brigitte  
1981 *Assyrische Tempel*. 2 vols. Studia Pohl, Series Maior 10. Rome: Biblical Institute Press.
- Michalowski, Piotr  
1989 *The Lamentation over the Destruction of Sumer and Ur*. Mesopotamian Civilizations 1. Winona Lake: Eisenbrauns.

## BIBLIOGRAPHY

- 1993 "Memory and Deed: The Historiography of the Political Expansion of the Akkad State." In *Akkad: The First World Empire*, edited by Mario Liverani, pp. 69–90. Padua: Sargon.
- 1995 Review of *Sumerian Literary Texts*, by Bendt Alster and Markham J. Geller, *Journal of Near Eastern Studies* 54: 49–51.
- 2003 "A Man Called Enmebaragesi." In *Literatur, Politik und Recht in Mesopotamien: Festschrift für Claus Wilcke*, edited by Walther Sallaberger, Konrad Volk, and Annette Zgoll, pp. 195–208. Wiesbaden: Harrassowitz.
- 2006 "The Strange History of Tummal." In *Approaches to Sumerian Literature: Studies in Honor of Stip (H. L. J. Vanstiphout)*, edited by Piotr Michalowski and Niek Veldhuis, pp. 145–65. Leiden: Brill.
- Mirti, Piero, Marco Pace, Mery Malandrino, and Mariamaddalena Negro Ponzi
- 2009 "Sasanian Glass from Veh Ardašīr: New Evidences by ICP-MS Analysis." *Journal of Archaeological Science* 36, no. 4: 1061–69.
- Mirti, Piero, Marco Pace, Mariamaddalena Negro Ponzi, and M. Aceto
- 2008 "ICP-MS Analysis of Glass Fragments of Parthian and Sasanian Epoch from Seleucia and Veh Ardašīr (Central Iraq)." *Archaeometry* 50, no. 3: 429–50.
- Mitchell, Peter
- 2018 *The Donkey in Human History: An Archaeological Perspective*. Oxford: Oxford University Press.
- Mithen, Steven J.
- 2009 "Holistic Communication and the Co-evolution of Language and Music: Resurrecting an Old Idea." In *The Prehistory of Language*, edited by Rudolf P. Botha and Chris Knight, pp. 58–76. Studies in the Evolution of Language 11. Oxford: Oxford University Press.
- Molina, Manuel
- 2008 "The Corpus of Neo-Sumerian Tablets: An Overview." In *The Growth of an Early State in Mesopotamia: Studies in Ur III Administration*, edited by Steven J. Garfinkle and J. Cale Johnson, pp. 19–53. Madrid: Consejo Superior de Investigaciones Científicas.
- Moorey, P. R. S.
- 1966 "A Re-consideration of the Excavations on Tell Ingharra (East Kish), 1923–33." *Iraq* 28: 18–51.
- 1970 "Cemetery A at Kish: Grave Groups and Chronology." *Iraq* 32: 86–128.
- 1978 *Kish Excavations 1923–1933: With a Microfiche Catalogue of the Objects in Oxford Excavated by the Oxford-Field Museum, Chicago, Expedition to Kish in Iraq, 1923–1933*. Oxford: Clarendon Press.
- 1994 *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence*. Oxford: Clarendon Press.
- 1999 *Ancient Mesopotamian Materials and Industries: The Archaeological Evidence*. Winona Lake: Eisenbrauns.
- Morony, Michael G.
- 2005 *Iraq after the Muslim Conquest*. Reprint of 1984 edition. Piscataway: Gorgias.
- Movassat, Johanna Domela
- 2005 *The Large Vault at Taq-i Bustan: A Study in Late Sasanian Royal Art*. Mellen Studies in Archaeology 3. Lewiston: Edwin Mellen.
- Nadooshan, Farhang Khademi, S. Colby Phillips, and Mohammad Safari
- 2007 "WDXRF Spectroscopy of Obsidian Tools in the Northwest of Iran." *International Association for Obsidian Studies Bulletin* 37: 3–6.
- Neiburger, E. J.
- 2000 "Dentistry in Ancient Mesopotamia." *Journal of the Massachusetts Dental Society* 49, no. 2: 16–19.
- Neiburger, E. J., Myron Cohen, Jack Lieberman, and Marilyn Lieberman
- 1998 "The Dentition of Abraham's People: Why Abraham Left Mesopotamia." *New York State Dental Journal* 64, no. 9: 25–29.
- Neves, Walter Alves, and Maria Antonieta Costa
- 1998 "Adult Stature and Standard of Living in the Prehistoric Atacama Desert." *Current Anthropology* 39, no. 2: 278–81.
- Niknami, K. A., A. C. Amirkhiz, and M. D. Glascock
- 2010 "Provenance Studies of Chalcolithic Obsidian Artefacts from Near Lake Urmia, Northwestern Iran Using WDXRF Analysis." *Archaeometry* 52, no. 1: 19–30.
- Nishimura, Yoko
- 2008 "North Mesopotamian Urban Space: A Reconstruction of Household Activities and City Layout at Titriş Höyük in the Third Millennium B.C." PhD diss., University of California, Los Angeles.
- Northedge, Alastair
- 1992 *Studies on Roman and Islamic 'Ammān: The Excavations of Mrs. C.-M. Bennett and Other Investigations*. Vol. 1, *History, Site and Architecture*. British Academy Monographs

## BIBLIOGRAPHY

- in *Archaeology* 3. Oxford: Oxford University Press.
- Nougayrol, Jean, Emmanuel Laroche, Charles Virolleaud, and Claude Schaeffer  
1968 *Nouveaux textes accadiens, hourrites et ugaritiques des archives et bibliothèques privées d'Ugarit: Commentaires des textes historiques*. Ugaritica 5. Mission de Ras Shamra 16. Paris: Geuthner.
- Noveck, Madeline  
1975 *The Mark of Ancient Man: Ancient Near Eastern Stamp Seals and Cylinder Seals; the Gorelick Collection*. Brooklyn: Brooklyn Museum.
- Ochsenschlager, Edward L.  
2004 *Iraq's Marsh Arabs in the Garden of Eden*. Philadelphia: University of Pennsylvania Museum of Archaeology and Anthropology.
- Oddone, M., G. Bigazzi, Y. Keheyian, and S. Meloni  
2000 "Characterisation of Armenian Obsidians: Implications for Raw Material Supply for Prehistoric Artifacts." *Journal of Radioanalytical and Nuclear Chemistry* 243: 673–82.
- Odell, George H.  
2001 "Stone Tool Research at the End of the Millennium: Classification, Function, and Behavior." *Journal of Archaeological Research* 9, no. 1: 45–100.
- Oelsner, Joachim  
1986 *Materialien zur babylonischen Gesellschaft und Kultur in hellenistischer Zeit*. Assyriologia 7. Budapest: Eötvös University.
- Ohgama, Naoko, and Eleanor Robson  
2010 "Scribal Schooling in Old Babylonian Kish: The Evidence of the Oxford Tablets." In *Your Praise Is Sweet: A Memorial Volume for Jeremy Black from Students, Colleagues and Friends*, edited by Heather D. Baker, Eleanor Robson, and Gábor Zólyomi, pp. 207–36. London: British Institute for the Study of Iraq.
- Ornan, Tallay  
2010 "Humbaba, the Bull of Heaven and the Contribution of Images to the Reconstruction of the Gilgamesh Epic." In *Gilgamesh: Ikonographie eines Helden*, edited by Hans Ulrich Steymans, pp. 229–60. Orbis Biblicus et Orientalis 245. Fribourg: Academic Press and Göttingen: Vandenhoeck & Ruprecht.
- Ortluff, Charles R., Robert A. Feldman, and Michael E. Mosely  
1985 "Hydraulic Engineering and Historical Aspects of the Pre-Columbian Intravalley Canal Systems of the Moche Valley, Peru." *Journal of Field Archaeology* 12: 77–98.
- Ortner, Donald J.  
2003 *Identification of Pathological Conditions in Human Skeletal Remains*. 2nd ed. San Diego: Academic Press.
- Parpola, Simo  
1993 *Letters from Assyrian and Babylonian Scholars*. State Archives of Assyria 10. Helsinki: Helsinki University Press.
- Pedersén, Olof  
1998 *Archives and Libraries in the Ancient Near East, 1500–300 B.C.* Bethesda: CDL Press.  
2005 *Archive und Bibliotheken in Babylon: Die Tontafeln der Grabung Robert Koldeweys, 1899–1917*. Abhandlungen der Deutschen Orient-Gesellschaft 25. Saarbrücken: Saarländische Druckerei und Verlag.
- Penniman, Thomas K.  
1934 "A Note on the Inhabitants of Kish before the Great Flood." In *Excavations at Kish*, vol. 4, 1925–1930, by Louis Charles Watelin and Stephen Langdon, pp. 65–72. Herbert Weld (for the University of Oxford) and Field Museum of Natural History (Chicago) Expedition to Mesopotamia. Paris: Geuthner.
- Pestle, William J., Karen Wilson, Stephen Nash, and Sarah Coleman  
2006 "Reconciling the Past: A Catalogue of Scattered Collections." In *Archäologie und Computer: Kulturelles Erbe und neue Technologien*, pp. 1–11. Vienna: Stadtarchäologie Wien.
- Pientka, Rosel  
1998 *Die spätaltbabylonische Zeit: Abiesuh bis Samsuditana; Quellen, Jahresdaten, Geschichte*. Imgula 2. Münster: Rhema.
- Pollock, Susan  
1999 *Ancient Mesopotamia: The Eden That Never Was*. Cambridge: Cambridge University Press.  
2003 "Feasts, Funerals, and Fast Food in Early Mesopotamian States." In *The Archaeology and Politics of Food and Feasting in Early States and Empires*, edited by Tamara L. Bray, pp. 17–38. New York: Kluwer Academic/Plenum.

## BIBLIOGRAPHY

- Pollock, Susan, and Reinhard Bernbeck, eds.  
2005 "Introduction." In *Archaeologies of the Middle East: Critical Perspectives*, edited by Susan Pollock and Reinhard Bernbeck, pp. 1–10. Malden: Blackwell.
- Pomponio, Francesco, and Giuseppe Visicato  
1994 *Early Dynastic Administrative Tablets of Šuruppak*. Naples: Istituto Universitario Orientale.
- Pope, Arthur Upham  
1945 *Masterpieces of Persian Art*. New York: Dryden.
- Pope, Arthur Upham, and Phyllis Ackerman, eds.  
1938 *A Survey of Persian Art from Prehistoric Times to the Present*. 9 vols. London: Oxford University Press.
- Porada, Edith  
1948 *Corpus of Ancient Near Eastern Seals in North American Collections*. The Collection of the Pierpont Morgan Library. New York: Bollingen Foundation.  
1965 *The Art of Ancient Iran: Pre-Islamic Cultures*. New York: Crown.
- Porada, Edith, Donald P. Hansen, Sally Dunham, and Sidney H. Babcock  
1992 "The Chronology of Mesopotamia, ca. 7000–1600 B.C." In *Chronologies in Old World Archaeology*, edited by Robert W. Ehrich, pp. 77–121. Chicago: University of Chicago Press.
- Postgate, J. Nicholas  
1977 "Excavations at Abu Salabikh, 1976." *Iraq* 39, no. 2: 269–99.  
1980a "Early Dynastic Burial Customs at Abu Salabikh." *Sumer* 36: 65–82.  
1980b "Excavations at Abu Salabikh, 1978–79." *Iraq* 42, no. 2: 87–104.  
1992 *Early Mesopotamia: Society and Economy at the Dawn of History*. London: Routledge.  
1994 "Text and Figure in Ancient Mesopotamia: Match and Mismatch." In *The Ancient Mind: Elements of Cognitive Archaeology*, edited by Colin Renfrew and Ezra B. W. Zubrow, pp. 176–84. New Directions in Archaeology. Cambridge: Cambridge University Press.
- Postgate, J. Nicholas, and P. R. S. Moorey  
1976 "Excavations at Abu Salabikh, 1975." *Iraq* 38, no. 2: 133–69.
- Potts, Daniel T.  
1993 "A Sasanian Lead Horse from Northeastern Arabia." *Iranica Antiqua* 28: 193–99.
- 2016 *The Archaeology of Elam: Formation and Transformation of an Ancient Iranian State*. 2nd rev. ed. Cambridge: Cambridge University Press.
- Price, Ira Maurice  
1908 "Some Cassite and Other Cylinder Seals." In *Old Testament and Semitic Studies in Memory of William Rainey Harper*, edited by Robert Francis Harper, Francis Brown, and George Foot Moore, vol. 1, pp. 383–400. Chicago: University of Chicago Press.
- Proudfoot, B.  
1976 "The Analysis and Interpretation of Soil Phosphorous in Archaeological Contexts." In *Geoarchaeology: Earth Science and the Past*, edited by Donald A. Davidson and Myra L. Shackley, pp. 93–113. London: Duckworth.
- Rahbar, Mehdi  
2004 "Le monument sassanide de Bandiān, Dargaz: Un temple du feu d'après les dernières découvertes 1996–98." *Studia Iranica* 33: 7–32.
- Rathbun, Ted A.  
1975 *A Study of the Physical Characteristics of the Ancient Inhabitants of Kish, Iraq*. Coconut Grove: Field Research Projects.
- Reiner, Erica  
1956 "Lipšur Litanies." *Journal of Near Eastern Studies* 15: 129–49.  
1974 "A Sumero-Akkadian Hymn of Nana." *Journal of Near Eastern Studies* 33: 221–36.  
1981 *Babylonian Planetary Omens*. Part 2, *Enūma Anu Enlil, Tablets 50–51*. Bibliotheca Mesopotamica 2/2. Malibu: Undena.
- Reisner, George A.  
1896 *Sumerisch-babylonische Hymnen nach Thontafeln griechischer Zeit*. Königliche Museen zu Berlin, Mitteilungen aus den orientalischen Sammlungen 10. Berlin: Spemann.
- Reitlinger, Gerald  
1935 "Islamic Pottery from Kish." *Ars Islamica* 2, no. 2: 198–218.
- Renfrew, Colin, and John E. Dixon  
1976 "Obsidian in Western Asia: A Review." In *Problems in Economic and Social Archaeology*, edited by Gale de G. Sieveking, Ian H. Longworth, and K. E. Wilson, pp. 137–50. London: Duckworth.

## BIBLIOGRAPHY

- Renfrew, Colin, John E. Dixon, and Johnson R. Cann  
1966 "Obsidian and Early Culture Contact in the Near East." *Proceedings of the Prehistoric Society* 32: 30–72.
- Renger, Johannes  
1967 "Untersuchungen zum Priestertum in der altbabylonischen Zeit, 1. Teil." *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 58: 110–88.  
1969 "Untersuchungen zum Priestertum in der altbabylonischen Zeit, 2. Teil." *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 59: 104–230.
- Reuther, Oscar  
1929 "The German Excavations at Ctesiphon." *Antiquity* 3, no. 12: 434–51.  
1938 "Sasanian Architecture: A History." In *A Survey of Persian Art from Prehistoric Times to the Present*, edited by Arthur Upham Pope and Phyllis Ackerman, vol. 2, pp. 493–578. London: Oxford University Press.
- Richter, Thomas  
2004 *Untersuchungen zu den lokalen Panthea Süd- und Mittelbabyloniens in altbabylonischer Zeit*. 2nd ed. Alter Orient und Altes Testament 257. Münster: Ugarit-Verlag.
- Richtsmeier, Joan T., and Janet W. McGrath  
1986 "Quantitative Genetics of Cranial Non-metric Traits in Randombred Mice: Heritability and Etiology." *American Journal of Physical Anthropology* 69, no. 1: 51–58.
- Rittig, Dessa  
1977 *Assyrisch-babylonische Kleinplastik magischer Bedeutung vom 13.–6. Jh. v. Chr.* München: Uni-Druck.
- Rollefson, G. O.  
1990 "The Uses of Plaster at Neolithic 'Ain Ghazal, Jordan." *Archaeomaterials* 4: 33–54.
- Römer, Willem H. Ph.  
2004 *Die Klage über die Zerstörung von Ur*. Alter Orient und Altes Testament 309. Münster: Ugarit-Verlag.
- Rosen, Steven A., Robert H. Tykot, and Michael Gottesman  
2005 "Long Distance Trinket Trade: Early Bronze Age Obsidian from the Negev." *Journal of Archaeological Science* 32, no. 5: 775–84.
- Rubio, Gonzalo  
2005 "On the Linguistic Landscape of Early Mesopotamia." In *Ethnicity in Ancient Mesopotamia: Papers Read at the 48th Rencontre Assyriologique Internationale, Leiden, 1–4 July 2002*, edited by W. H. van Soldt, R. Kalvelagen, and Dina Katz, pp. 316–32. Publications de l'Institut historique et archéologique néerlandais de Stamboul 102. Leiden: Nederlands Instituut voor het Nabije Oosten.
- 2007 "From Sumer to Babylonia: Topics in the History of Southern Mesopotamia." In *Current Issues in the Study of the Ancient Near East*, edited by Mark W. Chavalas, pp. 5–51. Publications of the Association of Ancient Historians 8. Claremont: Regina Books.
- 2008 "Sumerian Literature." In *From an Antique Land: An Introduction to Ancient Near Eastern Literature*, edited by Carl S. Ehrlich, pp. 1–61. Lanham: Rowman & Littlefield.
- Rutten, Marguerite  
1938 "Trente-deux modèles de foies en argile inscrits provenant de Tell-Hariri (Mari)." *Revue d'assyriologie et d'archéologie orientale* 35: 36–70.  
1958 "Un lot de tablettes de Mananâ." *Revue d'assyriologie et d'archéologie orientale* 52: 208–25.  
1960 "Un lot de tablettes de Mananâ (suite, suite et fin)." *Revue d'assyriologie et d'archéologie orientale* 54: 19–40, 147–52.
- Sachs, Abraham J., and Hermann Hunger  
1988– *Astronomical Diaries and Related Texts from Babylonia*. Vienna: Österreichischen Akademie der Wissenschaften.
- Sacks, Oliver  
2007 *Musicophilia: Tales of Music and the Brain*. London: Picador.
- Safar, Fuad, M. A. Mustafa, and Seton Lloyd  
1981 *Eridu*. Baghdad: State Organization of Antiquities and Heritage.
- Sajjadi, S. Mansur Seyyed  
2007 "Wall Painting from Dahaneh-ye Gholaman (Sistan)." In *Achaemenid Culture and Local Traditions in Anatolia, Southern Caucasus and Iran: New Discoveries*, edited by A. I. Ivantchik and Vaxtang Licheli, pp. 129–54. Leiden: Brill.
- Sajjadi, S. Mansur Seyyed, and Faramarz Saber Moghaddam  
2004 "Peintures et gravures murales découvertes à Dahan-e Gholāmān, Sistān." *Studia Iranica* 33: 285–96.

## BIBLIOGRAPHY

- Sallaberger, Walther  
 1988 "Das Pantheon von Kiš und Hursagkalama: Ein altmesopotamisches Lokalpantheon." Diplomarbeit, Universität Innsbrück.  
 1999 "Nagar in den fröhdynastischen Texten aus Beydar." In *Languages and Cultures in Contact: At the Crossroads of Civilizations in the Syro-Mesopotamian Realm; Proceedings of the 42nd Rencontre Assyriologique Internationale*, edited by Karel van Lerberghe and Gabriela Voet, pp. 393–408. *Orientalia Lovaniensia Analecta* 96. Leuven: Peeters.  
 2017 "Zababa." *RLA* 15: 164–68.
- San Nicolò, Mariano, and Arthur Ungnad  
 1935 *Neubabylonische Rechts- und Verwaltungsurkunden*. Leipzig: Hinrichs.
- Sarnat, G. B., and I. Schour  
 1941–42 "Enamel Hypoplasia (Chronologic Enamel Aplasia) in Relation to Systemic Disease: A Chronologic, Morphologic, and Etiologic Classification." *Journal of the American Dental Association* 28, no. 12: 1989–2000, and 29, no. 1: 67–75.
- Sassmannshausen, Leonhard  
 1999 "Adaptation of the Kassites to the Babylonian Civilization." In *Languages and Cultures in Contact: At the Crossroads of Civilizations in the Syro-Mesopotamian Realm; Proceedings of the 42nd Rencontre Assyriologique Internationale*, edited by Karel van Lerberghe and Gabriela Voet, pp. 409–24. *Orientalia Lovaniensia Analecta* 96. Leuven: Peeters.
- Saunders, Shelley R.  
 1989 "Nonmetric Skeletal Variation." In *Reconstruction of Life from the Skeleton*, edited by M. Yasar Işcan and Kenneth A. R. Kennedy, pp. 95–108. New York: Liss.
- Saxe, Arthur Alan  
 1970 "Social Dimensions of Mortuary Practices." PhD diss., University of Michigan.
- Sayre, Edward V.  
 1964 *Some Ancient Glass Specimens with Compositions of Particular Archaeological Significance*. Upton: Brookhaven National Laboratory.
- Schaudig, Hanspeter  
 2001 *Die Inschriften Nabonids von Babylon und Kyros' des Großen samt den in ihrem Umfeld entstandenen Tendenzschriften*. *Alter Orient und Altes Testament* 256. Münster: Ugarit-Verlag.
- Scheuer, J. L., J. H. Musgrave, and S. P. Evans  
 1980 "The Estimation of Late Fetal and Perinatal Age from Limb Bone Length by Linear and Logarithmic Regression." *Annals of Human Biology* 7, no. 3: 257–65.
- Schmandt-Besserat, Denise  
 1997 "Animal Symbols at 'Ain-Ghazal." *Expedition* 39: 48–58.
- Schmidt, Erich F.  
 1937 *Excavations at Tepe Hissar, Damghan*. Publications of the Iranian Section of the University Museum. Philadelphia: University of Pennsylvania Press.
- Schmidt, J. Heinrich  
 1934 "L'expédition de Ctésiphon en 1931–1932." *Syria* 15: 1–23.
- Schmidt, Jürgen  
 1970 "Uruk-Warka: Zusammenfassender Bericht über die 27. Kampagne 1969." *Baghdader Mitteilungen* 5: 51–96.
- Schneider, Adam William  
 2010 "Who Was Eating Fish at Kish? A Theoretical Framework for Using Stable Isotope Analysis to Explore Processes of Political Economy in Early Dynastic Mesopotamia." Master's thesis, University of California, San Diego.
- Schroeder, Otto  
 1917 *Altbabylonische Briefe, mit Zeichen- und Namenlisten*. Vorderasiatische Schriftdenkmäler der Königlichen Museen zu Berlin 16. Leipzig: Hinrichs.
- Schutkowski, Holger  
 1993 "Sex Determination of Infant and Juvenile Skeletons: I. Morphognostic Features." *American Journal of Physical Anthropology* 90, no. 2: 199–205.
- Self, Steven G., and Larry Leamy  
 1978 "Heritability of Quasi-continuous Skeletal Traits in a Rando-bred Population of House Mice." *Genetics* 88, no. 1: 109–20.
- Semenov, S. A.  
 1964 *Prehistoric Technology: An Experimental Study of the Oldest Tools and Artefacts from Traces of Manufacture and Wear*. London: Cory, Adams & Mackay.
- Shahīd, Irfan  
 1984 *Byzantium and the Arabs in the Fourth Century*. Washington, DC: Dumbarton Oaks Research Library.  
 1989 *Byzantium and the Arabs in the Fifth Century*. Washington, DC: Dumbarton Oaks Research Library.

## BIBLIOGRAPHY

- 2009 *Byzantium and the Arabs in the Sixth Century*. Vol. 2, Part 2: *Economic, Social, and Cultural History*. Washington, DC: Dumbarton Oaks Research Library and Collection.
- Shimada, Izumi, and Robert Corruccini  
2005 Comment on “The Nature of Moche Human Sacrifice: A Bio-Archaeological Perspective,” by Richard C. Sutter and Rosa J. Cortez. *Current Anthropology* 46, no. 4: 540–41.
- Siebrandt, Diane C.  
2007 “Site Assessment of the Ancient City of Kish (Tell al-Ukhaimir).” Report to Department of the Army, Headquarters, 3rd Squadron, 73rd Cavalry Regiment, CSC Scania, Iraq. APO AE 09331. November 3.  
2008 Follow-up report to “Site Assessment of the Ancient City of Kish (Tell al-Ukhaimir).” Report to Department of the Army, Headquarters, 3rd Squadron, 73rd Cavalry Regiment, CSC Scania, Iraq. APO AE 09331. February 17.
- Silva Castillo, Jorge  
2004 “Les offrandes *ana mālikī* (aux ancêtres des rois de Mari).” In *Nomades et sédentaires dans le Proche-Orient ancien: Compte rendu de la XLVI<sup>e</sup> Rencontre Assyriologique Internationale, Paris, 10–13 juillet 2000*, edited by Christophe Nicolle, pp. 235–39. *Amurru* 3. Paris: Éditions Recherche sur les civilisations.
- Simmons, Stephen D.  
1978 *Early Old Babylonian Documents*. Yale Oriental Series, Babylonian Texts 14. New Haven: Yale University Press.
- Šiškin, V. A.  
1963 *Varakhsha*. Moscow: Izd-vo Akademii nauk SSSR.
- Sjöberg, Åke  
1975 “The Old Babylonian Eduba.” In *Sumerological Studies in Honor of Thorkild Jacobsen on His Seventieth Birthday, June 7, 1974*, edited by Stephen J. Lieberman, pp. 159–79. *Assyriological Studies* 20. Chicago: University of Chicago Press.
- Sjöberg, Åke, and Eugen Bergmann  
1969 *The Collection of the Sumerian Temple Hymns*. Texts from Cuneiform Sources 3. Locust Valley: Augustin.
- Sjöberg, Alf  
1976 “Phosphate Analysis of Anthropogenic Soils.” *Journal of Field Archaeology* 3: 447–54.
- Sjøvold, T.  
1973 “The Occurrence of Minor Non-metrical Variants in the Skeleton and Their Quantitative Treatment for Population Comparisons.” *Homo* 24: 204–33.  
1977 “Nonmetrical Divergence between Skeletal Populations: The Theoretical Foundation and Biological Importance of C. A. B. Smith’s Mean Measure of Divergence.” *Ossa* 4, suppl. 1: 1–133.
- Sladek, William R.  
1979 “Inanna’s Descent to the Netherworld.” PhD diss., Johns Hopkins University.
- Sommerfeld, Walter  
1973 “Untersuchungen zur Geschichte von Kisurra.” *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 73: 204–31.  
1982 *Der Aufstieg Marduks: Die Stellung Marduks in der babylonischen Religion des zweiten Jahrtausends v. Chr.* Alter Orient und Altes Testament 213. Kevelaer: Butzon & Bercker and Neukirchen-Vluyn: Neukirchener Verlag.  
2000 “Narām-Sîn, die ‘Große Revolte’ und MAR.TU<sup>ki</sup>.” In *Assyriologica et Semitica: Festschrift für Joachim Oelsner*, edited by Joachim Marzahn and Hans Neumann, pp. 419–36. Alter Orient und Altes Testament 252. Münster: Ugarit-Verlag.  
2021 “Old Akkadian.” In *History of the Akkadian Language*, edited by Juan-Pablo Vita, chapter 11. *Handbuch der Orientalistik, Section 1, Nahe und Mittlere Osten* 152. Leiden: Brill.
- Spencer, Frank, ed.  
1982 *A History of American Physical Anthropology: 1930–1980*. New York: Academic Press.
- Stamm, Johann Jakob  
1968 *Die akkadische Namengebung*. Mitteilungen der Vorderasiatisch-Ägyptischen Gesellschaft 44. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Steckel, Richard H., and Jerome C. Rose, eds.  
2002 *The Backbone of History: Health and Nutrition in the Western Hemisphere*. Cambridge: Cambridge University Press.
- Stein, Julie K.  
1985 “Interpreting Sediments in Cultural Settings.” In *Archaeological Sediments in Context*, edited by Julie K. Stein and William R. Farrand, pp. 5–19. Orono: University of Maine.

## BIBLIOGRAPHY

- Steinkeller, Piotr
- 1987 "The Administrative and Economic Organization of the Ur III State: The Core and the Periphery." In *The Organization of Power: Aspects of Bureaucracy in the Ancient Near East*, edited by McGuire Gibson and Robert D. Biggs, pp. 19–41. Chicago: Oriental Institute.
- 1992 "Early Semitic Literature and Third Millennium Seals with Mythological Motifs." In *Literature and Literary Language at Ebla*, edited by Pelio Fronzaroli, pp. 243–75. Quaderni di semitistica 18. Florence: Dipartimento di linguistica, Università di Firenze.
- 2003 "An Ur III Manuscript of the Sumerian King List." In *Literatur, Politik und Recht in Mesopotamien: Festschrift für Claus Wilcke*, edited by Walther Sallaberger, Konrad Volk, and Annette Zgoll, pp. 267–92. Wiesbaden: Harrassowitz.
- 2004 "Studies in Third Millennium Paleography, 4: Sign Kiš." *Zeitschrift für Assyriologie* 94: 175–85.
- 2013 "An Archaic 'Prisoner Plaque' from Kish." *Revue d'assyriologie* 107: 131–57.
- Steinmetzer, Franz X.
- 1922 *Die babylonischen Kudurru (Grenzsteine) als Urkundenform*. Paderborn: Schöningh.
- Stol, Marten
- 1973 Review of *Late Old Babylonian Documents and Letters*, by Jacob J. Finkelstein. *Journal of Cuneiform Studies* 25: 215–33.
- 1976 *Studies in Old Babylonian History*. Uitgaven van het Nederlands Historisch-Archaeologisch Instituut te Istanbul 40. Leiden: Nederlands Historisch-Archaeologisch Instituut te Istanbul.
- 1998–2001 "Nanaja." *RLA* 9: 146–51.
- Stol, Marten, and F. A. M. Wiggermann
- 2000 *Birth in Babylonia and the Bible: Its Mediterranean Setting*. Groningen: Styx.
- Stone, Elizabeth C.
- 1977 "Economic Crisis and Social Upheaval in Old Babylonian Nippur." In *Mountains and Lowlands: Essays in the Archaeology of Greater Mesopotamia*, edited by Louis D. Levine and T. Cuyler Young, pp. 266–89. Bibliotheca Mesopotamica 7. Malibu: Undena.
- Storr, Anthony
- 1992 *Music and the Mind*. London: Harper Collins.
- Sürenhagen, Dietrich
- 1980 "Die frühdynastisch I-zeitliche Nekropole von Tall Aḥmad al-Ḥattū: Ausgrabungen der Deutschen Orient-Gesellschaft im Hamrin-Becken." *Paléorient* 6: 229–32.
- Sutter, Richard C., and Rosa J. Cortez
- 2005 "The Nature of Moche Human Sacrifice." *Current Anthropology* 46, no. 4: 521–49.
- Sutter, Richard C., and Lisa Mertz
- 2004 "Nonmetric Cranial Trait Variation and Prehistoric Biocultural Change in the Azapa Valley, Chile." *American Journal of Physical Anthropology* 123, no. 2: 130–45.
- Szlechter, Emile
- 1963 *Tablettes juridiques et administratives de la III<sup>e</sup> dynastie d'Ur et de la 1<sup>re</sup> dynastie de Babylone*. 2 vols. Publications de l'Institut de droit romain de l'Université de Paris 21. Paris: Recueil Sirey.
- Tadmor, Hayim
- 1994 *The Inscriptions of Tiglath-pileser III, King of Assyria: Critical Edition, with Introductions, Translations, and Commentary*. Jerusalem: Israel Academy of Sciences and Humanities.
- Talbot Rice, D.
- 1932 "The Oxford Excavations at Hira, 1931." *Antiquity* 6: 276–91.
- Talgam, Rina
- 2004 *The Stylistic Origins of Umayyad Sculpture and Architectural Decoration*. 2 vols. Wiesbaden: Harrassowitz.
- Tankard, A. J., and F. R. Schweitzer
- 1976 "Textural Analysis of Cave Sediments: Die Kelders, Cape Province, South Africa." In *Geoarchaeology: Earth Science and the Past*, edited by Donald A. Davidson and Myra L. Shackley, pp. 289–316. London: Duckworth.
- Tarrant, R. F.
- 1956 "Effects of Slash Burning on Some Soils of a Douglas Fir Region." *Soil Science Society of America Proceedings* 20: 408–11.
- Thompson, Deborah
- 1976 *Stucco from Chal Tarkhan-Eshqabad near Rayy*. Colt Archaeological Institute Publications. Warminster: Aris & Phillips.
- Thureau-Dangin, François
- 1921 *Rituel accadiens*. Paris: Leroux.
- Tobler, Arthur J.
- 1950 *Excavations at Tepe Gawra. Vol. 2, Levels IX-XX*. Museum Monographs 2. Philadelphia: University Museum.



## BIBLIOGRAPHY

- Tonietti, Maria Vittoria  
1998 "The Mobility of the NAR and the Sumerian Personal Names in Pre-Sargonic Mari Onomasticon." In *About Subartu: Studies Devoted to Upper Mesopotamia*, edited by Marc Lebeau, vol. 2, pp. 83–101. Subartu 4. Turnhout: Brepols.
- Torres-Rouff, Christina, and William J. Pestle  
2012 "An Exploration of Infant Burial Practices at the Site of Kish, Iraq." In *Bioarchaeology of the Near East and Eastern Mediterranean*, edited by M. A. Perry, pp. 35–59. Gainesville: University Press of Florida.
- Torres-Rouff, Christina, William J. Pestle, and Blair M. Daverman  
2012 "Commemorating Bodies and Lives at Kish's 'A Cemetery': (Re)presenting Social Memory." *Journal of Social Archaeology* 12: 193–219.
- Turner, Christy G.  
1979 "Dental Anthropological Indications of Agriculture among the Jomon People of Central Japan." *American Journal of Physical Anthropology* 51, no. 4: 619–36.
- Turner, Christy G., Christian R. Nichol, and G. Richard Scott  
1991 "Scoring Procedures for Key Morphological Traits of the Permanent Dentition: The Arizona State University Dental Anthropology System." In *Advances in Dental Anthropology*, edited by Marc A. Kelly and Clark Spencer Larsen, pp. 13–31. New York: Wiley-Liss.
- Unger, Eckhard  
1931 *Babylon: Die heilige Stadt nach der Beschreibung der Babylonier*. Berlin: de Gruyter.
- Ur, Jason A.  
2010 "Cycles of Civilization in Northern Mesopotamia, 4400–2000 B.C." *Journal of Archaeological Research* 18: 387–431.
- Ur, Jason A., Philip Karsgaard, and Joan Oates  
2007 "Early Urban Development in the Near East." *Science* 317: 11–88.
- US Department of Agriculture  
1975 *Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys*. Agricultural Handbook 436. Washington, DC: Natural Resources Conservation Service.
- Vallet, R.  
1997 "Habuba Kabire ou la naissance de l'urbanisme." *Paléorient* 22: 45–76.
- 1998 "L'urbanisme colonial urukien: L'exemple de Djebel Aruda." *Subartu* 4: 53–87.
- van der Spek, Robartus J.  
2006 "The Size and Significance of the Babylonian Temples under the Successors." In *La transition entre l'empire achéménide et les royaumes hellénistiques, vers 350–300 av. J.-C.*, edited by Pierre Briant and Francis Joannès, pp. 261–307. Persika 9. Paris: de Boccard.
- van Driel, Govert  
1969 *The Cult of Assur*. Studia Semitica Neerlandica 13. Assen: Van Gorcum.
- van Gessel, Ben H. L.  
1998–2001 *Onomasticon of the Hittite Pantheon*. 3 vols. Handbuch der Orientalistik, Section 1, Nahe und Mittlere Osten 33. Leiden: Brill.
- Van Lerberghe, Karel, and Gabrielle Voet  
2009 *A Late Old Babylonian Temple Archive from Dūr-Abiešuh*. Cornell University Studies in Assyriology and Sumerology 8. Bethesda: CDL Press.
- 2010 "Kassite Mercenaries at Abi-Ešuh's Fortress." In *Why Should Someone Who Knows Something Conceal It? Cuneiform Studies in Honor of David I. Owen on His 70th Birthday*, edited by Alexandra Kleiner and Jack M. Sasson, pp. 181–87. Bethesda: CDL Press.
- Vértessalij, Peter P., and Suzanne Kolbus  
1985 "Review of Protodynastic Development in Babylonia." *Mesopotamia* 20: 53–109.
- Villard, Pierre  
1992 "Parade militaire dans les jardins de Babylone." In *Florilegium marianum: Recueil d'études en l'honneur de Michel Fleury*, edited by Jean-Marie Durand, pp. 137–52. Mémoires de NABU 1. Paris: Société pour l'étude du Proche-Orient ancien.
- Voigt, Mary M.  
1983 *Hajji Firuz Tepe, Iran: The Neolithic Settlement*. Hasanlu Excavation Reports 1. University Museum Monograph 50. Philadelphia: University Museum University of Pennsylvania.
- Volk, Konrad  
2000 "Edubba'a und Edubba'a-Literatur: Rätsel und Lösungen." *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 90: 1–30.

## BIBLIOGRAPHY

- Waerzeggers, Caroline  
 2003–4 “The Babylonian Revolts against Xerxes and the ‘End of Archives.’” *Archiv für Orientforschung* 50: 150–73.  
 2010a *The Ezida Temple of Borsippa: Priesthood, Cult, Archives*. Achaemenid History 15. Leiden: Nederlands Instituut voor het Nabije Oosten.  
 2010b “Babylonians in Susa: The Travels of Babylonian Businessmen to Susa Reconsidered.” In *The Achaemenid Court*, edited by B. Jacobs and R. Rollinger, pp. 777–813. Wiesbaden: Harrassowitz.
- Walker, Christopher B. F.  
 1981 *Cuneiform Brick Inscriptions in the British Museum, the Ashmolean Museum, Oxford, the City of Birmingham Museums and Art Gallery, the City of Bristol Museum and Art Gallery*. London: British Museum.  
 1995 “The Dalbanna Text: A Mesopotamian Star-List.” *Welt des Orients* 26: 27–42.
- Walker, Christopher B. F., and Michael Dick  
 2001 *The Induction of the Cult Image in Ancient Mesopotamia: The Mesopotamian Mīs Pī Ritual*. State Archives of Assyria Literary Texts 1. Helsinki: Neo-Assyrian Text Corpus Project.
- Walker, Phillip L.  
 1989 “Cranial Injuries as Evidence of Violence in Prehistoric Southern California.” *American Journal of Physical Anthropology* 80, no. 3: 313–23.
- Walker, Phillip L., Rhonda R. Bathurst, Rebecca Richman, Thor Gjerdrum, and Valerie A. Andrushko  
 2009 “The Causes of Porotic Hyperostosis and Cribra Orbitalia: A Reappraisal of the Iron-Deficiency-Anemia Hypothesis.” *American Journal of Physical Anthropology* 139, no. 2: 109–25.
- Walker, Phillip L., John R. Johnson, and Patricia M. Lambert  
 1988 “Age and Sex Biases in the Preservation of Human Skeletal Remains.” *American Journal of Physical Anthropology* 76, no. 2: 183–88.
- Walmsley, Alan  
 2007 *Early Islamic Syria: An Archaeological Assessment*. Duckworth Debates in Archaeology. London: Duckworth.
- Ward, William Hayes  
 1910 *The Seal Cylinders of Western Asia*. Washington, DC: Carnegie Institution of Washington.
- Watelin, Louis Charles  
 1938 “The Sasanian Buildings near Kish.” In *A Survey of Persian Art from Prehistoric Times to the Present*, edited by Arthur Upham Pope and Phyllis Ackerman, vol. 2, pp. 584–92. London: Oxford University Press.
- Watelin, Louis Charles, and Stephen Langdon  
 1934 *Excavations at Kish*. Vol. 4, 1925–1930. Herbert Weld (for the University of Oxford) and Field Museum of Natural History (Chicago) Expedition to Mesopotamia. Paris: Geuthner.
- Watson, A.  
 1983 “Gypsum Crusts.” In *Chemical Sediments and Geomorphology: Precipitates and Residua in the Near-Surface Environment*, edited by Andrew Goudie and Kenneth Pye, pp. 163–85. London: Academic Press.
- Weaver, David S.  
 1980 “Sex Differences in the Ilia of a Known Sex and Age Sample of Fetal and Infant Skeletons.” *American Journal of Physical Anthropology* 52, no. 2: 191–95.
- Weidner, Ernst F.  
 1915 *Handbuch der babylonischen Astronomie*. Leipzig: Hinrichs.
- Weiss, Harvey  
 1973 *Demographic Models for Anthropology*. *Memoirs of the Society for American Archeology* 27. Washington, DC: Society for American Archaeology.  
 1975 “Kish, Akkad and Agade.” *Journal of the American Oriental Society* 95: 434–53.
- Wengrow, David  
 2003 “Interpreting Animal Art in the Prehistoric Near East.” In *Culture through Objects: Ancient Near Eastern Studies in Honour of P. R. S. Moorey*, edited by Timothy F. Potts, Michael Roaf, and Diana L. Stein, pp. 139–60. Oxford: Griffith Institute.
- Westenholz, Aage  
 2007 “The Graeco-Babyloniaca Once Again.” *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 97: 262–313.
- Westenholz, Joan Goodnick  
 1974 Review of *Briefe aus der Istanbuler Museum*, by F. R. Kraus. *Journal of Near Eastern Studies* 33: 409–14.  
 1997 *Legends of the Kings of Agade: The Texts*. Mesopotamian Civilizations 7. Winona Lake: Eisenbrauns.

## BIBLIOGRAPHY

- Whelan, Estelle  
1978 "Dating the A Cemetery at Kish: A Reconsideration." *Journal of Field Archaeology* 5, no. 1: 79–96.
- Wilcke, Claus  
1982 "Zwei spät-altbabylonische Kaufverträge aus Kiš." In *Zikir šumim: Assyriological Studies Presented to F. R. Kraus*, edited by G. van Driel, Th. J. H. Krispijn, Marten Stol, and Klaas R. Veenhof, pp. 426–84. *Studia Francisci Scholten memoriae dicata* 5. Leiden: Brill.  
1989 "Genealogical and Geographical Thought in the Sumerian King List." *DUMU-E<sub>2</sub>-DUB-BA-A: Studies in Honor of Åke W. Sjöberg*, edited by Hermann Behrens, Darlene Loding, and Martha T. Roth, pp. 557–71. Occasional Publications of the Samuel Noah Kramer Fund 11. Philadelphia: University Museum.  
1997a "Amar-girids Revolte gegen Narām-Su'en." *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 87: 11–32.  
1997b "Nanāja-šamḥats Rechtsstreit um ihre Freiheit." In *Ana šadī Labnāni lū allik: Beiträge zu altorientalischen und mittelmee-rischen Kulturen; Festschrift für Wolfgang Röllig*, edited by Beate Pongratz-Leisten, Hartmut Kühne, and Paolo Xella, pp. 413–29. *Alter Orient und Altes Testament* 247. Kevelaer: Butzon & Bercker and Neukirchen-Vluyn: Neukirchener Verlag.  
2007 *Early Ancient Near Eastern Law: A History of Its Beginnings; The Early Dynastic and Sargonic Periods*. Revised ed. Winona Lake: Eisenbrauns.
- Wilkinson, T. J.  
1976 "Soil and Sediment Structures as an Aid to Archaeological Interpretation: Sediments at Dibsi Faraj, Syria." In *Geoarchaeology: Earth Science and the Past*, edited by Donald A. Davidson and Myra L. Shackley, pp. 275–87. London: Duckworth.
- Williams-Thorpe, O.  
1995 "Obsidian in the Mediterranean and the Near East: A Provenancing Success Story." *Archaeometry* 37, no. 2: 217–48.
- Wilson, C. E.  
1924 *The Haft Paikar (The Seven Beauties): Containing the Life and Adventures of King Bahram Gur, and the Seven Stories Told Him by His Seven Queens*. 2 vols. Probsthain's Oriental Series 12–13. London: Probsthain.
- Wood, James W., George R. Milner, Henry C. Harpending, and Kenneth M. Weiss  
1992 "The Osteological Paradox: Problems of Inferring Prehistoric Health from Skeletal Samples." *Current Anthropology* 33, no. 4: 343–70.
- Woolley, C. Leonard  
1934 *The Royal Cemetery: A Report on the Pre-dynastic and Sargonic Graves Excavated between 1926 and 1931*. *Ur Excavations* 2. Oxford: British Museum and Museum of the University of Pennsylvania.
- Wu, Yuhong, and Stephanie Dalley  
1990 "The Origins of the Manana Dynasty at Kish, and the Assyrian King List." *Iraq* 52: 159–65.
- Wunsch, Cornelia  
2003 *Urkunden zum Ehe-, Vermögens- und Erbrecht aus verschiedenen Neubabylonischen Archiven*. *Babylonische Archive* 2. Dresden: Islet.
- Yamauchi, Edwin M.  
1999–2000 "Mandaic Incantations: Lead Rolls and Magic Bowls." *ARAM* 11–12: 253–68.  
2005 "Elchasaïtes, Manichaeans, and Mandaeans in the Light of the Cologne Mani Codex." In *Beyond the Jordan: Studies in Honor of W. Harold Mare*, edited by Glenn A. Carnagey, pp. 49–60. Eugene: Wipf & Stock.
- Yellin, Joseph, Thomas E. Levy, and Yorke M. Rowan  
1996 "New Evidence on Prehistoric Trade Routes: The Obsidian Evidence from Gilat, Israel." *Journal of Field Archaeology* 23, no. 3: 361–68.
- Yerkes, Richard W., and P. Nick Kardulias  
1993 "Recent Developments in the Analysis of Lithic Artifacts." *Journal of Archaeological Research* 1, no. 2: 89–119.
- Yilmaz, Derya  
2006 "Burial Customs of the Chamber Tombs in Southeast Anatolia during the Early Bronze Age." *Anadolu/Anatolia* 31: 71–90.
- Yoffee, Norman  
1998 "The Economics of Ritual at Late Old Babylonian Kish." *Journal of the Economic and Social History of the Orient* 41: 312–43.  
2005 *Myths of the Archaic State: Evolution of the Earliest Cities, States, and Civilizations*. Cambridge: Cambridge University Press.

## BIBLIOGRAPHY

- Zadok, Ran  
1985 *Geographical Names According to New- and Late-Babylonian Texts*. Répertoire Géographique des Textes Cunéiformes 8. Wiesbaden: L. Reichert.
- Zaina, Federico  
2016 “Tell Ingharra-East Kish in the 3rd Millennium BC: Urban Development, Architecture and Functional Analysis.” In *Proceedings of the 9th International Congress on the Archaeology of the Ancient Near East*, edited by R.A. Stucky, Oskar Kaelin and Hans-Peter Mathys, 431–46. Wiesbaden: Harrasowitz.
- Ziegler, Nele  
1999 *Florilegium marianum IV: Le harem de Zimrî-Lîm*. Mémoires de N.A.B.U. 5. Paris: Société pour l’Étude du Proche-Orient Ancien.
- 2007 *Florilegium marianum IX: Les musiciens et la musique d’après les archives de Mari*. Mémoires de N.A.B.U. 10. Paris: Société pour l’Étude du Proche-Orient Ancien.
- Zólyomi, Gábor  
2003 “A Manuscript of ‘Ninġišzida’s Journey to the Nether World’ from Kiš, Ingharra.” *Zeitschrift für Assyriologie und vorderasiatische Archäologie* 93: 70–81.



## CHAPTER 1

LIFE AND DEATH IN EARLY DYNASTIC KISH:  
THE EVIDENCE FROM INGHARRA, TRENCH Y

GUILLERMO ALGAZE

Mortuary remains were prominent among the finds recovered by the Field Museum–Ashmolean Museum expedition to the ancient Mesopotamian city of Kish.<sup>1</sup> Although these remains were haphazardly excavated many years ago, they still constitute one of the most important records we have for mortuary behavior in Early Dynastic Sumerian cities. Equally important, because they are accessible to researchers, they are the only systematic corpus of third-millennium osteological materials from southern Iraq that can be used to reconstruct issues related to the demography, health, diet, and, possibly, ethnic variability of ancient Mesopotamian populations.<sup>2</sup> Two principal bodies of mortuary remains were excavated at Kish: those exposed in “Mound A” in the eastern portion of the multimound settlement, which date mostly to the end of the Early Dynastic period and the very beginnings of the Akkadian Dynasty (ca. 2600–2300 BC), and those uncovered in “Mound Y,” the ziggurat mound of Ingharra, in the western portion of the city, which date to the first few centuries of the third millennium BC (Early Dynastic I period). Because the nature of available mortuary evidence from Mound A (the so-called A Cemetery) has recently been the subject of a com-

prehensive review by Christina Torres-Rouff, William Pestle, and Blair Daverman,<sup>3</sup> in what follows I focus instead on the earlier mortuary remains excavated in the “Y” trench area of Ingharra, where mudbrick houses with intramural cist burials of Early Dynastic I date were uncovered between 1927 and 1931. These earlier remains were termed the “Early Houses Stratum” (hereafter EHS) by their excavator, Louis Watelin (fig 1.1).<sup>4</sup>

Also found within the Trench Y/EHS area were at least six elite burials associated with wheeled chariots or, more likely, wagons. These interments differed from the more modest burials found within the EHS houses in that they were often accompanied by teams of draft animals, were associated with larger caches of metalwork and weapons, and, most important, may have included sacrificed retainers.<sup>5</sup> On account of parallels with comparable but richer and better-documented burials in the Royal Cemetery at Ur, the Kish “chariot” burials have already received much attention.<sup>6</sup> These burials are not discussed further here because, as McGuire Gibson discusses elsewhere in this volume, it is highly likely that they were excavated into the EHS from above and are therefore unrelated to it.

Photos and reconstructed plans of the EHS show portions of several mudbrick structures situated on either side of a street (figs. 1.1 and 1.2). No single coherent building is discernible in the plan. The fragmentary nature of the known EHS remains is no

<sup>1</sup> Earlier drafts of this chapter were read and critiqued by Karen Wilson (Field Museum) and an anonymous reviewer. Each provided astute criticism, plausible alternative interpretations, and useful suggestions, many of which have been incorporated into the final text. While I remain responsible for any remaining errors or omissions, I am most grateful for their insights. For an additional interpretation of the remains in Trench Y at Kish, see Zaina 2016, which appeared after this review was initially written.

<sup>2</sup> Schneider 2010; Pestle, Torres-Rouff, and Daverman, this volume.

<sup>3</sup> Torres-Rouff, Pestle, and Daverman 2012.

<sup>4</sup> Also occasionally referred to in the literature as the “Y Cemetery.”

<sup>5</sup> Details in Algaze 1983–84, appendix 1.

<sup>6</sup> Lloyd 1969; Gibson 1972; Moorey 1978; Algaze 1983–84.

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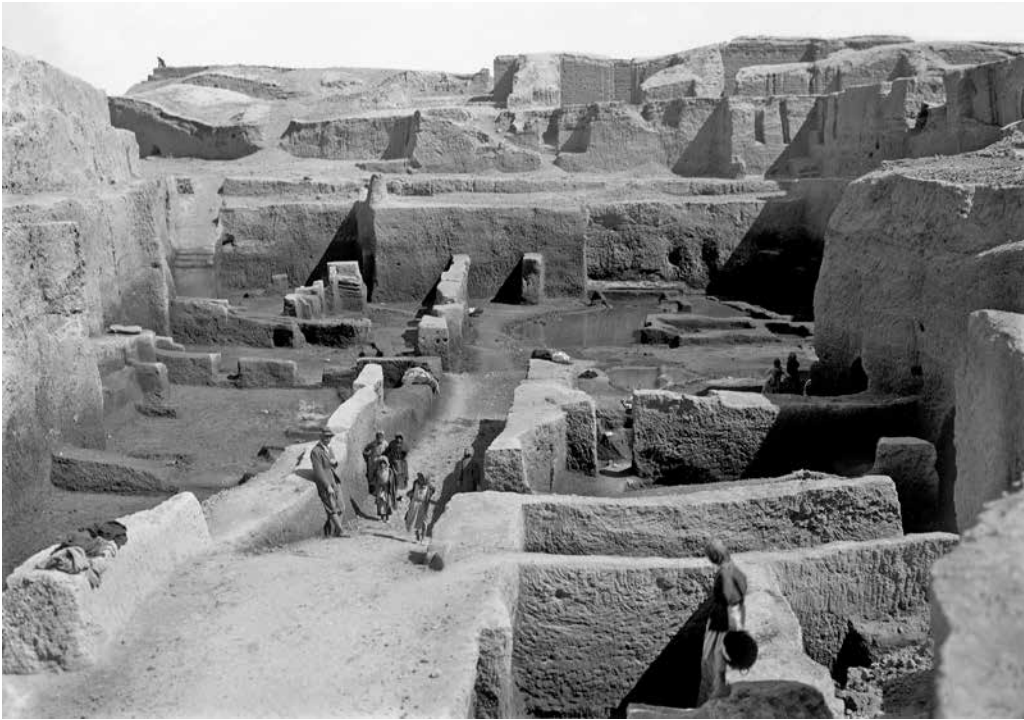


Figure 1.1. Early Houses Stratum in Ingharra, Trench Y, looking northeast (Field Museum).

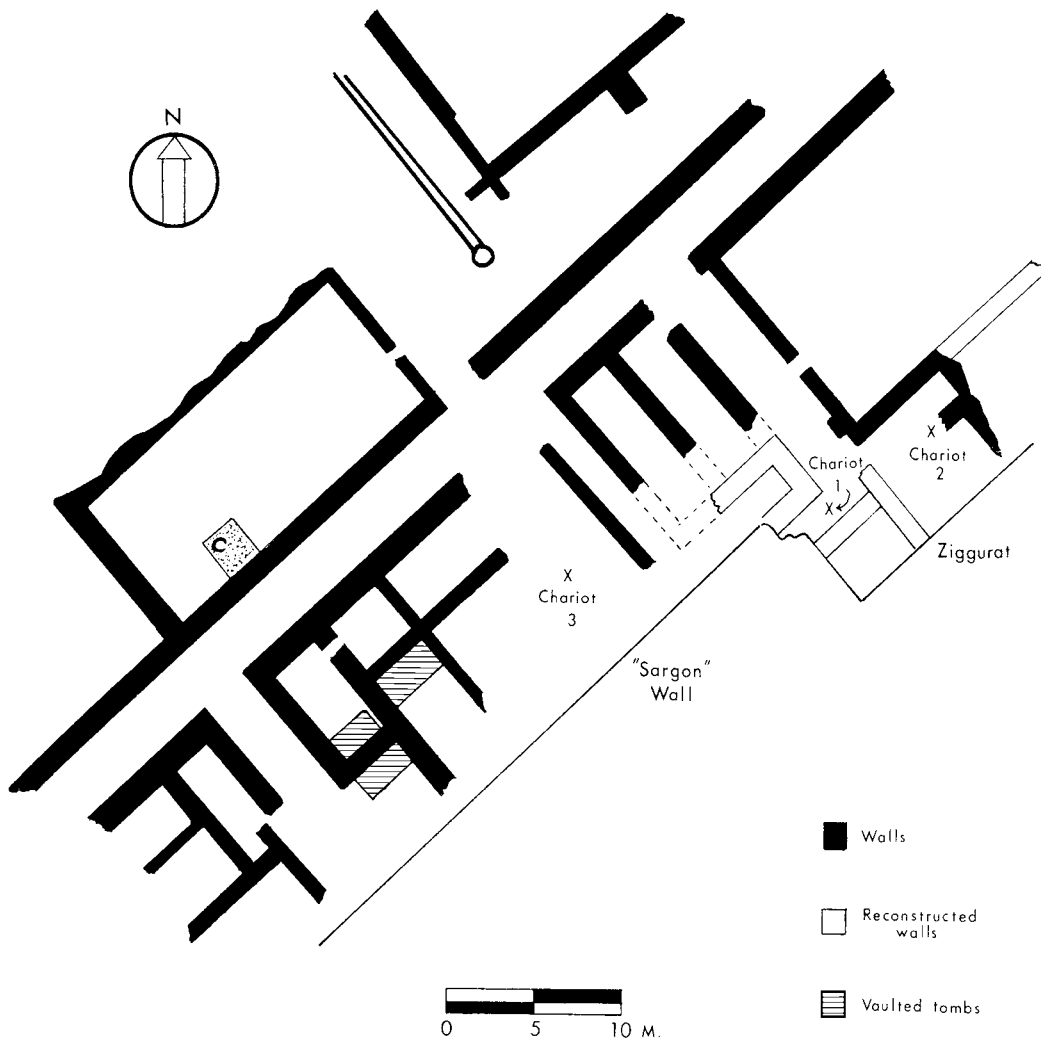


Figure 1.2. Reconstructed plan of the Early Houses Stratum in Ingharra, Trench Y (from Algaze 1983-84, fig. L, which is based on Watelin and Langdon 1934, fig. 2, with additions by the author).

doubt largely due to incompetent excavation, but problems of interpretation are compounded by the paucity of field records made at the time of excavation, by the fact that a proportion of records known to have existed in the field can no longer be found, and by the fact that results were only preliminarily published before Watelin died in 1934. Consequently, even after several attempts at reinterpretation by Seton Lloyd, McGuire Gibson, Roger Moorey, and me,<sup>7</sup> both the nature of the EHS and the relationship between the houses and the burials found therein remain only dimly understood.

This is quite regrettable because, as discussed below, the EHS provides us with one of the earliest instances of what eventually became a widespread mortuary tradition in ancient Near Eastern urban contexts, starting at the very end of the fourth millennium BC and continuing throughout the succeeding third millennium. In the earlier half of the third millennium, in fact, built burials situated within domestic contexts such as those uncovered in Ingharra's EHS were heavily concentrated within southern Mesopotamia, as was urbanism itself. For instance, to list only clear-cut cases, comparable houses incorporating intramural burials are recorded in the Diyala area sites of Khafayah (ancient Tutub) and Tell Asmar (ancient Eshnunna);<sup>8</sup> at Abu Salabikh, not far from Kish;<sup>9</sup> and at Fara (ancient Shuruppak) farther to the south.<sup>10</sup>

In turn, more recent results from excavations in northern Syria, northern Iraq, and southern Turkey (partly discussed below) demonstrate that comparable, if chronologically later, domestic intramural mortuary practices<sup>11</sup> also evolved in Upper Mesopotamia as part of the local urban tradition that (re)emerged there in the second half of the Early Bronze Age, around the middle of the third millennium BC, after a hiatus of more than five hundred years in the development of urbanism in the area.<sup>12</sup>

<sup>7</sup> Lloyd 1969; Gibson 1972 and this volume; Moorey 1978; Algaze 1983–84.

<sup>8</sup> Delougaz, Hill, and Lloyd 1967.

<sup>9</sup> Postgate 1980a; Martin, Moon, and Postgate 1985.

<sup>10</sup> Martin 1988.

<sup>11</sup> Yılmaz 2006; Laneri 2007, 2010.

<sup>12</sup> Ur 2010. Interestingly, to my knowledge the only exception we have for the noted chronological lag between the intramural burial traditions of northern Mesopotamia and the earlier ones of southern Mesopotamia comes from Mari (Tomb T-300; Jean-Marie 1999, p. 8), a city on the Middle Euphrates that traditionally acted as a gateway between north and south Mesopotamia.

Palace archives at Ebla and Tell Beydar,<sup>13</sup> both in Syria, leave little doubt that, although indigenous, this later urban tradition was based to a substantial degree on the self-conscious emulation by northern elites of ideologies of kingship, forms of economic organization, and mechanisms of social control that had originated earlier in southern Mesopotamian cities.

As the evidence mounts, an interesting pattern can be observed: at least superficially, the intramural funerary practices that become common in many southern and Upper Mesopotamian cities in the Early Bronze Age appear to mimic the much earlier mortuary practices of some of the first settled and agricultural villages that appeared in the ancient Near East—practices that had been largely abandoned for thousands of years prior to the third millennium. This raises the question why mortuary behavior across much of Mesopotamia changed so dramatically at the onset of the Bronze Age.

In what follows, I attempt to tackle this question by exploring how the early third-millennium mortuary behavior revealed by the EHS data from Kish differs from preurban mortuary practices in the ancient Near East. Additionally, because the Kish EHS evidence is—and will likely remain—inevitably inconclusive given its fragmentary state, I try to reinterpret its significance in light of more recent—and more reliably excavated—data from pertinent Upper Mesopotamian cities of Early Bronze Age date.

## LIVING WITH THE DEAD: FROM EARLY VILLAGES TO EARLY CITIES

As noted above, burial practice in the ancient Near East changed quite dramatically through the millennia spanning the emergence of early sedentary villages and early cities in the area. Both segregated external cemeteries and burials beneath individual house floors containing both adults and children are found in Natufian culture range sites dating to the very beginning of the Holocene.<sup>14</sup> However, primary or secondary intramural burials within houses are more common throughout the Pre-Pottery and Pottery Neolithic periods, as, for example, at Çatal

<sup>13</sup> Arcari 1988; Astour 1988; Ismail et al. 1996.

<sup>14</sup> Byrd and Monahan 1995.



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Höyük in the Central Plateau of Turkey,<sup>15</sup> dated roughly to the seventh millennium BC, and the Samarran site of Tell es-Sawwan in central Iraq,<sup>16</sup> dated roughly to the sixth millennium BC.

These differences in mortuary treatment matter: segregated external cemeteries are generally interpreted as evidence of collective lineage rights over resources, whereas intramural burials are often interpreted instead as evidence of ancestor worship, possibly connected with the rise of smaller extended families as the principal landholding and wealth-possessing units.<sup>17</sup> The advent of DNA extraction from ancient mortuary remains—a methodology that is starting to be used to great effect with Near Eastern data<sup>18</sup>—may one day make it possible to directly test these hypotheses.

Be that as it may, though there was some degree of regional variability, the handling of the dead started to change significantly across much of the ancient Near East after the Neolithic period.<sup>19</sup> In some areas of Upper Mesopotamia, intramural burials of both adults and children continue well into the first half of the fourth millennium, as illustrated by the spectacular intramural cist tombs at Tepe Gawra.<sup>20</sup> In the southernmost portions of Greater Mesopotamia, however, extramural cemeteries become the norm by the end of the fifth millennium, and intramural burials come to be restricted solely to infants, as is the case most clearly at the Late Ubaid site of Tell Abada<sup>21</sup> in the Hamrin Basin of Iraq.<sup>22</sup> At this time, adults start to be consistently buried in nondomestic contexts—usually in extramural cemeteries at the periphery of towns, as in the cases of Eridu<sup>23</sup> and Ur,<sup>24</sup> both at the southernmost edge of the Mesopotamian alluvium, or in close proximity to important architectural monuments of religious or ideological significance, as in the case of the ex-

tensive cemetery found at the base of the so-called Massif Funéraire at Susa<sup>25</sup> in the Susiana Plain of Khuzestan.

In the succeeding Uruk period, dated to the fourth millennium BC, the exclusion of the dead from habitation areas appears to have been extended even to infants, at least within southern Mesopotamia proper. To be sure, we do not have direct evidence for this because extramural cemeteries of Uruk date have yet to be found.<sup>26</sup> However, that such an exclusion existed is strongly suggested by the lack of interments of any sort inside Late Uruk-period houses at colonial sites such as Habuba Kabira-South<sup>27</sup> and Jebel Aruda,<sup>28</sup> both in Syria, where relatively wide exposures were achieved, and by the equally noteworthy lack of interments associated with the multiple Late Uruk-period public and administrative buildings uncovered at those same sites or, more to the point, in the much wider exposures achieved by German excavators in the Eanna and Anu precincts at the capital site of Uruk/Warka,<sup>29</sup> near Nassariya in southern Iraq.

At least in southern Mesopotamia, the millennia-long Ubaid-Uruk exclusion of dead adults from the realm of the living came to an end by the transition from the fourth to the third millennium BC, soon after the emergence of cities in the area, when, as noted above, an intramural adult burial tradition centered within houses became common at numerous sites.<sup>30</sup> To be sure, this new tradition coexisted for a while with the earlier extramural burial practices of the fifth and fourth millennia, as extramural cemeteries of Early Dynastic I date are attested at Tell Kheit Qasim I<sup>31</sup> and Ahmad al-Hattu,<sup>32</sup> both in the Hamrin Basin, and at the more central site of Ur, where the so-called Jamdat Nasr cemetery

<sup>15</sup> Mellaart 1967; Andrews, Molleson, and Boz 2005.

<sup>16</sup> Al-Wailly and Abu es-Soof 1965; Al-A<sup>3</sup>dami 1968.

<sup>17</sup> Saxe 1970; Goldstein 1981.

<sup>18</sup> E.g., Matney et al. 2010; Lawler 2012.

<sup>19</sup> Forest 1983.

<sup>20</sup> Tobler 1950.

<sup>21</sup> Jasim 1989.

<sup>22</sup> It should be noted, however, that while the exclusion of adults from intramural burials does not become systematic until the Late Ubaid period, its roots are likely earlier, as infants far outnumbered adults in the Samarra-period intramural interments at Tell es-Sawwan (Al-Wailly and Abu es-Soof 1965; Al-A<sup>3</sup>dami 1968).

<sup>23</sup> Safar, Mustafa, and Lloyd 1981.

<sup>24</sup> Forest 1983, pp. 111–16.

<sup>25</sup> Hole 1989.

<sup>26</sup> An apparently extramural cemetery discovered by Leonard Woolley at Ur dating in part to the Jamdat Nasr period and the very end of the fourth millennium (Forest 1983, pp. 117–32) makes it almost certain that the present lack of documented self-standing cemeteries in the immediately preceding Uruk period is due entirely to accidents of discovery.

<sup>27</sup> Vallet 1997.

<sup>28</sup> Vallet 1998.

<sup>29</sup> Boehmer, Pedde, and Salje 1995.

<sup>30</sup> Forest 1983; Pollock 1999, table 8.3.

<sup>31</sup> Forest 1980.

<sup>32</sup> Sørenhagen 1980.

continued in use well into the first quarter of the third millennium.<sup>33</sup>

In any event, the earliest evidence we have within southern Mesopotamia for the emergence of the intramural burial tradition that would become normative for the area in the Early Bronze Age is dated to the transition from the fourth to the third millennium and comes from the site of Khafajah (Houses 12), excavated by an Oriental Institute expedition to the Diyala area of Iraq in the 1930s.<sup>34</sup> However, the new mortuary tradition itself first came to the attention of the scholarly community as a result of Watelin's excavations in the EHS.<sup>35</sup>

What might this shift in mortuary practice leading to the start of domestic intramural adult burial in post-Uruk and third-millennium southern Mesopotamian alluvial cities mean? While it might be tempting to simplistically explain the reversal in ethnic terms (i.e., the so-called Sumerian Problem), this explanation is by no means the only plausible one. Whether dead adults are excluded from the spaces used by the living no doubt reflects prevailing conceptions at any given time of the nature of death, of what happens in the afterlife, and of the relationship between the living and the recently dead, and such conceptions can change significantly even within a single evolving culture. Thus, while we can use extant textual documentation to reconstruct Mesopotamian conceptions of the afterlife in the third millennium and later historic periods,<sup>36</sup> it is not immediately obvious how those later conceptions might relate to earlier beliefs informing the very different funerary practices of the Ubaid and Uruk periods, which are attested only through

archaeological remains, or, in the Uruk case, by the lack of such remains.

However, there is much we can do with the archaeologically derived mortuary evidence we do have. More specifically, we can use changes in mortuary practice observable in the archaeological record of Ubaid to Early Dynastic Mesopotamian settlements as proxies for social and economic transformations taking place within them. That mortuary data can yield insights on such transformations has been noted many times in the abstract and follows, particularly, from the pioneering ethnographic work of Maurice Bloch<sup>37</sup> among the Merina of highland Madagascar, the modern descendants of the original Austronesian populations that first colonized that island. Bloch's work shows how Merina lineages manipulate funerary ritual and the placement of their dead in order to legitimize contrasting rival claims to resources and power on the basis of direct descent from revered ancestors. In the Merina case, this took the form both of carefully built and maintained family tombs near houses and of elite royal tombs placed at prominent vantage points over the landscape.

Using the insights of Bloch as my point of departure, and knowing full well that attempts to draw structural analogies across very different cultures often obscure as much as they illuminate,<sup>38</sup> it may be possible to argue that overt claims over ancestral resources may well be particularly necessary at times when societies redefine what constitutes wealth and how that wealth is produced, or when lineages within them renegotiate who is entitled to that wealth—as surely must have been the case in times of rapid urbanization. It follows from this that changes in mortuary practice can sometimes be used as a measurable indication of social friction in general and as a rough proxy for changes in who has access to wealth in particular. With this in mind, we return to a brief review of the evidence from the EHS at Kish.

## LIVING WITH THE DEAD IN EARLY THIRD-MILLENNIUM KISH

What we know about the EHS is that, at and just above the water table level in Ingharra, Trench Y, Watelin encountered mudbrick architecture made

<sup>33</sup> Vértessalij and Kolbus 1985. As published, at least, it would appear that other extramural cemeteries of later third-millennium date existed within southern Mesopotamia proper. A case in point is the so-called A Cemetery from Kish, noted above. However, as Torres-Rauff, Pestle, and Daverman (2012, p. 199) note, following ideas often expressed publicly by both Karen Wilson and McGuire Gibson, the A Cemetery graves were almost certainly dug from—and associated with—architecture that had either eroded away prior to the start of excavations or was missed by the excavators (possibly both).

<sup>34</sup> Delougaz, Hill, and Lloyd 1967.

<sup>35</sup> In fact, intramural burials within domestic quarters in third-millennium Mesopotamian cities were first excavated by a German expedition at the large ancient southern Mesopotamian city of Shuruppak (modern Tell Fara) already at the beginning of the twentieth century, but this was not widely known until the results from the Shuruppak excavations were analyzed and published eight or so decades later (Martin 1988).

<sup>36</sup> E.g., Katz 2005.

<sup>37</sup> Bloch 1971.

<sup>38</sup> Yoffee 2005.

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with distinctive plano-convex-shaped bricks on either side of a street running southwest–northeast (see fig 1.2). Structures on opposite sides of the street appear to have served different functions. Those on the northern side were characterized by large rooms with elaborate bitumen-covered installations and drains, suggesting an industrial purpose requiring large amounts of water (leather tanning, wool cleaning, fulling of woven cloth?). However, structures on the southern side of the street, and particularly those in the southwestern sector of the excavated area, had smaller rooms, and Watelin plausibly described these buildings as houses.

The available plan is clearly fragmentary and likely reflects only the portion of the EHS structures excavated in the 1927–28 and 1928–29 seasons. We know from letters Watelin sent from the field to the director of the Field Museum that he continued to excavate in the EHS area in 1930–31 and 1931–32,<sup>39</sup> but no plans of any remains he may have found there in those later seasons have ever been located, either in the Field Museum or in the Ashmolean Museum. Moreover, existing descriptions make it clear that several substantial rebuildings of the published structures took place in antiquity, but again no plans of the later building phases have ever come to light—if indeed such plans ever existed.

What is clear, however, is that some of the EHS structures contained intramural burials. We know this from Watelin’s own cursory description of the EHS in his preliminary report and on the basis of somewhat more detailed notes taken by Thomas K. Penniman, the British-born physical anthropologist who accompanied the Kish expedition in 1928–29. The majority of the interments in the EHS are described as resting over paved house floors, but given the careless way the area was excavated it is unclear whether these individuals were laid on floors as the houses were rebuilt over them, as Penniman believed (but which seems unlikely to me), or whether they were placed in simple cut-earth pits excavated from higher surfaces that were not recognized by the excavators. Such simple interments usually were not accompanied by burial gifts.<sup>40</sup>

Some of the houses, however, also contained more substantial mudbrick-lined cist tombs, sometimes with preserved vaulted roofs (fig. 1.3). Only three such tombs are shown in Watelin’s published

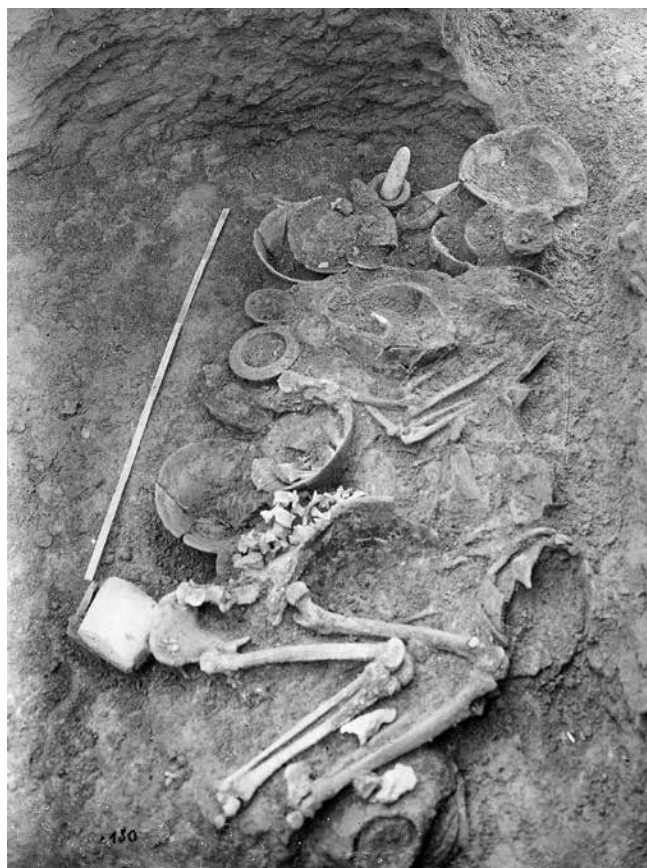


Figure 1.3. Trench Y, Burial 685, found within Early Houses Stratum at 6 m below datum (Oxford negative 130A).

plan (see fig. 1.2), but at least twenty-nine mudbrick-built cist tombs are documented in Penniman’s notes for 1928–29.<sup>41</sup> More likely than not, further such cist tombs were found in the EHS both in the 1927–28 season and in the 1929–30 and 1930–31 seasons, but if so, those interments are not documented in existing records. Most of the cist tombs recorded by Penniman housed a single adult. However, tombs housing two individuals were not uncommon, and some tombs even contained multiple individuals, including adults, adolescents, and children (but not infants). Generally, individuals laid in these built tombs were furnished with a variety of burial gifts, including pottery, stone vessels, metal vessels, tools, implements, jewelry, and occasionally weapons.<sup>42</sup>

In rare cases, existing documentation leaves no doubt that the tombs were dug from specific floor levels of individual houses that were rebuilt and re-floored multiple times. This is clear from a sketch in Penniman’s field notebook, which is unusually

<sup>39</sup> Algaze 1983–84, nn. 51–53.

<sup>40</sup> Algaze 1983–84, appendix 1.

<sup>41</sup> See Algaze 1983–84, appendix 1, for burial descriptions.

<sup>42</sup> See Algaze 1983–84, appendix 1, for a compilation of known grave groups.

## CHAPTER 1. LIFE AND DEATH IN EARLY DYNASTIC KISH

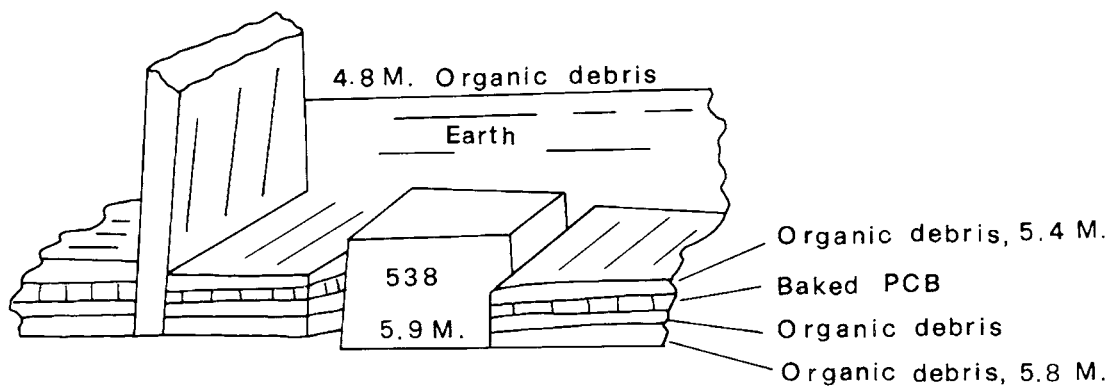


Figure 1.4. Sketch of the stratigraphy of Burial 538 and associated architecture (from T. K. Penniman's field notes from the 1928–29 season).

detailed as Kish records go and is reproduced here as figure 1.4. In the sketch, Penniman worked out the stratigraphic relationship between a vaulted mudbrick tomb (Burial 538) that was cut from an intermediate floor in one of the houses that in turn was sealed by a later floor in the same house. Regrettably, the level of stratigraphic precision that we have in the case of Burial 538 is not available for any of the other EHS tombs. Equally regrettably, available records do not allow us to reliably correlate the vast majority of the tombs excavated in the EHS and the specific houses that contained them.

Just as problematic is the fact that none of the datable Kish artifacts presently in the collections of the Field Museum of Chicago and the Ashmolean in Oxford can be situated within the houses. The problem stems from the fact that artifacts were commonly recorded in terms of absolute level below an arbitrary datum within a trench, but their specific archaeological and architectural contexts were not recorded. We are in better shape, however, when it comes to reassembling the associated artifacts found in individual burials because tomb groups can be reconstructed using information recorded on object cards in the possession of the Field and Ashmolean museums, which often copied information recorded on field tags, discarded later, that accompanied the objects when they were first received in Chicago and Oxford.<sup>43</sup> Such tomb group reconstructions are necessarily incomplete, as there is no guarantee whatsoever that all pertinent information on the field tags was indeed transferred to museum accession cards. By the same token, we can no longer check the accuracy of what information was transferred when the accession cards were created. Our problems are

compounded by the fact that existing tomb group reconstructions assembled by Moorey and Algaze do not include the portion of the finds sent to the then newly founded Iraq Museum in Baghdad.<sup>44</sup> To my knowledge, that portion of the finds has never been the object of independent restudy.

Keeping these caveats in mind, nonetheless, when the ceramics from EHS tomb groups that can be reconstructed are compared and seriated against the classic archaeological sequence from Mesopotamia derived from Oriental Institute excavations in the Diyala area of Iraq,<sup>45</sup> a date in the later part of the Early Dynastic I period, corresponding roughly to the “Private Houses” in levels 7–8 at Khafajah,<sup>46</sup> appears indicated for the EHS tombs.<sup>47</sup> This corresponds roughly to the end of the first and the beginning of the second quarter of the third millennium BC. Presumably, this dating is generally applicable to the houses where the tombs were found as well, although it should be remembered that the EHS houses were rebuilt and refloored many times and individual tombs within them cannot be assigned to any specific building level within the EHS on the basis of surviving documentation.

## THE MEANING OF THE KISH EARLY HOUSES STRATUM: INSIGHTS FROM TITRIS HÖYÜK

It should be clear from the preceding discussion that the task of trying to glean new information

<sup>43</sup> Moorey 1978; Algaze 1983–84, appendix 1.

<sup>44</sup> Moorey 1978; Algaze 1983–84.

<sup>45</sup> Evans 2007.

<sup>46</sup> Delougaz, Hill, and Lloyd 1967.

<sup>47</sup> See Algaze 1983–84, table 1, for seriation details.

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about the EHS from existing Kish documentation long ago reached the point of rapidly diminishing returns and is largely unrewarding at present. However, it may be possible to glean new insights about the meaning of the EHS by examining presumably comparable practices of intramural burial within third-millennium cities elsewhere in the ancient Near East. A case in point is provided by the site of Titris Höyük, a small indigenous middle and late Early Bronze Age (ca. 2600/2500–2200/2100 BC) city on the Upper Euphrates Basin in southeastern Turkey that was excavated between 1991 and 1999. Although Titris is not the only third-millennium urban site in northern Mesopotamia where domestic intramural burials have recently been brought to light, it provides us with what is arguably one of the best case studies we have at present illustrating how the practice of intramural burial evolved at a single location over time.<sup>48</sup>

Titris was one of numerous competing indigenous city-states that emerged in the second half of the third millennium BC across the high plains that today straddle northern Syria, northern Iraq, and southeastern Turkey. Archaeological work at the site and its surroundings shows that in the middle Early Bronze Age, about 2600–2400/2300 BC, the settlement grew abruptly from a small village of modest size to a sprawling urban center, 43 ha in extent, that was surrounded by a corona of extramural “suburb” areas where specialized production activities took place (fig. 1.5).<sup>49</sup> A series of trenches against the circumference of the site suggests that the city was not fortified in its initial urban phase.

About 650 m<sup>2</sup> of remains dating to this phase were excavated at Titris, including portions of fairly massive elite structures within two separate areas of the site’s lower city and multiple smaller and much more modest habitations in one of its surrounding suburbs,<sup>50</sup> which apparently was devoted to stone working and industrial-scale flint knapping.<sup>51</sup> Significantly, no evidence of built intramural burials was found directly associated with any of these mid- to early Bronze Age structures, either on the main mound itself or in the surrounding suburbs. Rather, burial at the time of Titris’s initial urban flourish appears to have taken place outside the settle-

ment itself, and at least one extramural cemetery area containing numerous stone-built cist tombs of various sizes that housed a varying number of individuals has been identified in a natural rise situated some 400 m west of the city.<sup>52</sup>

The site underwent significant changes in its configuration during the succeeding late Early Bronze Age phase, dated to circa 2400/2300–2200/2100 BC. Documented by means of subsurface mapping (magnetometry) and broad horizontal exposures that reached up to 3,000 m<sup>2</sup> in extent, these changes were so thorough and massive in scale that they could well be described as the result of an “urban redevelopment” program. This program—if that is what it was—saw the abandonment of the suburbs that had surrounded the city in earlier times, as the site contracted to about 80 percent of its previous extent (35 ha) and as its inhabitants came to cower behind a massive, newly erected fortification wall. At the same time, large portions of the site’s lower city were terraced, new streets were laid, and extensive domestic neighborhoods were built (fig. 1.6) in what appears to have been a centrally coordinated construction effort that took place over what we suspect was a relatively short period of time.<sup>53</sup> At least five complete houses and portions of several other dwellings were uncovered in two widely separated neighborhoods of the ancient city. Houses varied greatly in size (between roughly 200 and 400 m<sup>2</sup> per unit) but were built following standardized plans that are repeated in widely separate areas of the ancient city. Multiple courtyards and associated hearths suggest that individual dwellings were shared by extended families. Analyses of their contents suggest that these houses were the loci not only for expected various domestic activities, such as food preparation, but also for important productive activities, minimally including metal casting, weaving, grape processing (for wine?), and flint knapping.<sup>54</sup>

We do not entirely understand what triggered the just-described late Early Bronze Age redevelopment program at Titris, but the change may well be related to the start of regional hostilities in the Upper Euphrates Basin of southeastern Turkey, to judge both from a sharp rise in the incidence of trauma in osteological material from Titris in the late Early Bronze Age as compared to the preceding middle

<sup>48</sup> Laneri 2007.

<sup>49</sup> Algaze et al. 2001.

<sup>50</sup> Algaze et al. 2001.

<sup>51</sup> Hartenberger, Rosen, and Matney 2000; Hartenberger 2003.

<sup>52</sup> Algaze et al. 1995; Honça and Algaze 1998.

<sup>53</sup> Matney 2002.

<sup>54</sup> Hartenberger 2003; Nishimura 2008.

CHAPTER 1. LIFE AND DEATH IN EARLY DYNASTIC KISH

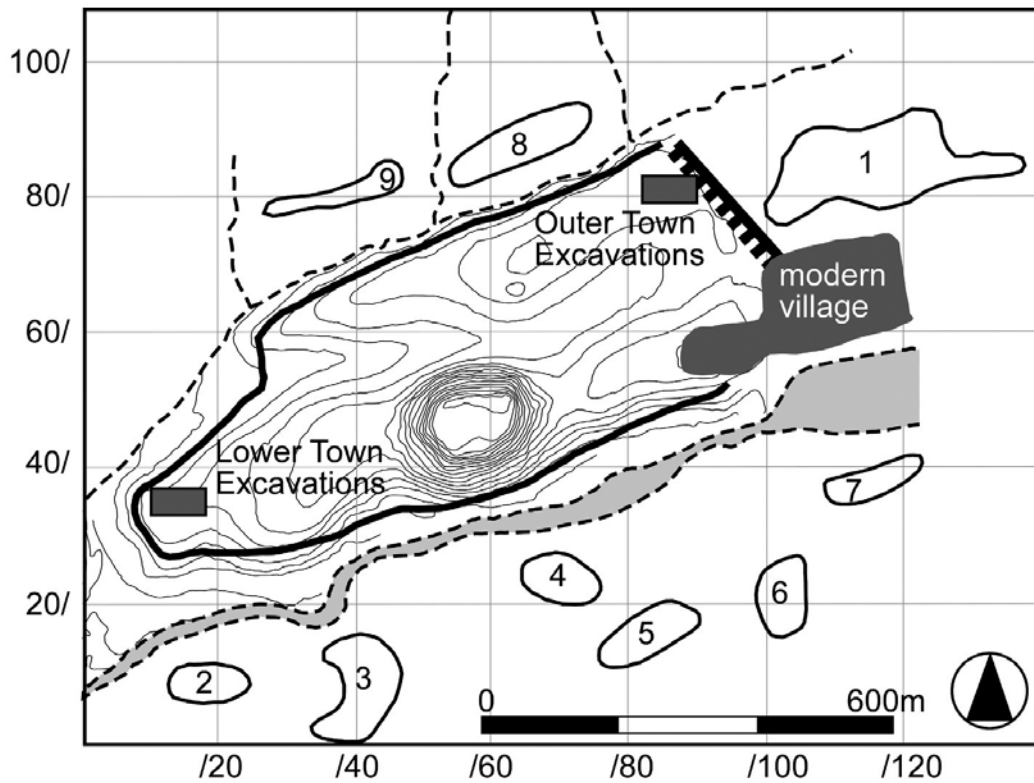


Figure 1.5. Topographic plan of Early Bronze Age Titris Höyük showing the location of excavated areas, late Early Bronze Age fortification wall, and middle Early Bronze Age extramural suburbs (1-9).

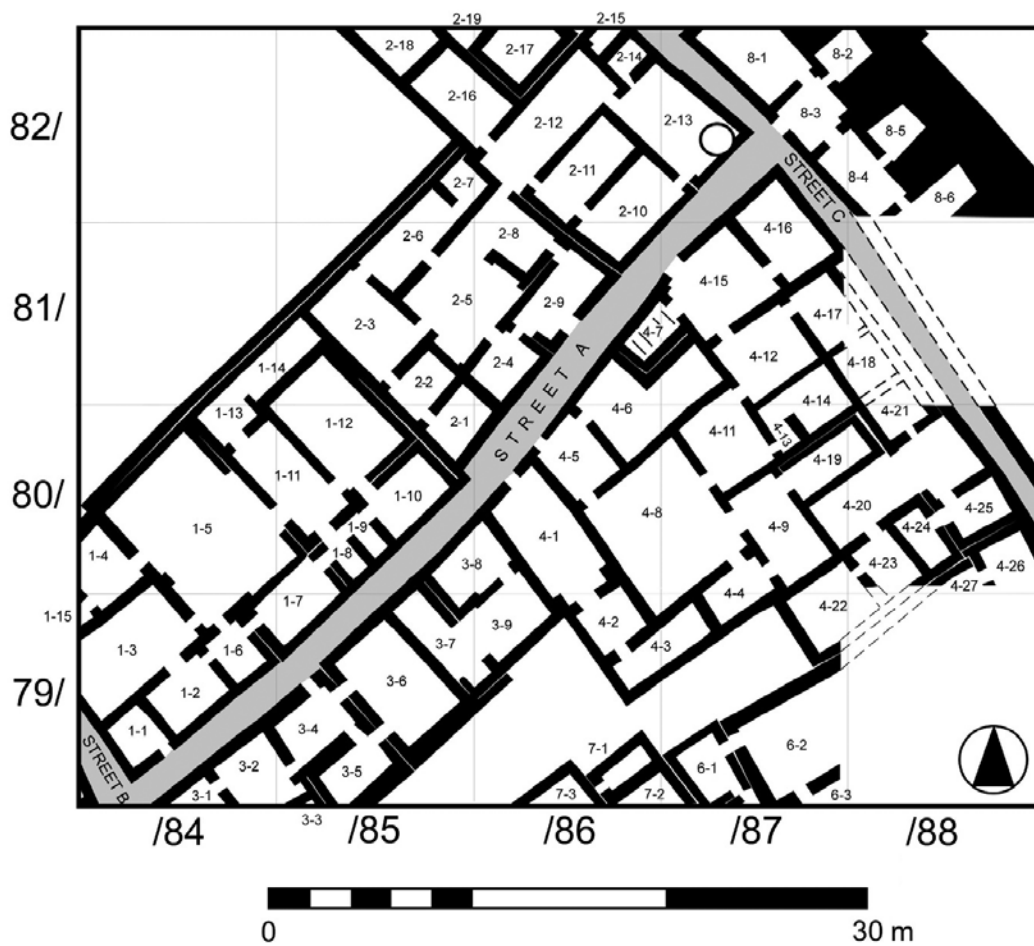


Figure 1.6. Titris Höyük: plan of the late Early Bronze Age houses and fortification wall excavated in the outer town.

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Early Bronze Age<sup>55</sup> and by the abandonment of a belt of middle Early Bronze Age villages directly to the south of the city in the late Early Bronze Age,<sup>56</sup> perhaps in an attempt to create a buffer zone between the city and hostile polities elsewhere.

Interestingly, and perhaps pertinent to our interpretation of Kish's EHS, the retrenchment/redevelopment of Titris in the late Early Bronze Age with its shift of some specialized economic activities (e.g., flint knapping) that earlier had taken place in extramural suburbs to crowded houses inside the city wall correlates with a noticeable change in how the dead were treated at the site. The external cemetery used when the city first grew to urban size in the middle Early Bronze Age was abandoned by the late Early Bronze Age, and, for the most part, in that later phase the dead began to be interred in carefully constructed, stone-lined cist tombs directly associated with all but one of the exposed late Early Bronze Age houses (fig. 1.7). Considerable effort went into the building of these intramural late Early Bronze Age tombs. In some cases, one or more of the walls of the intramural tombs were imbricated with the foundation walls of the house that contained them, suggesting that the late Early Bronze Age dwellings were built from the beginning to house both the living and the dead. Accessed by means of a dromos, the tombs were generally reused repeatedly and commonly contained multiple articulated individuals—adults, adolescents, and children—whom we presume to be members of the extended family living in the surrounding house, as suggested by a pilot program of DNA analysis.<sup>57</sup> Some of the tombs also contained caches of skulls and long bones that were either piled to the side of the tomb or placed in a pit below its floor, suggesting the secondary reburial of disarticulated remains brought in from elsewhere, possibly to “protect” them from whatever dangers were now thought to lurk beyond the newly erected city wall. There was commonly one tomb per house, but we observed in at least one house that the tomb originally built with the house fell into disuse and was covered by a floor and that a second tomb was subsequently built in a nearby room (fig. 1.8).

What do we make of the shift from extramural to intramural burial at Titris Höyük between the middle Early Bronze Age and the late Early Bronze

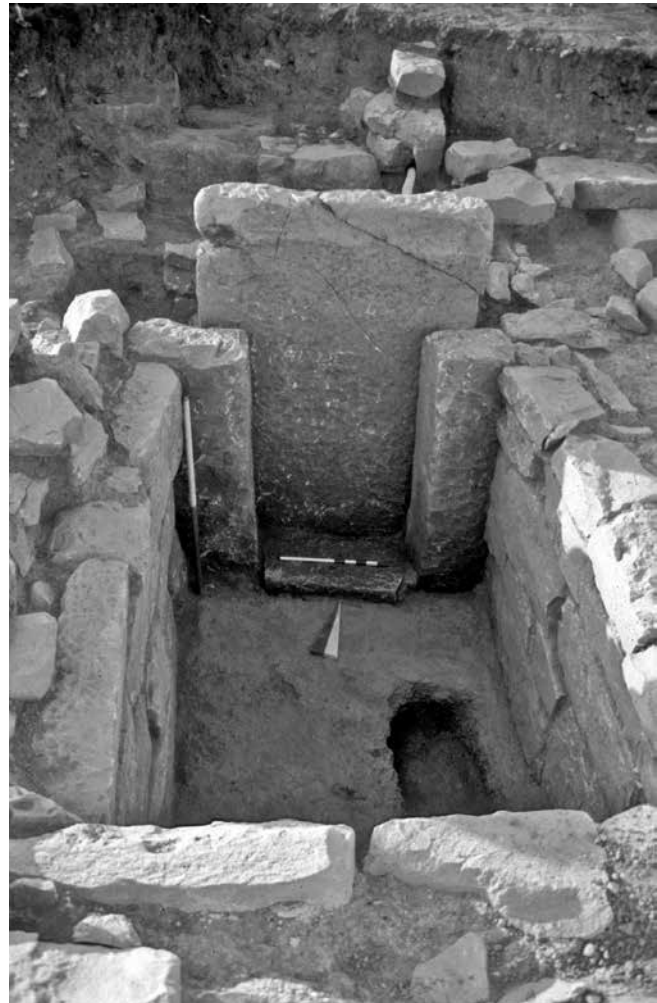


Figure 1.7. Titris Höyük: late Early Bronze Age intramural cist tomb (B.96.75) in the lower town.

Age—a shift that closely mirrors the earlier changes in mortuary practice in southern Mesopotamia between the Ubaid–Uruk and Early Dynastic periods? At a minimum, as Nicola Laneri has argued,<sup>58</sup> the shift represents, in effect, a movement in the performance of mortuary rituals from a shared external space in the earlier period to a private realm in the later phase.

Preliminary data suggesting that intramural burials within late Early Bronze Age houses at Titris served as multigenerational family crypts make it likely, in my opinion, that these interments signaled a claim of property rights within the newly reorganized and increasingly compact late Early Bronze Age city—a claim that apparently was not necessary in the earlier middle Early Bronze Age phase of the city. If so, why did such an ancestral claim suddenly become necessary in late Early Bronze Age Titris? Several not mutually exclusive possibilities come to

<sup>55</sup> Erdal 2010.

<sup>56</sup> Algaze et al. 2001, figs. 26 and 27.

<sup>57</sup> Matney et al. 2010.

<sup>58</sup> Laneri 2007.

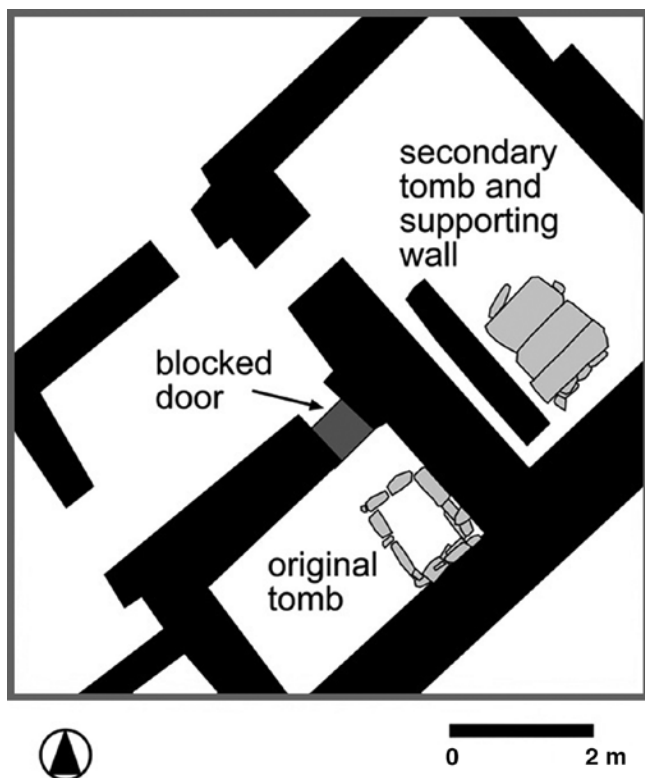


Figure 1.8. Titris Höyük: intramural burial sequence within a late Early Bronze Age house (House 3, rooms 3-4–3-6 in fig. 1.6).

mind in light of Bloch's work, noted above. One is that the extramural-to-intramural shift of mortuary practice at Titris reflects a heightened level of competition for resources triggered by either increasing regional hostilities in the late Early Bronze Age or increasing demographic density within the now walled city, possibly both. Another is that the change in mortuary practice mirrors a shift to the extended family household as the primary unit of social identity and economic production within the late Early Bronze Age city, as contrasted with a presumably more centralized economy of the city in the middle Early Bronze Age.

How pertinent are data from Titris to the interpretation of the earlier EHS remains at Kish? We can try to answer this question both literally and metaphorically. At the most basic level, the Titris evidence helps us better understand specific details of the EHS situation that have thus far been muddled because of excavation or recording deficiencies at Kish. Two categories of evidence from Titris are of particular relevance here. First, as noted above, at Titris individual houses can contain more than one tomb, although likely not contemporaneously. This may help explain why there are so many more recorded tombs than houses from the Y area at Kish. Second, it is certain

that some of the intramural domestic tombs at Titris were reused repeatedly. This was likely also the case at Kish, particularly when multiple interments were found within a single tomb.

At a more interesting level of abstraction, however, hypotheses about the meaning of the Titris evidence can help us think about the meaning of the less well understood evidence from Kish's EHS. Particularly pertinent is the claim that as regional hostilities increased around Titris and as extramural suburban and village populations streamed into the newly walled city in the late Early Bronze Age, competition over space within the city led to the need to demarcate new social boundaries by means of ancestral graves. No less relevant is the observation that as large chunks of economic production at Titris moved from the extramural periphery of the site to house interiors inside city walls, so too did the ancestors.

Could comparable processes have been at work at Kish and elsewhere in early third-millennium Mesopotamia? More specifically, might the use of intramural burial at Kish in the late Early Dynastic I period be a proxy for heightened social friction and increased urban density at the site resulting from the acceleration in the influx of rural populations into Mesopotamian cities that Adams documented for other portions of the Mesopotamian alluvium at the onset of the Early Dynastic period?<sup>59</sup> Or, to highlight a different facet of the same phenomenon, could the restart of an intramural burial tradition at early third-millennium Kish (and at other comparable southern Mesopotamian sites) be a proxy for heightened patterns of conflict predating the better-documented wars of Early Dynastic III and Akkadian date in the area?

Similarly, and possibly drawing the analogy further than one should, could the EHS intramural burials reflect a shift to the household as an increasingly important unit of social identity and economic production among some portions of the urban populace in southern Mesopotamia in the Early Dynastic I period as compared to conditions prevailing earlier in the Uruk period? While this question is unanswerable with presently available evidence from Kish, the social processes it presumes are certainly not implausible. In addition to individuals employed on a full-time basis by temples and palaces, the Fara tablets of mid-third-millennium Early Dynastic IIIa

<sup>59</sup> Adams 1981.



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date, for instance, testify to the existence of a semi-independent citizenry that at times was employed by the public sector and at other times engaged in a range of productive activities centered on households on their own behalf.<sup>60</sup> Might Kish's EHS with its associated richly appointed intramural tombs reflect a comparable but slightly earlier phenomenon in the northern parts of the Mesopotamian alluvium?<sup>61</sup>

Only targeted new research at Kish and comparable sites will allow us to address such questions directly. Until such research can take place, however, there is much we can do by looking at old data, such as Kish's, with new interpretative lenses derived from controlled comparisons with pertinent early urban sites currently undergoing investigation in other areas of the Near East. The foregoing is offered as a modest effort in that direction.

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<sup>60</sup> Cripps 2007, p. 15.

<sup>61</sup> This presumes, of course, that the Early Dynastic IIIa/Fara period directly follows the end of the Early Dynastic I period, as Evans (2007) has cogently argued.

## CHAPTER 2

ANIMAL FIGURINES AT KISH: VARIABILITY IN  
STYLE, COMPLETENESS, AND CONTEXT

DEBORAH BEKKEN

Zoomorphic or animal-shaped figurines are a common feature of archaeological sites in the ancient Near East. Found at sites dating from the Neolithic through the end of the third millennium BC, animal figurines were made and used for several thousand years. There are numerous analyses of their function and purpose, and it is highly likely that they served several distinct uses throughout the periods in which they were made. This chapter explores how the collection from Kish fits into the broad tradition of representation of animals as figurines in the ancient Near East.

There are 360 figurines of individual animals in the Field Museum of Natural History's collections from Kish. The animal figurines excavated at Kish constitute a group that contains a series of lively and variable depictions of many different taxa. Found throughout the excavations, the figurines together form an object class of their own. Several different species are represented, most often as stand-alone depictions of animals, but a smaller subset includes associated human figures (e.g., a horse and rider) or possibly imaginary figures (e.g., a double-headed or "push-me-pull-you" animal depiction). Multi-individual depictions are restricted to animal-human pairs, such as the horse and rider mentioned above. No multi-individual figurines depict two animals together other than, perhaps, the double-headed figurine. The following comments are restricted to the individual animal figurines, rather than the animal-human paired figurines.

## STYLE AND IDENTIFICATION

The majority of the figurines are modeled from clay and either dried or baked; two figurines are made from shell, and four are made from stone. Of the clay figurines, 7 percent show additional modeling or decoration in the form of applied clay features, painting, or incising. The most common additional decorative feature is the use of incising to highlight surface detail, such as the wool along the back of a ram figurine (FM 156933; fig. 2.1). Only one fragmentary figurine displays a painted pattern, a series of stripes along the rear haunches of the animal's torso (FM 156927; fig. 2.2). In addition, a few figurines are detailed with applied clay modeling, such as modeling of the bridle trappings on a horse figurine (FM 156939; fig. 2.3).

The figurines are small, ranging in size from approximately 3 cm to roughly 13 cm, nose to tail. The clays used for their manufacture seem to be ordinary and not particularly high quality, with some level of grit or temper added to the clay or perhaps present naturally.<sup>1</sup> Although some figurines are fired well, others appear to be only lightly and unevenly fired or possibly even dried rather than fired.

In terms of style, the features of interest to the makers appear to have been the overall shape of the animal and, more specifically, certain anatomical traits that the viewer presumably would understand as unique to one taxon. Differences in shape include

<sup>1</sup> For a discussion of modern use of tempering agents in clays from southern Iraq, see Ochsenschlager 2004.

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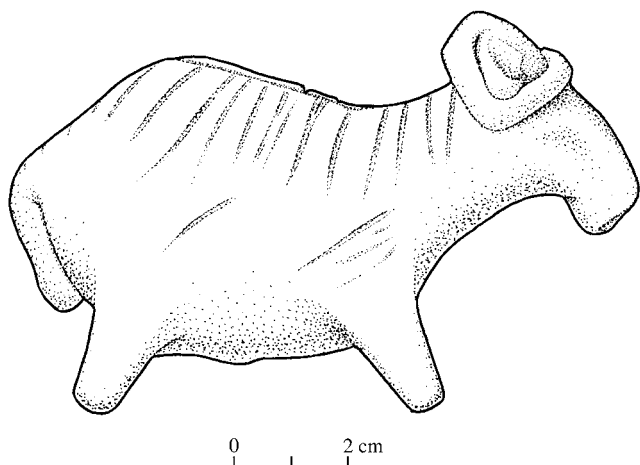


Figure 2.1. Ram figurine with curled horns and incised lines delineating the wool coat. Third millennium BC, baked clay. FM 156933 (illustration by Jill Seagard).



Figure 2.2. Unidentified figurine with painted stripes along the rear haunch. Third millennium BC, baked clay. FM 156927.



Figure 2.3. Horse figurine with applied clay bridle. Third millennium BC, baked clay. FM 156939.



Figure 2.4. Fragment of a camel figurine. Third millennium BC, baked clay. FM 156532.

a lengthened back and neck on horse figurines or the long legs and pronounced hump on one figurine that is likely a camel (FM 156532; fig. 2.4). The forequarters are more pronounced on bull figures, whereas the hindquarters are given more emphasis on some of the horse figures. In this respect, although the style is somewhat different, the attention to shape is similar to that seen at other sites such as Urkesh, an Early Dynastic site in Syria.<sup>2</sup> Earlier Neolithic sites, such as Jarmo (in northeastern Iraq) or 'Ain-Ghazal (in Jordan), show a similar focus on overall shape as a key taxonomic indicator.<sup>3</sup>

In many cases, certain anatomical features could be combined easily, either for stability or for ease of manufacture. For example, many figurines have

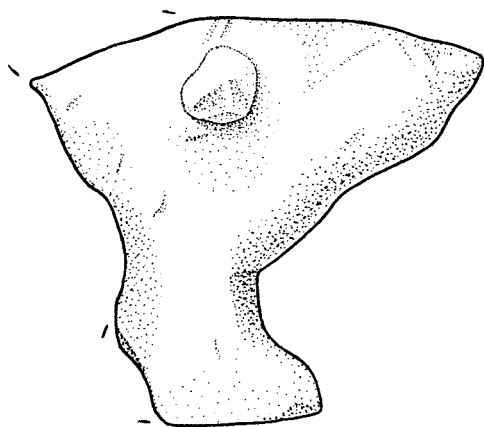
joined hind legs or joined forelegs or both. Bird figurines commonly have joined legs further altered to form a flat base that allows the figurine to stand upright (FM 229479; fig. 2.5). The figural depiction is usually an abbreviation that dispenses with detail. Ears, eyes, and mouth often are missing entirely. Perhaps surprisingly, even with very little detailing, the taxon of many of the figurines is instantly recognizable.

Some of the figurines display additional modeling to accentuate easily telegraphed features, such as the curled horns of a ram (FM 156542; fig. 2.6) or the distinctive mane along the back of a horse's neck (FM 229790; fig. 2.7). In many cases, these features appear to have been formed by pinching the clay into specific structures, such as a curled ram's horn, to add detail to the clay body itself. In other cases, applied detail is used, such as a coil of clay being

<sup>2</sup> Hauser 2007.

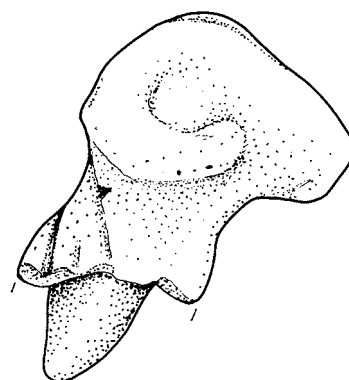
<sup>3</sup> Broman Morales 1983; Schmandt-Besserat 1997.

## CHAPTER 2. ANIMAL FIGURINES AT KISH



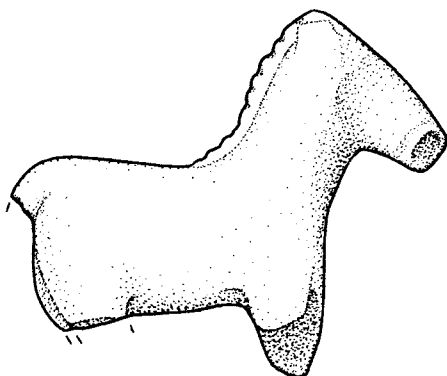
0 2 cm

Figure 2.5. Figure of a bird with joined legs flattened at the base to form a stand. Third millennium BC, baked clay. FM 229479 (illustration by Jill Seagard).



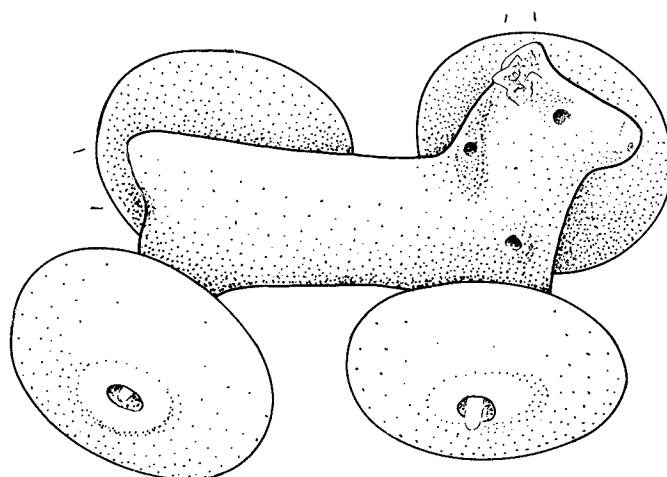
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Figure 2.6. Figure of a ram's head with modeled horn detail. Third millennium BC, baked clay. FM 156542 (illustration by Lori Grove).



0 2 cm

Figure 2.7. Figure of a horse with pinched detail to delineate the mane. Third millennium BC, baked clay. FM 229790 (illustration by Jill Seagard).



0 2 cm

Figure 2.8. Wheeled figurine showing the position of axle and wheels on the body. Third millennium BC, baked clay. FM 229627 (illustration by Lori Grove).

added to simulate a horse's bridle and trappings (see fig. 2.3). Many of the figurines, regardless of whether they are now in fragmentary or complete condition, are no longer identifiable to a modern audience.<sup>4</sup>

Several of the Kish figurines were made so that they could be mounted on an axle and fitted with wheels. In these figures, the legs were modified to form a hollow tube through which an axle can be threaded. The wheels were then mounted where the legs would be, and the figure could be pulled or pushed along. The wheel-mounted figurines are all four-wheeled and depict quadrupeds. They seem

to depict only large-bodied taxa; no small mammals are wheel mounted. The wheel-mounted animals fit into a larger category of wheel-mounted carts. These objects are thought by P. R. S. Moorey to be toys or votives rather than funerary gifts.<sup>5</sup> Many of the wheel-mounted animals are remarkably contemporary in appearance, with a striking resemblance to toys made today (FM 229627; fig. 2.8).

Location information for the figurines ranges from very little (e.g., surface find or no location recorded) to increasingly specific for some figurines. About 36 percent of the collection (131 figurines) are

<sup>4</sup> But see Hauser 2007 for a different analysis on how readily figurines can be identified even when fragmentary.

<sup>5</sup> Moorey 1978, p. 64.

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from various locations at Ingharra on the eastern side of the site. Many of the Kish figurines are from the Y trench, dated to the third millennium BC. Specifically, 12.5 percent of the collection (45 figurines) were found in the Y trench. The Y trench sampled residential areas or house structures, for the most part. Other locations for which we have contextual detail include the A and Z trenches. With few exceptions, animal figurines at Kish are not found in burials, arguing against a primarily mortuary function.

There is one concrete example of animal figurines in association with a burial. Mackay found two clay animals in association with the urn burial of a child in grave 36 of the A Cemetery.<sup>6</sup> Mackay states, though not definitively, that the figurines were probably representations of goats; one of the two figurines had a hole just below the eyes that Mackay thought could have been used to pull the animal along using a string. Additional grave goods for the child included a single barrel-shaped bead.<sup>7</sup>

There are three other possible instances of a figurine, or partial figurine, in association with burials. Grave Y357 had a partial animal figurine, grave Y464 had a figurine, and grave Y455 had a figurine of a dog. However, the Y Cemetery was so poorly documented that it is difficult to say with confidence that these figurines are clearly associated with the Y burials. A conservative estimate is that only one figurine, that found in A36, is truly associated with a burial. A more liberal estimate is that four discrete figurines are found with grave groups at Kish. Using the more liberal estimate of four figurines, only 1 percent of all animal figurines from Kish are found in association with burials.

## RELATIONSHIP TO TAXONOMIC ASSEMBLAGE

From a zooarchaeological perspective, one question in regard to the figurines is whether they occur in the same relative abundance as actual animal bones from the site. We might expect that animals that were important in daily life were also important and abundant as figurines. Table 2.1 shows the list of taxa identified from Kish, ordered in descending rank by the number of identified specimens (data from David Reese, unpublished manuscript in the

Table 2.1. Animal taxa present at Kish.

| Genus           | Common name         | Number of identified specimens* |
|-----------------|---------------------|---------------------------------|
| Equus           | Horse, ass, onager  | 364                             |
| Ovis/capra      | Sheep, goat         | 309                             |
| Sus             | Pig, boar           | 214                             |
| Bos             | Cattle              | 148                             |
| (Medium mammal) | Unidentified mammal | 66                              |
| (Large mammal)  | Unidentified mammal | 57                              |
| Gazella         | Gazelle             | 26                              |
| (Fish)          | Unidentified fish   | 26                              |
| Canis           | Dog, wolf           | 17                              |
| (Bird)          | Unidentified bird   | 15                              |
| Struthio        | Ostrich (eggshell)  | 12                              |
| Dama            | Persian fallow deer | 10                              |
| (Small mammal)  | Unidentified mammal | 9                               |
| Elephas         | Elephant            | 2                               |
| Felis           | Small cat           | 1                               |
| Testudo         | Tortoise            | 1                               |
| (Rodent)        | Unidentified rodent | 1                               |

\* As determined by David Reese.

collection of the Field Museum). It is not surprising that the most abundant taxa at Kish include sturdy domesticated livestock or draft animals, such as horses, sheep/goats, pigs, and cattle. The faunal suite includes a mix of wild and domesticated taxa, with a clear preponderance of domesticated livestock. Most of the recorded taxa are large bodied, but given the uneven excavation history of the site and the fact that zooarchaeology was not a priority for the excavators, it is probable that smaller bones were often overlooked and not collected.

Table 2.2 shows the relative abundance of figurines that can be identified with some level of confidence. The first two categories do indeed occur at the same relative frequency as the animal bone remains. This argues for the centrality of these taxa to life at Kish. Beyond the most numerous two taxonomic groups, the relative abundance of figurines diverges from the relative abundance of the fauna. Bird figurines are more abundant than cattle or pigs, although cattle figurines are clearly important in overall abundance. The hedgehog is present in figurine form (FM 156931; fig. 2.9) but is unknown from the faunal assemblage. The hedgehog, *Hemiechinus* sp., is common in Iraq today and also would have been common at the time Kish was occupied. Because it eats insects and other small animals, it is often welcomed for its ability to control pests in a garden. Due to the small size of the

<sup>6</sup> Mackay 1929, p. 20.

<sup>7</sup> Mackay 1929, p. 55.

## CHAPTER 2. ANIMAL FIGURINES AT KISH

Table 2.2. Relative abundance of animal figurines at Kish.

| Genus           | Common name        | Number of identified specimens |
|-----------------|--------------------|--------------------------------|
| Equus           | Horse, ass, onager | 53                             |
| Ovis/capra      | Sheep, goat        | 29                             |
| (Bird)          | Unidentified bird  | 20                             |
| Bos             | Cattle             | 15                             |
| Hemiechinus     | Hedgehog           | 5                              |
| Sus             | Pig, boar          | 2                              |
| Panthera leo    | Lion               | 2                              |
| Panthera pardus | Leopard(?)         | 1                              |
| Canis           | Dog, wolf          | 1                              |
| Gazella         | Gazelle            | 1                              |
| Camellus        | Camel              | 1                              |

bones, it is not surprising that it is absent in the faunal assemblage.

Other examples of animal taxa not found at Kish but present in the sample as figurines are the large cats—two lion figurines (FM 158009; fig. 2.10) and one provisionally identified as a leopard—and a camel. In all cases, these represent wild species that would have been present locally at the time that Kish was occupied. All are impressive, either as dangerous predators or as hardy species able to endure harsh conditions.

David Wengrow cautions that the identification of animal figurines is problematic when the researcher uses the associated faunal assemblage to identify individual species of grouped taxa (e.g., equids, sheep/goats).<sup>8</sup> Human classification of the animal world need not follow the Linnaean species-based system, and recognizable characteristics of animal art are highly variable across time and cultures. For Kish, no attempt is made to tie all the animal figures back to the taxa known to have been present at the site from the zooarchaeological evidence. It is clear that figurines are present that do not represent taxa known to have come from the site; in some cases, the figurines may instead represent an imaginary, double, or composite category of animal.

## COMPARISONS WITH OTHER COLLECTIONS

The majority of the figurines represent mammals, although birds are also present and one figurine may be a composite or magical animal with two

<sup>8</sup> Wengrow 2003.

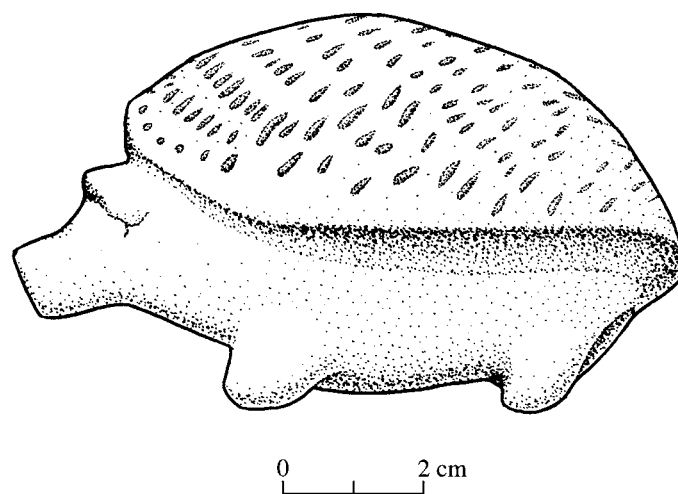


Figure 2.9. Hedgehog figurine with incised indentations for the spines. Third millennium BC, baked clay. FM 156931 (illustration by Jill Seagard).

heads (FM 156529; fig. 2.11). This pattern is similar to that found at the Early Dynastic site of Urkesh, in northeastern Syria, where birds are also present in the sample.<sup>9</sup> At the Neolithic site of ‘Ain-Ghazal, two figurines may represent lizards; at the Neolithic sites of Jarmo, Sarab, and Cayönü, by contrast, only mammals are represented.<sup>10</sup>

Urkesh yielded a number of animal figurines modeled in clay depicting wild and domesticated taxa. Rick Hauser uses a novel method of measuring angles, such as the angle of insertion of the legs to the body, to develop categories or types into which the fragmentary material can be fitted.<sup>11</sup> The animals are modeled to stand up, with the head up and alert, even though in some cases the legs are fused or individually modeled.

At Sarab, in northwestern Iran, Vivian Broman Morales documents an animal figurine assemblage that includes a mix of wild and domestic taxa.<sup>12</sup> The dominant groups are dogs, pigs/boars, and sheep/goats. Broman Morales states that whereas the dog figurines at Sarab represent domesticated animals, the pigs or boars are primarily wild taxa, as are the sheep and goats. The position of the tail is critical to understanding which taxon each individual figurine belongs to; also, the position of the body is alert, with the head up and the body standing on all four legs, or in some cases lying down but awake and alert.

<sup>9</sup> Hauser 2007.

<sup>10</sup> Broman Morales 1983; Schmandt-Besserat 1997.

<sup>11</sup> Hauser 2007.

<sup>12</sup> Broman Morales 1990.

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Figure 2.10. Fragmentary figurine of a lion with open mouth. Third millennium BC, baked clay. FM 158009.

Broman Morales also discusses the figurines from Cayönü, in Turkey.<sup>13</sup> At Cayönü, the majority of the figurines depict wild taxa; only the dog figurines are thought to be depictions of domesticated taxa. Both Cayönü and Sarab have figurines whose legs are not formed at all; rather, the animal is depicted on a flat base, as if lying down, but awake and alert, with the head up and facing forward. In addition, there are figurines whose legs are modeled individually, and the figurine is meant to stand up. At both Sarab and Cayönü, the figurines are distributed evenly throughout the site. They are not found in groups or in hoards, and they appear to be distributed primarily in houses.

At Sarab, there is one figurine that is double-headed. This figurine is very different in shape and form from the double-headed figurine present at Kish; but it is an example, from a much earlier period, of an imaginary animal with two heads at opposite ends of one body.<sup>14</sup> At Kish, by contrast, the double-headed figurine is, although fragmentary, well formed, with a clear head and neck at each end

of the figurine (see fig. 2.11). The heads face away from each other, and a body with a long, flat back is shared between them.

Despite the comparisons to other materials given here, identification of individual figurines tends not to be comparative. Figurines from a site are identified as a group, in comparison to each other, rather than in comparison to known collections of figurines from other sites.<sup>15</sup> Kish is no different in this regard. Identifications were recorded for figurines (in some cases modified by the present author) based on appearance rather than on comparisons with other sites. This practice has the tendency to emphasize the internal consistency of each site and perhaps even each individual maker while de-emphasizing potentially shared characteristics across many sites or across a whole region.

Certain shared characteristics can be identified, however, including a body posture for the animal that is upright and alert or awake and alert, head up even in cases where the animal appears to be lying down with legs tucked under the body. Animals are not shown rearing or running. The majority of figurines lack surface detailing. A small percentage show incising to indicate either features such as the eyes, nose, and mouth or the pelage or plumage (FM 229900; fig. 2.12). Legs can be fused to form a stable stand. The majority of animal figurines depict mammals, primarily large-bodied taxa. They are individual depictions; animals are not shown in composite groups or pairs, such as a mother and young modeled together. The clays used for their manufacture are ordinary; they are not distinctive from other clays in use at the sites where they are found. The one possible exception is the double-headed figurine, potentially an efficient example of two animals depicted together rather than one animal with two heads at either end of the body.

## PURPOSE AND USE

Wengrow states that art objects are important archaeologically in that they can “demonstrate the variety of ways in which form and image may be perceived and in which art objects can mediate processes of human interaction and transformation.”<sup>16</sup> The interpretation of the uses to which animal figurines were put, and the purposes for which they

<sup>13</sup> Broman Morales 1990.

<sup>14</sup> Broman Morales 1990, p. 9 and pl. 6c.

<sup>15</sup> For a critique of this practice, see Wengrow 2003.

<sup>16</sup> Wengrow 2003.

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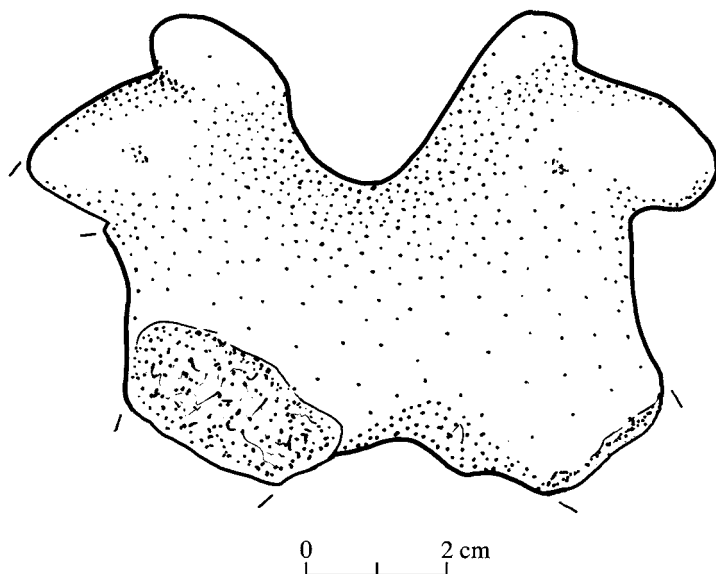


Figure 2.11. Double-headed or push-me-pull-you figurine.  
Third millennium BC, baked clay. FM 156529  
(illustration by Lori Grove).

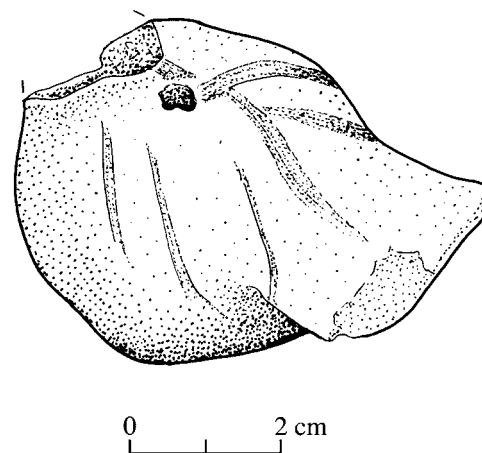


Figure 2.12. Fragmentary bird figurine showing  
the use of incised lines to add surface delineation.  
Third millennium BC, baked clay. FM 229900  
(illustration by Lori Grove).

were made, is highly variable and does not lend itself easily to a functional analysis based on form.<sup>17</sup> Determining the purpose and use of the figurines is challenging not only because they may have served more than one purpose but also because the criteria for recognizing one use over another may be imperfect. Suggested uses include toys, objects of worship or cult, decorative objects, magical images, symbols conveying a message, or symbols of representation.<sup>18</sup>

At Sarab, Cayönü, and Jarmo, stone working was already established as a craft tradition at a very high level. Animal figurines could have been made from stone if the makers wanted to create them. Broman Morales surmises that the animal figurines were never intended to be permanent but rather were made expediently out of humble materials.<sup>19</sup> She argues that the figurines in use at Neolithic sites in the Near East were magical wish figures, probably used to request a good outcome when hunting. Ian Hodder also discusses the magical or votive role of figurines at the Neolithic site of Çatalhöyük in Turkey,<sup>20</sup> as does Mary Voigt for the sixth-millennium site of Hajji Firuz Tepe in Iran.<sup>21</sup>

In an analysis of a concentrated assemblage from the third-millennium site of Abu Salabikh, in Iraq, Nicholas Postgate argues for the use of figurines as

votive figures, made to be given to a deity either as a request for divine assistance or as thanks once a prayer was granted.<sup>22</sup> The animal figurine works as a substitute in a votive setting at a temple. It is a gift to the deity that substitutes for the animal itself. He also cites the use of clay dogs in Neo-Babylonian contexts as magical images buried under house foundations for the protection of the house. Postgate suggests that later (e.g., Neo-Babylonian) examples, for which there is not only textual evidence supporting a particular use but also inscriptions directly on the figurine, can be helpful in interpreting the purpose and use of figurines from earlier periods.

Hauser's study of figurines from a concentrated assemblage at Urkesh, by contrast, suggests that the figurines represent a recognizable symbol of ownership.<sup>23</sup> The figurines are found in the royal store-rooms, and Hauser's interpretation is that they were used as a shorthand indicator of ownership that did not require the attendant to be literate. The queen's property, for example, could be symbolized by sheep figurines, whereas the king's goods could be symbolized by lion figurines. In the case of the royal store-rooms, the figurines matched cylinder seals from the same locations.

There is no evidence at Kish for tight concentrations of figurines as there is at Urkesh or several

<sup>17</sup> Henricksen and McDonald 1983; Voigt 1983, pp. 186–87.

<sup>18</sup> Voigt 1983; Postgate 1994.

<sup>19</sup> Morales 1983, 1990.

<sup>20</sup> Hodder 2003.

<sup>21</sup> Voigt 1983.

<sup>22</sup> Postgate 1994.

<sup>23</sup> Hauser 2007.



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earlier PPNB sites.<sup>24</sup> Also unlike earlier Neolithic assemblages, the figurines from Kish are not restricted to mammals, primarily horned quadrupeds.<sup>25</sup> Small mammals and birds are present at Kish, along with a small number of felids.

The distribution and recovery of figurines is always subject to depositional variation and excavation history. Given the lack of evidence at Kish for concentrated accumulations, the figurines likely did not serve as property markers in the manner that Hauser posits for the figurines found in the royal storerooms at Urkesh. The even distribution of figurines at Kish points to a more personal, domestic use. This leaves open the possibility that the figurines were magical figures, votive offerings to a deity, or toys. At Kish, all of these uses may be represented.

## WERE THE FIGURINES TOYS?

In *Archaeology of Childhood*, J. E. Baxter discusses a series of criteria that may be used to recognize toys in the archaeological record.<sup>26</sup> Of these, three major criteria include an object's small size, crude manufacture, and similarity to items used as children's toys in modern cultures. Small size is appropriate for a smaller person, and size has been an important component in attempts to recognize toys archaeologically. It is important, though, to stress that the figurines are not miniature versions of a manufactured object, in the way that a modern child's tea set is a miniature version of an adult set. There is no larger set of animal figurines at Kish; rather, the figurines themselves are small to begin with and not miniature versions of another object class.

Since toys used by children are subject to breakage, minimal effort in manufacture has been used archaeologically to recognize artifacts as probable toys.<sup>27</sup> The corollary observation of the degree to which object classes thought to be toys are found in broken state is also seen as an indicator that an object was a toy. At Kish, there are both crudely made examples and finely made examples. If one compares the animal figurines to the anthropomorphic figurines or plaques also present at the site, one can see a great deal of variation in manufacture. The

figurines as a group do, however, exhibit a general lumpiness in manufacture that is perhaps due to the quality of the clay used.

We often recognize toys in the simplest way—by observing that they are similar to objects used as toys today in contemporary ethnographic settings. The Kish figurines, even from many thousands of years ago, can be seen to be similar in many striking ways to clay animal figurines being made by the Marsh Arabs in southern Iraq in the late 1960s. Edward Ochsenchlager's ethnographic study of the Marsh Arabs included detailed observation of children and their toys.<sup>28</sup> Animal figurines made from sun-dried mud were among the most common elements that were manufactured locally. In Ochsenchlager's observations, the toys were made by local children for their own entertainment, and he states that younger children learned from watching older children. The result was a great variation in quality, with the more finely crafted objects made by older children used as models to be emulated by younger children. In addition to variation in modeling, Ochsenchlager reports variation in material.<sup>29</sup> Younger children would mix courtyard dirt with water and start from there; but as they grew older, they began to emulate older children who would search out better clays from the canal banks and temper their mixtures with straw or other agents, just as their mothers did when making pottery. Resulting figurines thus varied greatly in modeling skill as well as in material sturdiness. Voigt also discusses several ethnographic examples of the manufacture of figurines as toys from easily available local materials in her discussion of the probable function of the figurines from the sixth-millennium site of Hajji Firuz Tepe in Iran.<sup>30</sup>

At Kish, the wheel-mounted animals are easy to recognize as forms still in use as toys today. The individual standing figurines, as a group, are small, and they could easily fit the hand of a child. They are of a size similar to that of contemporary animal toys. Also, they are made—sometimes well, sometimes poorly—from an ordinary material. Several researchers have noted their expedient manufacture out of whatever clay was at hand and their uneven firing. They were not meant to be durable beyond a certain time horizon. The lack of attention

<sup>24</sup> Wengrow 2003; Hauser 2007.

<sup>25</sup> Wengrow 2003, p. 152.

<sup>26</sup> Baxter 2005, p. 46.

<sup>27</sup> Baxter 2005, p. 49.

<sup>28</sup> Ochsenchlager 2004.

<sup>29</sup> Ochsenchlager 2004, pp. 74–83.

<sup>30</sup> Voigt 1983, pp. 186–95.

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to durability could be used to argue that they were made for the amusement of children and were not intended to last very long in play. Nevertheless, none of these characteristics is sufficient to exclude the possibility that the figurines were instead votive offerings to be given to a deity in a shrine or temple, or magical images to be made and used to confer a benefit to the maker.

Some of the figurines may have been truly generic or composite or imaginary, but often they were clearly intended to represent one species or another. Care and attention were required for their manufacture, whether they were made according to a magical incantation and prescribed recipe, as a votive image given to a deity, or to amuse and entertain a child.<sup>31</sup> Many of the figurines carry a strong sense

of recognition and personality and evidence a deep connection between people and the animals that were present all around them and on which they depended for their survival in a rich but variable landscape.

It is neither clear nor necessary that only one purpose and use must be declared for the figurines from Kish. In the case of grave A36, it is hard to escape the conclusion that a child was buried with two cherished toys. At other domestic settings at Kish, it is perhaps just as likely that a figurine was made and used briefly, as a votive offering or as part of a magical performance requiring the manufacture of a figurine as well as the recitation of texts or incantations. In a large urban center, all are possible and, perhaps, probable.

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<sup>31</sup> For a description of a magical image requiring that the maker follow a prescribed recipe for assembling the clay and disposing of the figurine, see Postgate 1994.



## CHAPTER 3

# KISH AND HURSAGKALAMA: AN ASSESSMENT OF THE CITIES' HISTORY AND CULTS IN THE LIGHT OF INFORMATION FROM CUNEIFORM TEXTS

STEPHANIE DALLEY

Information from cuneiform texts and evidence from other excavated remains should in theory complement each other.<sup>1</sup> In practice they sometimes do not. To show when texts throw light on particular aspects of history and culture, and to fill gaps in the archaeological record, are two aspects of this study of the twin cities Kish (Uhaimir) and Hursagkalama (Ingharra). In addition, the particular character of each at different periods can occasionally be illuminated.

Any attempt to examine the history of Kish suffers from unreliable information that a tablet or inscribed object supposedly comes from Kish. At the time of excavation, by both French and British-American teams, Kish and Hursagkalama were considered to be part of the same city of greater Kish, so most finds were automatically labeled “Kish.”<sup>2</sup> The two, however, were not entirely merged; textual evidence shows, on the one hand, that they were generally regarded as separate cities for certain purposes such as landholdings, letters, and legal documents in

both early and late periods, but on the other hand, the two sometimes evidently shared a single governor and administration, presumably for the main purposes of taxation and civic service.

In some cases, the provenience “Kish” is demonstrably wrong. Twenty-one Achaemenid-period tablets in the “Kish” collection in the Ashmolean Museum were written in Babylon and may have been purchased by the Kish expedition.<sup>3</sup> A few Old Babylonian and Neo-Babylonian tablets also belong to that category, some of them having been excavated and published as texts from Babylon before they were bought by members of the Kish expedition.<sup>4</sup> The same is true of a Middle Babylonian letter excavated in Babylon by the German expedition of 1899–1917.<sup>5</sup> Late Babylonian tablets that must have come from Uruk have been identified in the Ashmolean’s “Kish” collection.<sup>6</sup> At least one “Kish” tablet of the Ur III period can now be identified as coming from Drehem.<sup>7</sup> Six Ur III tablets, acquired by Dr. Norman

<sup>1</sup> This overview does not attempt to gather all the published texts and studies. The main draft was completed in 2011, and some basic evidence was inserted at proof stage in 2019.

I would like especially to thank Karen Wilson for inviting me to contribute this essay to her Kish project; Walther Salaberger for generously putting his Diplomarbeit of 1988 (Innsbruck) at my disposal and helping with bibliography; Norman Yoffee for discussion of an early draft; Jacob Dahl, Roger Matthews, and Jon Taylor for help with early texts; Christopher Walker for information about British Museum tablets; Ian Rutherford for help with Hittite evidence; and Yoram Cohen for help with Emar material.

<sup>2</sup> See Gurney 1989, p. 1; Moorey 1978, p. xx.

<sup>3</sup> For “Kish” tablet Ashm. 1924.1607, see Gurney 1982.

<sup>4</sup> Pedersén 2005, esp. pp. 39–53; Field Museum tablets 156006–156010, including 156008 from the Old Babylonian archive of Kurû and 156006 from the Neo-Babylonian palace of Nebuchadnezzar II.

<sup>5</sup> Information from J. A. Brinkman; Ashm. 1924.514, which is the same as Bab 36443 on PhBab 1569. Ashm. 1924.1325 (Dalley and Yoffee 1991, no. 108), letter to Kurigalzu lacking an archaeological provenience, may be likewise.

<sup>6</sup> Jursa 2005, re McEwan 1984, nos. 107 and 315, belong to an Eanna archive from Uruk.

<sup>7</sup> Grégoire 1996–2001, vol. 1, p. 117, Ashm. 1932.529; see also Donbaz and Yoffee 1986, p. 15.

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Lace Corkill in Baghdad, were listed as coming from “Kish?” when they entered Exeter Museum in the United Kingdom.<sup>8</sup>

Detailed excavation proveniences, almost all for tablets in the Ashmolean Museum, were established from unpublished excavation records by McGuire Gibson, Roger Moorey, and Norman Yoffee. When a specific findspot is recorded in the excavation records, the context may not be primary given the possibility of subsequent displacement, whether from upheavals in ancient times or through disturbances of strata caused by modern looters; but the contexts may be regarded as primary or at least close to the original locations. Tablets that definitely have Kish or Hursagkalama as proveniences, as established from information within the texts, are very widely distributed in museums and private collections—Oxford (Ashmolean Museum); Chicago (Field Museum, ISAC Museum); Istanbul; Paris (Louvre); New Haven (Yale Babylonian Collection); New York (Morgan Library Collection, Nies Babylonian Collection); Berkeley (Phoebe A. Hearst Museum of Anthropology); Berrien Springs, Michigan (Siegfried H. Horn Museum of Andrews University<sup>9</sup>); Berlin (Pergamon Museum); London (British Museum<sup>10</sup>); Manchester (John Rylands Library); Geneva; Brussels; Leiden<sup>11</sup>—and many of them have been published. No doubt others will be identified elsewhere. Most of them have no archaeological provenience. Occasionally internal evidence, such as oaths sworn by the city god of Kish, Zababa, suggests that the supposed provenience “Kish” is correct; but even then the records may have been written for men of Kish who resided or did business in another city.<sup>12</sup> Literary texts that relate to Kish certainly existed in the libraries of other ancient cities. One task is to separate Hursagkalama material from that of Kish-Uhaimir where possible.

Current interpretations of certain literary and historical texts concerning Kish, many decades after excavation and initial publication, give a more

nuanced picture in some respects from those that were accepted when Moorey wrote.<sup>13</sup> In particular, the pseudohistorical nature of certain inscriptions has been recognized, usually when the text was written later than the time to which it purports to relate—for example, the Tummal Chronicle and the Sumerian King List, the latter particularly in light of variants found in new versions.<sup>14</sup> The new text begins unbroken: “When kingship came down from heaven, (the city) Kish was sovereign; in Kish Gušur exercised kingship for 2,160 years.” It dates from the Ur III period, earlier than other versions in which the first dynasty at Kish is placed after the Flood. The idea that all early texts had a single version, faithfully transmitted in writing through many generations, is no longer tenable. Thus an initial task is to assess what information can be gleaned reliably about the city’s early history—whether a historical, legendary, or fictional interpretation is preferable for the several early compositions in which Kish plays an important role—rather than treating all such texts as primary historical evidence. As Piotr Michalowski has expressed it, history has all too often been written as a paraphrase of ostensibly factual material collected from literary and other texts of various periods.<sup>15</sup>

The Myth of Etana describes the hero Etana as the first king to be chosen by the gods, but an early Old Babylonian version of the myth does not name the city, and no version mentions the city god Zababa. Etana’s historical existence is suspect: no contemporary inscriptions recording buildings or dedications of his are known. In legend he became an official in the Underworld, subordinate to Gilgamesh,<sup>16</sup> and a Neo-Babylonian text from Babylon names him as a weapon of Zababa.<sup>17</sup> The Semitic names of some of the twelve kings of the first dynasty of Kish, who precede Etana in the later Sumerian King List, are names of constellations,<sup>18</sup> and in the Middle Assyrian version of the myth, the Eagle calls Etana “king of the animals.” The myth, known only in the Akkadian language, is attested no earlier than the Old Babylonian period; there is no evidence (yet) that it was composed at an earlier date.

<sup>8</sup> Dr. Corkill worked from 1927 to 1930 as professor of zoology and civil staff surgeon in Baghdad.

<sup>9</sup> In addition to the published texts, three unpublished ones have been identified: LB 1325, 1330, 1331. I thank T. Krispijn for supplying this information.

<sup>10</sup> Almost all bought from dealers.

<sup>11</sup> J. Marzahn kindly informs me that no unpublished or provenienced Kish tablets have yet been identified in the tablet collections held by the Pergamon Museum in Berlin.

<sup>12</sup> This is virtually certain in the case of BM 94878; see Waerzeggers 2003–4, p. 166.

<sup>13</sup> Moorey 1978, ch. 9.

<sup>14</sup> Klein 1991; Steinkeller 2003; Marchesi 2010.

<sup>15</sup> Michalowski 1993, p. 89.

<sup>16</sup> See Katz 2003, pp. 116–19.

<sup>17</sup> Cavigneaux 1981, p. 137, text 79.B.1/19 rev. iii 6, name spelled <sup>d</sup>e-ta-ni.

<sup>18</sup> See Frayne 2008, pp. 50–51, with references.

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Several other literary compositions in Sumerian and Akkadian assign great importance to the city in very early times. Archaeological evidence for Early Dynastic-period prosperity, augmented by contemporary inscriptions of particular kings of Kish, shows that some of the literary tradition is not entirely a later fiction.<sup>19</sup> Seven separate dynasties of Kish are listed in some versions of the Sumerian King List, but very few of the named rulers are known from contemporary texts. The order of those seven dynasties implies that pre-Sargonic Kish lost power in turn to Uruk, Hamazi (east of the Tigris), Akshak, then again Uruk, Hamazi, Akshak, and finally Uruk again. The sequence appears to be a part of a schematic arrangement, promoting Uruk as the southern counterpart of Kish rather than a literally historical one. The Early Dynastic version of the Kesh Temple Hymn implies some kind of control by Kish as far south as Nippur and Adab and may relate to historical reality.<sup>20</sup>

The prime importance of Kish is reflected in contemporary, nonliterary textual evidence, especially from tablets found at Ebla in Syria, located beyond the Euphrates, beyond the area encompassed by the Sumerian King List, as discussed below. The waxing and waning of Kish's power during the Early Dynastic period is suggested from intermittent contemporary Sumerian dedicatory inscriptions: the record of siege and victory over Kish by En-shakush-Ana from Ur, who dedicated booty to Enlil in Nippur, presumably relates to a real event, whether transient or long-lasting in effect, and a similar event may account for a stone vessel found at Nippur, dedicated by Utuk (or Uhub) of Kish to the city god of Kish, Zababa. Inscriptions of Me-salim on stone objects from Girsu and Adab do not necessarily imply more than diplomatic and religious ties.<sup>21</sup>

The title “king of Kish” was taken by kings of Uruk and Ur, and by Eanatum of Lagash.<sup>22</sup> Its implications are still unclear and may vary according to period and spellings: does it mean “ruler of Kish city,” or “king of the world” as a punning

abbreviation of *kiššatum* “totality”?<sup>23</sup> For instance, Mesanepada, king of the first dynasty of Ur, took the title, but there is no contemporary evidence for him conquering Kish, and the listing in the Sumerian King List implies that he defeated Uruk, not Kish. An interesting observation is that of Tohru Maeda, who pointed out that those southern rulers who bore the Sumerian title “king of Kish” all received it from Inanna, which he linked originally to the cult of Inanna in Kish.<sup>24</sup> Precisely which Inanna/Ishtar is meant is ambiguous, as discussed below.<sup>25</sup> By the Old Babylonian period, nonliterary inscriptions in particular reassure us that “king of Kish” was understood to mean “king of the world (*kiššatum*),” a title in which “the world” may be a symbolic expression arising from conquests or raids, whether local or far-flung, made from a ruler's city to all four cardinal points, not necessarily including Kish.<sup>26</sup>

A possible illustration of the Akkadian Myth of Etana on a Sargonic cylinder seal that comes from Kish might be evidence for a version of the legend earlier than the second millennium.<sup>27</sup> But identification of the person flying on an eagle's back has been questioned because of slight evidence from early cuneiform texts (supported by Aelian's account in which Gilgamesh's legendary childhood included a flight on an eagle's back) that the person is Gilgamesh.<sup>28</sup> The Sumerian story Gilgamesh and Akka refers to Gilgamesh in early life taking refuge in Kish, giving the city a legendary association with the hero.<sup>29</sup>

At Kish, where Akkadian rather than Sumerian was the earliest identifiable language recorded in writing, it is important to try to separate early Akkadian (northern) from Sumerian (southern) compositions, and to note at what period texts that purport to be early were actually composed. These two distinctions may throw light on the regime under which they were composed, whether any are pseudohistorical traditions, and what motives

<sup>19</sup> See discussion in Postgate 1992, pp. 28–32.

<sup>20</sup> Frayne 2008, p. 55.

<sup>21</sup> Frayne 2008, pp. 69–71.

<sup>22</sup> Frayne 2008, p. 392: Mes-Ane-pada, king of Ur and king of Kish; pp. 411–12: Lugal-sila-si of Uruk, king of Kish; p. 415: Lugal-kigine-dudu, king of Uruk and Ur, king of Kish; p. 427: Ur-zage king of Uruk(?), king of Kish. For Eanatum, see Cooper 1986, p. 39 n. 26, pp. 41–42. See also now Sommerfeld 2021, 547–48.

<sup>23</sup> Maeda 1981.

<sup>24</sup> Maeda 1981.

<sup>25</sup> See below for Inanna of Uruk at Kish as sister of Zababa.

<sup>26</sup> RIA 5 s.v. “Kish” (D. O. Edzard).

<sup>27</sup> Buchanan 1966, no. 332. The motif may have contributed to the formation of the story rather than being derived from it; see Steinkeller 1992.

<sup>28</sup> Aelian, *De natura animalium* 12.21, possibly extracted from Berossus, *Babyloniaca* book 2. See Frayne 2010, pp. 174–76; Ornan 2010, p. 248.

<sup>29</sup> Wilcke 1989, pp. 562–63.

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influenced composition.<sup>30</sup> Some of them evidently arose to promote or reflect the interests of Kish in competition with one or more other great cities, notably Uruk and Ur.

Literature from southern Mesopotamia written in Sumerian, referring to Kish during the Early Dynastic period, seems to have been composed at a much later date. This group includes *The Ballad of Former Heroes*, also known as *The Poem of Early Rulers*, which invokes the names Alulu and Entena as the most famous kings of early times, in which Alulim of Eridu and (probably) Etana of Kish have been recognized;<sup>31</sup> some versions of the Sumerian King List; the *Tummal Chronicle*, which connects Kish with Nippur; *Gilgamesh and Akka*, which connects Kish with Uruk; the Sumerian Temple Hymn to Zababa; and the *Lamentation over the Destruction of Sumer and Ur*.

*The Ballad of Former Heroes* is thought to be a composition of the late Old Babylonian period.<sup>32</sup> The Sumerian King List, in the version inscribed on the Weld-Blundell Prism, is a school text of the early second millennium—prisms at that period were used for school exercises, in contrast to their later use for royal inscriptions—and it gives one particular version appropriate to its city of origin, as major variants in other versions show. It is not a genuine historical collection of material, for the earliest kings' names and parentage were designed to demonstrate legitimate succession derived from the great gods.<sup>33</sup> More or less standard texts assembled in libraries are not attested until late in the second millennium.<sup>34</sup>

The story *Gilgamesh and Akka* never found its way into later tradition as did other stories about *Gilgamesh*. In telling how Uruk avoided conquest by the ruler of Kish, it perhaps reflects the Sumerian King List, in which, on two occasions, kingship passed from Kish to Uruk. But does it reflect history, or did the two compositions work together to “prove,” with ironic humor, that Uruk was greater even than Kish? In support of such a possible stimulus for composition, one may point to the extraordinary name given in *Gilgamesh and Huwawa* to a little sister of *Gilgamesh*, *Mebaragesi*, the same name as

a famous king of Kish, father of Akka, a joke at the expense of Kish.<sup>35</sup> Whether historical events lie behind the tale is arguable, but the interpretations that Kish in fact tried to exact corvée work from the people of Uruk, needed clay from Uruk, or was in dispute over irrigation have yielded to a different analysis of the text: that they may be the fictitious background against which *Gilgamesh the great hero* could deflect single-handedly an attack by Kish.<sup>36</sup> The discovery of a text in which *Gilgamesh* was king of Ur<sup>37</sup> shows that more than one city could claim a legendary hero for its own, invalidating the assumption of an essential historical or pseudohistorical link between city and hero.

The schematic character of the Sumerian King List has already been mentioned. Omissions are notable: for instance, it failed to include King *Mesalim* of Kish, whose building work in Lagash and mediation in a dispute between Lagash and Umma are documented by contemporary inscriptions but who has no known connection with Uruk.<sup>38</sup> Relations with Uruk rather than with Lagash may therefore have dictated inclusion and exclusion from the list. We have contemporary evidence for interaction between Kish and Lagash on the one hand, and legendary stories about Kish and Uruk of much later date on the other.

The *Tummal Chronicle*, despite its format as a chronicle, is now viewed as “an erudite exercise in fake royal legitimation.”<sup>39</sup> In claiming that *Enmebaragesi*, king of Kish (see below), built the first temple of Enlil in Nippur, the composition may have been intended to establish either Kish's claim to Nippur or Nippur's claim to an original association with the world's first politically powerful city. In versions of the Sumerian King List, the pole position held by Kish after the Flood is constant, but Ur and Uruk as second and third are reversible. The *Curse of Agade*, a pseudohistorical Sumerian text, records the downfall of both Kish and Uruk as a preliminary to the rise of Sargon of Agade.<sup>40</sup> It was probably composed in Nippur as a school composition no earlier than the late Ur III period, more than a century after that event. In the *Lamentation over the Destruction of*

<sup>30</sup> See, e.g., Liverani 1993.

<sup>31</sup> For an overview of these Sumerian compositions, see Rubio 2008.

<sup>32</sup> Cohen 2013, pp. 129–50.

<sup>33</sup> Wilcke 1989.

<sup>34</sup> Durand and Guichard 1997, pp. 20–23.

<sup>35</sup> Michalowski 2003.

<sup>36</sup> Civil 1999–2000, pp. 181–82.

<sup>37</sup> George 2007.

<sup>38</sup> A full list is given by D. O. Edzard in *RIA* 5 s.v. “Kish,” pp. 608–9. See also Marchetti 2006.

<sup>39</sup> Michalowski 2006.

<sup>40</sup> Cooper 1983, pp. 11–12; Black et al. 2004, pp. 116–25.

## CHAPTER 3. KISH AND HURSAGKALAMA

Sumer and Ur, composed during the Isin dynasty, cities supposedly “destroyed” are listed with Kish first:

The temple of Kish, Hursagkalama, was destroyed. Zababa took an unfamiliar path away from his beloved dwelling. Mother Baba was lamenting bitterly in her Urukug.

The description is thought to be largely symbolic and is not substantiated by a destruction layer at the site.<sup>41</sup> The same is true of Sumerian laments over the “destruction” of other great cities.

The very early written records that were found in or near Kish can be assigned to different periods only approximately, and dates before the Early Dynastic IIIa period are schematic. In the period corresponding to Uruk IV (ca. 3300–3100 BC) in southern Babylonia, there are no inscriptions from Kish. In the following Uruk III = Jamdat Nasr period (ca. 3100–2900 BC), “one or two” archaic tablets of Jamdat Nasr type were found in Ingharra (Hursagkalama) out of context: one in Palace A and one in the Plano-Convex Building.<sup>42</sup> There may be as many as four such tablets from Kish.<sup>43</sup> Jamdat Nasr, the source of so many precuneiform, archaic pictographic texts, lies a mere 27 km northeast of the site.<sup>44</sup> Those Protoliterate texts date to several centuries before the earliest Early Dynastic tablets of the Early Dynastic IIIa period.<sup>45</sup> The language that they represent is uncertain.<sup>46</sup>

It is certain that the Akkadian language was used for the earliest legal contracts, administration, and personal names throughout the region influenced by Kish during the third millennium.<sup>47</sup> As a general rule, it seems that literature in Akkadian was composed, but not necessarily recorded in writing,<sup>48</sup> in northern Mesopotamia in the Early Dynastic to Sargonic periods, and then again throughout the Old Babylonian period, but by then alongside Sumerian. Early Dynastic and Sargonic records concerning real estate, written in an early form of Akkadian on

stone,<sup>49</sup> suggest that Hursagkalama was one of the earliest cities to promote or illustrate the rule of law through written contracts.<sup>50</sup>

### EARLY DYNASTIC I–II PERIOD, CIRCA 2900–2600 BC

A few early inscriptions may belong to this period rather than the following one, but analysis and dating are still insecure. In southern Mesopotamia, archaic texts from Ur are assigned to this time. The archaic list of geographic names can be recognized as “a gazeteer of the archaic territorial state of Kiš” from its resemblance to the text on the Prisoner Plaque, both linked to conquests.<sup>51</sup>

### EARLY DYNASTIC IIIA = FARA PERIOD, CIRCA 2600–2450 BC

In southern Babylonia, texts from Fara (ancient Shuruppak), Abu Salabikh (possibly ancient Kesh), and elsewhere are assigned to this time.<sup>52</sup> The Sumerian language of many of those texts shows traces of an Akkadian background, and some of the scribes have Akkadian names, but the names of the deities and of several of the kings appear to be Sumerian; writing with logograms rather than phonetic syllables allows for uncertainty. At that time Abu Salabikh was the northernmost city of the southern, Sumerian “hexapolis,” which consisted of Adab, Shuruppak, Uruk, Larsa, Umma, and Nippur. Kish was apparently the main city of northern Babylonia in close contact with them, especially with Abu Salabikh. The episode of Me-salim’s influence on Girsu shows that Kish had far-reaching prestige among the southern cities. Conversely, King Eanatum of Lagash may have conquered Kish, if that is a correct deduction from his claim that the goddess Inanna had given him the kingship of Kish. The earliest sign for the city’s name resembles an aurochs but later changes to an equid, perhaps a donkey.<sup>53</sup>

Kish is frequently mentioned in the Fara texts, and its kings Me-baragesi, Uhub, Me-salim, and

<sup>41</sup> Michalowski 1989, pp. 9, 13, and lines 115–17 on p. 43.

<sup>42</sup> Moorey 1978, p. 164.

<sup>43</sup> Englund and Grégoire 1991, nos. 205, 207, 224, 241; and perhaps sealing no. 97a in Langdon 1928.

<sup>44</sup> Englund and Grégoire 1991; Matthews 2002; Hasselbach 2005, p. 7.

<sup>45</sup> Dates are given by the Middle Chronology from the late third millennium onward.

<sup>46</sup> See, e.g., Rubio 2005, p. 321.

<sup>47</sup> Hasselbach 2005, ch. 1.

<sup>48</sup> Civil 1999–2000, pp. 181–82.

<sup>49</sup> Gelb, Steinkeller, and Whiting 1991; where findspots are known, they are all C trenches on Ingharra.

<sup>50</sup> Wilcke 2007.

<sup>51</sup> Steinkeller 2013.

<sup>52</sup> Krebern timer 1998, pp. 260–70.

<sup>53</sup> Steinkeller 2004; Mitchell 2018, pp. 87–90.



Lugal-tarsi, who are all known from their own contemporary inscriptions, may date to this period.<sup>54</sup> En-mebaragesi, tenth king of Kish after the Flood according to the Weld-Blundell versions of the Sumerian King List, is known not only from contemporary dedication inscriptions but also from later, nonhistorical writings, many in Akkadian;<sup>55</sup> the royal title EN, which is especially associated with Uruk (not Kish), was later added to the name Mebaragesi. In the Isin-Larsa and Old Babylonian periods, legends of dubious or blatantly nonhistorical value were attached to him as En-me-baragesi: he supposedly conquered Elam, was the first king to build the Tummal temple of Ninlil, was captured by Dumuzi, and was father of Akka and sister (*sic*) of Gilgamesh. Early relations between Kish and Lagash, such as Me-salim's mediation in the water dispute between Umma and Lagash, and his building or rebuilding the temple for Ningirsu in Girsu,<sup>56</sup> may be connected to the fact that Baba (Bau), a goddess most closely associated with Lagash, was (or later became) the consort of Zababa at Kish.<sup>57</sup> Scant evidence for the period when she took up residence in Kish is discussed below. A Sumerian hymn found at Abu Salabikh honors Kish and its god Zababa, "the goading ox of Kish."<sup>58</sup>

One tablet, found at Palace A on Hursagkalama-Ingharra, lists deliveries to Nintu, Inanna, and Enki, implying perhaps that the consort of the goddess of Hursagkalama in the Fara period was Enki. Given that Hursagkalama, like Nippur and Kesh, is not listed in the Sumerian King List, it is possible that Palace A and the Plano-Convex Building on Ingharra were not the main residence of a temporal king.

## EARLY DYNASTIC IIIB- PRE-SARGONIC PERIOD, CIRCA 2450-2334 BC

The attested findspots for pre-Sargonic and Sargonic inscriptions are mainly the C trenches at Ingharra.<sup>59</sup> Contemporary historical inscriptions must be separated from later legends where possible, as mentioned above, and the later legends, including the Sumerian King List, are mentioned here only because they refer back to rulers of this period.

It has become clear that Kish was the leader in a sphere of influence that encompassed Mari (Tell Hariri), Ebla (Tell Mardikh), Nagar (Tell Brak), and Abu Salabikh.<sup>60</sup> Scribes and musicians from Kish went abroad to Ebla,<sup>61</sup> rulers of Ebla sent ingots of gold to Kish,<sup>62</sup> and its people, like its earliest kings, bore Semitic names. Its use of a Semitic language rather than Sumerian for administration is now certain. Its educational system for training scribes is attested from school texts found abroad. I. J. Gelb's term "Kish Civilization"<sup>63</sup> has been justified by subsequent discoveries at Ebla, Mari, and Nagar, as well as by further publication and study of texts from Kish and Hursagkalama, although the nature of the contact is still under discussion.

It is uncertain which kings of Kish, whether named in the Sumerian King List or attested briefly in earlier texts, belong to this time, and which to the previous period. Nevertheless, evidence from administrative texts found at Ebla shows that Kish was the most important city of northern Mesopotamia, maintaining prestige despite a defeat in the reign of the Eblaite king Ishar-Damu. The attack was probably the one led by En-shakush-ana of Uruk against Enbi-Ishtar, king of Kish, in which treasure of Kish was seized and dedicated to Enlil in Nippur. A victory over Mari by Ebla in which Kish was an ally, a few years later, in the reign of Ishar-Damu, was followed by the diplomatic marriage of the Eblaite princess Keshdut to the king of Kish. Ebla was "destroyed" not long afterward, but Kish remained to lead a coalition in the following period.<sup>64</sup>

<sup>54</sup> Pomponio and Visicato 1994, pp. 13-16; G. Marchesi in Marchetti 2006, p. 221 n. 83.

<sup>55</sup> Michalowski 2003.

<sup>56</sup> Cooper 1986, p. 19.

<sup>57</sup> In early publications the god's name was read "Ilbaba." Later, "Zamama" was sometimes given, as an alternative reading of the same signs.

<sup>58</sup> Biggs 1974, no. 268.

<sup>59</sup> Findspots for inscriptions on stone listed in Grégoire 1996-2001, vol. 2, pp. 233-43.

<sup>60</sup> Archi 1987b; Sallaberger 1999, pp. 395-96.

<sup>61</sup> Rubio 2007.

<sup>62</sup> See, e.g., Archi 1987a.

<sup>63</sup> Gelb 1992; see now Sommerfeld 2021, pp. 545-47.

<sup>64</sup> See Archi and Biga 2003, esp. pp. 11 and 15-18.

The Early Dynastic List of Geographic Names may have been composed in Kish or somewhere to the south. The text, which includes canal names known from Kish tablets, has been found no farther south than Abu Salabikh, where scribes with Akkadian names worked,<sup>65</sup> and it is essentially written in Akkadian. The range of place-names perhaps represents roughly the area of influence wielded by Gelb's "Kish Civilization," a grouping perhaps connected with the development of Akkadian as a tool for long-range communication rather than for local records, incantations, and cultic chanting. Burkhart Kienast and Konrad Volk have suggested that letter-writing began in the Akkadian language rather than in Sumerian.<sup>66</sup> Their suggestion is reinforced by the fact that Old Babylonian exercises in writing Akkadian model letters, found at Kish, seem to have no equivalent in the contemporary scribal curriculum of Nippur.<sup>67</sup>

The ruler of Kish who was ousted by Sargon of Agade in later legend bore the name Ur-Zababa, which is almost the same as the name of a musical instrument known much earlier from a hymn of Shulgi: GIŠ *urzababītum*. It is listed as a bull-lyre/harp of Ninurta in the canonical god list AN=Anum.<sup>68</sup> The coincidence of names suggests a legendary role for Ur-Zababa.

To summarize, three groups of evidence concerning the pre-Sargonic period have been identified. Texts from Ebla show interaction of Kish in Syria, particularly at Mari and at Nagar. Contemporary texts from Kish and elsewhere in Babylonia show a strong relationship with Girsu; this link is also strongly reflected in the cult of Zababa, as discussed below. Neither of those groups is reflected in the Sumerian King List. The third group includes only texts composed in the Isin-Larsa and Old Babylonian periods, which relate to earlier times and show a special relationship with Uruk, almost all to the advantage of Uruk.

## SARGONIC PERIOD, CIRCA 2334–2154 BC

Following the Early Dynastic period of prosperity and leadership, royal inscriptions are lacking from Kish apart from an impression on a bulla inscribed with a dedication to Shū-Turul (2168–2154), the last king of Agade, from Hursagkalama.<sup>69</sup> Other texts from Kish include sixty-seven administrative and legal documents, five letters, and a love incantation, probably all from Hursagkalama.<sup>70</sup> The city was dominated by others, but the first Sargonic king, Sargon of Agade, took the title "king of Kish" and lived in Kish before his rise to power—like Gilgamesh—according to later legend. Although archaeological evidence does not suggest a period of prosperity at that period, Kish and its god Zababa played a role in the later legend Sargon King of Battle.<sup>71</sup> A contemporary inscription of Naram-Sin, known only from a later copy, shows that Kish demonstrated leadership in an alliance, perhaps for the last time in its early history.<sup>72</sup>

Lack of evidence may be either due to accidents of discovery or interpreted as a time of genuine eclipse.<sup>73</sup> If the Sumerian Temple Hymn devoted to Zababa of Kish is not a late accretion to the collection attributed to Enheduana, daughter of Sargon of Agade—the collection of hymns certainly contains material both earlier and later than her lifetime<sup>74</sup>—it implies that the main god of Kish, and thus also the city, was still important at this time. That Zababa had the character mainly of a warrior god from early times seems likely in view of the epithet UR.SAG, used in the Sumerian Temple Hymn and incorporated, perhaps later, into the name for his shrine E-mete-ursag "House worthy of the warrior."

Manishtusu, son of Sargon, bought fields around Kish; the record that gives this information mentions a priest of Zababa and tells that eighty citizens of Kish ate bread in Kazallu.<sup>75</sup> A contemporary record of the General Revolt against Naram-Sin,<sup>76</sup> later

<sup>65</sup> Frayne 1992.

<sup>66</sup> Kienast and Volk 1995.

<sup>67</sup> Ohgama and Robson 2010, p. 213.

<sup>68</sup> Litke 1998, tablet I line 268, with note.

<sup>69</sup> Genouillac 1924, p. 23 re P 111; Frayne 1993, p. 215.

<sup>70</sup> Hasselbach 2005, p. 16.

<sup>71</sup> J. G. Westenholz 1997, p. 115; Günbattı 1997.

<sup>72</sup> Kutscher 1989.

<sup>73</sup> See Weiss 1975, disputing the interpretation of R. McC. Adams and M. Gibson.

<sup>74</sup> Sjöberg and Bergmann 1969, no. 35; Biggs 1974, p. 48, lines 70–71.

<sup>75</sup> Gelb, Steinkeller, and Whiting 1991, p. 122, lines viii.20 and ix.8, and p. 140.

<sup>76</sup> Wilcke 1997a, pp. 11–32; Sommerfeld 2000.

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modified for several legendary versions relevant to events in cities of the Old Babylonian period,<sup>77</sup> puts Kish under King Iphur-Kish (the name means “He assembled Kish”) at the head of a huge and widespread alliance against the powerful fourth king of Agade. Rebel cities included Kutha, Tiwa, Sippar, Kazallu, Giritab, and Apiak. In the contemporary version, Kish was defeated. As punishment, the wall of Kish was “destroyed” and the city “flooded”; nevertheless, Naram-Sin set out from Kish in the next phase of his campaign to subdue rebels from the south led by Amar-girid, king of Uruk, supported by the southern cities Ur, Lagash, Umma, Adab, Shuruppak, Isin, and Nippur. The text shows that Kish must still have been a large and prestigious city at the time when it led the coalition against Naram-Sin, and when 2,525 men were killed inside the city.<sup>78</sup> With a view to interpreting Kish’s archaeological remains, it may be that the flooding of the city was partial or is an exaggerated literary topos based on a partial or symbolic act carried out during victory celebrations as a punishment, rather than a total inundation. If so, it would not be found in all areas.<sup>79</sup> The archaeological evidence for decline in the Sargonic period proposed by M. Gibson<sup>80</sup> presumably dates from the reign of Naram-Sin rather than Sargon.

The legendary versions, pseudohistorical or at least heavily redacted, may have been remodeled to prefigure a later event, intending to provide an authoritative precedent. Mario Liverani suggested that one was written to legitimize the reign of Sumu-la-El,<sup>81</sup> Dominique Charpin suggested Shamshi-Adad I.<sup>82</sup> Reuse of the basic theme for more than one redaction is likely.<sup>83</sup>

Since written Akkadian language developed very early for both letter-writing and legal contracts, as well as for keeping administrative records at Kish and Hursagkalama, it is worth mentioning the role played by music and the likelihood that it accompanied Akkadian words. Music is richly represented in the iconography of inlays from Palace A and from terra-cotta figurines at Kish, complementing textual evidence for musicians and the Kish-linked name of the musical instrument *urzabab̄itum*. Instrumental

music cannot be separated from the human voice at this time. Singers/musicians traveled between Kish, Mari, Ebla, Nagar, and other towns in the pre-Sargonic period, as they did later in the Old Babylonian period.<sup>84</sup> They were no mere itinerant minstrels, but state functionaries who operated at the highest level of society, performing at state banquets attended by foreign dignitaries. Music was part of the curriculum for training scribes.<sup>85</sup> Although a link between the use of spoken language and music for the development of the former is disputed,<sup>86</sup> there is no doubt that music, like language, extends social bonding and is especially useful when a group does not have a common language.<sup>87</sup> In the Sumerian south, too, musicians played an early role in both temples and palaces.<sup>88</sup>

## THE NAMES, TEMPLES, AND DEITIES OF KISH-UHAIMIR

The two main mounds, Uhaimir (Kish) and Ingharra (Hursagkalama), may always have been distinct places. The Lipshur Litanies<sup>89</sup> and the Lament over Ur<sup>90</sup> name Kish and Hursagkalama separately as cult centers, but the Nippur Lament names only Kish, and the same is true of the god list AN=Anum. The Sumerian Lamentation over the Destruction of Sumer and Ur names Hursagkalama as “the house of Kish” in which Zababa and Baba reside. The two centers are differentiated in second- and first-millennia texts of various kinds, including letters and administrative documents. In the Sumerian myth Inanna’s Descent to the Netherworld, the line “In Kish she abandoned Hursagkalama and went into the Netherworld” implies that Hursagkalama is a part of Kish as an overarching name.<sup>91</sup>

The worship of the god Zababa, as an indication of the importance of Kish-Uhaimir, certainly goes back to the Fara period, for the god is attested both at Fara and at Abu Salabikh.<sup>92</sup> In Sargon King

<sup>77</sup> Grayson and Sollberger 1976; Charpin 1997, pp. 16–17.

<sup>78</sup> Kutscher 1989, pp. 14–15, and p. 44 n. 91.

<sup>79</sup> For flood levels at Kish, see Moorey 1978, pp. 98–99.

<sup>80</sup> Gibson 1972, p. 58.

<sup>81</sup> Liverani 1993.

<sup>82</sup> Charpin 1997.

<sup>83</sup> See also Cooper 1983.

<sup>84</sup> Tonietti 1998; Ziegler 2007.

<sup>85</sup> Å. Sjöberg 1975, pp. 168–69, quoting Adam Falkenstein.

<sup>86</sup> Sacks 2007, p. 242; Storr 1992, p. 23; Mithen 2009.

<sup>87</sup> Dunbar 2009, pp. 12–35; Cross and Woodruff 2009.

<sup>88</sup> For details and bibliography, see *RLA* 8 s.v. “Musik” (A. Kilmer and M. Tonietti).

<sup>89</sup> Reiner 1956.

<sup>90</sup> Römer 2004.

<sup>91</sup> Sladek 1979.

<sup>92</sup> Krebernik 1998, pp. 260–70; Biggs 1974, no. 142.

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of Battle he is a god who paves the way for travelers.<sup>93</sup> In the Isin-Larsa period he is “the famous son of Enlil,” giving him a parentage that links him to Nippur, in an inscription of Warad-Sin (king of Larsa, 1834–1823), according to which the king built a temple for Zababa in Ur as a result of the god’s support in winning a victory.<sup>94</sup> The epilogue to the Code of Hammurabi likewise names him as “the first son of the Ekur.” From the dedication by Warad-Sin and from Bilingual C of Samsu-iluna it is apparent that Zababa was famous for delivering reliable prophecies of victory in war.<sup>95</sup> As for his symbol, just as the logogram for Kish is interpreted as the head of an equine, so too may a symbol of Zababa, as labeled on a twelfth-century *kudurru* of Melishihu, be an equine; but a lion, or a bird composite derived from his identification as a Ninurta/Ningirsu, have also been suggested.<sup>96</sup> The lion-headed eagle of Ningirsu is perhaps recognizable on some seals from Kish.<sup>97</sup> The god is described as having horns in the legend Naram-Sin and the Lord of Apishal.<sup>98</sup>

In view of the primary use of Akkadian rather than Sumerian at Kish, it is notable that the various temples, shrines, and kings—as well as the city Hursagkalama—have Sumerian names. This suggests that there was not a clear-cut distinction in language between the northern and the southern cities. Zababa’s temple Edubba<sup>99</sup> is known in earlier texts than the name of his shrine E-mete-ursag. E-mete-ursag was built or rebuilt by Sumu-la-El (1880–1845), and the building done during that reign either may not have been completed until the reign of Hammurabi (1792–1750) or may have been restored by

Hammurabi “for Zababa and Inanna” along with the building or rebuilding of its ziggurat, E-unir-kitush-mah.<sup>100</sup> It was renovated by Samsu-iluna for “Zababa and Inanna in Kish,”<sup>101</sup> son and daughter of Enlil.<sup>102</sup>

E-mete-ursag is sometimes paired with the Edubba of Zababa at Kish.<sup>103</sup> Andrew George considers Edubba to be the main name of the temple, and E-mete-ursag the name of its cella, with another name É.AB:ZU.KÛ.GA “House of the pure Apsu.”<sup>104</sup> The latter name implies that Zababa’s temple contained a basin or cistern representing the Apsu. One aspect of worship in Zababa’s temples is found in an Ershahunga prayer, in which the temple of Kish, Edubba, the shrine E-mete-ursag, and the ziggurat E-unir-kitush-mah (perhaps also É-KA-KÛ.GA<sup>105</sup>) are invoked as residences of Madānu, god of justice.<sup>106</sup> Zababa as a form of Ninurta in the latter’s aspect as seal-keeper to Enlil and as scribe of Esharra at Nippur is relevant, since law and written records are closely associated and Hursagkalama, so close to Kish, had very early legal texts. Zababa may have been an early patron god of scribes and law, in accordance with a possible interpretation of the name of his temple, Edubba, as “tablet house.” Although it can also be interpreted as “storehouse,” an understanding as “tablet house” has been well argued by Amar Annus.<sup>107</sup> The two possible meanings may both be applicable. With the meaning DUB as “tablet,” the temple name would stand for the preeminence in scribal tradition of Zababa as the patron god of Kish, comparable with a sanctuary of Nisaba, goddess of the scribal art, in Lagash-Girsu called É.DUB.BA-GU.LA, which could mean “great tablet house” as well as “great storehouse” (since Nisaba was also a grain goddess, the latter interpretation is also possible for her). Edubba at Kish housed a replica of the primeval mound Duku. É.ŠUL!.AN.NA “House of the Hero of Heaven” is

<sup>93</sup> J. G. Westenholz 1997, p. 114, line 14; p. 126, line 20’(?).

<sup>94</sup> Frayne 1990, pp. 247–78, no. 24.

<sup>95</sup> Dalley 2010.

<sup>96</sup> See Frayne 2008, p. 50; Black and Green 1992, p. 169, “eagle-headed or griffin-headed” (no wings or beak are apparent in the drawing, p. 16), following U. Seidl in *RIA* 3 s.v. “Göttersymbole,” p. 488, where a beak is drawn.

<sup>97</sup> See, e.g., Buchanan 1966, nos. 517, 562, and 672.

<sup>98</sup> J. G. Westenholz 1997, p. 180, line 5’. Cf. his epithet “goring ox” in Biggs 1974, no. 268.

<sup>99</sup> This reading replaces E-kishiba. See Maul 1991b, p. 321, note to line 23. For Edubba, often but not always spelled É.DUB.BA.A, as tablet house in non-Kish contexts, see Å. Sjöberg 1975, p. 159 n. 1. To explain the additional -A, Volk (2000, pp. 2–5) lists possibilities within Sumerian grammar but did not consider -a as a phonetic complement required to exclude a logogram for *bīt tuppī* or *bīt tuppātim*, to imply that Edubba was to be read as a Sumerian temple name. Note the name *ri-iš-É-DUB-BU* in Finkelstein 1972, no. 368, line 23, referring presumably to the temple in Kish; for the analogy of GÁ.DUB.BA/GÁ.DUB.BA.A, see CAD s.v. *šandabakku*.

<sup>100</sup> Ashm. 1961.261 Uhaimir, Ashm. 1966.1048+1924.638, and epilogue to the law code. There may not have been a ziggurat there in earlier times; see Gibson 1972, pp. 72–74.

<sup>101</sup> Sumerian text stamped on bricks: Frayne 1990, p. 383, no. 6.

<sup>102</sup> The identity of Inanna here is discussed below. The supposed existence of a triad of deities is considered unlikely by Wilcke 1997b, pp. 414–15 and n. 5.

<sup>103</sup> George 1993, p. 125.

<sup>104</sup> George 1993, p. 50, no. 6, line 1.

<sup>105</sup> Maul 1988, no. 37, line 11.

<sup>106</sup> Maul 1988, no. 37. See also Annus 2002, pp. 86–87 and n. 244; Maul 1991b, p. 314, lines 23–24.

<sup>107</sup> George 1993, pp. 78–79; George 1992, p. 471.

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known as a temple name for Zababa in Kish, attested only in a topographical list.<sup>108</sup>

A late Old Babylonian witness list may support a connection between the temple name É.DUB.BA(-A) and the profession of the sage-scholar (DUMU É.DUB.BA.A, literally, “son of the Edubba”). In a record of sale involving *naditum/ugbaltum*-priestesses of Zababa, the group with specified professions all consists of temple personnel.<sup>109</sup> The first witness is the priest (SANGA) of Zababa, then the overseer of those priestesses (UGULA NIN.DINGIR.MEŠ), then the scholarly temple administrator (ŠÀ.TAM), then four “temple enterers” (*ērib* É), then two “sons of the Edubba”; the fifteenth and final witness is a scribe (DUB.SAR). The grouping suggests that “sons of the Edubba” at Kish were attached specifically to the temple of Zababa, the Edubba. This understanding may reflect the Early Dynastic evidence for Kish and Hursagkalama as preeminent centers of literacy.<sup>110</sup>

Zababa’s consort Baba (also known as Bau and Babu) was a major goddess of Girsu and Lagash, where she was the daughter of An, the sky god, with an oracular role evident in the inscriptions of Gudea. A harp was made for her, showing her role in music.<sup>111</sup> Her shrine at Kish, É.GALGA.SÙ “House filled with Counsel,” has the same name as her shrine in Girsu.<sup>112</sup> The date of her presumed introduction into Kish is unknown, but the city’s early contact with Girsu and Lagash might be considered appropriate, especially the presumed conquest of Kish by the Early Dynastic king Eanatum of Lagash, who received from Inanna the kingship of Kish. The name of Kù-<sup>d</sup>Baba, the barmaid who restored the foundation of Kish together with Ur-Zababa, occurs in the Sumerian King List of the Isin-Larsa period; presumably pseudohistorical, the names incorporate the city’s leading pair of deities. Although the partnership is seldom attested before the first millennium BC, Zababa and Baba are together on an Old Babylonian seal inscription<sup>113</sup> and together also in the Early Old Babylonian Lament for Sumer and Ur.<sup>114</sup> A courtyard cleaner of Baba is mentioned in

a late Old Babylonian text,<sup>115</sup> and Baba is found following Zababa, Lagamal, and Pabilsag in a god list from Nippur, not precisely dated but almost certainly from the early or middle Old Babylonian period.<sup>116</sup> Baba was known as the divine queen of Kish, although that title sometimes refers to a separate goddess, and she may also have been called Baba-Inanna.<sup>117</sup> In first-millennium texts, “explanatory lists of sanctuaries of Kiš give separate names for the cellas of Baba and the Queen of Kish in Edubba.”<sup>118</sup> Zababa and Baba are paired in the Middle Babylonian god list AN=Anum. There were eventually six sanctuaries of Baba in Kish, according to much later evidence.<sup>119</sup>

Zababa’s temple Edubba as a center for literacy and scholarship implies that the temple housed a school of some kind.<sup>120</sup> In general, Mesopotamian schools were located in various types of buildings: temples, palaces, and within “private” houses.<sup>121</sup>

The shrines contained statues of lesser deities and of great kings of Babylon: Ammi-ditana made protective deities and brought them to Inanna the “great queen” NIN.GAL of Kish, “who raised up his kingship”;<sup>122</sup> Ammi-ditana and Ammi-šaduqa each placed a statue of himself in E-mete-ursag.<sup>123</sup> In a text of the first millennium (but perhaps transmitting an older tradition), fifteen(?) gods of the Edubba in Kish include “the daughters of Edubba” <sup>d</sup>DUMU.MÍ.MEŠ É.DUB.BA, “the queen of Kish” <sup>d</sup>šarrat Kiš<sup>ki</sup>, and twelve other deities,<sup>124</sup> with the total given as “15 gods of Edubba.”<sup>125</sup> This number comes close to the sixteen statues in the temple of Zababa and Inanna that are mentioned in a variant to year

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Babylonian period.

<sup>115</sup> Finkelstein 1972, no. 375.

<sup>116</sup> Chiera 1929, no. 124.ii.6–9.

<sup>117</sup> Szlechter 1963, p. 26, tablet H 10, line 17: “PN priest of <sup>d</sup>Baba-<sup>d</sup>Inanna”; see also Renger 1969, p. 106; Pientka 1998, p. 188, quoting Szlechter.

<sup>118</sup> For the separate shrines or cellas and their Sumerian names, see George 1992, pp. 49–52; George 2000, p. 298.

<sup>119</sup> George 1992, pp. 471–73.

<sup>120</sup> A. R. George has pointed out that DUB could have the equivalent *šapākum*, allowing an understanding as “storehouse.”

<sup>121</sup> Å. Sjöberg 1975, pp. 176–77; Volk 2000.

<sup>122</sup> According to his year name 29; Horsnell 1999, vol. 2, pp. 310–12.

<sup>123</sup> According to their year names 34 and 15, respectively.

<sup>124</sup> <sup>d</sup>[x], <sup>d</sup>UT.ÛLU-A.LIM, <sup>d</sup>muštēšir, <sup>d</sup>GIŠ.TUKUL-<sup>d</sup>ŠÀ.ZU, <sup>d</sup>GIŠ.TUKUL-[x x], <sup>d</sup>ku-ú-bu, <sup>d</sup>UT.U<sub>18</sub>.LU, <sup>d</sup>i-qa-li-a, <sup>d</sup>ŠUL.ŠÀ.GA.NA <sup>d</sup>mi-[tu] [<sup>d</sup>LÚ.HUŠ.A <sup>d</sup>]x x x (erasure).

<sup>125</sup> George 2000, p. 293, BM 32516 and BM 41239, lines 18–20. DINGIR.MEŠ šá É.DUB.[BA].

<sup>108</sup> See George 1992, p. 195.

<sup>109</sup> MLC 2656; Wilcke 1982, pp. 427–35.

<sup>110</sup> For DUMU É.DUB.BA.A as a near equivalent of DUB.SAR and UM.MI.A, see, e.g., Stol 1973, p. 217.

<sup>111</sup> Edzard 1997, p. 44.

<sup>112</sup> George 1992, p. 89, nos. 333 and 334.

<sup>113</sup> Buchanan 1981, no. 791.

<sup>114</sup> See, e.g., Black et al. 2004, p. 131. Pientka (1998, p. 188) suggests Baba was not introduced into the cult before the late Old

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name 22 of Samsu-iluna.<sup>126</sup> Two “daughters of Edubaba” at Kish are known by name as Iqbi-damiq and Hussinni.<sup>127</sup>

Two of the gods later attested as attendant on Zababa, Šul-šà.ga(-na) and Ig-alim (also written <sup>d</sup>I-qa-li-a),<sup>128</sup> are known elsewhere associated with Ningirsu and Baba at Girsu,<sup>129</sup> where the divine name Nin-duba “the warrior,”<sup>130</sup> likewise associated with Ningirsu, presupposes a scribal school attached to a shrine of a warrior god. The associations of Zababa with Girsu therefore include his consort Baba, a name of his temple, and the names of some of his attendants or weapons. According to a Neo-Babylonian text from Babylon, there were seven weapons of Zababa, two of them, Sharur and Shargaz, elsewhere known as weapons of Ningirsu/Ninurta.<sup>131</sup> The name of Kāmi-tamîsû, not found in that grouping, relates to Zababa as enforcer of oaths. Different symbols representing the different aspects of the god, together with his weapons and statues of his divine entourage, were presumably displayed in his shrines.

### THE NAMES, TEMPLES, AND DEITIES OF HURSAGKALAMA-INGHARRA

It is not often possible to distinguish Ishtar of É-Hursagkalama on Ingharra from other Ishtars, not least because the word *ištar* could be used as a generic term for any goddess and because many of the goddesses had similar attributes in love and war.<sup>132</sup> The temple of the New Year Festival at Kish, which would have been involved in the royal ritual for which it was built, was named E-giš.hur.bi-gagalam “House whose rituals are skillful”; no equivalent temple is known for Hursagkalama. In the canonical god list AN=Anum, Hursagkalama is not mentioned, but Inanna “of Kish” is separated from Zababa and his circle, namely, Baba and Papsukkal.<sup>133</sup> However, the divine “queen of Kish” is named both in Zababa’s circle and outside it, raising the possibility that

Ishtar of Hursagkalama also had a shrine in E-mete-ursag or was equated with Baba.

At Hursagkalama, scant information comes from the late third and second millennia. Since AN=Anum gives Inanna of Kish as “*kiššitum*” and “queen of Kish” but does not include her in the group Zababa, Baba, and Papsukkal, it is possible that the goddess <sup>d</sup>*kiššitum*, often found in personal names of the Old Babylonian period, can refer to the main Ishtar of Hursagkalama. The ambiguity of information suggests that the epithet may be a generic one that was applicable to more than one major goddess, both in Zababa’s temple and in the temple of Hursagkalama.

Accompanying deities, equated deities, and temple names are abundant in first-millennium texts. From at least the eighth century onward, the main goddess was considered to be a form of Nanay.<sup>134</sup> Ishhara, too, dwelt in her temple;<sup>135</sup> Hursagkalama itself was equated with the constellation Scorpio,<sup>136</sup> and the scorpion is known from Kassite texts as the symbol of Ishhara. Ishtar of Hursagkalama also became known as Ninlil (Mulliltu/Mullēshu); as Ninlil, her temple was named É-kur-nizu “House, fearsome mountain.”<sup>137</sup> The two ziggurats of Ingharra can now be identified as É-kur-mah “House, exalted mountain” of Ishtar/Ninlil, and É-melammah “House, exalted radiance” of Enlil.<sup>138</sup> The deity Bizilla (after whom a canal at Kish was named) was perhaps the vizier of the goddess Ishtar, likewise Nin-shubur and Papsukkal.<sup>139</sup> Both Bizilla and Enlil are known at Hursagkalama for their astral aspect, Bizilla as the “Abundance star” and Enlil as “Wolf star.”<sup>140</sup> This wealth of information may be related to the growing importance of Hursagkalama in the first millennium following a period of poverty and cannot be assumed to represent the situation in the third or early second millennium. It indicates that the shrines of Hursagkalama displayed celestial and astronomical iconography, not necessarily in early periods, although the naming of the earliest kings of Kish in the Sumerian King List as constellations is suggestive.

<sup>126</sup> Horsnell 1999, vol. 2, p. 210 and n. 114.

<sup>127</sup> Cavigneaux 1981, p. 138, no. 79.B.20, line 4.

<sup>128</sup> Also in Cavigneaux 1981, p. 137, no. 79.B.1/19, line 3.

<sup>129</sup> E.g., Edzard 1997, p. 54, Statue K.

<sup>130</sup> Edzard 1997, p. 72, Cylinder A vi.3–5.

<sup>131</sup> Cavigneaux 1981, p. 137, no. 79.B.1/19 rev. iii, lines 3–7.

<sup>132</sup> Recently stressed by Charpin (2005, p. 167).

<sup>133</sup> Litke 1998, AN=Anum IV 17, 119 and V 49–51. For further discussion of Inanna with Zababa at Kish, see below.

<sup>134</sup> Reiner 1974; Stol 1998–2001.

<sup>135</sup> Reiner 1974, strophe VII, line 21.

<sup>136</sup> Falkenstein 1931, no. 44, line 12.

<sup>137</sup> C. B. F. Walker 1981, no. 75.

<sup>138</sup> George 1993, p. 52.

<sup>139</sup> Reisner 1896, VII rev. 2 and I 3.

<sup>140</sup> George 1993, p. 54; George 2000, p. 283. The information comes only from first-millennium texts.

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THIRD DYNASTY OF UR,  
CIRCA 2112–2004 BC

Kish lay on the periphery of the core kingdom of Ur during the Ur III period.<sup>141</sup> The version of the Sumerian King List that begins with Kish is likely to have been composed in the reign of Shulgi.<sup>142</sup> According to the activities recorded in year names, Kish was less important than neighboring Kazallu, which lay to the south between Kish and Marad on the great ME-Enlil canal. Kish and Kazallu are mentioned together in the cadastre of Ur-Namma.<sup>143</sup> Six Ur III tablets from Kish have been identified, if the proveniences are correct.<sup>144</sup> Moorey considered that Monument Z, close to one of the two ziggurats on Ingharra, was built early in that period.<sup>145</sup> Two governors—one UGULA and one ENSI—of Kish are attested.<sup>146</sup> As causes of such a poor record, it may be suggested that Kazallu took the lead over cities in the region of Kish and that the invasion by the Elamite ruler Puzur-Inshushinak into that region—causing Marad and Kazallu to be “freed” by Ur-Namma—harmed Kish too.<sup>147</sup>

ISIN-LARSA-EARLY OLD  
BABYLONIAN PERIOD,  
CIRCA 2017–1793 BC

In many instances, it is impossible to separate the early Old Babylonian period from the late Isin-Larsa period, since they overlapped.<sup>148</sup> For convenience, the whole period is divided here into three phases, the middle one consisting of the reigns of Hammurabi and Samsu-iluna.

Ashduni-yarīm, who ruled Kish perhaps shortly before the beginning of the First Dynasty of Babylon, recorded that he was “servant of Ishtar and of Zababa.”<sup>149</sup> The king’s emphasis on building a

rampart, named “Kish is at peace,” and a canal might be understood as evidence for emergence from a period of decline. No synchronisms are yet known for his reign, but the ductus and orthography have been compared with that of Lipit-Ishtar, king of Isin (1934–1924).<sup>150</sup> This suggests the possibility that his conquest, over the course of eight years, of “the four quarters,” which had become hostile to him, represents a victory that brought the supremacy of Isin to an end and would have established Kish, once again, in the forefront of northern Babylonian cities, perhaps for a short time. An early liver omen found at Mari, “Omen of the throne, which (says): In Kish a breach was made and the troops of Ishma-Dagan were taken (captive?),” may refer to this change of power.<sup>151</sup> In the Sumerian Nippur Lament, the god Enlil enjoins Ishme-Dagan of Isin (1953–1935) to secure the foundations of Kish on the border of Sumer and Akkad, among other cities of prime importance.

While Warad-Sin ruled Larsa (1834–1823), contemporary with Sabium (1844–1831) and Apil-Sin (1830–1813) of Babylon, the cult of Zababa was installed in Ur, an act that shows how important the god of Kish was. The dedicatory text from which this is known implies that Zababa delivered reliable oracles or prophecies for victory in battle.<sup>152</sup>

Sometime around this period, Kish may have been dominated by the nearby city of Marad under its king Sumu-ditana, if such a large conclusion is warranted from a very small piece of evidence.<sup>153</sup> From slightly later evidence, we know that the ME-Enlil canal linked Kish and Marad.

Sumu-El, king of Larsa (1894–1866), had influence in Kish during the reigns of local rulers Halium and Manana, and claimed victory over the army of Kish in his eleventh year; he was contemporary with Bur-Sin, king of Isin (1895–1874), the latter ruling a few decades after Ishme-Dagan, king of Isin (1953–1935), to whom the liver omen refers, and whose revival of Sumerian literature is well known.<sup>154</sup>

The “Manana Dynasty” texts are contemporary with those from Kisurra.<sup>155</sup> King Manana him-

<sup>141</sup> Steinkeller 1987, pp. 19–41.

<sup>142</sup> Marchesi 2010.

<sup>143</sup> Frayne 1997, pp. 53–54.

<sup>144</sup> Molina 2008, p. 53 and n. 114.

<sup>145</sup> Moorey 1978, p. 95.

<sup>146</sup> Frayne 1997, pp. xli–xliv, 273, 275.

<sup>147</sup> See Frayne 1997, Ur-Namma nos. 21 and 29; Potts 2016, pp. 116–17 (reading the name Puzur-Inshushinak).

<sup>148</sup> For chronological and synchronical charts of dynasties, see Simmons 1978, pp. 26–28; Charpin 1978a, p. 40.

<sup>149</sup> BM 108854, presumably from Kish; Frayne 1990, E4.8.1, with corrections of Marzahn (1999). Godderis 2002, pp. 251–304, describes all texts from this period in detail.

<sup>150</sup> Edzard 1957, p. 79.

<sup>151</sup> Rutten 1938, p. 44, no. F II; see also Edzard 1957, p. 79.

<sup>152</sup> Frayne 1990, pp. 247–48.

<sup>153</sup> The death of Sumu-ditana is recorded in a year name of Yawium. See also Dalley 2005b, pp. 1–2.

<sup>154</sup> Stol 1976, p. 30.

<sup>155</sup> Sommerfeld 1973, pp. 228–29. Note that in *RIA* 6 s.v. “Mananaja,” D. O. Edzard is cautious about the term “dynasty” in connection with that ruler.

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self was contemporary with Sumu-abum, who was the first king of Babylon (1894–1881) according to the king lists but was not regarded as such by later kings; during the latter’s reign in Babylon, oaths were sworn by the moon god Nanna-Sin, not by Marduk, god of Babylon.<sup>156</sup> Sumu-la-El of Babylon (1880–1845), who appears to be in part contemporary with Sumu-abum, was regarded by later Babylonian kings as the founder of their dynasty.<sup>157</sup> Manana was also contemporary with Yawium, ruler of Kish, and may have ruled Elip,<sup>158</sup> a location close to Kish perhaps represented by one of the outlying mounds. The group of texts connected with Yawium includes datings to Sumu-la-El years 28 and 33.<sup>159</sup> The name Elip, written also MĀ<sup>ki</sup> and so presumably to be understood as *status absolutus* of *elippum* “boat,” emphasizes the importance for the vicinity of Kish, as elsewhere, of digging and maintaining canals and quaysides. The town Elip was not ephemeral: its temples to Sin and Mār-bīti are recorded in “a neo- or late Babylonian administrative document which includes a list of temples in and around the city of Babylon.”<sup>160</sup> Its goddess was revered in the time of Hammurabi (year name 17), and the town is listed after Babylon in the lexical list HAR.ra-hubullu XXI.<sup>161</sup> Also important to the Manana “dynasty” was the town Akušum/Akuš, whose goddess *Ištar akušitum* was still known in the Late Babylonian period, residing with <sup>d</sup>Mār-bīti and fourteen other deities in É-ur<sub>5</sub>.šab.ba, presumably the name of the temple in Akušum.<sup>162</sup> The relationship between Kish, Elip, and Akuš is still unclear.

The Manana tablets came to light before Henri de Genouillac began to excavate at Uhaimir in 1912 and came to Europe as a result of the extensive pillaging noted by him.<sup>163</sup> Many tablets in the Louvre came from the private collection of Allotte de la Fuye and were said to come from Uhaimir by dealers.<sup>164</sup> The location from which those tablets came,

which may be the seat of the “dynasty,” is still uncertain.<sup>165</sup> They consist mainly of contracts and a few administrative texts, and many bear the year formulas for its kings; in contracts dated to Yawium, Zababa was sometimes invoked to reinforce oaths, but other rulers in that group of texts invoke the moon god and other deities. Sometimes a Manana “dynasty” ruler and a ruler of Kish are named together in the oath clause, which implies a close relationship between the two. The archive of Shumshunu-watar and Šissu-nawrat forms part of this group of texts and includes purchases and loan contracts, written mainly in Sumerian. A tablet inscribed with Nungal in the Ekur bears a date to a year of Manana,<sup>166</sup> and a copy of a hymn of Lipit-Ishtar also probably bearing a Manana “dynasty” date was found on Uhaimir, according to de Genouillac;<sup>167</sup> other literary texts are likely to date to the same reign and perhaps also came from Uhaimir. This suggests a very close relationship between his town Elip and Kish-Uhaimir, perhaps both as centers for scholarship.

A year name of a ruler of the Manana “dynasty,” recording the installation of a large throne for Marduk,<sup>168</sup> whether at Elip(?) or at Kish, may be linked with the later-attested presence in the archive of Tutu-nišu of a temple of Marduk at Kish.<sup>169</sup> If so, a cultic installation for Marduk at Kish or nearby was present from at least the beginning of Babylon’s First Dynasty.

While kings of Babylon were growing in power, the fate of Kish was still bound up with Kazallu. A close relationship between the two cities is also clear from the thirteenth year name of Sumu-abum, “Year S. captured Kazallu and Kish,” which followed year 10, in which he “made the sublime crown of Kish.”<sup>170</sup> Sumu-la-El of Babylon “destroyed” Kish in his thirteenth year; he continued to have a problem with the rebel leader Yahzir-el, who was finally ejected from Kazallu in Sumu-la-El’s year 18, the same rebel leader being “defeated” several times subsequently; meanwhile, the heavenly wall of Kish was “destroyed” in year 19, but Kish was already be-

<sup>156</sup> Sommerfeld 1982, pp. 22, 26.

<sup>157</sup> See Charpin 2005, pp. 172–73.

<sup>158</sup> RIA 6 s.v. “Mananaja.”

<sup>159</sup> Charpin 1978b, pp. 147–50, “Nouveaux Textes” nos. 46 and 47.

<sup>160</sup> George 1992, pp. 222–26, rev. 27.

<sup>161</sup> See George 1992, pp. 222–23 n. 4.

<sup>162</sup> George 2000, p. 293; on p. 299, n. 25, penultimate line, Edubba is presumably a slip for E-urshabba, which should be added to George 1993.

<sup>163</sup> Thirty-one tablets registered in 1911 in the Royal Scottish Museum belong to this archive. See Dalley 1979.

<sup>164</sup> See Rutten 1958, p. 208; Charpin 1978b, p. 139 n. 1.

<sup>165</sup> See RIA 6 s.v. “Mananaja”; and more recently Charpin 2005, p. 168.

<sup>166</sup> Alster and Walker 1989, no. 27, BM 108866; see also Michalowski 1995, confirming with a second collation.

<sup>167</sup> TCL 16, no. 65 (Genouillac 1930, p. 7). I owe this information to F. van Koppen, who has collated the tablet.

<sup>168</sup> Rutten 1960, pp. 25–26, no. 30, line 14.

<sup>169</sup> Kupper 1959, pp. 27–28, D 11, line 6.

<sup>170</sup> Horsnell 1999, vol. 2, pp. 46–47.



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ing revived by the very same king in his thirtieth year, when he began building or rebuilding “E-mete-ursag the temple of Zababa.” After those episodes, Kazallu was “destroyed” by Sabium of Babylon in his twelfth year and disappeared from history. The far reach of the power of Sumu-la-El, who built or rebuilt E-mete-ursag, has been gained from new evidence, the seal of a scribe, servant of Sumu-la-El, found at Tilmen Hüyük, near Gaziantep in Turkey.<sup>171</sup>

From this time onward, Kish and Hursagkalama were closely linked to Babylon, and Kish was eclipsed by it as a political center. Although two kings of Eshnunna, Ipiq-Adad II (contemporary with Sabium of Babylon) and his son Naram-Sin (contemporary with Sin-muballit of Babylon and Shamshi-Adad I of Assyria), took the title “king of Kish,” it is not certain whether they were claiming to dominate Kish; no direct evidence has yet come to light to support that interpretation of the title.

### THE DATING OF THE OLD BABYLONIAN LITERARY AND LEXICAL TEXTS

To the reign of Manana belongs the earliest published Sumerian literary text of the second millennium that is dated, a fragment of Nungal in the Ekur, thus contemporary with the first two kings of Babylon. It has no detailed provenience. The copy of the hymn of Lipit-Ishtar with a probable date to a Manana “dynasty” king was found on Uhaimir.<sup>172</sup> D. O. Edzard thought that some literary and lexical texts excavated by de Genouillac in 1912 were probably contemporary with the archive of Tutu-nišu and the reign in Babylon of Sin-muballit (1812–1793).<sup>173</sup> If his suggestion is correct, one group of such texts from the early second millennium, found supposedly on Uhaimir, may be separate from, or continuous with, an earlier group, represented by the tablet of Nungal in the Ekur and the hymn of Lipit-Ishtar, linked to the Manana “dynasty.”

Hursagkalama produced literary and school texts. From the C trenches on Ingharra came many of the Sumerian literary texts published by

O. R. Gurney and S. N. Kramer.<sup>174</sup> A few dated legal tablets in the same range of accession numbers in the Ashmolean indicate the reigns of Sin-muballit and Hammurabi; school texts may have a wider time span.<sup>175</sup> Uhaimir, too, produced literary and school texts;<sup>176</sup> a few dated legal texts in the same range of accession numbers from various locations imply a similar time span for school texts, which include the Akkadian model letters already mentioned.<sup>177</sup> One of the literary texts, no. 8, refers to Iddin-Dagan, early king of Isin (1974–1954); another, no. 18, refers to the “destruction” of Isin; another, no. 57, is addressed to Nin-Isina. A fragment of Lipit-Ishtar’s law code was also found at Kish. These texts suggest a scribal tradition linked to the supremacy of Isin in the twentieth and early nineteenth centuries BC, preceding the period of the Manana “dynasty,” with popularity continuing into the time of Hammurabi and Samsu-iluna.

The Old Babylonian literary texts excavated by the Oxford–Field Museum expedition in 1923–33, many of them now in the Ashmolean, came mostly from Uhaimir, the area west of the ziggurat, in Old Babylonian house ruins “and perhaps a school associated with the ziggurat complex.”<sup>178</sup> From information collected by Dalley and Yoffee,<sup>179</sup> it seems that administrative texts such as nos. 20 and 21 were found on the southeast side of the ziggurat platform on Uhaimir, separate from school texts such as nos. 37 and 39, administrative records nos. 29, 32, and 35, and letters such as nos. 18, 22, and 23 found in house ruins; those two locations were distinct in the excavation records. But a clear separation of school and administrative texts cannot necessarily be made since some administrative texts, like the model letters, may be practice tablets from school deposits, and the findspots may not be primary because of later disturbance or looting. Indeed, several collections of texts, separate in antiquity and perhaps of different dates, may have been mixed in the course of the various excavations and the intervening looting; some of the tablets found by the Oxford–Field Museum expedition probably came

<sup>171</sup> Marchetti 2010, p. 370.

<sup>172</sup> TCL 16, no. 65 (Genouillac 1930, p. 7). I thank F. van Koppen for this information.

<sup>173</sup> Frankena 1974, no. 107, letter from Sin-muballit to Tutu-nišu; see also Blocher 1988, p. 42.

<sup>174</sup> Gurney and Kramer (1976) gave no proveniences, but see Gurney 1989.

<sup>175</sup> Ohgama and Robson 2010, pp. 216–20.

<sup>176</sup> E.g., Gurney and Kramer 1976, nos. 1 and 56, both Sumerian literary texts.

<sup>177</sup> Ohgama and Robson 2010, pp. 211–16.

<sup>178</sup> Donbaz and Yoffee 1986, p. 2.

<sup>179</sup> Dalley and Yoffee 1991.

from the same area that the French team had already partly excavated in 1912, since Stephen Langdon was mainly interested in finding texts and the old trenches would still have been recognizable a little more than a decade later. Details of script do not always distinguish between periods; for example, Gurney found it difficult or impossible to be sure in some instances which of his literary and school texts were Old Babylonian and which were Middle Babylonian.<sup>180</sup>

The range of identified texts is wide, including the law code of Lipit-Ishtar, royal hymns of Shulgi, literary royal letters of Ur III, Dumuzi's Dream, Ninmesharra, Ningishzida's Journey to the Netherworld,<sup>181</sup> Dumuzi poems, school dialogues, a version of the Sumerian King List, Sumerian incantations, lexical lists, mathematical texts, and Sumerian and bilingual historical inscriptions. Some Early Dynastic texts were copied, probably during the Old Babylonian period, such as the professions list LÚ E, a copy that, despite a superficial appearance, may be of Ur III or early Old Babylonian date<sup>182</sup> and may have been composed in Kish.<sup>183</sup> This may imply that scribal schools were continuous after the Early Dynastic period. It is notable that some historical texts relating to Kish by the early second millennium were bilingual or written only in Sumerian. The school texts identified in the Ashmolean collections appear to belong to a curriculum with significant differences from that of Nippur in the Old Babylonian period.<sup>184</sup> They may span the whole Old Babylonian period, with a concentration in the middle of that time span.

## THE ARCHIVE OF TUTU-NIŠU

Much of the archive of Tutu-nišu was found on Uhaimir in 1912 by de Genouillac but reached the Louvre only in 1925.<sup>185</sup> Some of this group may also have come to Europe through dealers, perhaps looted after excavations had finished. Some of the

archive, including letters, is in Istanbul,<sup>186</sup> some is in Berlin,<sup>187</sup> and some is in Manchester.<sup>188</sup> The findspot was the area west of the ziggurat, presumably house ruins, but in an area already pillaged by looters, which may have resulted in the mixing of more than one original group.

Tutu-nišu was governor (*šāpirum*) of Kish in the reign of Sin-muballiṭ (1812–1793) and may have been in charge of the rebuilding of E-mete-ursag initiated by Sumu-la-El and perhaps continuing into, or resumed during, the reign of Hammurabi (1792–1750).<sup>189</sup> Greetings in some of the letters written to or by him invoke Shamash and Marduk, but others invoke Ishtar and Zababa, presumably as the tutelary deities of Hursagkalama and Kish.<sup>190</sup> The name Kish may have been used, on the one hand, for the city based on Uhaimir and centered around the temple of Zababa, and, on the other hand, for a larger administrative district that included Hursagkalama. A group now numbering twenty-one tablets deals with brick production dating to month 5 of Sin-muballiṭ year 11;<sup>191</sup> the name of the overseer, Saggil<sup>192</sup>-zimu, working together with Zababa-qarrād, suggests a close link between Kish and Babylon for the implied work of construction. One letter shows that Kish and Hursagkalama were still distinct cities at this period but almost certainly under the same overall administration.<sup>193</sup> A temple dedicated to Marduk at Kish<sup>194</sup> reflects close ties between Babylon and Kish and, as mentioned above, may already have been founded at the beginning of the First Dynasty of Babylon.

A *kārum*-harbor of Kish<sup>195</sup> confirms that the city was important as a hub for water transport at this period because of its location at the junction of several major canals, continuing the role inferred from the Early Dynastic Geographic List. The ME-Enlil canal linked Kish with Marad at this time.<sup>196</sup> A

<sup>180</sup> O. R. Gurney, personal communication; and see D. S. Kennedy in Civil, Gurney, and Kennedy 1986, p. 72.

<sup>181</sup> Zólyomi 2003.

<sup>182</sup> Gelb (1970, p. 35) suggested an Ur III date. Whether the text was originally composed in Akkadian or Sumerian is uncertain.

<sup>183</sup> Biggs 1981, p. 132.

<sup>184</sup> Ohgama and Robson 2010, p. 229.

<sup>185</sup> Kupper 1959; seal impressions: Blocher 1988.

<sup>186</sup> Kraus 1972, pp. 26–59, nos. 114, 131, 132, 134 and probably others; see, e.g., J. G. Westenholz 1974.

<sup>187</sup> Schroeder 1917; Frankena 1974, nos. 107, 112, 114, 119, 121, 122, 166, 180, 183, 184, 205, 206, and probably others.

<sup>188</sup> Fish 1936; see Kraus 1985, nos. 1–31.

<sup>189</sup> Blocher 1988, p. 42.

<sup>190</sup> Frankena 1974, nos. 121, 183, 184; Fish 1936, no. 11.

<sup>191</sup> Charpin 2005, pp. 169–71.

<sup>192</sup> Saggil is a form of Esagila, the name of Marduk's temple in Babylon.

<sup>193</sup> Frankena 1974, no. 166.

<sup>194</sup> Kupper 1959, D 11, line 6.

<sup>195</sup> References given in Groneberg 1980, p. 141.

<sup>196</sup> Groneberg 1980, p. 297; see also Cole and Gasche 1998, pp. 27–30.

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letter warning of an attack on Kish by 240 boats assembled at Mashkan-shapir by Rim-Sin I of Larsa<sup>197</sup> indicates that a canal or a branch of a river connected Mashkan-shapir (on the Tigris) and Kish (on a branch of the Euphrates) and suggests also that the city remained under Babylon rather than being a part of the empire of Larsa, although threatened by Rim-Sin or perhaps paying tribute to both Babylon and Larsa at the same time;<sup>198</sup> other explanations are possible.<sup>199</sup> A few tablets inscribed with school exercises come from both Uhairir and Ingharra, and may date to this period. They appear to represent a curriculum different from that of Nippur.<sup>200</sup>

### MIDDLE OLD BABYLONIAN PERIOD, CIRCA 1792–1712 BC

Kings of Babylon continued to further the prosperity of Kish and, in doing so, left evidence that Sumerian rather than Akkadian was by then appropriate for formal inscriptions there. Hammurabi (1792–1750) and Samsu-iluna (1749–1712) both made repairs to the temple E-mete-ursag that Sumu-la-El had rebuilt at Kish, as recorded on inscribed bricks found at Uhairir. Hammurabi's year name 36 records his renewal of E-mete-ursag and its ziggurat, Unir-kitushmah, for Zababa and Inanna.<sup>201</sup> A Sumerian inscription of Hammurabi was found by the ziggurat on Uhairir.<sup>202</sup> It is possible that the ziggurat was first built during this period, as there are no earlier references to it and Early Dynastic remains of a different sort were found beneath it.<sup>203</sup> "Building" and "rebuilding" are not differentiated in the vocabulary of building inscriptions.

According to a Mari letter, Hammurabi's army stayed in Kish, and there was a garden in Kish where Haneans, who are found in texts of this period as soldiers—perhaps levies or mercenaries—ate and paraded.<sup>204</sup> This is an early indication that Kish was a city where troops assembled, giving a particular military association with the character of Zababa as a warrior god. A garden of Zababa is mentioned in

another letter.<sup>205</sup> An unpublished letter from Kish,<sup>206</sup> written by Samsu-ditana to "the *rabiānum* of Kish and the scribe of troops who are living/staying in Kish," gives a further indication of Kish as a military base for Babylon. Moorey had already concluded that "Kish was maintained as a vital military outpost of the capital at Babylon" in the time of Samsu-iluna;<sup>207</sup> the new information supports that inference and extends it. A continuation or resumption of the same role in the Neo-Assyrian period is indicated below.

Samsu-iluna, restoring the ziggurat for Zababa and Inanna,<sup>208</sup> received an oracle from them, a prophecy for victory, recorded in Bilingual C.<sup>209</sup> It is evidence for Kish as a center for oracles, comparable with Uruk,<sup>210</sup> and perhaps with those two city gods in association, if the Seleucid oracle of Zababa from Uruk is to be interpreted as evidence for continuity;<sup>211</sup> the inscription of Warad-Sin from Ur, already mentioned, likewise associates Zababa with oracle-giving. A hymn to Enlil, which includes a prayer to Samsu-iluna, names Zababa among the great gods who supported or chose Samsu-iluna.<sup>212</sup> From Bilingual C we also learn that the Inanna in E-mete-ursag was sister of Zababa and therefore distinct from his spouse Baba. According to the same inscription, Samsu-iluna undertook major works at Kish: excavating a ditch that was then surrounded by a canebrake and building a new, higher rampart of bricks on a stronger foundation than previously. His year name 24 records building higher the wall of Kish at the same time as constructing a fort on the Turul canal, on a site identified at Khafajeh, ancient Tutub.<sup>213</sup> Protection from flooding, anticipated due to changes in watercourses, may be as much a reason for raising the height of the city wall as defense against enemies, for Samsu-iluna recorded building

<sup>197</sup> Kupper 1959, D 29.

<sup>198</sup> Goddeeris 2005, pp. 143–44.

<sup>199</sup> Wu and Dalley 1990, pp. 159–65.

<sup>200</sup> Ohgama and Robson 2010, p. 229.

<sup>201</sup> Horsnell 1999, vol. 2, pp. 153–55.

<sup>202</sup> Frayne 1990, pp. 342–44.

<sup>203</sup> Gibson 1972, pp. 72–74.

<sup>204</sup> Villard 1992, p. 138; Heimpel 2003, p. 507.

<sup>205</sup> Kraus 1985, no. 37.

<sup>206</sup> MLC 1725, to which J. Finkelstein (1972, p. 2 n. 5) refers.

<sup>207</sup> Moorey 1978, p. 176.

<sup>208</sup> C. B. F. Walker 1981, nos. 48 and 49, Ashm. 1930.40 Uhairir, southwest side of zigurrat platform; the brick inscription corresponds to the year name for year 22; see Frayne 1990, p. 383, no. 6.

<sup>209</sup> Frayne 1990, p. 383, no. 7: Ashm. 1930.40, found on southwest side of zigurrat platform. The Akkadian version writes the name as <sup>d</sup>INNIN, as in the Sumerian version, not as IŠ<sub>4</sub>-tār or <sup>d</sup>15.

<sup>210</sup> Biggs 1969, p. 604; see Dalley 2010.

<sup>211</sup> McEwan 1980.

<sup>212</sup> Alster and Walker 1989, no. 2.

<sup>213</sup> Horsnell 1999, vol. 2, pp. 213–15; Frayne 1990, pp. 384–88.

a new canal leading off from the Euphrates north of Kish two years later.<sup>214</sup>

According to Bilingual C, Rim-Sin II of Larsa was buried in the district of Kish after Samsu-iluna defeated him and was honored with a burial mound. This indicates that one of the small mounds near Kish is the tumulus of a king from that great southern city, and not a ruler of Kish. Since tumuli in historical times can be associated with sedentary people as well as with pastoralists and nomads,<sup>215</sup> the text raises the possibility of a traditional royal burial ground for various kings other than those of the Kish elite, for whom regular ceremonies would have attracted celebrants from beyond its own circle of political control, ensuring special prestige for Kish.<sup>216</sup>

### THE REFUGEE ISSUE IN THE REIGN OF SAMSU-ILUNA

Following Samsu-iluna's loss of control over southern Mesopotamia between his tenth and twelfth years, it has been suggested that cults from Uruk were transferred to Kish as part of a larger situation of unrest, abandonment of settlements, and refugee movements.<sup>217</sup> A major part of the textual evidence came from dated tablets showing that An-Inanna, Nanay, and Kanisurra, deities of Uruk, were worshipped in late Old Babylonian Kish.<sup>218</sup> The inference also followed the claim made by Elizabeth Stone<sup>219</sup>—arguing in part from the Nippur Lament,<sup>220</sup> from a lack of cuneiform tablets and other inscriptions from southern cities, and from surface surveys—that most of southern Babylonia was wrecked and depopulated by the end of the First Dynasty of Babylon and not resettled until just before and during the Amarna period.<sup>221</sup>

Supposed confirmation from a series of year formulas from Tell Muhammad has been challenged,<sup>222</sup> and Thomas Richter argued more generally against the interpretation,<sup>223</sup> pointing out that one would expect other cults from Ur, Isin, Nippur, and Uruk to be found likewise at Kish and adding that the edicts of late Old Babylonian kings indicate that merchants traded at Uruk and Larsa.<sup>224</sup> Among late Old Babylonian letters and administrative texts, one mentions “long-boats” of Nippur,<sup>225</sup> as well as men meeting in a house in Nippur; another begins by invoking the gods of Nippur and mentions a boat apparently traveling between Nippur and Dur-Abi-eshuh.<sup>226</sup> A late Old Babylonian archive from Dur-Abi-eshuh presents clear information showing that Nippur, though impoverished and under threat, was still capable of defending itself in the reign of Ammi-ditana<sup>227</sup> and was not deprived of water at that time, as the earlier interpretation of survey data had supposed.<sup>228</sup> Gardeners who came from Uruk to Kish to work in the royal date-palm gardens near Kish toward the end of Samsu-iluna's reign<sup>229</sup> were therefore not necessarily refugees. If the deductions were correct, one would expect a major expansion of Kish to accommodate the influx, a development that might be detectable by excavation or survey.

It remains a problem to understand why no clay tablets or building inscriptions from the cities of southern Babylonia have been found after the reign of Samsu-iluna. Recent evidence, including linear alphabetic script on a few tablets of the First Sealand

<sup>214</sup> Cole and Gasche 1998.

<sup>215</sup> McLellan 2004.

<sup>216</sup> Silva Castillo 2004.

<sup>217</sup> Charpin 1986b, following the tentative suggestion of Finkelstein 1972, pp. 12–13; also Birot 1974, p. 272; Charpin, Stol, and Edzard 2004, p. 342.

<sup>218</sup> Finkelstein 1972, p. 11; see Richter 2004, p. 280.

<sup>219</sup> Stone 1977.

<sup>220</sup> Cf. *RIA* 9 s.v. “Nippur-Klage” (H. Vanstiphout); Dalley 2005a.

<sup>221</sup> E.g., George 1997, pp. 132–33.

<sup>222</sup> Sassmannshausen 1999, pp. 413–14, “Year (the Kassite king) settled in Babylon” rather than “Year Babylon was resettled.” The idea that no less than thirty-eight years were all named after an act of resettlement is inherently unlikely; a translation “Year that (the king) stayed (in) Babylon” may also be offered. Cf. the later Chronicle entry type: RN *ina mātišu* (Chronicle of Nabopolassar); MU.7.KAM LUGAL *ina URU Temā* (Chronicle of Nabonidus).

<sup>223</sup> Richter 2004, p. 280; Uruk is named in the Edicts 20 and 21 of Ammi-šaduqa, in whose reign the major composition or redaction of the Epic of Atrahasis took place and the Venus Tablets were compiled.

<sup>224</sup> Besides, as Richter (2004) mentions, Ammi-šaduqa seems to have been deified in some circles, attested at Emar.

<sup>225</sup> Klengel 1983, no. 90.

<sup>226</sup> Kraus 1977, no. 118.

<sup>227</sup> Van Lerberghe and Voet 2009, pp. 3–7; Van Lerberghe and Voet 2010; Abraham and van Lerberghe 2017.

<sup>228</sup> See *RIA* 7/8 s.v. “Nippur,” p. 559 (M. Gibson, D. Hansen, and R. Zettler).

<sup>229</sup> Charpin 1986a, p. 414.

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Dynasty and wooden writing boards, suggests a change from clay to organic writing material.<sup>230</sup>

It is not necessary to infer that refugees fleeing from a destroyed parent city were the cause of cults belonging to one city being installed in another. One reason for establishing “colony” cults from one city in another (rather than transferring them) was to increase the prestige of the recipient city. A clear example of this comes from an inscription of Gudea recording that he built for Inanna of Uruk “her beloved house Eanna in the midst of Girsu.”<sup>231</sup> Another case is the inscription of Warad-Sin, mentioned above, in which the king built a temple for Zababa at Ur in thanks for a victory, presumably linked to an oracle predicting success. In the case of Marduk’s temple in Old Babylonian Kish, the cult may reflect the importance of Babylon before the time of Hammurabi, whether through some kind of client relationship, through the presence in Kish of merchants from Babylon who needed to swear oaths by their own city god, or connected with Sumu-la-El’s conquest of Kish and his work in building up the city and its temples and defenses. In the case of conquest and direct rule, a conqueror might observe the rituals of vassals’ gods within his own royal city to signify that the gods of the subdued peoples approved of the victor, and contracts would require oaths to be sworn on the temple property of the ruler’s god as well as that of the local deity in the subjected city. For this reason, the cult of a conquered city’s god might be installed in the city of the conqueror, and vice versa. At Mari, cults were imported and exported as a result of dynastic marriages.<sup>232</sup> Sennacherib’s import into Assur city of Zababa’s cult is described below.

The identity of the Inanna in E-mete-ursag at Kish-Uhaimir excludes the hypothesis of a cult transferred by refugees because the goddess was already there before the great rebellion. Samsu-iluna recorded in Bilingual C that he renovated the ziggurat there “for Zababa and Inanna in Kish” and described them as the son and daughter of Enlil; in other words, they were regarded as brother and sister,<sup>233</sup> information corresponding to the name of his year 22: “Year when Samsu-iluna renovated the ziggurat, lofty dwelling place of Zababa and Inanna.” But it was not a new venture, for it echoes

the year name 36 of his predecessor Hammurabi: “Year when Hammurabi renovated the E-mete-ursag, built the ziggurat, lofty dwelling place of Zababa and Inanna. . . .” That this Inanna is specifically the goddess of Uruk is known from a late Old Babylonian contract,<sup>234</sup> dated to the reign of Samsu-ditana: the first witness is SANGA Zababa, then a GALA.MAH of Zababa, then a GALA.MAH of Inanna of Uruk, then UGULA NIN.DINGIR.MEŠ. The cult of An-Inanna, Nanay, and Kanisurra, attested in several Kish texts,<sup>235</sup> is thus to be connected with the cult of Inanna of Uruk as the sister of Zababa in E-mete-ursag long before the rebellion against Samsu-iluna.

Charpin has pointed out that *ugbaltum*-priestesses of Zababa at Kish lived next to a priest of Inanna of Uruk in the late Old Babylonian period.<sup>236</sup> The text that gives this information belongs in a sequence of transactions going back to year 20 of Sin-muballit, implying a continuous tradition.<sup>237</sup> Either Sin-muballit or Sumu-la-El<sup>238</sup> as restorer of E-mete-ursag may have installed Inanna of Uruk in Kish as sister of Zababa, if the installation was not an even earlier one. The evidence shows Kish increasing its influence through the accumulation of “branch” cults emanating from other cities.

The reevaluation has two implications. First, for the assessment of settlement size, the city Kish-Uhaimir did not necessarily grow suddenly as a result of refugees arriving in large numbers from abandoned southern cities. Second, some of the cities of southern Babylonia could have been in contact with Kish in the late Old Babylonian period, so textual and archaeological evidence may be probed for such contact. The rebellion of the southern cities against Samsu-iluna may, however, have led to poor conditions for some time following damage and reprisals.

<sup>230</sup> Dalley 2021.

<sup>231</sup> Edzard 1997, p. 39, Statue C.

<sup>232</sup> See Ziegler 1999, pp. 40–41.

<sup>233</sup> Frayne 1990, p. 383, no. 6; pp. 384–91, no. 7.

<sup>234</sup> Finkelstein 1972, no. 90 = MLC 603; Wilcke 1982, pp. 435–40.

<sup>235</sup> See Finkelstein 1972, p. 11. For uncertainty over the interpretation of AN-<sup>d</sup>INANNA, see Wilcke 1997b, p. 415. AN-AN-MAR.DÚ may be comparable.

<sup>236</sup> Charpin 1986a, p. 408, re Finkelstein 1972, no. 96.

<sup>237</sup> Charpin 1986b, pp. 136–37.

<sup>238</sup> Note that Sumu-la-El calls E-mete-ursag “the house of Zababa” only in his year name 30.

## LATE OLD BABYLONIAN PERIOD, CIRCA 1711–1595 BC

The reigns of late Old Babylonian kings are represented in many Kish tablet collections, including those at Yale, Oxford, and Geneva. Where proveniences are known, they are from Uhairir. This is the period when a cloister of *nadītu*- and other types of priestesses dedicated to Zababa was active in Kish-Uhairir, producing records dated to the reigns of Ammi-šaduqa and Samsu-ditana.<sup>239</sup> There was at least one *nadītu* of Marduk resident in Kish by the late Old Babylonian period, namely Ṭāb-Esagila, whose name links her to his temple Esagila in Babylon.<sup>240</sup> Another cloister, but at Hursagkalama, may also be deduced since the Emesal prayer to the goddess, lady of the cloister GÁ.GI<sub>4</sub>.A, comes from Ingharra C-6; it was found alongside texts that refer to Isin, so it is perhaps as old as the Isin-Larsa period but may have continued into this period.<sup>241</sup> In total, therefore, there were at least four cloisters with *nadītus*: in Uhairir for Zababa, for Inanna of Uruk, and for Marduk; and in Ingharra for Ishtar. None is known for Baba. Such priestesses combined a role in ritual with contributions to economic life.<sup>242</sup>

Ammi-šaduqa's year formula 15 records that "he installed a statue of himself . . . for Zababa and Inanna in E-mete-ursag." Ammi-ditana's year formula 34, "he installed a statue of himself made of gold in E-mete-ursag," shows that the temple E-mete-ursag now contained the statues of at least two kings of Babylon.

Dilbat may have belonged to the administrative district of Kish during the middle and late Old Babylonian period, if not earlier;<sup>243</sup> Kutha may also have been included.<sup>244</sup>

## HITTITE ZABABA, MAINLY THIRTEENTH CENTURY BC

The cult of an equivalent to Zababa, attested in Hittite texts, reflects the importance of Kish in Hittite tradition. The name Zababa is used as a logogram for war gods, whether as Wurunkatte (in central

Anatolia), Heshui in Hurrian, or Yari in Hittite, the latter thought to be cognate with the Greek Ares. He is found in rituals including the New Year *purulliya*-festival, the KI.LAM-festival, the great festival of Arinna, the *antahšum*-festival, and the *hišuw*a-festival. Three musicians took part in a battle ritual at a festival for Zababa, a battle song was associated with him, and he played a part in the myth of Inar and Hannahanna. His temples or shrines were located in several different cities in Anatolia, including the capital Hattusha, and he is also named in Hittite texts as god of Kish. He had a particular association with royalty, according to three indications: he stood on a lion, and in one of his temples both a statue of Hattusili and a royal throne received offerings.<sup>245</sup> His popularity may imply that scribes and musicians from Kish had an early formative influence in Hittite Anatolia.

## FIRST SEALAND DYNASTY IN BABYLON, CIRCA 1550–1500 BC?

Year name G of Aya-dara-galama, king of the First Sealand Dynasty, in which Enlil gave him kingship over the world KI.ŠÁR.RA (read *kiššatu*), does not necessarily imply that he was overlord of Kish;<sup>246</sup> no references to Kish have been found in the archive, although Zababa is listed in no. 66. The existence of this archive, with some associations closer to Old Babylonian than to Kassite, contributes to the weakening of the refugee hypothesis; the archive probably comes from the vicinity of Nippur.

## KASSITE PERIOD TO SECOND DYNASTY OF ISIN, CIRCA 1500–1026 BC

Sparse finds indicate that Kish-Uhairir was still important for the Kassite kings in Babylon. An inscribed brick now in the Ashmolean bears a dedication "to Zababa his king and Inanna his queen"; the provenience is Uhairir.<sup>247</sup> The king responsible may be Kurigalzu I, to whom all inscribed bricks should probably be attributed; other Kassite texts found at

<sup>239</sup> Renger 1967, pp. 146–47.

<sup>240</sup> Finkelstein 1972, no. 91, with discussion on pp. 6–7.

<sup>241</sup> Gurney and Kramer 1976, no. 40.

<sup>242</sup> Yoffee 1998; Barberon 2012, pp. 51–58.

<sup>243</sup> Stol 1973, p. 216.

<sup>244</sup> See Fish 1936, no. 11.

<sup>245</sup> Haas 1994, esp. pp. 247, 619, also pp. 364, 366, 437, 732, 756, 767, 794, 802, 868, 884; Badalì 1985; van Gessel 1998–2001, vol. 2, pp. 961–69.

<sup>246</sup> Dalley 2009, pp. 1, 11.

<sup>247</sup> C. B. F. Walker 1981, no. 71.

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Kish include two dedications by Kurigalzu to Zababa, and one to Zababa and Inanna, all three in Sumerian; all such dedicatory inscriptions appear to be attributable to Kurigalzu II.<sup>248</sup> Whether the joint dedications refer to Inanna of Uruk is uncertain. A brick inscription from Uhaimir records that E-mete-ursag was restored by Adad-apla-iddina (1067–1047).<sup>249</sup>

A symbol variously identified as an eagle, a griffin, or an equine, labeled “Zababa,” is sculpted on a *kudurru* of Meli-shihu;<sup>250</sup> the equation of Zababa with Aquila the eagle constellation<sup>251</sup> may support the identification as an eagle. In curses on *kudurru* texts, Zababa is frequently invoked as “lord of the weapon” and “lord of battle.” A seal dedicated to “Inanna of Kish” perhaps came from Kish.<sup>252</sup>

### UGARIT AND EMAR, CIRCA 1400–1185 BC

A god list found at Ugarit lists Zababa followed by Papsukkal and Ningirsu, and Inanna of Kish, but not Hursagkalama.<sup>253</sup> Among the many tablets from Emar dated to the late second millennium, Kish, Hursagkalama, and Zababa are found in traditional Mesopotamian lexical texts but are rare in other types of text; the name Zababa occurs in two incantation (or ritual) fragments.<sup>254</sup> The name Zababa is found for a month name,<sup>255</sup> presumably implying a festival for the god, and “the land of Kish” is mentioned in the Emar version of the Dispute between the Palm and the Tamarisk, in the context of a time before kingship came into existence, presumably an allusion to the myth of Etana.<sup>256</sup>

<sup>248</sup> Clayden 1992, confirmed in more recent analysis by Alexa Bartelmus, to whom I am indebted for the information.

<sup>249</sup> C. B. F. Walker 1981, no. 72.

<sup>250</sup> Steinmetzer 1922, no. 36; *RIA* 3 s.v. “Göttersymbole” at “Adlerstab”; Black and Green 1992, p. 16, fig. 7, eagle or griffin; Frayne 2008, p. 50, “equine.” See also above.

<sup>251</sup> Weidner 1915, p. 36, BM 86378 ii 12 MUL <sup>d</sup>ZABABA MUL TI<sub>8</sub>. MUŠEN and presumably restore accordingly; Reiner 1981, appendix, Astrolabe B ii 30–34.

<sup>252</sup> Limet 1971, no. 4, line 22. Gibson (1970) gives details of provenienced seals in the Ashmolean Museum.

<sup>253</sup> Nougayrol et al. 1968, p. 214, lines 41–43; p. 218, line 142.

<sup>254</sup> Arnaud 1986, no. 521, line 4(?) and no. 529, line 5'.

<sup>255</sup> Arnaud 1992, p. 225, no. 26, line 4.

<sup>256</sup> Arnaud 1987, no. 784, line 8.

### NEO-ASSYRIAN PERIOD, LATE TWELFTH CENTURY TO 625 BC

Neither Tiglath-pileser I (1114–1076) nor Shamshi-Adad V (823–811) mentioned Kish or Hursagkalama when they campaigned in northern Babylonia,<sup>257</sup> which may suggest decline, but both were flourishing in the late Neo-Assyrian period. The two city names occur as a pair in a poem of praise for Babylonian cities,<sup>258</sup> and Tiglath-pileser III (744–727) named Kish among unrivalled *māhāzu*-cult centers, without including its gods in the list of those to whom he made offerings.<sup>259</sup> At least one collection of literary texts found on Kish-Uhaimir, and another on Hursagkalama, show that the city did not lose its scholarly expertise despite becoming in part a military base for Babylon. The importance of Kish to Assyria from the late eighth century is attested in contemporary historical inscriptions from the reign of Sargon II (721–705) onward. Assyrian seal impressions on clay, presumably representing administration, were found in a room at the southeast corner of the ziggurat base on Uhaimir.<sup>260</sup>

In Mound W,<sup>261</sup> a rich deposit of literary tablets was found by Langdon in 1924, stored in jars around rooms; texts consisted mainly of syllabaries and literary and religious texts.<sup>262</sup> According to Langdon, the tablet inscribed with the first tablet of *Enūma eliš*<sup>263</sup> was “found with tablets of the age of Sargon of Assyria, end of the eighth century BC.” In the same building were found inscribed foundation figurines—two terra-cotta Papsukkals and three small dog figurines<sup>264</sup>—characteristic of major Assyrian buildings at that time.<sup>265</sup> Langdon’s dating of the collection of tablets, from the late eighth century onward and perhaps continuing into the Neo-Babylonian period, would match the dates of inscribed bricks of Marduk-apla-iddina II (Merodach-Baladan),

<sup>257</sup> Glassner 2004, pp. 180–83, Synchronistic Chronicle.

<sup>258</sup> Livingstone 1989, no. 9. Zababa is named in line rev. 10.

<sup>259</sup> Tadmor 1994, p. 160.

<sup>260</sup> See Moorey 1978, p. 22.

<sup>261</sup> To be considered a part of Hursagkalama, rather than of Kish as was at first supposed; see Moorey 1978, p. 48.

<sup>262</sup> Langdon 1913, 1923a, 1923b, 1927.

<sup>263</sup> Langdon 1927, Ashm. 1924.790 (not 1927.71). This group definitely included the joined fragments Ashm. 1926.373 and 375, likewise inscribed with a part of the Epic of Creation.

<sup>264</sup> Moorey 1978, p. 50.

<sup>265</sup> Rittig (1977, pp. 252–53) describes four others, “dated” to Sin-balassu-iqbi, governor of Ur during Assurbanipal’s reign.

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Sargon II, and Nebuchadnezzar II, if the bricks all came from Mound W.<sup>266</sup>

In the C trenches on Ingharra, some provenienced literary texts of the same period were found—for example, an Akkadian incantation<sup>267</sup> and a fragment of the Babylonian Almanac. Since so many tablets have no detailed provenience,<sup>268</sup> and since literary texts were found both on Mound W and on Ingharra, proveniences on Uhaimir cannot be excluded. This applies, for instance, to many incantations from the *Šurpu* and *Maqlû* series, to omens, and to wisdom literature. Known only from a text found at Assur is the name of Nergal of Kish as Luhuššu “the terrifying man,” a name used in incantations including in *Šurpu*.<sup>269</sup> None of the school texts, including lexical pieces and god lists, has a specific findspot.

The names of at least two scribes connected with “Kish” of this period are known from colophons on Sultantepe tablets, one on a metrological text, the other lexical.<sup>270</sup> From Sultantepe came a late Assyrian tablet inscribed with an incantation from the “Washing of the Mouth” ritual for the induction of a new divine statue; it bears a colophon naming the scribe Mushallim-Baba, who claimed descent from a priest of Zababa named Nur-Shamash.<sup>271</sup> A man with the same name is found on colophons of a *namburbi*, *Iqur-īpuš*, and a medical text.<sup>272</sup> According to Petra Gesche, the school texts of the first millennium from Hursagkalama are comparable with those of Nabusha-harê in Babylon and different from those found in Sippar and Ur.<sup>273</sup> Some school exercises that were at first assigned to other canonical lexical series are noncanonical and belong to an independent lexical list known as UMMIA = *ummânu*. This list has similarity to the “practical” lists of Assyria;<sup>274</sup> the first (title) line can be linked with DUMU É.DUB.BA.A as a type of *ummânu* and perhaps with the Edubba as the name

for Zababa’s shrine on Uhaimir.<sup>275</sup> The existence of a library connected with the Edubba is very likely.

These are indications that scholarly work at Kish was independent of the Nippur tradition followed in some other cities, in part at least, as it had been in the Old Babylonian period, and suggest that Late Assyrian scholarship was linked to the scribal tradition of Kish. In Assyria a particular interest in the temples within the city of Kish is implied by two texts listing its temples, found at Assur. They confirm that Edubba was still the name of one of Zababa’s shrines;<sup>276</sup> there was also an É-du<sub>6</sub>-kù.ga “House of the holy mound.” George suggests that one of the texts “was similar in content to *Tintir = Babylon*, though evidently briefer.”<sup>277</sup>

A letter to Esarhaddon (680–669) from his agent in Babylonia, Mar-Issar, mentions work on a statue of Zababa in Babylon.<sup>278</sup> The Canonical Temple List does not include a temple of Zababa in Babylon,<sup>279</sup> but there was a court of Ishtar and Zababa in Esagil,<sup>280</sup> and a gate at Babylon was named after him,<sup>281</sup> perhaps linked to the procession of gods from Babylon to Kish and Hursagkalama along a ceremonial way, described below. An exercise tablet from Kish, containing lines in common with the Esagil Tablet, shows a close link between Kish and Babylon in this temple-listing genre of text.<sup>282</sup> Reference to a temple of Zababa in a letter from the reign of Assurbanipal or soon after may refer to the temple in Uruk attested from the Seleucid period.<sup>283</sup> Moorey emphasized the importance of Hursagkalama as a religious center at this time,<sup>284</sup> based on the discovery of literary texts on Mound W, but collections of such texts are now understood to be widespread.<sup>285</sup> The

<sup>266</sup> Pedersén 1998, p. 182. See also C. B. F. Walker 1981, nos. 100 and 102, for bricks of Nebuchadnezzar.

<sup>267</sup> Gurney 1989, no. 11.

<sup>268</sup> See Gurney 1989, p. 1.

<sup>269</sup> See *RIA* 7 s.v. “Luhuššu” (W. Röllig). The name is restored in a list of twelve gods of Kish; see George 2000.

<sup>270</sup> Hunger 1968, nos. 185–87.

<sup>271</sup> Walker and Dick 2001, p. 119, STT 199.

<sup>272</sup> See Baker 2001, s.v.

<sup>273</sup> Gesche 2000, p. 110.

<sup>274</sup> Gesche 2000, pp. 126–27.

<sup>275</sup> Gesche 2000, p. 129; also found at Sippar, Babylon temple of Nabu-sha-harê.

<sup>276</sup> The restoration of Eduba (Ekishiba) by Reiner (1974, strophe VII, line 20) for the shrine of Ishtar in Hursagkalama is almost certainly wrong.

<sup>277</sup> VAT 13817 and VAT 10111 +(?) VAT 10942; see George 1992, no. 22, pp. 193–97.

<sup>278</sup> Parpola 1993, no. 368.

<sup>279</sup> George 1992, p. 23.

<sup>280</sup> George 1992, pp. 114–15, the Esagil tablet, line 2, and note on p. 416; see also Unger 1931, p. 246.

<sup>281</sup> George 1992, p. 67.

<sup>282</sup> George 1992, p. 232, no. 48; see also no. 55.

<sup>283</sup> ABL 1387 (R. F. Harper 1914, pp. 159–60); see Baker 2001, s.v. “Nabu-de’iq.”

<sup>284</sup> Moorey 1978, pp. 178–79.

<sup>285</sup> See, e.g., Pedersén 1998, p. 238.



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Hymn to Nanay shows that Ishtar of Hursagkalama was regarded as a form of Nanay at this period.<sup>286</sup>

In the late eighth century, during a decade of independence from Assyrian domination, Marduk-apla-iddina II built or restored a bridge over the Banītu canal that linked Babylon to Kish and to Hursagkalama.<sup>287</sup> Both Chaldeans and Aramaeans lived in Kish and Hursagkalama at this time,<sup>288</sup> and Elamite mercenaries were active in the region.<sup>289</sup> When Sargon II regained control, he made his headquarters in Kish.<sup>290</sup>

Among administrative texts, proveniences include seventh-century Assyrian tablets from Hursagkalama dated to Sennacherib year 24;<sup>291</sup> to Shamashshum-ukin years 1, 9, and 12;<sup>292</sup> and to Kandalanu years 13 and 18.<sup>293</sup>

Kish did not get *kidinnūtu*-status when Sargon II granted that freedom to Ur, Uruk, Eridu, Larsa, Kish, and Nemed-Laguda, perhaps because the army was sometimes stationed there, as illustrated by a letter written to Sargon: “News of the son of Zeri: his army is in Kish, he himself is staying in Babylon.”<sup>294</sup> Sennacherib fought Merodach-Baladan “in the environs of Kish,” a location probably linked to the use of Kish as a military base for the conquest of Babylon.<sup>295</sup> The *kudurru*-like stone of Aššur-nadin-shumi, son of Sennacherib, who was the Assyrian regent in Babylon, may not come from Kish;<sup>296</sup> among the witnesses are men with Assyrian military professions.

Prestige accorded to Zababa in Assyria is evident from the adoption of his cult in Assur city. Two fragmentary inscriptions found there, recording the building of a temple to Zababa in Assur city by Sennacherib,<sup>297</sup> may be linked with Sennacherib’s dedication of personnel to the temple of Zababa and

Baba.<sup>298</sup> A land grant of around the same period<sup>299</sup> mentions Zababa and Baba together, confirming that Baba was still regarded as his official consort at that time, although a Late Assyrian list of gods names him on his own.<sup>300</sup> In Assyria Zababa was regarded as son of the god Anshar, a descent that linked him to the great gods in an Assyrian version of the Epic of Creation.<sup>301</sup> On a ritual tablet describing Sennacherib’s New Year festival for the god Ashur, presumably in the city of Assur, Zababa and Baba are included in the procession of deities.<sup>302</sup> An astronomical compilation of the Neo-Assyrian period shows that Zababa—his crown, his left and right feet, and his *kumāru*-terrain—was the name of a significant constellation.<sup>303</sup>

One reason for installing the cult of Zababa in Assyria may have been for ease of consulting him for his oracle in his capacity as a war god. The Assyrian evidence for interest in the cult of Zababa and Baba supports the evidence of texts excavated at Kish that the cult in Kish-Uhaimir was very important during the period of Assyrian rule.

A brick inscription found on the summit of Uhaimir in a small building<sup>304</sup> dates presumably between 709 and 705, when Sargon II ruled Babylon. It invokes Marduk of Babylon and describes only building works at Babylon; it does not refer to gods or building works at Kish. The use of the Sumerian cosmic place-name Anzanunzu gives the text a high literary flavor. Although other explanations have been offered,<sup>305</sup> one may suggest that preeminent scribes of Kish composed some literary inscriptions destined for Babylon at this time. A temple administrator from Kish was probably involved in the repair of Babylon during the reign of Esarhaddon.<sup>306</sup> The close connection between Kish and Babylon is

<sup>286</sup> Reiner 1974.

<sup>287</sup> C. B. F. Walker 1981, no. 75; see Zadok 1985, p. 366.

<sup>288</sup> Frame 1992, p. 37.

<sup>289</sup> Brinkman 1984, p. 29.

<sup>290</sup> Brinkman 1984, pp. 50–51.

<sup>291</sup> VAT 4919, translated in San Nicolò and Ungnad 1935, no. 107.

<sup>292</sup> Year 1, BM 78167; year 12, BM 78159; year 12, BM 46799; year 9, Ashm. 1932.519; year 12, Ashm. 1930.366A.

<sup>293</sup> Year 13, Ashm. 1924.2280; year 18, Ashm. 1924.1653.

<sup>294</sup> Fuchs and Parpola 2001, no. 162 rev. 12. See Chamaza 1992, pp. 21–33.

<sup>295</sup> Glassner 2004, no. 16, p. 197.

<sup>296</sup> Ashm. 1933.1101; Brinkman and Dalley 1988. It was part of a bequest from Archibald Sayce to the Ashmolean Museum.

<sup>297</sup> Galter 1984. Presumably this is the temple named KUN<sub>4</sub>. KÁ.TILLA<sub>4</sub>.É.ŠÁR.RA “Threshold, outer gate of Esharra”; see George 1993, no. 673.

<sup>298</sup> Kataja and Whiting 1995, no. 87.

<sup>299</sup> Kataja and Whiting 1995, no. 48 = STT 44.

<sup>300</sup> Menzel 1981, vol. 2, p. T.125, 3R66.xii.5’; Baba without Zababa: p. T.134 STT 88.ix.4.

<sup>301</sup> Kataja and Whiting 1995, no. 87, lines 1’–3’. Dirven (1997) compares the role of Zababa to that of Nabu in the Hellenistic period.

<sup>302</sup> BM 121206. See van Driel 1969, pp. 74–119, v.14’ ix.32’.

<sup>303</sup> C. B. F. Walker 1995; Koch 1995.

<sup>304</sup> C. B. F. Walker 1981, no. 76.

<sup>305</sup> Brinkman (1984, p. 53 n. 250) thought that the bricks were used for construction at Kish even though they bore inscriptions relating only to Babylon. Moorey 1978, p. 178: “the inscribed brick fragments of Sargon II . . . refer only to Babylon, whence they may have been brought by Neo-Babylonian builders.”

<sup>306</sup> Frame 1992, p. 73.

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illustrated by the steps taken to ensure the safety of divine statues when they were sent to Babylon following the death of Kandalanu in 627.<sup>307</sup> Presumably, they returned when the danger had passed; the same action was taken in the reign of Nabonidus.<sup>308</sup>

### NEO-BABYLONIAN PERIOD, 625–539 BC

Dates are seldom given in nonadministrative texts, and archaic scripts were imitated, making it impossible to date them on palaeographic grounds alone. Dated administrative texts continue from the Neo-Assyrian period through the Neo-Babylonian and Achaemenid periods. Many of them contain information within the text that they were written in Hursagkalama. Zababa occurs as a divine element in personal names of this and the Achaemenid period.<sup>309</sup> The literary and lexical texts from the temple of Nabu-sha-harê in Babylon date at least in part from the reign of Nebuchadnezzar, and, as mentioned above in connection with the names of deities, show an interest in Kish and Zababa.<sup>310</sup>

The Nabonidus Chronicle makes it clear that Kish and Hursagkalama were still regarded as separate places, but joining together for some ceremonies: “Zababa and the gods of Kish, Ninlil and the gods of Hursagkalama, entered Babylon.”<sup>311</sup> A ritual for a Babylonian temple involving gods of Kish is recorded on a tablet that probably came from Kish or Hursagkalama.<sup>312</sup> Mulleshu (Ninlil) is often paired with Zababa from at least the time of Nabonidus to the Seleucid period, perhaps representing a syncretism with one of the goddesses of Kish.<sup>313</sup> According to Nebuchadnezzar II (604–562), his father Nabopolassar (625–605) had rebuilt Edubba for Zababa, and he too rebuilt Edubba for Zababa and Baba at Kish.<sup>314</sup> The ceremonial way that ran from Babylon to Kish is mentioned by Nebuchadnezzar, who constructed

huge earthworks, some 46 km long, near it in order to channel water around the citadel of Babylon:

At the boundary of Babylon, [from the Pro]cessional Way on [the banks] of the Euphrates [as far] as Kish, over a distance of 4 ½ beru, I constructed [a great earth]work and surrounded the city with mighty waters.<sup>315</sup>

The E'igikalama Cylinder of Nabonidus records, among other things, the rebuilding of the wall of Kish named Melem-kurkurra-dulla, “Wall whose aura covers the lands.”<sup>316</sup> These are indications that both Kish and Hursagkalama were flourishing.

School texts probably show a continuing tradition of pedagogy; although most tablets are without a detailed provenience or date, some may be Late Assyrian.<sup>317</sup> Whether as part of a library or as a school text, the Cuthean Legend of Naram-Sin is notable.<sup>318</sup> School extracts of TIN.TIR<sup>ki</sup> are on probable Kish tablets, and library tablets too.<sup>319</sup>

The “Kish canal” is thought to run between Sippar and Kish at this period, facilitating links between those two cities.<sup>320</sup> In texts from Sippar dated to the reigns of Nebuchadnezzar and Nabonidus, there were two administrators of temple property (*rab banê*) with Zababa-compounded names: Zababa-ahiddin son of Nergal-ibni and Zababa-zer-ibni.<sup>321</sup>

### ACHAEMENID PERIOD, 538–331 BC

There is a discrepancy between archaeological and textual information: according to Michael Jursa, “textual evidence suggests that the Edubba of Zababa was active at least until the early Hellenistic period, which is however at odds with the archaeological evidence which suggests that the temple ceased

<sup>307</sup> Glassner 2004, pp. 216–17.

<sup>308</sup> Glassner 2004, pp. 236–37.

<sup>309</sup> E.g., Wunsch 2003, Urkunden nos. 8 (scribe), 17 (slave), 33 (holder of musician prebend).

<sup>310</sup> Cavigneaux 1981, p. 173, 79.B.1/20: list of minor goddesses associated with great temples; hymn to Zababa, p. 137, 79.B.1/19 rev. iii.

<sup>311</sup> Glassner 2004, pp. 236–37.

<sup>312</sup> McEwan 1982, no. 47; see Beaulieu 1992, p. 110.

<sup>313</sup> Joannès 2000, p. 201; and quoting Sachs and Hunger 1988–, no. -254.

<sup>314</sup> Langdon 1912, p. 184; Gurney 1977.

<sup>315</sup> Da Riva 2009, pp. 280–84.

<sup>316</sup> Schaudig 2001, p. 366, 2.5, col. ii, line 2. See also George 1993, no. 51.

<sup>317</sup> See the comments of Maul (1991a, pp. 858–59). Gurney's heading “Late Babylonian” (1989, p. 6) is misleading.

<sup>318</sup> J. G. Westenholz 1997, p. 297.

<sup>319</sup> George 1992, p. 30. One of the Ashmolean tablets on which the topography of Kish was inscribed, Ashm. 1930.354, has a provenience, Mound W, so it is likely the others also came from there, allowing the likely identification as Kish; names given in colophons: Ashm. 1924.849, colophon Kidin-Marduk; Ashm. 1924.846 with colophon Marduk-shuma-ibni s. Marduk-zer-ibni.

<sup>320</sup> Nbk. 330; see Bongenaar 2000, p. 81.

<sup>321</sup> Jursa 1995, pp. 73–74.

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to function in the Achaemenid period.”<sup>322</sup> The well-known Egibi family of Babylon, whose archive spans the period from about 606 to 482 BC, had a house in Kish and colleagues there; they held prebends associated with temples in Kish or Hursagkalama.<sup>323</sup> Administrative texts from Hursagkalama continue through this period; some came specifically from the C trenches on Ingharra, Mound W, and YWN.<sup>324</sup> A processional way led to the temple É-Hursagkalama at this time,<sup>325</sup> and a canal was named after the deity Bizilla.<sup>326</sup> Archives show connections with the crown prince<sup>327</sup> and with the temple of Zababa. An explanatory list of this approximate period confirms that the goddess of Eanna at Kish was separate from Baba and from the queen of Kish, and that she was in Kish, separate from Mulleshu (Ninlil) of É-Hursagkalama.<sup>328</sup>

In 509 BC, a palm festival performed in the month Kislimu included a procession, perhaps along the Banītu canal that ran between Babylon and Kish, consisting of three goddesses from Babylon who made their way to Kish, spent the night in Zababa’s temple Edubba in Kish, then continued to Hursagkalama in the company of gods from Kish; they returned to Kish, and then the three goddesses went back to Babylon.<sup>329</sup> Goddesses, “daughters of Ezida,” traveled with Nanaya of É-HUR-ŠÀ.BA from Ezida to Babylon and then on to Kish in company with the divine scepter Shibirru.<sup>330</sup>

In the reign of Darius I, the *šakin tēmi* of Kish named Zababa-iddin traveled to Susa, presumably as an act of loyalty to the Persian emperor.<sup>331</sup> The rebellion against Persian rule in Xerxes’s second year (483) among the cities of northern Babylonia included Kish, but its punishment was not so severe as to prevent continuity in some archives and festivals. Some new archives began, which include texts dated to the reign of Artaxerxes I from Hursagkalama.<sup>332</sup> In

that reign, the temple of the New Year festival was still in existence at Kish.<sup>333</sup>

Rarity of archival material after the reign of Artaxerxes I could be interpreted as evidence for either decline or a switch to perishable writing materials. Jursa has noticed evidence in perhaps comparable material from Sippar that copies of presumably original records, made by pupils as school exercises, make up a large part of one archive, with a variety of ductus: calligraphic, extravagant, or hurried, as if clay tablets were a medium of secondary importance.<sup>334</sup>

Seven archives have been identified in which contacts with the royal family and with the temple of Zababa are attested, in a more than regional range of activities.<sup>335</sup> Both of the twin cities are involved. The groups can be summarized as follows:

1. Archive of Bel-ana-mērehti and Nergal-ahu-iddin: Business contacts with the temple of Zababa, also rented a house in Hursagkalama. Seven tablets, Mound W, dated to Darius and Xerxes.
2. Archive of Eppesh-ili: Seven tablets, Mound W, dated to early Darius.
3. Archive of Rē’i-alpi: Four tablets, Mound W, dated to Darius years 14–16.
4. Archive of Mushallim-Bēl son of Nidintu: Seventeen tablets, Mound W, dated from Xerxes year 8 to Artaxerxes I year 34. Mushallim-Bēl was in contact with a superintendent of the crown prince.
5. Archive of Labashi son of Balātu: Four tablets, of which two from Ingharra, one from Mound W; dates from Xerxes year 17 to Artaxerxes I year 13.
6. Archive of Paharu: Thirty tablets, probably from Mound W; contents “reflect agricultural and trading activities extending as far as Babylon and beyond.” Dates were sold for the Zababa temple.
7. Archive of Gahal: About forty tablets, mostly written at Hursagkalama, apparently found on Mound W; also with a connection to the Zababa temple.

<sup>322</sup> Jursa 2005, pp. 102–7.

<sup>323</sup> Wunsch 2003, p. 71.

<sup>324</sup> McEwan 1984; from Ingharra C-2, 3, 4, 6, 7, 11, and area YWN (a cutting on the edge of Ingharra mound; see Moorey 1978, p. 114).

<sup>325</sup> San Nicolò and Ungnad 1935, Camb. 349, line 12.

<sup>326</sup> Zadok 1985, p. 369.

<sup>327</sup> McEwan 1984, no. 345; see below, archive no. 5.

<sup>328</sup> Lambert 1989.

<sup>329</sup> BM 78076; see George 2000, no. 4, pp. 280–89.

<sup>330</sup> Waerzeggers 2010a, p. 26.

<sup>331</sup> Waerzeggers 2010a, p. 789; Waerzeggers 2010b.

<sup>332</sup> Waerzeggers 2003–4, pp. 157, 170–71.

<sup>333</sup> McEwan 1984, no. 6, line 2; see also George 1993, p. 96.

<sup>334</sup> Jursa 1999, p. 26. The scribe’s patronym is a Zababa compound.

<sup>335</sup> Jursa 2005, pp. 102–7.

## MACEDONIAN AND SELEUCID TO ARSACID PERIOD, CIRCA 330 BC–51 AD?

A letter, five fragmentary legal texts, and a Babylonian-Sumerian bilingual text date to the early part of this period.<sup>336</sup> In the brief account of early Mesopotamian kings relayed by the transmitters of Berossus, Kish is not mentioned. According to *Astronomical Diaries* no. -254, property belonging to Zababa and Ninlil in Babylon was taken away and burnt.<sup>337</sup> This episode may either refer to a temple to Zababa and Ninlil in Babylon or be compared with the two earlier occasions on which statues were removed temporarily from Kish as a precaution when danger threatened. If the latter, that date might mark the end of Babylonian worship in Kish. But there is no way to estimate the magnitude of this episode, nor to be sure that there was a long gap in occupation in the Parthian period until the arrival of the Lakhmids. At this time, and perhaps earlier, there was a shrine to Zababa in Uruk where an oracle was given to the governor of Uruk in the reign of Antiochus III (222–187),<sup>338</sup> and Zababa took part in the New Year festival there.<sup>339</sup> This may imply that the temple of Zababa in Kish maintained prestige, not least because of its role as a center for oracles. Although it has been asserted that the latest cuneiform tablet from Kish dates to 272 BC and that Kish “was apparently of minor importance already under the Seleucids,”<sup>340</sup> in view of the toll taken by erosion, looting, and impatient excavation, as well as the extent and complexities of the site and the switch of language and writing material from cuneiform on clay to Aramaic on perishable materials, one may prefer to keep an open mind.

In the late Arsacid period, there appears to be a financial link between Esagil in Babylon and Kish: large temple accounts from the archive of Rahīm-Esu mention money from Zababa and Mulleshu (Ninlil) used to pay expenses of several temples in Babylon,<sup>341</sup> although the temple of Zababa and Ninlil may be one in Babylon rather than in Kish.<sup>342</sup>

## SASANIAN–LAKHMID PERIOD

Since the Sasanian-period buildings at Kish now appear to be Lakhmid in style according to the research of Trudy Kawami, it is possible that the incantation bowls and the lead scroll,<sup>343</sup> probably all inscribed in Aramaic, should also be attributed to Lakhmid rule, which began in the third century AD as the Sasanian Dynasty was establishing itself in Persia with its earliest conquests to the east, leaving Mesopotamia relatively independent for its first century of power.<sup>344</sup> The coinage of that period found at Kish should also be considered for that attribution.<sup>345</sup>

## CONCLUSION

Two records of the Early Dynastic period, related to conquests by Kish, have recently been identified. An early version of the Sumerian King List, also newly found, puts Kish as the first city ever to receive kingship. Those discoveries reveal the place of the city as a prime leader in the development of Mesopotamian civilization, long suspected from archaeological finds and now proven from written records. From earliest historical times, the twin cities of Kish and Hursagkalama, each with a distinct cult center, comprised centers for literacy in which some of the first developments in Akkadian legal contracts and epistolary writing took place. During the Fara and pre-Sargonic periods Kish was paramount, a leader of cities in shifting alliances and wars far to the north, west, and perhaps east of Mesopotamia, and a mediator among cities of the south. Its role in the south presumably accounts for the introduction into the Zababa temple of Baba, goddess of Lagash, and (perhaps later) of Inanna, goddess of Uruk. The city god Zababa in his roles as leader of expeditions, god of battles and legal contracts, and perhaps god of scribal expertise, reflects the character of the city in those early periods.

Whereas links with Girsu and Lagash are strong in historical inscriptions of the third millennium, interaction with Uruk is frequent in legendary texts of the early second millennium and in the cult of Zababa as known mainly from first-millennium texts.

<sup>336</sup> Oelsner 1986, pp. 232–33, 500; van der Spek 2006, p. 265.

<sup>337</sup> Sachs and Hunger 1988–, vol. 2, no. -254.

<sup>338</sup> McEwan 1980.

<sup>339</sup> Thureau-Dangin 1921, pp. 98–108.

<sup>340</sup> A. Westenholz 2007, p. 302.

<sup>341</sup> Boiy 2004, p. 276.

<sup>342</sup> See van der Spek 2006, p. 265.

<sup>343</sup> See Moorey 1978, p. 141. The lead scroll Ashm. 1933.1285 has not yet been unrolled and deciphered.

<sup>344</sup> I thank Christa Müller-Kessler for confirming that there are no objections to dating the incantation bowls to the Lakhmid period.

<sup>345</sup> See Moorey 1978, pp. 141–42.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

As a subordinate but still prestigious city, Kish took an intermittent leading role in rebellions against overlords, notably against Naram-Sin of Agade and, much later, under its own king Ashduni-irim. It may have served as a burial ground for tribal nobility and was probably home to more than one collection of literary texts. Subject to the great kings of the Third Dynasty of Ur and then of Isin, rivalled by Kazallu and Marad, it began to fall under the shadow of emergent Babylon, exemplified by the correspondence of the governor Tutu-nišu, and became eventually a satellite city attached to the orbit of Babylon, specializing in the role of a military base. The hypothesis that Kish received a flood of refugees from Uruk and other southern cities during the reign of Samsu-iluna can now be modified in the light of new evidence. The city of Kish-Uhaimir left considerable marks of influence upon the Hittites, traceable through cults of Zababa strongly linked with royalty. It continued to maintain its individuality as seat of an oracle for war, as well as remaining

an important center of literacy with at least one major library. Both in early and late times, the naming of constellations was associated with the city and its patron god.

In those capacities, the Assyrians were attracted to it in order to make it their center for operations in their efforts to control Babylon. Sennacherib founded a new temple to Zababa and Baba in Assur, as Warad-Sin had done at Ur for Zababa more than a millennium earlier. The literary and educational tradition specific to Kish stimulated scribal activities in seventh-century Assyria. Religious ties between Kish, Hursagkalama, and Babylon were cemented by a ceremonial way along which the city's gods could travel to Babylon and take part in its festivals before returning to their temples. Royal and religious connections with Babylon and Borsippa helped Kish and Hursagkalama to survive and perhaps to flourish through the Persian period, and on through Seleucid times, according to evidence obtained almost entirely from cuneiform records.

## CHAPTER 4

## SASANIAN AND POST-SASANIAN GLASS FROM KISH

LAURE DUSSUBIEUX

Despite the tremendous number of publications dealing with ancient glass in the Middle East, little is known about Sasanian glass or how the Sasanian glass industry developed, evolved, and was organized. Sasanian glass was manufactured in a region located east of the Euphrates River from the third to the seventh century AD and is characterized by the use of plant ashes as a source of soda mixed with crushed quartz pebbles. In contrast, during the same period west of the Euphrates, mineral efflorescence such as natron was preferred for glass production in conjunction with lime-rich sand. Sasanian glass technology is generally presented as a continuation of the glass tradition that appeared in Mesopotamia at very early periods and that was based on the same kind of recipes involving soda plant ashes and a relatively pure source of silica.<sup>1</sup> Sasanian glass technology is known through a much smaller number of glass analyses.<sup>2</sup> It would be necessary to accumulate more data to assess more accurately the variability of Sasanian glass compositions to try to characterize the different glass workshops producing such glass. In parallel, studying coloring ingredients in Sasanian glass would help us to connect this type of glass with other glass industries developed in other regions or at different periods and to better evaluate the degree of skill of the Sasanian craftsmen. The presence of Sasanian glass vessels in the Kish collection at the Field Museum of Natural History gives us the opportunity to expand the corpus of Sasanian glass compositions available and to contribute to a better understanding of that kind of material.

DESCRIPTION OF THE  
GLASS MATERIAL FROM KISH

Stephen Langdon and D. B. Harden published glass artifacts from the Sasanian buildings of Kish (fifth to sixth century AD) that were excavated in the 1932–33 season.<sup>3</sup> The glass artifacts are extremely fragmentary aside from some small intact perfume bottles. They are badly corroded and their color is difficult to determine, but it seems that they are made mostly from a greenish or buff-colored glass. The greenish glass is associated with typology belonging to an earlier period. The buff glass has been dated to the sixth century AD, and similarities were found with material from Nineveh. The earliest pieces are typical of Roman glass from Syria and Egypt of the fourth and fifth centuries AD. The artifacts reported by Langdon and Harden are stored in the Ashmolean Museum of Art and Archaeology and in the Birmingham Museum and Art Gallery.

In the Kish collection at the Field Museum, there are fifty-seven cataloged glass vessels. Most of the artifacts have no documented provenience at all. One object comes from Mound H without any more precise indication of its location. Mound H is the large tell where the Sasanian quarters were identified. Locations SP 2, SP 4, and SP 5 are part of Mound H. Location SP 2 was identified as a palace; bases of columns were excavated here, along with sculptures, mural decorations, and pottery. Locations SP 4 and SP 5 are small buildings without any sculptures. Some artifacts with unknown provenience may be

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<sup>1</sup> Brill 2005.

<sup>2</sup> Brill 2005; Mirti et al. 2008, 2009.

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<sup>3</sup> Langdon and Harden 1934.

## WHERE KINGSHIP DESCENDED FROM HEAVEN



Figure 4.1. The different types of decorative techniques used on the glass from Kish: (a) cut, ground, and polished; (b) negative relief; (c) applied decoration; and (d) pinching (photos courtesy of the Field Museum, catalog nos. 157024, 236466, 236197, 157018).

dated to the early Islamic period according to their typology.

Like the artifacts described by Langdon and Harden, the objects in the Field Museum collection are extremely fragmentary, and only small objects are intact. With a few exceptions, all the artifacts are corroded to various degrees. Despite the corrosion, it is possible to determine that the glass is generally transparent or at least translucent. Only one glass sample is opaque: FM 157016, which is opaque red. Colors are generally tinted light green, light blue, or light yellow. Objects with intense colors are rare, exceptions being FM 236197, which corresponds to a purple fragment of glass decorated with white trails; FM 157004, which is translucent dark green; and FM 236199, which is dark blue.

Some of the containers are decorated, and four different techniques were used. Characteristic Sasanian containers are decorated with a pattern of ground, cut, and polished hollow facets. Artifact FM 157024 illustrates this decorative technique (fig. 4.1a). This container, heavily restored, was once colorless but now appears white because of weathering. Its walls are completely covered with cut, ground, and polished decoration. Five types of alternating cut and ground decoration are arranged in five continuous horizontal registers separated from each other by two horizontal lines. A few artifacts, which appear to have been blown in a mold, feature patterns in negative relief, such as fragment FM 236466 (fig. 4.1b). Some samples feature applied decorations; FM 236197, for example, is decorated with

a contrasting trailed decoration (fig. 4.1c). Blobs of glass at the surface of containers were produced by pinching, as seen in FM 157018 (fig. 4.1d).

The variability of the shapes present at Kish is difficult to assess because of the fragmentary aspect of the artifacts. However, it is possible to determine that the most common shapes in the Kish glass material are vials, flasks or small bottles, cups, and bowls. Molar flasks, which contained perfume or valuable cosmetics, present a specific tooth-like shape; they are ubiquitous in all Islamic countries and can be dated from the seventh or eighth century to the tenth or eleventh century.<sup>4</sup> They were quite likely manufactured at multiple locations.

Artifact FM 236470 looks like an alembic that could have been used in connection with a distillation apparatus. This type of container is quite common at Islamic-period sites.<sup>5</sup>

Hemispherical cups are represented through a few fragments that display either honeycomb-faceted decoration or round facets, depending on how close the facets are at the surface of the cup. This type of artifact is emblematic of Sasanian production and was a prestige good traded over long distances. Similar artifacts have been found as far away as China and Japan in the tombs of elite people dating from the fifth to the sixth century AD.<sup>6</sup>

<sup>4</sup> Carboni and Whitehouse 2001.

<sup>5</sup> Kröger 1995.

<sup>6</sup> Chen 2006, 4752.

## EXPERIMENT

The analyses carried out at the Field Museum followed the protocol developed for glass analysis by Dussubieux, Robertshaw, and Glascock<sup>7</sup> and involved a Varian Quadrupole inductively coupled plasma mass spectrometer (ICP-MS); a New Wave UP213 laser ablation (LA) system for the sampling of small, solid artifacts (<5 cm); and a modified New Wave Macro266 laser for the sampling of larger objects.

It is important to note that no sample preparation is necessary for LA-ICP-MS analysis, and the analytical technique is virtually nondestructive since no visible damage is made. Major, minor, and trace elements were determined. The limits of detection ranged from 10 parts per billion to 1 part per million for most elements. Accuracy ranges from 5 to 10 percent depending on the elements and their concentrations.

ARTIFACTS ANALYZED  
USING LA-ICP-MS

Artifacts were selected based on different criteria; totally corroded artifacts or artifacts that seemed too fragile (due to corrosion) to be safely handled were excluded. Selected artifacts covered, as much as possible, the range of colors, shapes, and decoration types described above. Most of the objects come from the SP 2 context and are dated to the Sasanian period. One artifact is dated from the eighth to the ninth century AD. The regular chamber laser was used in all cases except for two artifacts marked with an asterisk in table 4.1; these two artifacts were sampled using the adaptable chamber laser.

Table 4.1. Samples analyzed using LA-ICP-MS.

| Field Museum no. | Reference no. | Description                                     | Color     | Context | Period           |
|------------------|---------------|---|-----------|---------|------------------|
| 157018           | KII001        | Fragment of a container                         | Greenish  | Unknown | Unknown          |
| T2002.1.708      | KII002        | Fragment of a container with applied decoration | Green     | Unknown | Unknown          |
| 157012           | KII003        | Fragment of a wheel-cut decorated bowl          | Colorless | SP 2    | Sasanian         |
| 157012           | KII003B       | Fragment of a wheel-cut decorated bowl          | Colorless | SP 2    | Sasanian         |
| 157010           | KII004        | Fragment of a container                         | Greenish  | SP 2    | Sasanian         |
| 157010           | KII004B       | Fragment of a container                         | Greenish  | SP 2    | Sasanian         |
| 236197           | KII005P       | Square bottom from a broken container           | Purple    | Unknown | Sasanian         |
| 236197           | KII005W       | Trailed decorations                             | White     | Unknown | Sasanian         |
| 228275           | KII006        | Molar flask                                     | Colorless | Unknown | Sasanian         |
| 228276           | KII007        | Molar flask                                     | Colorless | Unknown | Sasanian         |
| T2002.1.708      | KII008        | Bottom of a broken container                    | Greenish  | Unknown | unknown          |
| 157015           | KII009        | Broken small ribbed container                   | Greenish  | SP 2    | Sasanian         |
| 228281           | KII010        | Small bowl                                      | Colorless | Unknown | Arab, 8th-9th c. |
| 236198           | KII011        | Molar flask                                     | Greenish  | Unknown | Sasanian         |
| 236200           | KII012        | Molar flask                                     | Colorless | Unknown | unknown          |
| 157001           | KII013        | Small round flask                               | Greenish  | SP 2    | Sasanian         |
| 157000           | KII014        | Wheel-cut decorated bowl                        | Greenish  | SP 4    | Sasanian         |
| 236199           | KII016        | Jug   | Dark blue | Unknown | Sasanian         |
| 157002           | KII017        | Small, round, ribbed flask                      | Greenish  | SP 2    | Sasanian         |
| 157004           | KII018        | Flask   | Green     | Unknown | Sasanian         |
| 157013           | KII019*       | Wheel-cut decorated container                   | Colorless | SP 2    | Sasanian         |
| 157014           | KII020*       | Fragment of bottom with pontil mark             | Greenish  | SP 2    | Sasanian         |

Note: Different reference numbers were attributed to artifacts that are part of a group of objects recorded under a single registration number.

\*Artifacts sampled using the adaptable chamber laser.

<sup>7</sup> Dussubieux, Robertshaw, and Glascock 2009.



## RESULTS

Ancient glass was produced from at least two ingredients: a silica source and a flux. Sand or silica-rich minerals were mixed with an alkali or alkali earth-based ingredient to keep the melting point of the mix reasonably low. Different kinds of flux exist. A sodium-based flux was obtained either from mineral deposits or from soda plant ash, the former being purer than the latter. The magnesia and in some cases the potash contents of the glass act as indicators of the purity of the soda flux. For example, sodium carbonate taken from mineral deposits, also called natron, contains low quantities of magnesia and potash. Concentrations in magnesia and potash higher than 1.5 percent in glass generally indicate the addition of soda plant ash. These soda plants are halophytic plants that grow in salt-rich soils. Different proportions of magnesia, soda, and potash may derive from the use of different types of halophytic plants. Potash or lime-based fluxes were used. Saltpeter, also called potassium nitrate, a mineral efflorescence, provides a rather pure potash flux, whereas forest plant ash, containing both potash and lime along with other elements (e.g., chlorine, phosphorus), has more of a mixed composition that can vary according to species. Lead may also act as a flux.

Alumina and lime are necessary to obtain durable glass and are often introduced in the glass involuntarily with either the sand or the flux. Lime may also be added separately in the form of a third ingredient, called a stabilizer, when the flux and the sand have insufficiently high concentrations of this constituent. The different proportions of such elements in the glass, as well as the concentrations of iron, titanium, and trace elements, can help define the type of silica sources used by the glassmaker. When alumina is much higher than lime, a poorly refined granite sand, generally containing quantities of other elements in significantly high concentrations, was chosen. When lime is higher than alumina, sand taken from coastal deposits or other lime-rich deposits was selected. Crushed quartz pebbles are a rather pure source of silica, with low lime and alumina concentrations.

We examined twenty-one glass samples from Kish using LA-ICP-MS to determine their composition. As many as fifty-five elements were measured with this technique, but only thirty-five elements are reported in table 4.2. One sample is polychrome

(KII005), and the different glasses, purple (P) and white (W), were analyzed separately. Therefore, twenty-two compositions are available for the Kish samples.

In the glass samples from Kish, soda is systematically the most abundant constituent after silica. Concentrations in potash and magnesia are higher than 1.5 percent, indicating that the soda is quite likely derived from the ashes of halophytic plants. Lime with concentrations varying from 4.4 to 8.6 percent may also have been brought to the glass by the plant ashes. Two groups appear when the magnesia and phosphorus concentrations are examined; one has lower phosphorus and magnesia concentrations than the other (fig. 4.2).

It is interesting to notice that three of the four molar flasks that were analyzed are in the group with higher magnesia concentrations. Wheel-cut decorated glass is in both groups. No real correlation could be identified between compositions and types of artifacts or colors.

Our results concur with others obtained on Sasanian glass from the site of Veh Ardashīr (central Iraq) published by Piero Mirti and colleagues.<sup>8</sup> At this site, high-magnesia glass was also identified. Glass with lower potash and higher magnesia concentrations was called type 1 glass. Glass with higher potash and low magnesia concentrations was called type 2 glass. Mirti and colleagues suggest that two different types of halophytes were used.

The glass samples that were analyzed ranged from colorless to light and dark green, purple, and dark blue. Iron is present in most sand, and the concentration of this element may vary widely. Iron produces different colors according to the general composition of the glass, the atmosphere of the furnace, and the presence of other elements such as manganese. Manganese is generally present in very low quantities in the ingredients used to make glass but may be added either to color the glass purple or to cancel out the color produced by iron.

Glass samples with low concentrations of manganese (<0.2 percent) are green. The intensity of the green color depends on the concentration of iron: the more iron, the greener the glass. The addition of manganese in proportions ranging from 0.4 to 1.4 percent produces colorless glass. The sample with the higher concentration of manganese (1.8 percent) is purple (fig. 4.3).

<sup>8</sup> Mirti et al. 2008.

CHAPTER 4. SASANIAN AND POST-SASANIAN GLASS FROM KISH

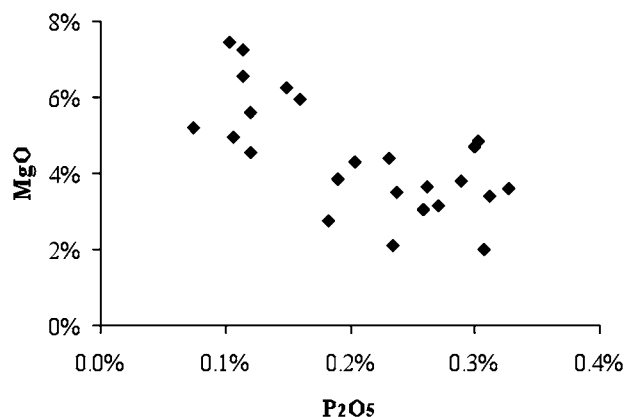


Figure 4.2. Phosphorus oxide and magnesia concentrations for the glass samples found at Kish.

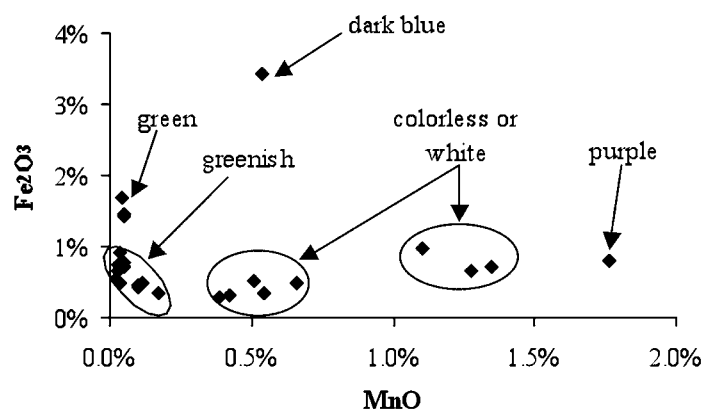


Figure 4.3. Manganese and iron concentrations for the glass samples from Kish (each sample's colors are indicated on the graph).

Table 4.2. Compositions of the Kish glass samples.

|                                | KII001   | KII002  | KII003    | KII003B   | KII004   | KII004B  | KII005P | KII005W | KII006    | KII007    | KII008   |
|--------------------------------|----------|---------|-----------|-----------|----------|----------|---------|---------|-----------|-----------|----------|
| Color                          | Greenish | Green   | Colorless | Colorless | Greenish | Greenish | Purple  | White   | Colorless | Colorless | Greenish |
| SiO <sub>2</sub>               | 72.1%    | 66.4%   | 65.0%     | 63.1%     | 63.9%    | 61.5%    | 69.4%   | 55.5%   | 70.5%     | 70.6%     | 65.7%    |
| Na <sub>2</sub> O              | 12.3%    | 16.2%   | 16.7%     | 17.8%     | 15.8%    | 17.1%    | 12.2%   | 8.0%    | 13.2%     | 12.3%     | 13.9%    |
| MgO                            | 3.17%    | 6.54%   | 7.24%     | 7.47%     | 5.96%    | 6.27%    | 3.07%   | 2.10%   | 4.97%     | 5.19%     | 3.78%    |
| Al <sub>2</sub> O <sub>3</sub> | 1.35%    | 2.21%   | 0.90%     | 0.89%     | 2.51%    | 2.55%    | 2.03%   | 1.58%   | 1.03%     | 1.31%     | 3.82%    |
| P <sub>2</sub> O <sub>5</sub>  | 0.27%    | 0.11%   | 0.11%     | 0.10%     | 0.16%    | 0.15%    | 0.26%   | 0.23%   | 0.11%     | 0.07%     | 0.29%    |
| Cl                             | 0.73%    | 0.86%   | 0.70%     | 0.62%     | 0.78%    | 0.68%    | 0.31%   | 0.41%   | 0.53%     | 0.43%     | 0.39%    |
| K <sub>2</sub> O               | 2.42%    | 2.57%   | 2.59%     | 2.58%     | 2.33%    | 2.31%    | 3.82%   | 3.14%   | 2.37%     | 1.65%     | 3.30%    |
| CaO                            | 7.06%    | 4.41%   | 6.13%     | 6.66%     | 7.77%    | 8.58%    | 6.19%   | 4.98%   | 6.76%     | 7.30%     | 7.28%    |
| MnO                            | 0.10%    | 0.03%   | 0.38%     | 0.42%     | 0.05%    | 0.05%    | 1.76%   | 1.10%   | 0.17%     | 0.66%     | 0.05%    |
| Fe <sub>2</sub> O <sub>3</sub> | 0.45%    | 0.66%   | 0.28%     | 0.31%     | 0.70%    | 0.77%    | 0.79%   | 0.96%   | 0.34%     | 0.49%     | 1.42%    |
| CuO                            | 0.002%   | 0.001%  | 0.001%    | 0.002%    | 0.002%   | 0.002%   | 0.01%   | 0.007%  | 0.001%    | 0.002%    | 0.002%   |
| SnO <sub>2</sub>               | 0.0004%  | 0.0001% | 0.00004%  | 0.0001%   | 0.0001%  | 0.0001%  | 0.002%  | 9.93%   | 0.0002%   | 0.0002%   | 0.0002%  |
| PbO                            | 0.005%   | 0.0004% | 0.0002%   | 0.001%    | 0.001%   | 0.001%   | 0.006%  | 11.94%  | 0.003%    | 0.001%    | 0.001%   |
| Li                             | 13       | 29      | 30        | 30        | 18       | 18       | 14      | 9       | 21        | 21        | 8        |
| Be                             | 0.3      | 0.4     | 0.2       | 0.4       | 0.5      | 0.6      | 0.4     | 0.3     | 0.4       | 0.6       | 0.5      |
| B                              | 115      | 130     | 119       | 112       | 143      | 138      | 103     | 68      | 76        | 69        | 141      |
| Ti                             | 350      | 600     | 324       | 354       | 565      | 646      | 554     | 472     | 256       | 394       | 1,020    |
| V                              | 11       | 12      | 8         | 9         | 14       | 15       | 19      | 16      | 7         | 9         | 26       |
| Cr                             | 58       | 34      | 20        | 21        | 75       | 76       | 55      | 43      | 22        | 32        | 95       |
| Ni                             | 18       | 18      | 8         | 9         | 21       | 22       | 29      | 33      | 12        | 16        | 43       |
| Co                             | 2        | 2       | 2         | 2         | 3        | 3        | 4       | 4       | 2         | 3         | 6        |
| Cu                             | 13       | 7       | 6         | 12        | 12       | 12       | 83      | 56      | 11        | 14        | 18       |
| Zn                             | 55       | 15      | 13        | 23        | 22       | 25       | 250     | 84      | 28        | 25        | 40       |
| As                             | 2        | 1       | 0.1       | <dl       | 1        | <dl      | 5       | 443     | <dl       | <dl       | <dl      |
| Rb                             | 9        | 14      | 12        | 12        | 15       | 15       | 20      | 18      | 14        | 13        | 18       |
| Sr                             | 367      | 342     | 360       | 369       | 518      | 511      | 410     | 370     | 344       | 329       | 315      |
| Zr                             | 36       | 83      | 57        | 58        | 50       | 51       | 45      | 36      | 35        | 45        | 56       |
| Nb                             | 1        | 3       | 1         | 1         | 2        | 2        | 3       | 2       | 1         | 2         | 3        |
| Sb                             | 1        | 0.2     | 0.1       | 0.1       | 0.2      | 0.2      | 0.9     | 23      | 0.2       | 0.6       | 0.3      |
| Cs                             | 0.1      | 0.1     | 0.1       | 0.1       | 0.2      | 0.2      | 0.3     | 0.6     | 0.2       | 0.2       | 0.3      |
| Ba                             | 81       | 78      | 82        | 87        | 100      | 106      | 994     | 571     | 80        | 113       | 107      |
| La                             | 3        | 5       | 3         | 3         | 5        | 5        | 5       | 5       | 3         | 3         | 6        |
| Ce                             | 6        | 10      | 5         | 5         | 9        | 9        | 11      | 10      | 6         | 6         | 12       |
| U                              | 0.7      | 0.6     | 0.5       | 0.5       | 0.5      | 0.5      | 0.7     | 0.7     | 0.5       | 0.5       | 0.6      |
| W                              | 0.1      | 0.1     | 0.1       | 0.1       | 0.1      | 0.1      | 3       | 665     | 0.1       | 0.4       | 0.1      |

Note: Concentrations expressed in weight percentage of oxide or parts per million of element. <dl = below detection limits; nm = not measured.

(continued)

## WHERE KINGSHIP DESCENDED FROM HEAVEN

Table 4.2. Compositions of the Kish glass samples (*continued*).

|                                | KII009   | KII010    | KII011   | KII012    | KII013   | KII014   | KII016    | KII017   | KII018 | KII019    | KII020   |
|--------------------------------|----------|-----------|----------|-----------|----------|----------|-----------|----------|--------|-----------|----------|
| Color                          | Greenish | Colorless | Greenish | Colorless | Greenish | Greenish | Dark blue | Greenish | Green  | Colorless | Greenish |
| SiO <sub>2</sub>               | 66.7%    | 69.1%     | 73.8%    | 72.3%     | 71.1%    | 66.3%    | 66.9%     | 71.9%    | 70.6%  | 66.9%     | 62.5%    |
| Na <sub>2</sub> O              | 16.0%    | 12.1%     | 12.0%    | 10.9%     | 14.1%    | 15.5%    | 11.3%     | 10.8%    | 11.1%  | 16.1%     | 16.7%    |
| MgO                            | 3.49%    | 3.86%     | 4.55%    | 2.73%     | 3.59%    | 5.61%    | 3.42%     | 4.31%    | 2.01%  | 4.86%     | 4.68%    |
| Al <sub>2</sub> O <sub>3</sub> | 2.46%    | 2.07%     | 1.15%    | 1.29%     | 2.64%    | 1.12%    | 3.12%     | 1.99%    | 4.85%  | 1.47%     | 4.60%    |
| P <sub>2</sub> O <sub>5</sub>  | 0.24%    | 0.19%     | 0.12%    | 0.18%     | 0.33%    | 0.12%    | 0.31%     | 0.20%    | 0.31%  | 0.30%     | 0.30%    |
| Cl                             | 0.54%    | 0.35%     | 0.48%    | 0.54%     | 0.61%    | 0.56%    | 0.48%     | 0.81%    | 0.31%  | nm        | nm       |
| K <sub>2</sub> O               | 3.29%    | 3.26%     | 2.27%    | 3.32%     | 2.26%    | 2.46%    | 3.98%     | 3.14%    | 4.00%  | 2.10%     | 2.85%    |
| CaO                            | 6.29%    | 7.09%     | 5.09%    | 7.88%     | 4.63%    | 7.81%    | 6.19%     | 6.28%    | 5.09%  | 7.22%     | 6.77%    |
| MnO                            | 0.04%    | 1.28%     | 0.03%    | 0.55%     | 0.03%    | 0.10%    | 0.54%     | 0.02%    | 0.04%  | 0.51%     | 0.05%    |
| Fe <sub>2</sub> O <sub>3</sub> | 0.92%    | 0.67%     | 0.47%    | 0.35%     | 0.73%    | 0.42%    | 3.42%     | 0.55%    | 1.69%  | 0.52%     | 1.47%    |
| CuO                            | 0.002%   | 0.003%    | 0.002%   | 0.002%    | 0.002%   | 0.001%   | 0.07%     | 0.001%   | 0.003% | 0.002%    | 0.002%   |
| SnO <sub>2</sub>               | 0.0001%  | 0.0003%   | 0.0002%  | 0.0002%   | 0.0001%  | 0.0003%  | 0.07%     | 0.0001%  | 0.001% | 0.001%    | 0.0004%  |
| PbO                            | 0.0004%  | 0.002%    | 0.002%   | 0.001%    | 0.0004%  | 0.002%   | 0.2%      | 0.0004%  | 0.001% | 0.005%    | 0.002%   |
| Li                             | 7        | 15        | 15       | 7         | 6        | 19       | 9         | 5        | 12     | 18        | 12       |
| Be                             | 0.5      | 0.48      | 0.3      | 0.5       | 0.3      | 0.5      | 0.9       | 0.4      | 0.5    | 1.9       | 1.1      |
| B                              | 127      | 89        | 75       | 77        | 347      | 119      | 113       | 383      | 87     | 133       | 119      |
| Ti                             | 668      | 575       | 255      | 215       | 494      | 501      | 975       | 499      | 1,101  | 419       | 922      |
| V                              | 18       | 16        | 9        | 7         | 12       | 9        | 26        | 12       | 34     | 13        | 25       |
| Cr                             | 60       | 47        | 29       | 18        | 45       | 30       | 79        | 47       | 113    | 44        | 123      |
| Ni                             | 27       | 17        | 13       | 13        | 24       | 12       | 35        | 19       | 34     | 20        | 42       |
| Co                             | 4        | 3         | 2        | 2         | 3        | 2        | 675       | 2        | 5      | 4         | 5        |
| Cu                             | 14       | 20        | 16       | 14        | 12       | 7        | 568       | 11       | 9      | 18        | 16       |
| Zn                             | 19       | 69        | 30       | 20        | 18       | 25       | 160       | 15       | 31     | 29        | 37       |
| As                             | <dl      | 7         | 0.3      | <dl       | <dl      | <dl      | 818       | 7        | 10     | 15        | 11       |
| Rb                             | 15       | 15        | 8        | 17        | 11       | 10       | 23        | 15       | 27     | 12        | 16       |
| Sr                             | 311      | 556       | 294      | 308       | 344      | 345      | 458       | 365      | 201    | 330       | 309      |
| Zr                             | 46       | 51        | 13       | 24        | 36       | 87       | 90        | 49       | 51     | 52        | 70       |
| Nb                             | 2        | 3         | 1        | 1         | 2        | 2        | 4         | 2        | 4      | 2         | 3        |
| Sb                             | 0.3      | 0.8       | 0.7      | 0.2       | 0.2      | 0.2      | 6         | 0.3      | 0.3    | 3.0       | 0.7      |
| Cs                             | 0.2      | 0.2       | 0.2      | 0.2       | 0.2      | 0.1      | 0.4       | 0.2      | 0.4    | 0.3       | 0.3      |
| Ba                             | 78       | 371       | 49       | 167       | 81       | 77       | 140       | 81       | 128    | 152       | 171      |
| La                             | 5        | 5         | 2        | 3         | 4        | 4        | 7         | 4        | 7      | 4         | 7        |
| Ce                             | 10       | 10        | 4        | 5         | 8        | 7        | 15        | 8        | 13     | 7         | 13       |
| U                              | 0.5      | 0.6       | 0.3      | 0.5       | 0.4      | 0.6      | 1.1       | 0.6      | 0.7    | 0.9       | 0.7      |
| W                              | 0.04     | 0.9       | 0.2      | 0.4       | 0.0      | 0.1      | 1         | 0.1      | 0.2    | 0.4       | 0.1      |

Note: Concentrations expressed in weight percentage of oxide or parts per million of element. <dl = below detection limits; nm = not measured.

One sample has a behavior that is different from the others. It is characterized by a high concentration of iron (3.4 percent). This glass sample is dark blue, a color produced by the presence of cobalt, and contains notably more arsenic, copper, tin, and lead. Zinc concentrations are slightly above normal. The high concentration of both iron and the other elements listed above is quite likely associated with the presence of cobalt in the glass. Edward Sayre associates cobalt with iron, nickel, copper, tin, and lead impurities to glass found in Mesopotamia and southern Iran.<sup>9</sup>

Iron, aluminum, titanium, and various trace element concentrations, such as chromium concen-

trations, are correlated. This suggests that a more or less pure sand was used to achieve a specific color. Mirti and colleagues interpret this variation in the composition of the sand (alumina and iron concentrations) as a result of the use of two different sands combined in different proportions—a rather pure sand with very low concentrations of iron and a second sand containing iron.<sup>10</sup> Choice in the proportions of the two sands would be made in accordance with the colors that were desired: a high proportion of pure sand containing more iron and other elements would have been used in the recipe for darker glass. In general, glass in Group 1 has lower alumina and iron concentrations than glass in Group 2 (fig. 4.4).

<sup>9</sup> Sayre 1964.

<sup>10</sup> Mirti et al. 2009.

## CHAPTER 4. SASANIAN AND POST-SASANIAN GLASS FROM KISH

Several hundred parts per million of tungsten (W) was found in the white glass used to decorate sample KII005. This sample also contains about 10 percent tin. The use of tin ore containing tungsten is possible.

## DISCUSSION

Comparison of our data with data published by Mirti and colleagues<sup>11</sup> from glass samples collected at the Iraqi site of Veh Ardashir shows similar results. The Kish samples exhibit the same types of composition. According to Mirti and colleagues, at the beginning of the Sasanian period only type 1 glass was available;<sup>12</sup> then, around the fourth century AD, a second type of glass, manufactured with different halophytic plants, came into use. This change in composition is interpreted as due to either a shift in the type of plants used or different parts of the plants being ashed. Mirti and colleagues noticed that type 2 glass is also associated with a sand with fewer impurities, resulting in lighter-colored or colorless glass.<sup>13</sup> This shift is interpreted as a change in taste.

The two types of glass may have been manufactured at two production centers; however, this hypothesis needs to be verified. Robert Brill published the compositions for approximately seventy-five samples collected at five sites in Iraq (Ctesiphon, Choche, Tell Umm Jirin, Umm Jezaziyat, Tulul Umm Ghemimi) and dated to the Sasanian or “early Islamic” period.<sup>14</sup> Three of these sites yielded evidence of glassmaking, according to Brill. Despite the absence of phosphorus concentrations, for some compositions it was possible, by looking at the variability of magnesia concentrations, to determine that the two groups of glass identified by Mirti and colleagues<sup>15</sup> were present at the sites studied by Brill, including the glass-producing sites. According to Brill’s investigations, no specific compositions could be associated to a given production site.

The results presented by Mirti and colleagues,<sup>16</sup> Brill,<sup>17</sup> and this study raise several questions related to the glassmaking workshops at Sasanian sites and

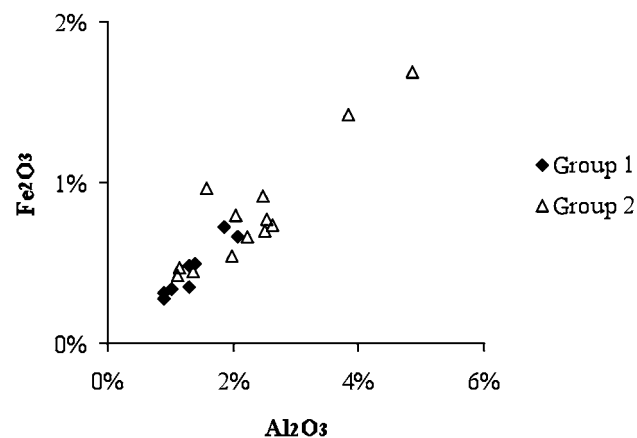


Figure 4.4. Concentrations of alumina and iron in the Kish glass samples, with separated glass samples belonging to Group 1 and samples belonging to Group 2.

how they were organized. Brill’s results suggest that several glassmaking centers would use the same ingredients (sand and flux) and would all switch to different ones. Because of the necessity of using large quantities of sand, a glassmaking workshop is usually implanted close to a sand source so as to reduce the costs of transportation of a material that has a quite low intrinsic value. Flux and colorants can be traded over longer distances. It has been established, for example, that Venetian glassmakers imported plant ashes from the Levant to make glass. As far as the Sasanian glass is concerned, it seems possible that at a certain period different glassmaking workshops within the Sasanian empire switched to a different type of flux, if we assume that there was only one source for that ingredient. It seems less likely that the same glassmaking workshops also altogether changed the type of sand they used. Results from Mirti and colleagues,<sup>18</sup> Brill,<sup>19</sup> and this study suggest instead that the sites that were presented first as glassmaking sites were only glassworking sites and that the glass production was centralized at a site that has not yet been studied.

## CONCLUSION

This study stresses the importance of defining the composition of Sasanian glass in order to understand how the glass industry was organized in the Sasanian empire. This study, in conjunction with previous ones, shows that Sasanian glass production

<sup>11</sup> Mirti et al. 2008, 2009.

<sup>12</sup> Mirti et al. 2009.

<sup>13</sup> Mirti et al. 2009.

<sup>14</sup> Brill 2005.

<sup>15</sup> Mirti et al. 2008.

<sup>16</sup> Mirti et al. 2008, 2009.

<sup>17</sup> Brill 2005.

<sup>18</sup> Mirti et al. 2008, 2009.

<sup>19</sup> Brill 2005.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

may have been centralized and only one glassmaking center would have distributed its production to different secondary glassworking workshops. These glassworking manufactures would have then transformed the glass into containers that would have been distributed throughout Iraq and beyond. Data obtained using chemical analysis also would be very useful to study the long-distance trade of Sasanian glass. If the discovery of typical Sasanian containers

at sites in China and Japan shows without any ambiguity that Sasanian glass was a desirable good in remote regions, it has also been assumed that Sasanian glass could have been traded in South and Southeast Asia, where beads with a similar composition were found. Future research combining results obtained from Sasanian glass and glass recovered in Southeast Asia should help define more precisely the area of distribution of Sasanian glass.

## CHAPTER 5

# THE FIRST ACTUAL STRATIGRAPHIC PROFILE OF PART OF THE Y TRENCH

MCGUIRE GIBSON

From late 1926 until early 1933, the years in which Louis Charles Watelin was in charge of excavations at Kish, he devoted much of his time and effort to the Y trench at Ingharra (fig. 5.1). The Y trench was important because it yielded material that should have given great detail on the earliest dynasties in Mesopotamia. The city of Kish was arguably the most important early political capital in the entire region. The cart burials excavated in the Y trench

were similar to, but earlier than, the spectacular ones found at Ur and were immediately presumed to be related to kings in the early part of the Sumerian King List. Besides the burials, there was in Trench Y evidence of a massive flood (fig. 5.2), described as consisting of “clay precipitated in thin layers, or of ashes and other substances foreign to the soil above and below; it contains also pottery sherds all lying horizontally . . . in certain parts lay skeletons of



Figure 5.1. Y trench with Watelin in the background, from the southeast (FM negative 65948 = 67094-81).

## WHERE KINGSHIP DESCENDED FROM HEAVEN



Figure 5.2. Y trench with the red stratum (RS) and flood level (FL) indicated, from the southeast (FM negative, number not known).

fresh water fish evenly precipitated in the sediment, and in lower parts of the layer, blocks of pure clay.”<sup>1</sup> Watelin characterized the thickness of the flood deposit as “averaging 30 cm thick.”<sup>2</sup>

<sup>1</sup> Watelin and Langdon 1934, p. vi. Langdon inserts at this point a bracketed sentence: “This layer averages a half metre [*sic*] in thickness, but differs greatly in various parts, being found all over the mound below plain level.” This insertion introduces an error that should be disregarded when viewing the various schematic renderings of the Y stratigraphy. When reading Watelin and Langdon 1934, one must be aware that Langdon translated the text from the French and edited it, often inserting his own opinions and arguments into the text—not always in brackets, as he does in some footnotes. The long discussion of the implications of the flood for Sumerian history (Watelin and Langdon 1934, pp. 41–44) resounds with Langdon’s voice, not Watelin’s. Note that in the introduction Watelin mentions Langdon’s role in the book and indicates that their views do not always coincide (Watelin and Langdon 1934, p. vii). It should be remembered that, when the book went to press, Watelin was already dead and would not have been able to change anything Langdon decided to add.

<sup>2</sup> Watelin and Langdon 1934, p. 40. In the present account, I call the flood deposit the “flood level” to distinguish it easily from the red stratum. Watelin, Langdon, and all other authors including me have used the terms “flood stratum” and “flood level” indiscriminately.

Watelin and Stephen Langdon intended to make great publicity by trumpeting the layer as proof of the biblical flood, but they were outmanoeuvred by a consummate publicist, C. Leonard Woolley, who happened to visit Kish in 1927 just after Watelin realized he had evidence of a flood. A very short time later, Woolley claimed, in headlines around the world, that he had found the biblical flood at Ur. There is a rather sad letter from Watelin to Stanley Field, director of the Field Museum of Natural History, lamenting that Woolley had stolen the flood.<sup>3</sup> But, having learned from this incident, he urged that publicity on finds at Kish be made public fast; otherwise “Ur gets all the money and publicity.”<sup>4</sup>

Watelin claimed in his publications and in unpublished periodic reports to the Ashmolean Museum of Art and Archaeology and the Field Museum that his flood covered the entire Y trench, forming an unbroken, intact seal and isolating the lower

<sup>3</sup> Langdon (1930) belatedly did claim the biblical flood.

<sup>4</sup> Watelin, December 12, 1928. Letter to Director, Field Museum Archives.

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layers from those above.<sup>5</sup> If this were true, the finds below the flood level would have provided an unparalleled assemblage of unmixed material that defined a large part of the Early Dynastic period. That the Early Dynastic was, in fact, named and defined by the Oriental Institute's contemporaneous Diyala Expedition is an indication that Watelin and Langdon were incapable of excavating the material well enough or publishing it effectively enough for their findings to have any impact. As a result of the presentation of a few graves and schematic stratigraphic sections of the Y trench,<sup>6</sup> the Kish material took on the character of an enigmatic but seemingly invaluable body of evidence, the failings of which were not apparent until the 1960s. Watelin left the expedition in 1933, when funding was finally cut off due to the Great Depression, and he died within a year on his way to excavate on Easter Island.<sup>7</sup> Perhaps because of the economic situation, there was no organized plan to have one or more of the younger members of the expedition publish the results, so the material lay neglected in the Ashmolean Museum, the Field Museum, and the Iraq Museum until Roger Moorey, and later I, began to work on it in the 1960s.<sup>8</sup>

During the time of the Kish excavations and in the ensuing years, there have been several presentations of the Ingharra stratigraphy in idealized section drawings, usually as part of larger profiles

<sup>5</sup> Watelin and Langdon 1934, p. 41.

<sup>6</sup> E.g., Watelin and Langdon 1934.

<sup>7</sup> Langdon preface in Watelin and Langdon 1934.

<sup>8</sup> The Iraq Museum took half of the finds from the excavations, with the rest going to the expedition to be divided by the Field Museum and Ashmolean Museum. As a result of a protest over previous divisions made by Langdon that favored the Ashmolean Museum, much of the material from the Y trench ended up in the Field Museum. The objects occupied most of a large store-room. Lacking climate control, as was normal in museums until a few decades ago, the collection suffered a good deal of deterioration in certain classes of artifacts. The objects were stored on shelves by type or material, and thus grave groups were disassociated. But it was still possible to assemble such groups by using the information on the object cards and on the objects; I began to do this in the mid-1960s and resumed the task in the early 1970s. Unfortunately, I left for a field season, and when I returned I found that a large group of newly acquired green pottery from Central America had been introduced to the store-room, and the Kish and Jamdat Nasr material was consolidated onto about half the number of shelves it had occupied. In the process, the objects had once again been sorted by type or material, and the grave groupings were again dispersed. One of the effects of the consolidation was that many items, such as the small bronze tools, became separated from the tags that had been tied on them. Guillermo Algaze, with a grant, was able to reassemble some of the groupings for his study of the Y burials (Algaze 1983–84).

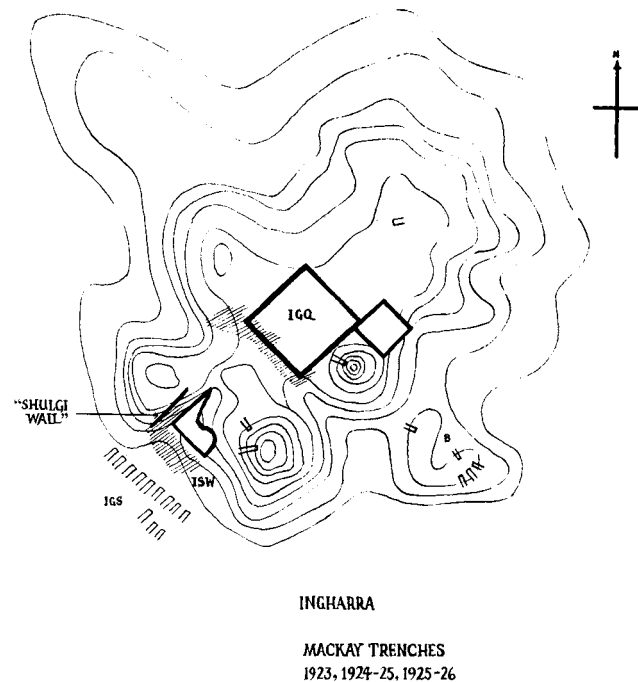


Figure 5.3. Sketch showing Mackay's trenches at Ingharra (Gibson 1972, fig. 53).

that attempted to show all strata from the surface of the mound to water level, which was reached at 6 m below the plain. When writing periodic reports from Kish to Langdon at the University of Oxford and to Stanley Field at the Field Museum, Watelin included sketches of his progress,<sup>9</sup> and these bits of information have given us a means by which to follow his work, which followed some initial trenches in Ingharra by Ernest Mackay (figs. 5.3–5.9). Watelin began his operations in a high part of Ingharra that he labeled “A,” which can be confused with the A Palace and Cemetery already dug about 200 m to the south by Mackay. To help avoid the confusion, I labeled this rise as Hillock A.<sup>10</sup>

Watelin was trained not as an archaeologist but rather as an engineer, and he was proud of moving as much dirt as possible in the shortest amount of time, which is not the best way to do archaeology.<sup>11</sup>

<sup>9</sup> Gibson 1972, pp. 32–83 and figs. 53–60; Moorey 1978, figs. H–I.

<sup>10</sup> Gibson 1972.

<sup>11</sup> Unfortunately, this method had proven to be “successful” at the site of Susa, in Iran, where he came upon some of the most important objects of Mesopotamian civilization, such as the Victory Stele of Naram Sin of Akkad. Langdon was eager to replace the excellent archaeologist Ernest Mackay with Watelin because he was a man who “found things,” whereas Mackay had been digging entirely too slow from Langdon's point of view (Letters from Langdon to the Director of the Field Museum, October 12 and 14, 1926). Langdon was a philologist, with no training in archaeology, and was primarily interested in obtaining more cuneiform texts. He had no interest in exact provenience. During the few months that he was with the expedition at Kish and



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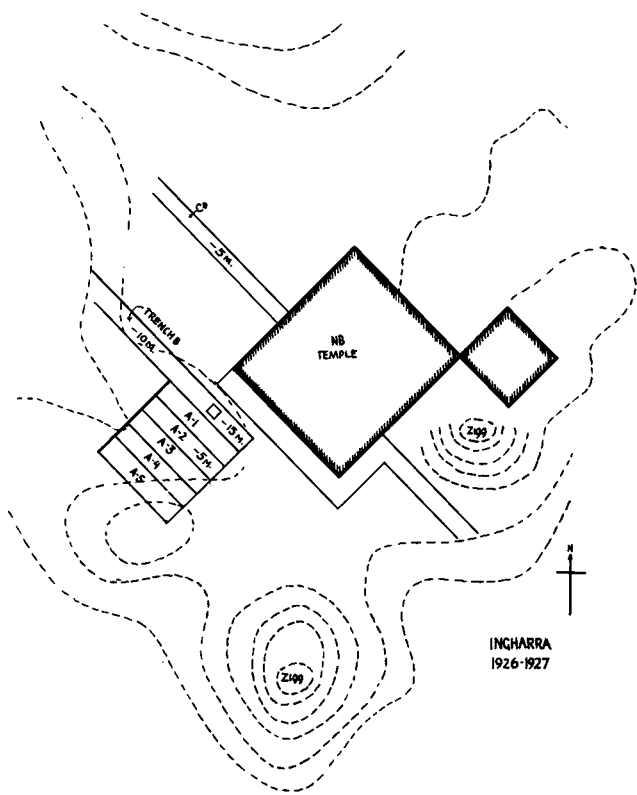


Figure 5.4. Sketch of Watelin's trenches, 1926-27: A and C trenches (Gibson 1972, fig. 54).

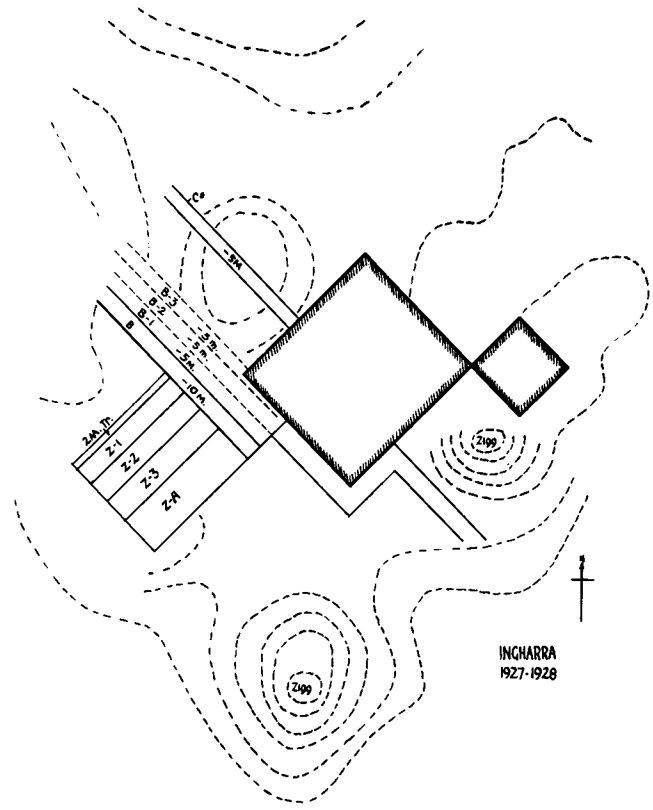


Figure 5.5. Sketch of Watelin's trenches, 1927-28: B, C, and Z trenches (Gibson 1972, fig. 55).

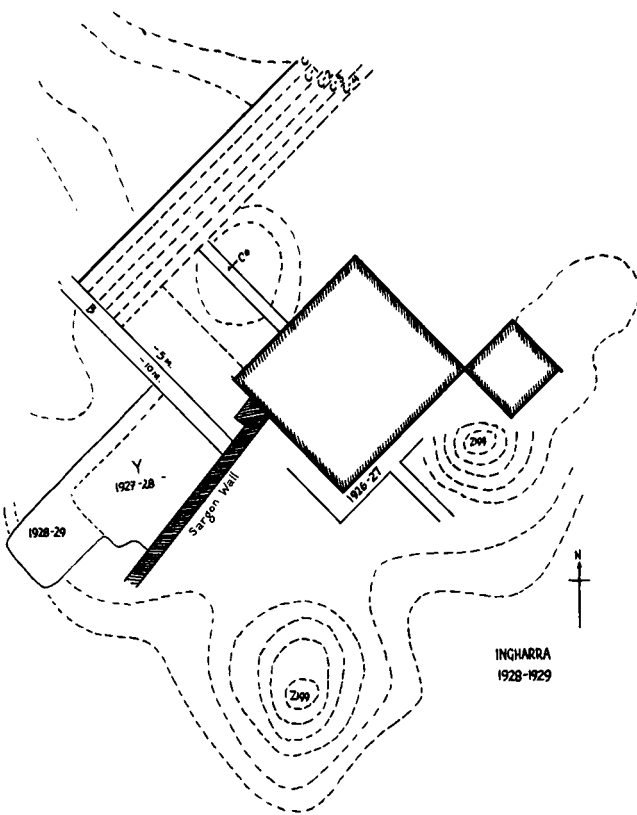


Figure 5.6. Sketch of Watelin's trenches, 1928-29: Y, B, and C trenches (Gibson 1972, fig. 57).

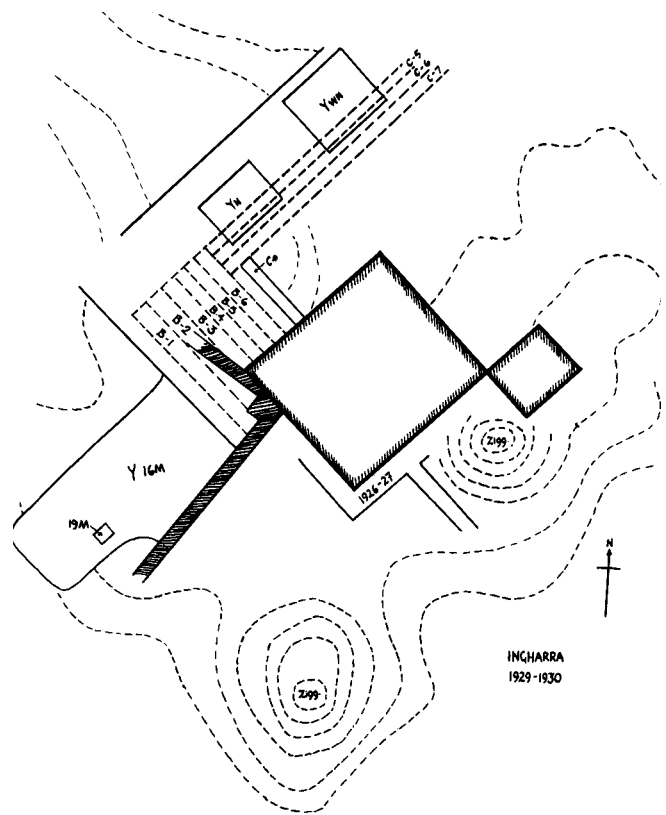


Figure 5.7. Sketch of Watelin's trenches, 1929-30: Y, deep sounding, B, and C trenches (Gibson 1972, fig.58).

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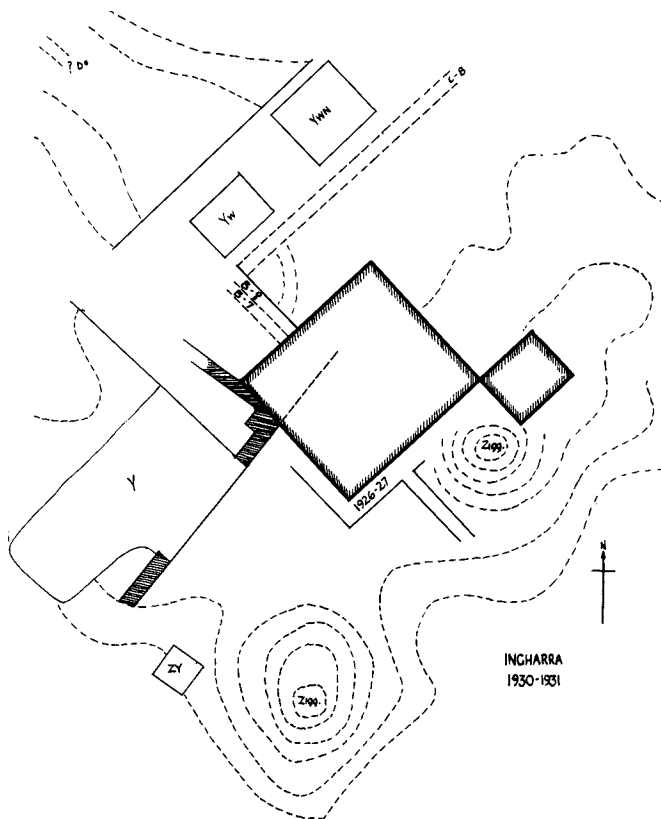


Figure 5.8. Sketch of Watelin's trenches, 1930-31: Y, cut against face of ziggurat, Yw, and Ywn (Gibson 1972, fig. 59).

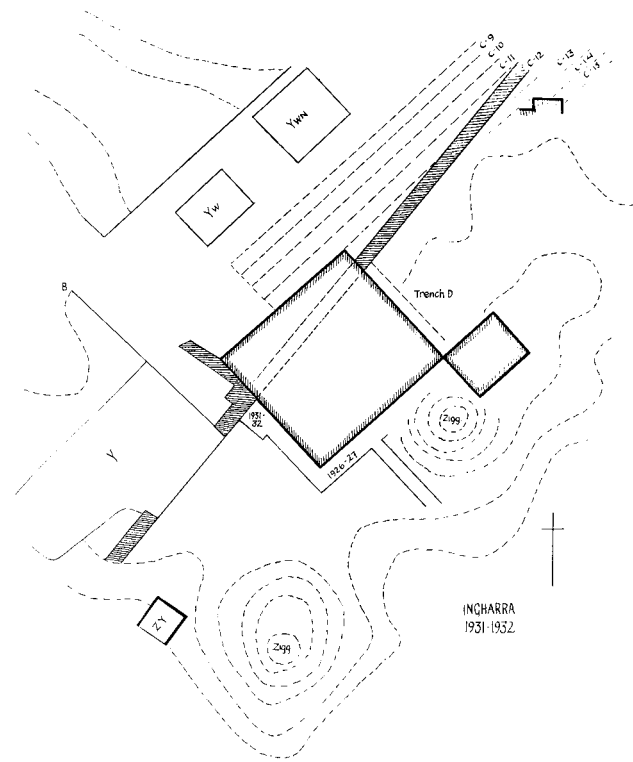


Figure 5.9. Sketch of Watelin's trenches, 1931-32: Y and C trenches (Gibson 1972, fig. 60).

Watelin's "technique" was to cut an initial long trench from the surface of the mound down to a given level, gradually laying in it the rails and cars of a hand-pushed railroad. His first track level was at approximately 5 m above the plain. With the track in place, he had his workers start at the top of the mound next to the railroad, indiscriminately shoveling away layers of occupational debris down into the rail cars (figs. 5.10-5.11) until they reached the level of the track, thereby removing long slices of occupational remains that could be as much as 50 m long, 5 m wide, and 5-8 m deep. Having finished his first 5 m wide slice, he then moved his railroad and cut another, and another, until he had reduced the top of the mound. Although we know from the objects cataloged that he was going through first- and second-millennia BC levels in the top part of the mound, we have virtually no information on actual findspots. Watelin's "method" completely ignored organically accumulated stratigraphy. Instead, he devised an odd system by which he would "locate" an object

with a notation such as "B-3, 3 (5)," meaning that it was from the third B trench and was found 3 m down from the top, where the mound was 5 m high. This is essentially meaningless information since there is no real indication where in the length or breadth of the slice of debris the object was found.<sup>12</sup>

After having removed much of the mound down to 5 m above the plain, Watelin encountered a large building that he designated "Z."<sup>13</sup> At this point, he abandoned the A designation and adopted the letter Z for his new trenches, removing additional huge slices of material down to plain level, which he had adopted as his vertical datum. He continued the B trenches and began a series of C trenches to clear the entire area northwest of the Neo-Babylonian temple (figs. 5.5-5.9). Once he reached plain level,

<sup>12</sup> See Gibson 1972, pp. 82-83, for a previously published explanation of the digging method, and Gibson 1970 for a discussion of the findspot system in the B and C trenches.

<sup>13</sup> Mackay had already touched this building, which he called the Shulgi Wall, as well as the Retaining Wall and the southern corner of the larger ziggurat (see fig. 5.3). For a view of Monument Z, which appears to have been a very substantial public building, see Watelin and Langdon 1934, pl. V.

Jamdat Nasr, Mackay was unable to stop him from burrowing, and his work was a disaster in terms of field method.

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Figure 5.10. Watelin's digging method, C trenches, from the southeast (FM negative 65924-62).



Figure 5.11. Watelin's digging method, railroad, and men destroying strata above, from the southwest (FM negative, number not known).

## CHAPTER 5. THE FIRST ACTUAL STRATIGRAPHIC PROFILE OF PART OF THE Y TRENCH

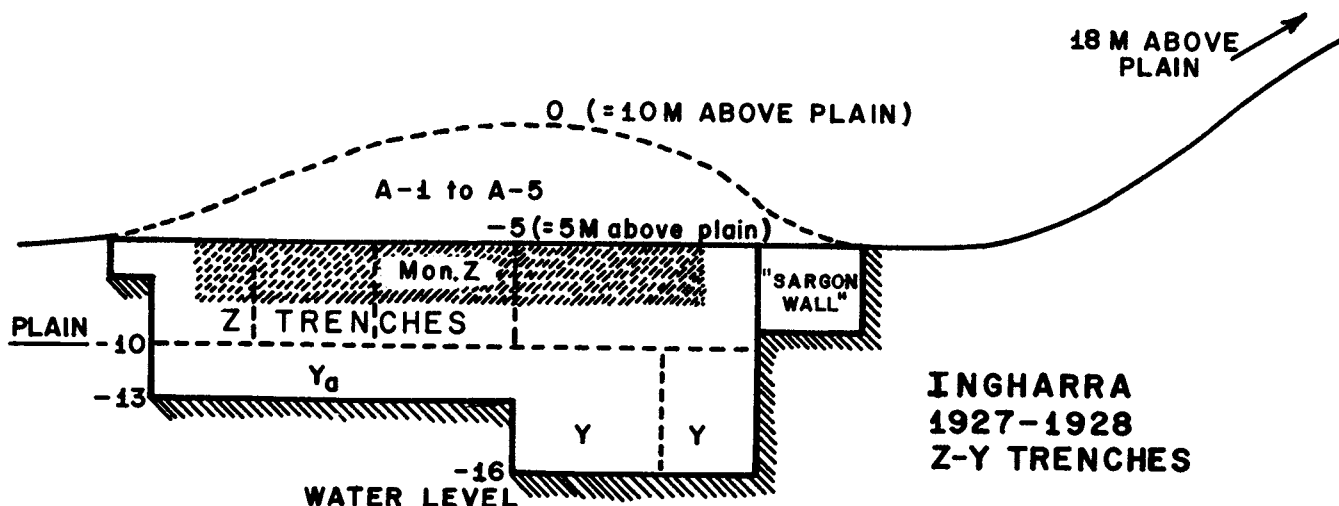


Figure 5.12. Sketch section showing the A trenches, Monument Z below, and Y and Ya below (Gibson 1972, fig. 56).

Watelin was no longer able to use the railroad to do his slices, but he continued to cut huge trenches (Y, Ya) below the Z trenches (fig. 5.12), employing about 200 workmen to carry the dirt up to the rail cars. Because the removal of the debris was slowed down, the excavators recovered more information and objects than they had done previously; they also kept somewhat better notes, especially when two physical anthropology students were on site: Erich Schroeder, from Harvard, and T. K. Penniman, a Rhodes scholar from New Hampshire who stayed the rest of his life at Oxford, later becoming curator of the Pitt Rivers Museum. Henry Field, another physical anthropologist and a nephew of Stanley Field, kept copious notes, but they are not as exact as the records left by the other two young men. Watelin was assisted in his last seasons by his son René, who was trained in architecture and later served as a regional archaeological official in the Dordogne Valley of France.

When Watelin started digging below plain level, he divided it between Trenches Y and Ya, an adjacent area to the northwest that was taken down only 3 m and then subsumed under an expanded and deepened Trench Y. Two additional pits, Yw and Ywn, were sunk below the plain to the northeast of Trench Y, below where the C trenches had been, beyond the northwest facade of the Neo-Babylonian temple (fig. 5.13).

The slower pace of the digging, necessitated because the dirt from the Y trench had to be brought up to the railroad cars, should have made it possible to gain a more genuine idea of the stratigraphy.

Watelin's section diagrams are a bit more detailed in the lower parts of the trench, but they are still only schematic and do not reflect the actual strata that he encountered, as will be demonstrated below. He recorded more than 600 graves, assigning some of them to the four (probably royal) cart burials that he discovered. But the digging was so bad that, although he often knew what objects were from an individual grave, he could not say exactly which skeletons and grave goods may have been associated with which cart.<sup>14</sup> Some of the graves were buried from floors of the houses that Watelin encountered under the flood level, especially near the bottom of the Y trench (figs. 5.14–5.15).<sup>15</sup> Even though the pace of digging was somewhat slower than it had been in the B, C, and Z trenches, the recording method in Y was still inadequate. Some sketches show the

<sup>14</sup> One of the four carts was recognized in the northeast baulk, and was not excavated. I attempted to group burials with carts (Gibson 1972, p. 85), but I am not confident about any of those groupings. Unlike Woolley at Ur, who could sometimes see the limits of shaft burials and could therefore assign skeletons to particular royal burials, Watelin had no such skills as an excavator.

<sup>15</sup> Algaze (1983–84, pp. 139–41) correctly argues forcefully for intramural burials but seems to imply that I did not believe this to be the case because I suggested (Gibson 1972, p. 84) that the cart burials and some of the other single graves could have been dug from above the flood level. He apparently overlooked my discussion of the graves in houses two pages later (Gibson 1972, p. 86). Having excavated numerous intramural burials in most periods of Mesopotamian history, I have always known and have taught the importance of the burying of people under houses. At this point, I am skeptical of the existence of most cemeteries as such, unless they were for people who did not own their houses and therefore had no right to bury in dwellings.

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Figure 5.13. View toward the north with Yw and Ywn (FM negative, number not known).

relative positions of some graves, but there is no real measuring in or surveying of anything. The graves float in space, as do the cart burials.

Just as he had designated the stratigraphy above the plain in terms of height above the plain, for the trenches below the plain Watelin used minus signs (e.g., “-5 below the plain” or alternatively “-10,” meaning 10 m below the top of the mound). For his entire vertical column, he had 10 m above the plain and 6 m below, at which point he reached the water table. By employing an irrigation pump,<sup>16</sup> he was able to dig a 6 × 8 m pit (see fig. 5.7) down to 3 m below the water table, from which he scooped up mud containing Jamdat Nasr sherds and hundreds of stone artifacts. In letters to Langdon,<sup>17</sup> Watelin reported that he had found black-painted sherds in the pit, which probably indicate an Ubaid level at the base of the mound, but he did not illustrate them in

any publication.<sup>18</sup> He halted the excavation of the pit when he reached what he took to be virgin soil.

An area bordering the northwest edge of trenches Z and Y was not removed by Watelin (fig. 5.16), so in the future it will be possible to reconstruct some of the stratigraphy of Ingharra from that remnant of the mound and from the unexcavated spaces between Y and Yw and between Yw and Ywn. That northwestern baulk should make it possible, if the groundwater is controlled through pumping, to allow excavation to go low enough to trace the stratigraphy from the earliest period of occupation (perhaps the Ubaid) through at least the second millennium, if not through the Neo-Babylonian period. But there no longer exists the chance to detail the history of the mound between the C trenches and the Neo-Babylonian temple and the two ziggurats. It is now unlikely that any stratigraphy is intact against the facade of the Neo-Babylonian temple because both the expedition of Henri de Genouillac

<sup>16</sup> Watelin and Langdon 1934, p. vii, pls. VI.2 and VIII.2.

<sup>17</sup> E.g., January 2, 1929, Ashmolean Museum Archive.

<sup>18</sup> Langdon (1924, pp. 67–68) reported the finding of Ubaid sherds at Uhaimir.

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Figure 5.14. Y trench with lower houses at bottom of Y, at water level, from the southwest (FM negative 67093).

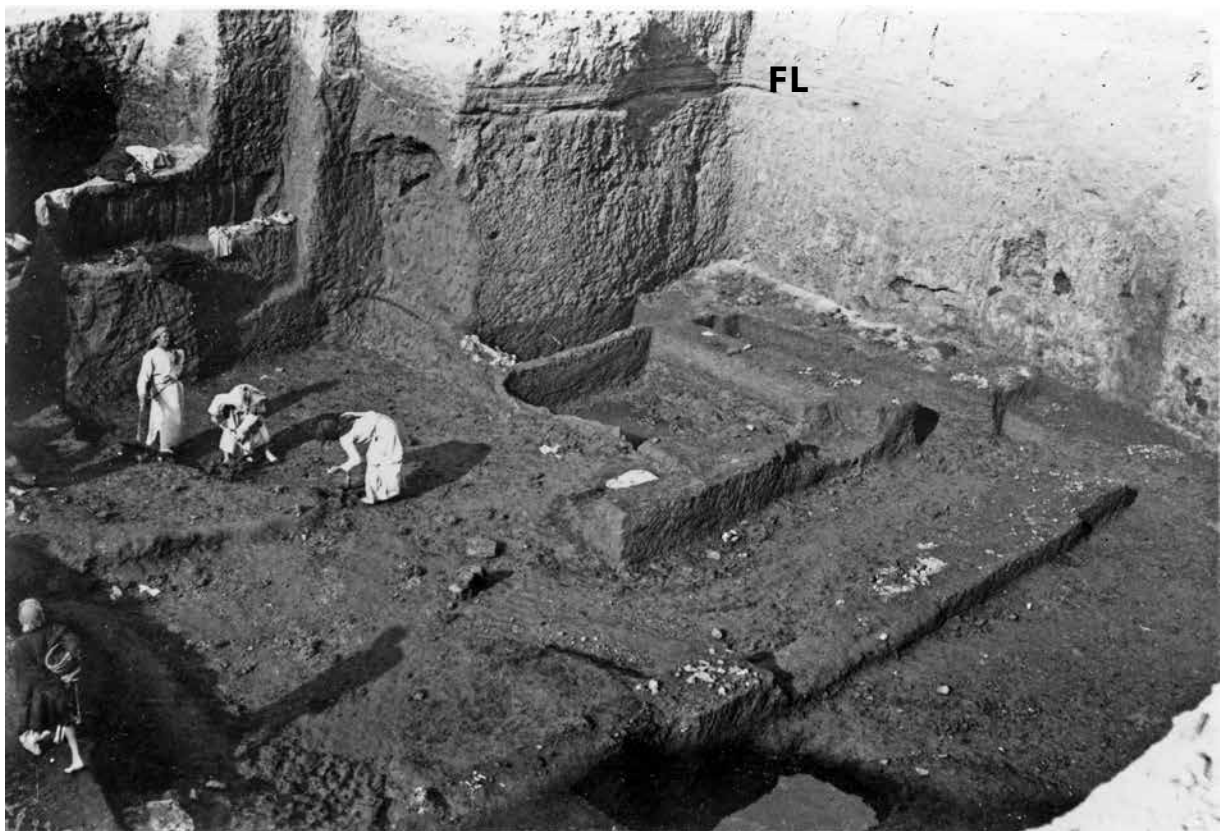


Figure 5.15. Y trench, houses at water level, with the flood level (FL) clearly visible, from the southwest (FM negative 63540).

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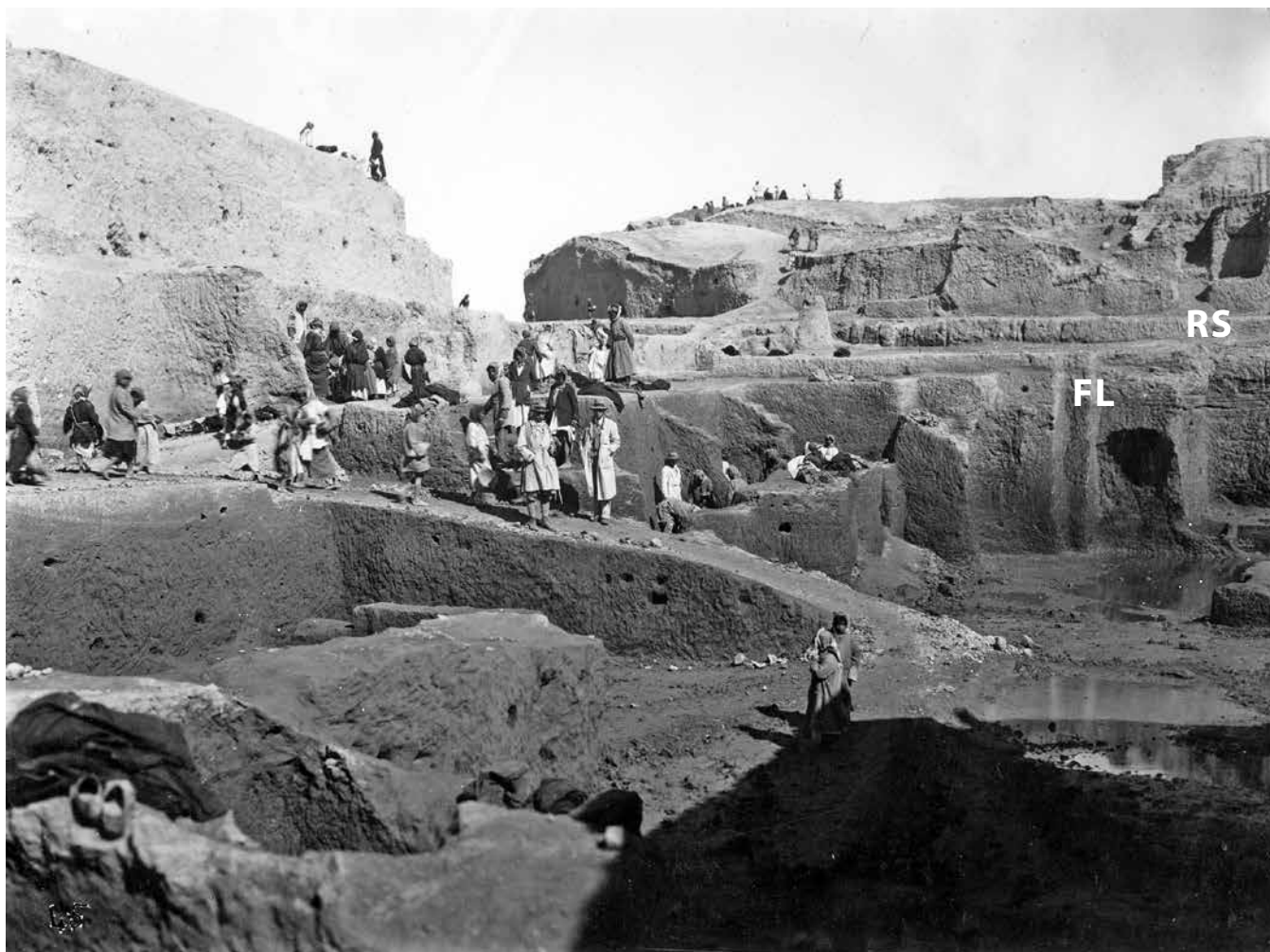


Figure 5.16. Y trench with the untouched baulk at left, and the red stratum (RS) and flood level (FL) indicated, from the south (FM negative 67060-B-45).

from 1911 to 1912<sup>19</sup> and the Ashmolean-Field team trenched along all faces. But, as late as 2003, there was an undisturbed area on the southeastern side of the two Early Dynastic ziggurats. Unfortunately, the United States military established a small base around and on the ziggurats in 2003,<sup>20</sup> and in the process there was some cutting back of stratigraphy to set in living quarters, especially on the southeastern edge of the large ziggurat (fig. 5.17). It is unclear from evidence in photographs how extensive the damage from this military occupation is.<sup>21</sup> There are visible tire tracks on the surface northwest of the Neo-Babylonian temple, so there may be damage from the weight of vehicles, even where there was no cutting. The Y trench itself was used as a

<sup>19</sup> Genouillac 1924, 1925.

<sup>20</sup> Siebrandt 2007, 2008.

<sup>21</sup> Derived from Diane Siebrandt's reports and used with her permission, for which I thank her. It was her diligence that effected the removal of the army base from the site.

garbage dump (fig. 5.18). The military facility, which was transferred from American to Iraqi troops some time before 2007, was completely removed in 2008, and the area was cleared of debris, except for the trash in the Y trench.<sup>22</sup> Some remedial steps were scheduled to fill in holes cut into the larger ziggurat and in other places on the mound.

Turning now to the stratigraphy of the Y trench, the earliest published section drawing of Ingharra is a Watelin diagram enhanced by Langdon.<sup>23</sup> A more ambitious, yet still schematic, rendering by Watelin (fig. 5.19) shows an idealized section marked by representative examples of whole pots, which do give a rough idea of periodization. In the same publication, Watelin gives an even more schematic drawing of the entire sequence and another of Trench Y, under the flood level (fig. 5.20).

<sup>22</sup> Siebrandt 2008.

<sup>23</sup> Langdon 1930, p. 207.

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Figure 5.17. Army camp on the eastern edge of Ingharra (image courtesy of Diane Siebrandt).

H. W. Eliot attempted to make sense of Watelin's excavations from published reports, and his summation is a remarkable achievement considering his limited sources.<sup>24</sup> It was Roger Moorey, trying to place the Ashmolean Museum's share of Kish artifacts in their original context, who began the detailed reconstruction of the Y trench as well as of the rest of the Ashmolean-Field expedition.<sup>25</sup> For my doctoral dissertation, I constructed a section (fig. 5.21) based on information from the publications and from annotated photographs and notes of Watelin and his assistants (Field, Schroeder, and Penniman), copies of which were in the Field Museum. At about the same time, Seton Lloyd<sup>26</sup> reconstructed a very well-reasoned section (fig. 5.22), based on Moorey's work and the available publications. Subsequently, Moorey<sup>27</sup> published a schematic chart of the section (fig. 5.23).

All these stratigraphic schemes depend on Watelin's assertion that there were two intact horizontal strata marking major breaks: (1) an upper one, the red stratum, made up of thousands of red



Figure 5.18. Army debris in the Y trench (image courtesy of Diane Siebrandt).

plano-convex mudbricks and related debris; and (2) the flood level, which was said to be unbroken over the entire Y trench (figs. 5.24–5.26), under which Watelin placed the four cart burials.<sup>28</sup> In my reconstruction, I show all the chariot/cart burials that had been found in the lower parts of the Y trench coming

<sup>24</sup> Eliot 1950.

<sup>25</sup> Moorey 1966.

<sup>26</sup> Lloyd 1969.

<sup>27</sup> Moorey 1978.

<sup>28</sup> In his report, Watelin does allow possible breaks in the flood level: "If it is broken in certain places, that is caused by the foundation of later buildings, which reveal a new type of brick" (Watelin and Langdon 1934, p. 41).



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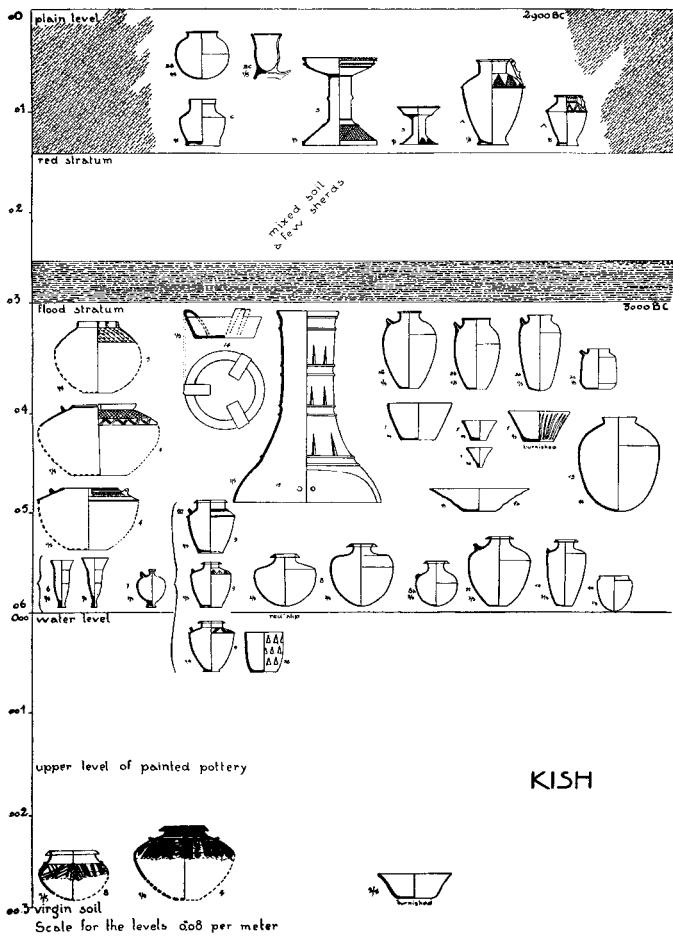


Figure 5.19. Watelin schematic section, plain level to virgin soil (Watelin and Langdon 1934, pl. 1).

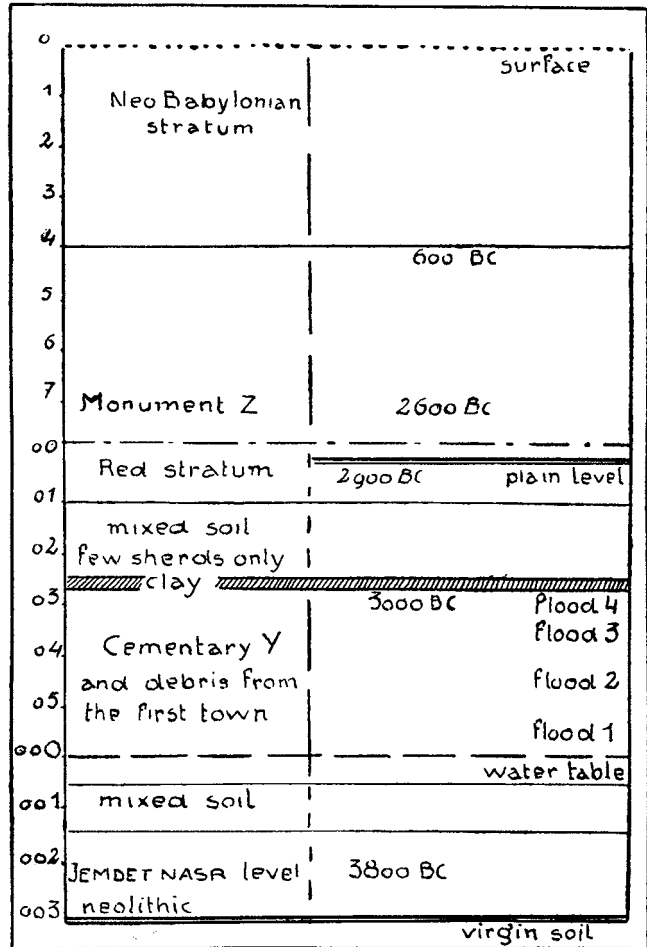


Figure 5.20. Watelin sketch section, top of mound to virgin soil (Watelin and Langdon 1934, fig. 7).

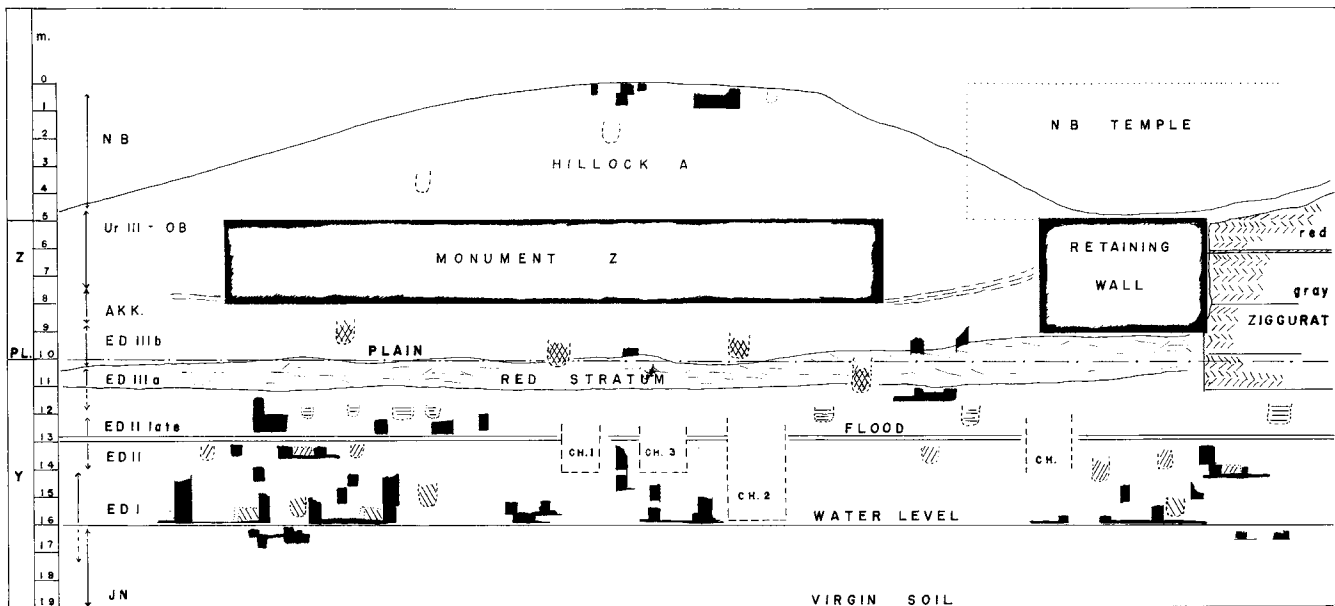


Figure 5.21. Gibson east-west section reconstruction (Gibson 1972, fig. 61).

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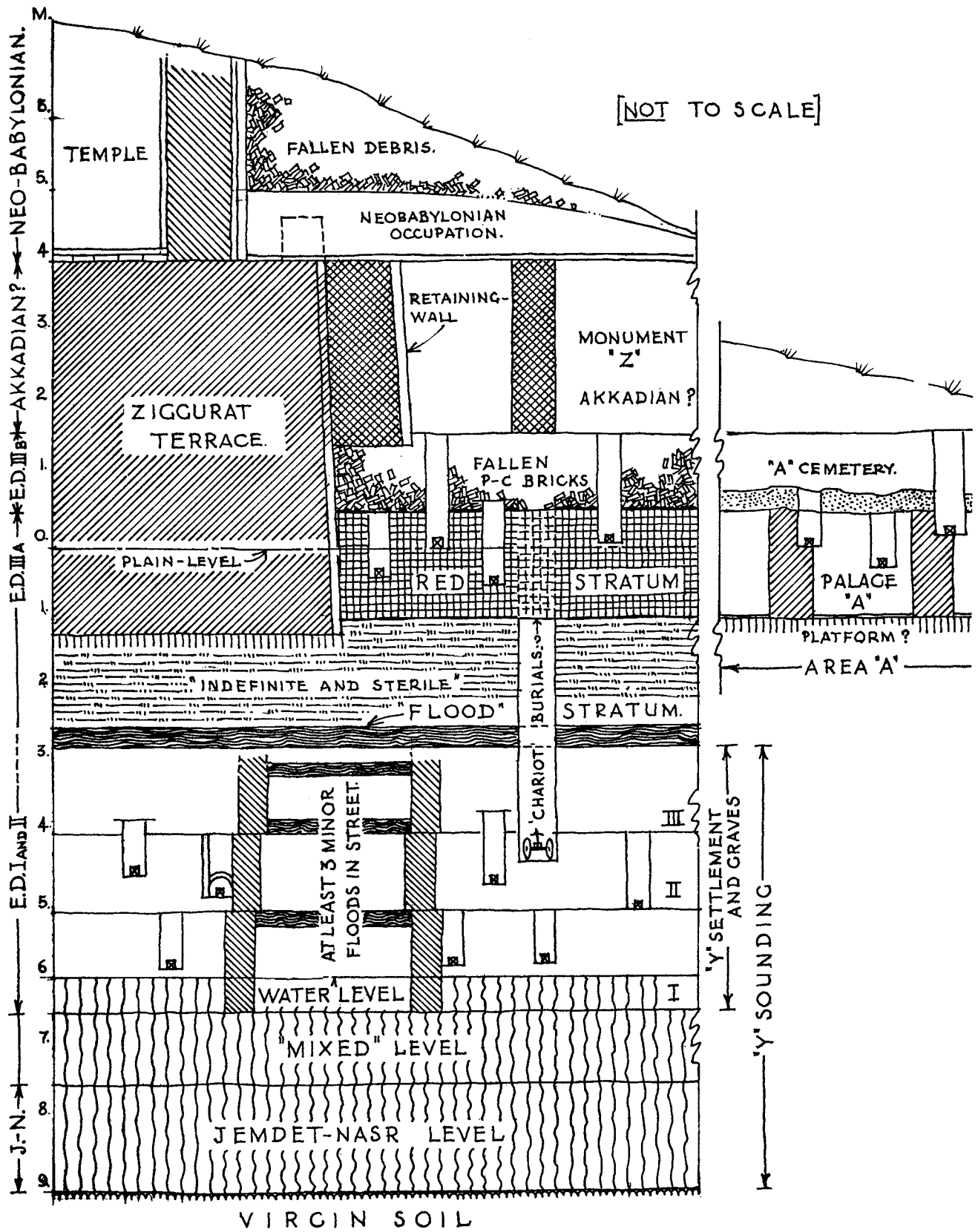


Figure 5.22. Lloyd section reconstruction (Lloyd 1969, fig. 1).

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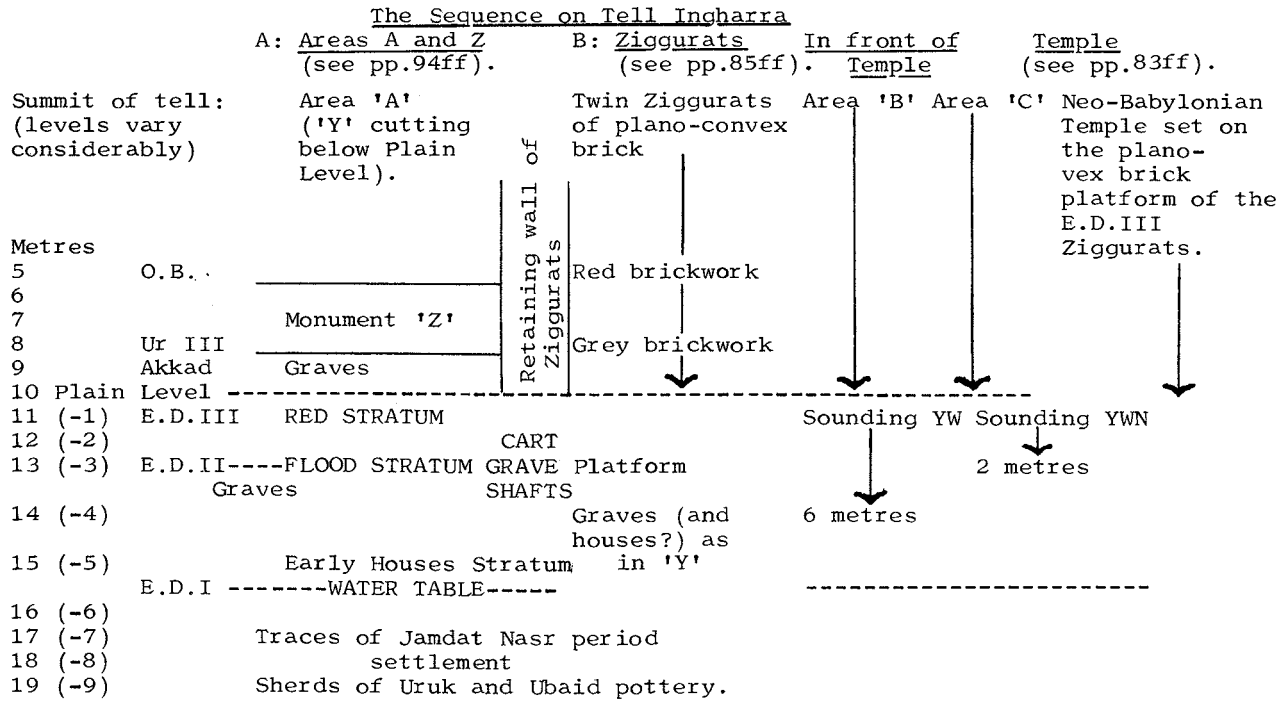


Figure 5.23. Moorey schematic section (Moorey 1978, p. 86).



Figure 5.24. Ingharra with the larger ziggurat, Retaining Wall, red stratum, and flood level indicated, from the northwest (FM 65948 = 67094-81).



Figure 5.25. Watelin's demolition of the Retaining Wall to expose the face of the larger ziggurat; red stratum and flood level are indicated (FM 74538).

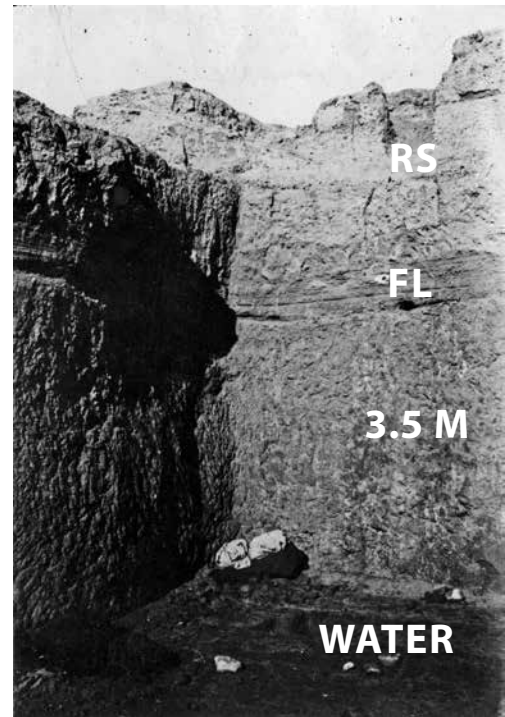


Figure 5.26. Photograph with the red stratum, flood level, and water level indicated, as well as the measurement of 3.5 m between the bottom of the flood level and the water. Adapted from a Watelin-annotated photograph in the Field Museum (FM 88730).

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down from above and cutting through the flood level, based on my conviction, shared by Moorey,<sup>29</sup> that the tombs would have required much deeper shafts than would have been possible in the space between the bottom of the tombs and the flood. Moorey and Lloyd's sections suggested that the flood level may have been cut to put in one or more of the chariot/cart burials. But in their reconstructions, following Watelin's sections, both the flood level and the red stratum are shown as level on both bottom and top surfaces.<sup>30</sup> At the time Kish was dug, it was common practice to construct an idealized section based on the bottoms of walls, pretending that the horizontal surfaces between walls were level. This was the case even in far better done excavations (e.g., the Diyala sites), and the practice continued into the 1960s. But anyone who has dug in an area of mudbrick architecture knows that strata are seldom flat and floors are almost never completely level, even when paved. In my reconstructed Kish section (fig. 5.21), I try to show some details that I had personally observed. For example, I indicate that the red stratum was not uniform, varying from 1.30 to 1.50 m thick, and it became thinner as it ran out to the northwest from the face of the Early Dynastic ziggurat. In some places, the top of the red stratum rose more than 0.5 m higher than in other places. By actual measurement in two places, I found that the top of the flood level lay at about 1.5 m below the bottom of the red stratum. From old photographs I could see that there was evidence for a ground surface that ran from the base of Monument Z up to the face of the Retaining Wall ("Sargon Wall") that enclosed the larger Early Dynastic ziggurat. Likewise, I also drew in some indications of architecture in the layer between the flood level and the red stratum because, although Watelin states in publications that this layer was sterile,<sup>31</sup> he recorded in notes that there were some bits of walls in the layer that he did not show in his section. As will be seen below, a major contribution of our section cleaning in 1978 was to demonstrate that the layer was far from sterile and that it certainly contains remains of buildings.

As will become evident, all the reconstructed sections, including my previously published one, are not adequate representations of the stratigraphy of the Y trench.

The Y trench has attracted the attention of scholars because it covers the time from at least the Jamdat Nasr through the Early Dynastic period, roughly a millennium of growing organizational complexity in ancient Mesopotamia. The finding of cart/chariot burials, which were most probably within royal tombs that were earlier and less elaborate than those found at about the same time at Ur, promised to furnish insight into early kingship. The Sumerian King List gives Kish as the first location of kingship after the flood,<sup>32</sup> an event that is also featured in the Epic of Gilgamesh, which is probably the source for the biblical story. It has been tempting to relate, as I did, the cart burials found low down in the Y trench with these postflood rulers.<sup>33</sup> But Watelin's assertion that the flood level was not pierced made it difficult to place their origin after the flood. As mentioned previously, Moorey and I argued that the shaft for the cart burials would have required a greater depth than is possible under the flood level, and we both suggested that all or at least some of them were cut from above the flood. Watelin claimed to have found evidence of three earlier floods lower down in the trench among "early houses." He did not furnish pictorial proof of the earlier floods but represented them in his section drawing (fig. 5.20). It must be emphasized that Mesopotamia probably had almost annual floods and many great flood events, given the nature of the Tigris and Euphrates Rivers before modern dams brought them under control; therefore, it is not at all certain that a particular one was memorialized in the Gilgamesh Epic and the Sumerian King List. It is clear, however, that the flood level in the upper reaches of the Y trench marked either a major inundation or a series of annual flooding and ponding events, given its thickness of about 30 cm. I assume that in some places, where there may have been a low spot, the flood deposit would have been thicker.

Placing the flood level in Early Dynastic II is difficult at this point, because that phase seems no longer to be valid.<sup>34</sup> The flood level at Kish is more likely to be datable to late in Early Dynastic I, which was a very long and complex subperiod. The previous layout of Early Dynastic I, II, and III, worked out in the Diyala region a few years later than Watelin was digging the Y trench, saw Early Dynastic I as a short

<sup>29</sup> Moorey 1966, p. 42.

<sup>30</sup> Watelin says "the thickness of the red stratum is irregular" (Watelin and Langdon 1934, p. vi) but averaged 1.5 m.

<sup>31</sup> E.g., Watelin and Langdon 1934, p. 41.

<sup>32</sup> Jacobsen 1939.

<sup>33</sup> Gibson 1972.

<sup>34</sup> Hansen 1965; Porada et al. 1992; Evans 2007.

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transitional phase followed by a very important and long Early Dynastic II. Elsewhere, for example at Nippur and Tell al-Hiba, Early Dynastic I and III are seen as very substantial phases, whereas Early Dynastic II is so unimportant as to be dropped entirely. Jean Evans's recent work has suggested that most of the Early Dynastic II levels in the Diyala should be reassigned to Early Dynastic III.<sup>35</sup>

In the 1960s, anyone who went down into the Y trench could easily see the flood level, with its bottom more than 1 m above the debris that filled the trench. At that time, the layer had a very marked laminated character with dozens of fine horizontal striations, a feature described by Watelin as clay precipitated in thin layers.<sup>36</sup> Some less fine striations were easily visible in Watelin's photographs of the late 1920s (figs. 5.24–5.26). I proposed in my 1972 volume that the striations were the result of the evaporation of one large flood that lay over the landscape, but I had no way of testing that proposal at the time.

The flood level in the Y trench contained thousands of freshwater shells and fish bones, and samples of the flood were taken out in large chunks for analysis in Chicago. By the 1960s, the samples consisted of extremely dense, hard masses of soil and shells, with occasional fish bones visible (fig. 5.27).<sup>37</sup> The samples at that time occupied a large cardboard box in the Kish storage room in the Field Museum, but as far as I know, no one had ever done an analysis.<sup>38</sup> I was allowed to take samples, one of which is shown here (fig. 5.28). The freshwater shells are easily apparent.

By 1975, the flood level was no longer visible because the trench had filled in as a result of the decay of the baulks caused by a raised water table



Figure 5.27. Field Museum photograph of the flood level.



Figure 5.28. Fragment of the flood level taken in 2011.

<sup>35</sup> Evans 2007.

<sup>36</sup> Watelin and Langdon 1934, p. vi.

<sup>37</sup> Henry Field published very short reports on the fish bones (Field 1932, 1936). He also published a semipopular pamphlet for the Field Museum (1929) in which the expedition's general findings were outlined.

<sup>38</sup> In the late 1960s, the samples consisted of very large, irregular pieces of tightly packed soil. At the time, as a graduate student, I tried to interest a fish expert in identifying the bones and a sedimentologist in making a cross section of one of the samples, to see if it were possible to determine if the flood had been deposited in one large event or in a series of yearly events, but nothing came of my efforts. In the late 1930s Henry Field, while employed at the Field Museum, wrote an article titled "The Drowned Fish at Kish," but his uncle Stanley thought it better not to publish it (Field, manuscript with marginal note, Field Museum archive).

and consequent salinization, which was evident in the brown bushes that grew in the bottom (fig. 5.29). In addition, work by the State Board of Antiquities and Heritage to shore up the base of the large Neo-Babylonian temple to the north of the trench resulted in further filling, since it was decided to dispose of broken mudbricks and leftover mud mortar by dumping them into the Y trench. The dump from this restoration operation is visible in a photograph from 1978 (fig. 5.30).

It was in order to try to establish a real stratigraphy for the Y trench, including the fixing of the flood level in the Early Dynastic sequence and in its vertical relationship to the red stratum, as well as

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Figure 5.29. Y trench in October 1978: unfinished section cleaning on the western baulk and brown bushes indicating salinization.



Figure 5.30. Y trench in 1978: beginning of section cleaning with the pile of debris from previous activity at the site, from the south.

to determine if the flood had been breached rather than intact everywhere as Watelin claimed, that I sought permission from the State Board of Antiquities and Heritage several times in the 1970s to clean and reexamine a portion of the Y trench. Finally, in 1978, as a reward for having organized a team to excavate in the Hamrin Dam Salvage Project, I was allowed to carry out the investigation. From the time

I first saw the flood level in 1964 (and in more detail in 1966 as part of my project around Kish) until 1978, very great changes had happened in the area that altered the situation greatly. First, huge new irrigation and drainage channels had been dug around and through the site as part of the planned expansion of the Mussayib Desalinization Project. This project was meant to remove the salts from the entire

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alluvium through controlled flooding of fields and the subsequent leaching out of the salts into drains that would feed into a huge main drain. The Main Drain, which became known as the Third River, was to take the salty water to the Gulf. Unfortunately, the project was never completed because of economic cutbacks associated with the Iran-Iraq war, and much of the area for many kilometers south-east of Kish was then occupied by dozens of isolated drainage segments that form, in effect, long narrow marshes full of reeds and stagnant water. Instead of being reduced by the project, salinization has greatly increased because the supply canals were largely completed and, during the 1970s, were allowed to run very full, raising the water table and encouraging the farmers to overirrigate. The huge amounts of water flowing through the Kish area meant that the groundwater at the site was raised by several meters, and the effect of the salinization caused by the raised water table was easily visible in the white, salt-encrusted fields around the site and the brown bushes that would ordinarily be green. Another effect was the accentuated rate of deterioration of the walls and baulks of the excavated areas, especially notable in the rapid filling-in of the Y trench.

From October 28 until November 1, 1978, we took advantage of a holiday break from the Oriental Institute–University of Copenhagen salvage of Uch Tepe, in the Hamrin area east of Baghdad, to carry out a cleaning of part of the Y profile. James A. Armstrong and Dennis Collins passed up the chance to rest around a swimming pool in the camp of a Danish company that was building a cement plant in Kufa and instead went with me to Kish. We stayed at the tourist guesthouse at Babylon for the five days we worked on the project.

This limited cleaning operation aimed to answer a number of questions, given certain limitations: Would it be possible to reach the flood level before the groundwater stopped us? Were Watelin's sections accurate to some extent? Were there buildings, as I had concluded from Watelin's unpublished notes, between the flood layer and the red stratum? Could we obtain information that the flood level was broken in at least one place, thus allowing the probability that the cart burials had come from above? Could we reexpose the flood level and take samples for geomorphological analysis, perhaps making it possible to find out if the layer was the result of one event or a series of events? Could we get low enough to establish the earlier floods claimed by Watelin?

And could we gain enough of a sample of pottery to date the layers we exposed, even with the limited removal of debris in our cleaning?

Cleaning entailed the cutting back of the baulk to a limited extent, about 0.5 m to 1.0 m, and cutting down as far as we could go (figs. 5.31–5.34). The section recording and drawing are the work of Armstrong (fig. 5.35). There is a jog in the section because we found that in the northern end, where we started, the face of our profile was about 0.5 m farther back (to the southeast) than in the rest of the section. Not having time to cut back that much along the entire exposure, we reestablished a new section line and proceeded from there. The jog is indicated by two vertical lines on the drawing (fig. 5.35). We hired five men from the Kish area to assist in the work, but Armstrong, Collins, and I did all the detailed picking and troweling.

Having five days, we thought we might be able to sample both sides of the Y trench, with most of our effort on the 12 m long area of the southeastern baulk. Therefore, we began preparing a meter-wide portion on the opposite baulk (see fig. 5.29), which would give us the profile above Watelin's "plain level." As it happened, we lost time because of rain; we barely finished examining the selected part of the southeast baulk, and our investigation of the northwest baulk consisted only of the initial scraping back to a firm surface, with no opportunity to record or sample it. In recording the southeast section, we designated layers as Units 1 to 27. Walls were given letters, with the exception of the Retaining Wall ("Sargon Wall"), to which we assigned both a letter (A) and a unit number (1). In a table accompanying the section drawing are visual descriptions of the units. The chapter 5 appendix, a geomorphological report by Joseph Schuldenrein, gives sedimentological descriptions.

At the top of the section is the Retaining Wall (Unit 1 in fig. 5.35, also marked "A"), called the "Sargon Wall" by Watelin. This wall was a massive one, at least 3 m thick with 5 m wide niches between buttresses that measured about 2.5 m in width. In the niches, originally, were doubly recessed small niches. Watelin left most of the Retaining Wall intact, but he did cut it away in one stretch to see the face of the ziggurat (fig. 5.25). The Retaining Wall was constructed against the larger Early Dynastic ziggurat of plano-convex bricks laid in a herringbone pattern. Our section catches part of the Retaining Wall to the north of the cut made by Watelin but is mainly in the gap made by him.

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Figure 5.31. Beginning of section cleaning, October 1978.



Figure 5.32. Section cleaning from above.



Figure 5.34. James Armstrong recording the section.

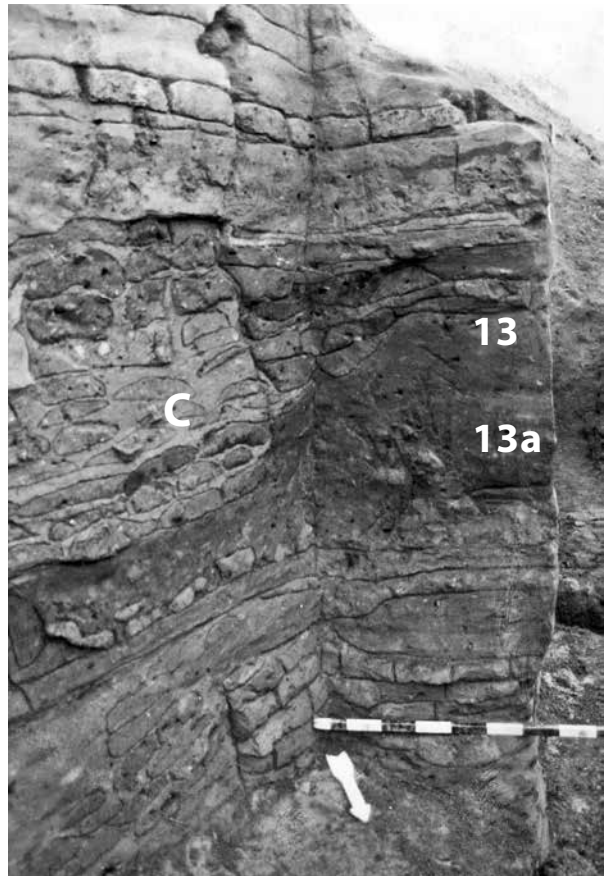


Figure 5.33. Photograph of the jog in the section, with Wall C to the left and the black soil of Units 13 and 13a.



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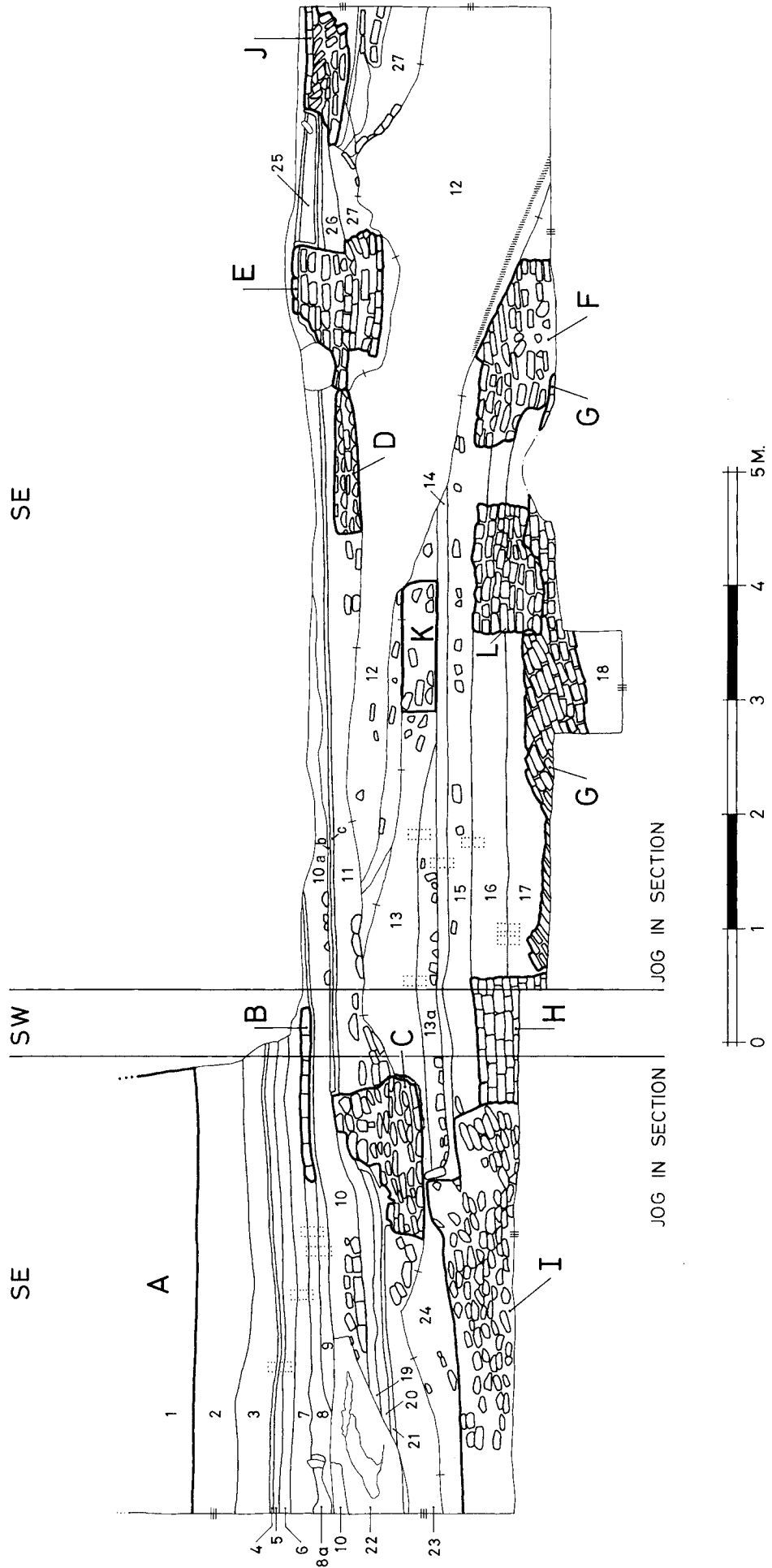


Figure 5.35. Section drawing.

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## KEY TO THE KISH PROFILE (FIGURE 5.35)

NOTES BY J. A. ARMSTRONG

| Unit | Description  |
|------|--|
| 1    | Wall A, Retaining Wall, Sargon Wall  |
| 2    | Red stratum. Plano-convex bricks, red and yellow/gray-green. Red = 18.5 × 12.5 × 7.5 cm. Yellow/gray-green: 16.0 × 14.5 × 6.0 cm   |
| 3    | Clay layers  |
| 4    | Sand. Less than 1-2 cm   |
| 5    | Mottled gray/yellow band with charcoal, occupational   |
| 6    | Red clay with incompletely burned brick, bits of charcoal at junction with Unit 7  |
| 7    | Gray-green clay  |
| 8    | Red clay   |
| 9    | Brick (Wall B) set on greenish sand  |
| 10a  | Mostly clay with ash and yellowish dense sand lens running through. Some plano-convex brick fragments. Clean red clay layer at base  |
| 10b  | Living surfaces built up on buff plaster (Unit 10c). Matrix of brown soil with heavy concentrations of ash, charcoal fragments, pottery, and small bits of burned brick  |
| 10c  | Brown clay plaster floor   |
| 11   | Ash and soil in irregular bands, top slopes down toward ziggurat (east) and toward south. Rests on a reed-mat layer. Rich in pottery. Appears to be construction debris for building made up of Walls C, D, E, and J below deliberate fill. Walls sit in foundation cuts. Wall C: irregular red/brown plano-convex bricks, 15 × ? × 7 cm. Light greenish gray mortar |
| 12   | Filling of a pit. Very dense black, red, orange fire-burnt soil and burned bricks, pottery, and burned clay, especially in bottom of pit. Ash lenses, charcoal throughout. Seems to have been laid in gradually, in irregular layers. Top 20 cm appears denser, may be occupation layers   |
| 13   | Black, greasy layer with occasional mudbricks, few sherds. Growing blacker under Wall C flood level  |
| 13a  | Lower portion of Unit 13, equally black and greasy, but with many fragments of brick. In vicinity of jog, many fragments of reeds lying on Unit 14   |
| 14   | Silty yellow clay plaster floor and a thinner (2 cm) green-gray plaster floor  |
| 15   | Very dense and greasy brown soil, chunks of clay and brick on a floor halfway up the unit, few lenses of ash running horizontally. Construction debris with deliberate fill above? Bottom of unit is a well-defined, black ashy floor resting on Unit 16   |
| 16   | Mottled yellow and gray clay, air bubbles throughout. Very few sherds. At top, thin light-red bands of clay  |
| 17   | Mottled gray and yellow clay, relatively few sherds  |
| 18   | Dark, greasy, but under water  |
| 19   | Dark gray, ashy, clay pieces   |
| 20   | Light brown or tan, with ashy lenses, sherds, and living debris running to Wall C  |
| 21   | Light buff clay plaster floor  |
| 22   | Light gray, almost white ash in a pit, with central area of dark ash   |
| 23   | Deliberate fill in a pit to set in Wall C, lots of black ash and red burned clay   |
| 24   | Light and black ash, burned clay, bricks and sherds  |
| 25   | Very dense, very uniform occupational buildup on clay floor and under a higher clay floor between Walls E and J  |
| 26   | Gray ashy matrix with small, light chunks of clay and bricks   |
| 27   | Fill in irregular foundation pit for Walls E and J. Red burned clay, brick pieces, and flakes of clay  |

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The Retaining Wall rests on the red stratum (Unit 2), which is made up of plano-convex bricks that were, presumably, torn from the face of the ziggurat and contemporary buildings before the Retaining Wall was built. The bricks in the red stratum are mainly red; some are yellow. Like the red bricks in the Old Babylonian ziggurat at Uhai mir, these Early Dynastic red plano-convex bricks are composed of a very friable clay, appearing to be lightly baked but perhaps only partially baked as a result of a fire. It is also possible that Kish bricks are constituted of a peculiar red clay that is harder than normal and appears to be partly baked. On the Old Babylonian ziggurat at Tell Uhai mir, intact unburned straw is easily visible within the bricks, indicating that the bricks of that ziggurat were not baked although they appear to be. The plain north of Kish is badly affected by salt, and the ground appears reddish. Brickmakers in Syria informed me in 1999 that if they wanted to have especially strong mudbricks, they sought a clay bed that was saltier than normal and even added salt to less salty clay. This seems counterintuitive, when one thinks of the damage that salt does to mudbrick walls, but I was assured that the presence of some salt made mudbricks harder and more durable. The salty soil north of Kish may, therefore, have been preferred for brickmaking.

Below the red stratum (Unit 2), we scraped back the loose material until we reached better-preserved layers, then cut in about 0.5 m to gain a sherd sample. Near the top of the section we encountered very easily defined layers of clay, sand, occupational debris, and a large filled-in pit (Units 3–12), the last having vivid orange, red, and black mottled fill (figs. 5.36–5.38). Below, there was abundant evidence of several phases of mudbrick buildings with easily visible plano-convex bricks, usually with the mud mortar of a different color than the mudbricks, as well as plastered wall faces and plastered floors. It is difficult for us, now, to understand why Watelin could not see these walls given that the bricks and mortar were often of strikingly different colors. But few other archaeologists at that time were expert in mudbrick articulation. In some of the walls (e.g., Walls C, F, and I), the builders used a great deal of mud mortar, often containing bits of pottery, burned clay, and ash, which would make the bricks harder to see if one were not used to digging plano-convex mudbrick walls.

Of great importance is the fact that in the deposits below the red stratum, which were supposed to be sterile, we very quickly found evidence of plastered

floors and walls of a substantial building (figs. 5.35, 5.37–5.38; Walls C, E, J). Just below that building was Unit 13 (figs. 5.33, 5.37), a very black, greasy layer with much cultural material, clay lumps, and a band of horizontal laminations according to the sedimentological report (chapter 5 appendix). Although Unit 13 was interrupted by later cuts and wall construction (Wall C) and we could not see those laminations, and although no fish bones and shells were visible,<sup>39</sup> I suggest that this layer represents the flood level. Unit 13 is at the right depth below the red stratum (Unit 2) and the Retaining Wall (A) to be a remnant of Watelin's flood. Unit 13a appears to have been an occupation layer, but it is also black and greasy. Below Unit 13a, there were at least four phases of plano-convex mudbrick buildings, with another stratum (Unit 16) that we interpreted as a possible earlier inundation because of its visual resemblance to Unit 13. There was yet another possible inundation layer at Unit 18, but rising groundwater prevented us from examining this lowest unit in detail. Because there are several meters of the Y trench below Unit 18, Watelin's additional floods could easily be lower than we reached.

It is a bit difficult to coordinate Unit 13 with Watelin's flood because in one of his sections (fig. 5.19) the bottom of the flood level is only 1.5 m below the bottom of the red stratum, whereas in another (fig. 5.20) it is given as 2 m below. Moorey accepted the 1 m distance between the red stratum and the top of the flood level. In my reconstruction (fig. 5.21),<sup>40</sup> I indicate that the red stratum was not uniformly level and that its bottom could vary enough to make the bottom of the flood level either 1.5 or 2.0 m deeper, depending on where the measurement was taken. Moorey<sup>41</sup> generally took Watelin's plain level datum as reliable, but I think it was an estimated point rather than a truly established one,<sup>42</sup> as there is no evidence that Watelin used survey instruments for accessing elevation while excavating.<sup>43</sup> If we follow Watelin's more detailed

<sup>39</sup> Watelin indicated that he found such fauna only in some parts of the flood level (see above). That we did not find any does not argue against Unit 13's being the flood level.

<sup>40</sup> Moorey 1978, p. 98.

<sup>41</sup> Moorey 1978.

<sup>42</sup> Gibson 1972, p. 86.

<sup>43</sup> It should be noted that Mackay did use surveying instruments and did establish within his camp at Uhai mir a benchmark for the entire Kish area, and that in his limited work at Ingharra he mapped with reference to that point. Unfortunately, that original datum has long been lost.

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Figure 5.36. North end of the section, with the red stratum above and Wall C at lower right.

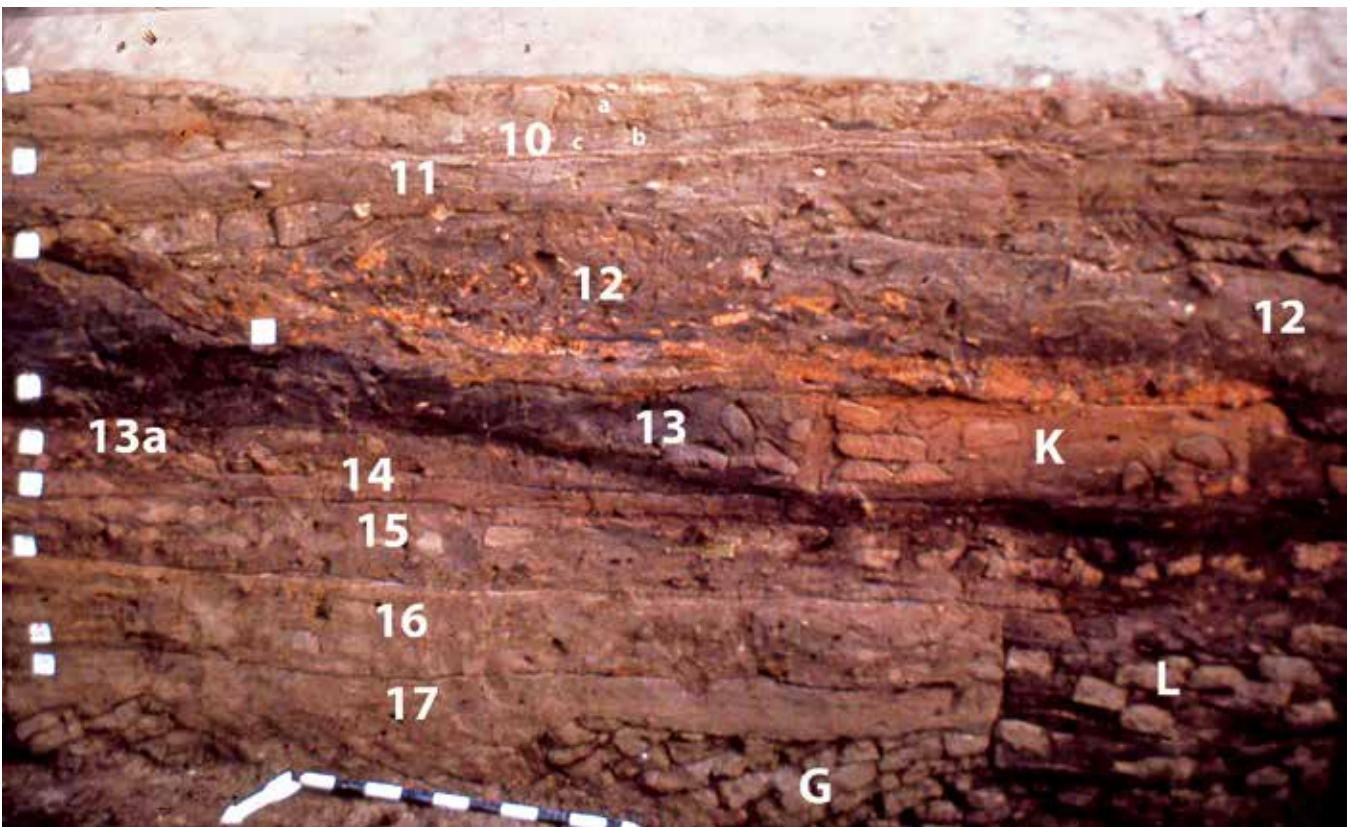


Figure 5.37. Middle of the section, with Unit 10c (plastered floor) above, pit (Unit 12) with mottled black and red-orange fill, and black Unit 13 below.

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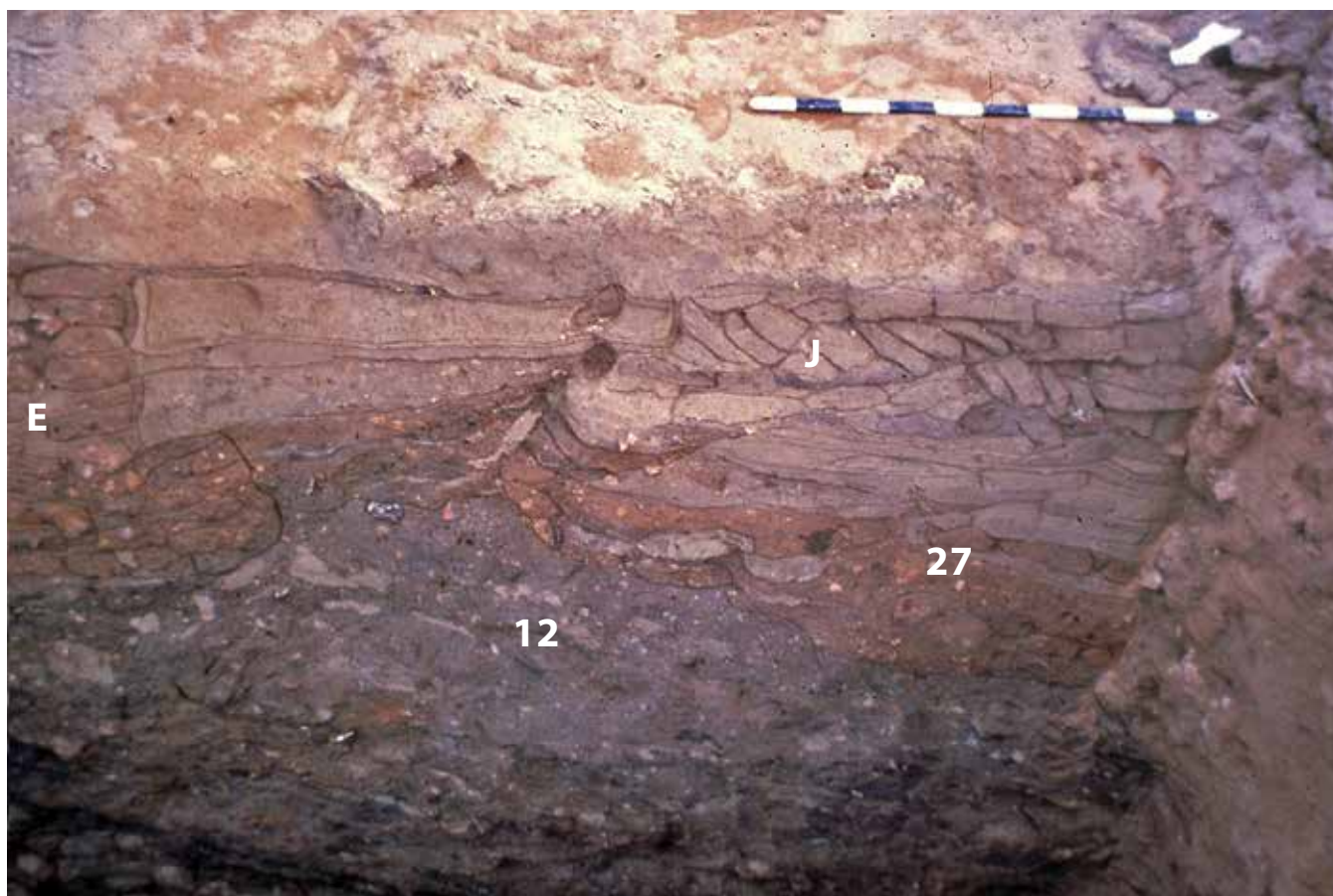


Figure 5.38. North end of the section with Walls E and J.

section (fig. 5.19), in which the bottom of the flood level is about 1.5 m below the bottom of the red stratum, then the flood would match roughly with Unit 13. More telling, one Field Museum photograph (fig. 5.26) has on its reverse a penciled notation by Watelin indicating that the encountered water level was 3.5 m below the bottom of the flood while the red stratum was easily visible at the top of the photograph, as indicated in the figure. Although there is no meter stick in the photograph, the depth from the bottom of the red stratum to the top of the flood level appears to be a bit less than 1 m. Also, it is clear that the bottom of the flood level is not horizontal but undulates.

It would seem better to use the bottom of the Retaining Wall (fig. 5.35, Unit 1, Wall A), which was supposed to rest at about plain level, than the red stratum (Unit 2) as a more reliable point from which to measure down,<sup>44</sup> but we cannot be sure that the bot-

<sup>44</sup> In my section (fig. 5.21) and in Lloyd's (fig. 5.22), the bottom of the Retaining Wall is placed 1 m above plain level to allow for the irregularity of the red stratum on which the Retaining Wall rested. If that were the true base, then we would have to drop 4 m below the Retaining Wall, which would put the flood

tom of the Retaining Wall is at the same level along its entire length.

To make the sequence of events reflected in the profile (fig. 5.35) more comprehensible, I will describe it from the bottom up.<sup>45</sup> The lowest point of our exposure was a small pit sunk below the level of Wall G, which made it clear that we had reached the bottom of that wall. Our attempt to go lower the following day was frustrated by rapidly rising groundwater caused by rain overnight. We could not examine the stratum (Unit 18) in detail or sample it, but we did observe that it consisted of very dark soil that was greasy to the touch and may therefore be an inundation layer. Wall G, of yellow plano-convex mudbricks with a darker buff mud mortar, had clearly suffered a structural failure.

entirely below our Wall G. But in tracing the red stratum around the perimeter of Trench Y, it could be seen that it does not rise as much as 1 m in any spot, so I think that both I and Lloyd were wrong in putting the Retaining Wall and the top of the red stratum so high.

<sup>45</sup> The dotted rectangles in the section drawing indicate the location of boxed soil samples, which formed the basis for the sedimentary analysis in the chapter 5 appendix.

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Following the destruction of Wall G, a building consisting of Walls F, H, and L was constructed, with the foundations partially laid in a cut that went down into Wall G. The plano-convex bricks of these walls were brown or yellowish brown in color, with brown mortar. The space between Walls F and L may have originally formed the corner of a room. The composition of most of Unit 17 appears not to have been living surfaces but rather construction debris and deliberate fill with a living floor at the upper surface,<sup>46</sup> on which charcoal and ash were clearly traceable, running between the walls.

Unit 16, at its base, had concentrations of pottery and organic cultural debris, but higher up it was composed of “sandy silts with 4–6 mm thick laminar structures in a more massive cemented matrix” (chapter 5 appendix). In the upper part of the unit were alternating silts and sands in laminar beds, each of which was about 4 mm thick. Between the beds were fragments of reed matting. It is this unit that I propose was an earlier inundation, although no shells or fish bones were recovered in our sample. It might be the highest of four floods that Watelin thought he had encountered in the Early Houses Stratum below the flood level.

Unit 15 rests on a well-marked black, ashy floor, but it should not be interpreted as having been an occupation floor for Walls H, L, and F since these walls were cut down at that point for a new building, represented only by Wall I, which was constructed with a foundation cut that removed part of Wall H. Unit 15, within the foundation zone of Wall I and another wall that must have been to the right but was not found because it was destroyed by Unit 12, was dense and greasy, with chunks of clay and broken mudbricks lying on ephemeral surfaces, interspersed with horizontal lines of ash. This unit, which the geomorphologist terms a “midden” (see chapter 5 appendix), was formed in part by construction debris and later by deliberate fill, on which a plaster floor was laid (Unit 14, with an additional, later thin coat of plaster). Wall I was not very well constructed, compared with the earlier walls, having much more black mud mortar and fewer gray bricks. We seem to have encountered Wall I in such a way as to slice diagonally through it instead of across it. But Unit 14,

the plaster floor for the new building, was a layer of fine greenish-gray clay below a yellow silty coat of plaster that ran over the footing of Wall I and up its face. At the south, to the right, the plaster floor was cut away by Unit 12. The plaster floor was much blackened near Wall I, and there were remains of reeds lying on it in this area. Although plaster floors are rare in Mesopotamian houses, they are common in palaces and other public buildings, especially in the Early Dynastic period.

Resting on the plaster floor (Unit 14) was Wall K, which had good faces of reddish brown mudbricks but whose interior was made up of only brown mud mortar with ash and other impurities in it. This “wall” may, in fact, have been a bin or other feature resting on the plaster floor in the middle of a room. Above much of the plaster floor was Unit 13a, which had fragments of mudbricks strewn across it, perhaps the debris from the destruction of a mudbrick wall. Of importance, this unit contained “terrestrial gastropod fragments” (chapter 5 appendix), such as freshwater shells. Immediately above Unit 13 was a bed of sandy silt “in a matrix of heterogeneous black greasy” soil that contained “pockets of organic laminar silts with bands up to 5 millimeters thick” (chapter 5 appendix). Unit 13 constitutes the best candidate for the flood level.

To the left of Wall I, a large pit (Unit 24) had been carved down into the wall from some level after Unit 13, prior to the cutting of a pit into the original pit as preparation for the construction of a later building that was formed, in part, by Wall C. The next event in the sequence was the cutting of Unit 12, a huge pit that was still descending at the bottom of our operation. Assuming that Unit 13 was the flood level, it can be concluded that the flood level was definitely not intact across the Y trench. Even Unit 16, another possible inundation, would have been cut by Unit 12. The cut was filled with starkly contrasting black and orange-red mottled debris, burned clay, mudbricks, bricks, and sherds. Along the sloping bottom of Unit 12 was a bed of deep-red burned clay, whereas other fragments of similar material are scattered throughout the black or dark-gray matrix. Under Walls E and J, the upper part of the unit is a dark-gray soil with white flecks. The filling of Unit 12 seems to have been done gradually or at least not in one operation, because the fill was not uniform. How Watelin and his team missed all of this multicolored evidence of the filling of a huge cut (figs. 5.37–5.38) is difficult to explain. He

<sup>46</sup> The soil of Unit 17 was mottled gray and yellow clay with air bubbles throughout, and it was relatively sherd free. The geomorphological report (chapter 5 appendix) indicates that it is sandy silt with prominent laminar bedding planes with fibrous twigs in the matrix.

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probably recognized the flood level only because, as it dried, it began to show the laminations and shells/bones that characterize it.

The filling of Unit 12 was followed by the construction of another building with plastered floors (Walls C, E, and J). Unit 11, between Walls C and E, was initially a construction surface with reed mats and broken mudbricks lying on it. Wall D, located on that construction floor, may have been a temporary structure used during the building process. After the walls were constructed, Unit 11 was deliberately filled with debris and many sherds. The walls of the building (Walls C, E, J) were constructed of low-quality plano-convex mudbricks that included grayish black ash and red baked-brick fragments as well as bones and sherds. The bricks were irregular in size, and some were relatively flat. The mud mortar was light greenish-gray and in places was thicker than the bricks themselves. The difference in color between the bricks and the mortar made these walls extremely visible, and again it is difficult to understand why Watelin or any of his team could not see them. The bases of the walls were laid at different depths, with Wall C much lower than Walls E and J. But they are all tied temporally by a buff-colored plaster floor, Unit 10c, which sloped down slightly to the north and also to the southeast, in the direction of the ziggurat. To the north of Wall C was another room with a plaster floor (Unit 21) about 0.5 m lower than the plaster floor (Unit 10c) that linked Walls C and E. The plaster floor (Unit 21) must have run to a wall that lies outside one section to the north, but the floor was interrupted by another large pit (Unit 22). I call attention to the lower plaster between Units 25 and 26 in the small space between Walls E and J, which would be equivalent of Unit 10c, and to a higher plaster floor above it capping Unit 25. Above the plaster floor (Unit 10c) was an area of mudbrick fragments toward the north and a buildup of occupation surfaces (Unit 10b) to the south. The buildup of occupational debris in the southern end of Unit 10b was probably contemporary with Units 19 and 20 to the north. These layers had a matrix of brown soil with a heavy concentration of ash, charcoal fragments, pottery, and small bits of burned brick. We have viewed the sharp break between Unit 10a and 10b, and between 10a and Unit 19 to the north of Wall C, as a cut-down surface that brought an end to the building made up of Walls C, E, and J. Unit 10a consisted of lenses of sand and ash within a dense yellowish clay matrix.

Subsequently, at the north end a pit (Unit 22) was dug and then filled with ashes in succeeding beds of brown and white with a dramatic diagonal bedding of dark-gray ash mottled with red (fig. 5.36).

Above Unit 10 was Unit 9, a greenish sand deposit with a course of mudbricks (Wall B) set on it. This bit of wall was contemporary with Unit 8, a red clay layer that was interrupted at the north by a small ash pit (Unit 8a) bordered by vertically laid plano-convex mudbricks. The ash pit would have been in use during the lifetime of Unit 7. The next meter of deposit consisted of relatively thin layers, some of clay (Units 7 and 6), with a charcoal-strewn surface separating the units. Unit 5 was a gray-brown mottled deposit with charcoal fragments, which appeared to be occupational buildup. Unit 4 was a narrow band of clean sand, but Unit 3 was a fairly thick bed of clay layers. I would interpret these alternating layers as having been accumulations of materials in an open space, most probably a temple courtyard next to the ziggurat. Above lay the red stratum of reddish plano-convex bricks. The bricks varied in size and color, but red was dominant. Typical red bricks measured 12.5 cm wide × 18.5 cm long × 7.5 cm thick, whereas a few bricks of yellow, gray, or green clay measured about 14.5 cm wide × 16 cm long × 6.5 cm thick. As mentioned above, the bricks appear to be baked, but it is not clear if they were baked before use or were burned in a conflagration. The spreading of the red stratum across Y appears to have been a deliberate operation, with its thickness lessening toward the northwest. The bottom of the red stratum was not level, being on a slope down from the face of the Early Dynastic ziggurat. Even in the short length of our section, the bottom of the red stratum is at least 30 cm higher in some places than in others.

Directly on the red stratum rested the Retaining Wall/Sargon Wall (Wall A, Unit 1), a massive wall that had been inserted against the cut-back face of the larger ziggurat.

It should be noted that we did not encounter the mudbrick platform on which Watelin claimed to have found the ziggurat built when he demolished the Retaining Wall. Watelin also thought he had found that platform in at least two other locations on Ingharra.<sup>47</sup>

In our section drawing (fig. 5.35), dotted rectangles indicate the location of nine sediment samples,

<sup>47</sup> For a summation, see Moorey 1978, pp. 87–88.

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positioned and extracted so as to show the nature not just of the layers on either side of stratigraphic breaks but also of the breaks themselves. These samples were collected with the expectation that they would be analyzed with a technique employing thin sections, a procedure adopted from the Belgian expedition's work at Tell ed-Deir. In fact, Hermann Gasche took an additional boxed sample from Units 16 and 17 for an independent analysis in Ghent. We sampled these units more thoroughly than the others because Unit 16 appeared to be a likely candidate for an inundation deposit. Gasche's sample met with an accident in the laboratory and yielded no results. Our samples are analyzed in the chapter appendix.

As mentioned earlier, Watelin's assertion that the layers below the red stratum were sterile is clearly wrong, given the evidence of a large building with plaster floors represented by Walls C, E, and J. Under what we think was the flood level (Unit 13) are three other buildings: one with plaster floors (Wall I), a lower building represented by Walls H, K, and F, and an even earlier building with Wall G. These buildings must be seen as the uppermost group of houses in the Early Houses Stratum, with Unit 16 and perhaps Unit 18 representing the upper two strata of four inundations that Watelin said he found below the flood level.

It is certain that neither the flood level nor Units 13 or 16 were intact over the entire area of Trench Y, since Unit 12, the large pit, clearly interrupts both.

The geomorphological analysis by J. Schuldenrein (chapter 5 appendix) does not help to answer the question of the nature of the flood level. Although the ceramic evidence is slim, the finding of Early Dynastic I sherds, and nothing earlier, below the flood level fits with the assessments made by Moorey and me. Schuldenrein was not in Chicago for consultation at the time he did the analysis, and he seems not to have understood the evidence of plaster floors. His analysis of the soils led him to identify one plaster floor (Unit 14) as an "interval of ponding" that he associated with reed and organic mats found on that floor, not realizing that reeds and mats were commonly used on floors and also in construction activity.

Schuldenrein characterized Unit 9 as fluvial and typifying "a sorting pattern associated with a broader distribution of particle sizes as may be

expected in a bedload-rich fluvial deposit." He identified Unit 9 as the best candidate for the flood level despite the fact that this layer is too thin at 10 cm, discontinuous, and too high in the profile. It is likely that Unit 9 is deliberately laid sand or the remnant of a construction activity.

Units 4–8 at the top of the section, which Schuldenrein characterizes as being evidence of repeated inundations, appeared to me to be gradual accumulations of clay lenses that may have been, in part, deliberately laid but could also be created by rain gradually moving the face of plastered walls and making small sheets of what appear to be plastering at the base of those walls. Once the Early Dynastic ziggurats were built, perhaps at the time of Unit 10, approximately 1 m below the bottom of the Retaining Wall (Unit 1) according to my reconstruction of the stratigraphy (fig. 5.21),<sup>48</sup> this area was no longer residential but would have had open spaces that were kept relatively clean. The fact that Unit 5 has mottled grayish-yellow soil with charcoal bits suggests that it is the result of normal buildup that did not get cleaned. Just above that layer is Unit 4, which consists of a very thin bed of sand that could have accumulated in a sandstorm or been laid down deliberately.

The dating of the strata by ceramic evidence is not as clear-cut as I would like. Unfortunately, the great majority of pottery recovered in the baulk-cleaning exercise consisted of nondiagnostic body sherds. In the illustrations (figs. 5.39–5.51), I have presented only drawings of the rims and bases. The only entire cleaned section yielded evidence of Early Dynastic sherds, but there is little that is distinctive enough to determine precise phases. Sherds were collected by stratigraphic units, each unit's sherds being assigned specific lot numbers. After counting and sorting, the nondiagnostics were discarded and the rims and bases were drawn. The lowest unit, Unit 18, yielded three nonspecific bowl rim sherds and fragments of ridged and notched stems of fenestrated stands (fig. 5.39), comparable to items in Level XI of the Inanna Temple at Nippur (Early Dynastic I). Unit 17 had no diagnostics, whereas Unit 16 had two bowl rims, a bowl base, a triangular jar rim (fig. 5.40, left), and a ring base from a jar. There was

<sup>48</sup> Lloyd, in his section (fig. 5.22), locates the base of the ziggurat at about 3 m below the bottom of the Retaining Wall, but I think that is too great a span.



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also a fragment of a solid-footed goblet (fig. 5.40, right) that we date to Early Dynastic I.<sup>49</sup>

From Unit 15 we recovered several jar rims but only one distinctive sherd: a fragment of the stem of a ridged stand (fig. 5.41, lower right). This item might be comparable to a Diyala type<sup>50</sup> that was previously dated to Early Dynastic II but would more likely now be dated to late Early Dynastic I.

Unit 14, a thick plaster floor, had three rim sherds embedded in it (fig. 5.42). One is from a plain-necked jar, while another is from a small jar with outturned rim. The latter may be comparable to an Early Dynastic III miniature in the Diyala but could be earlier.

Unit 13a yielded a sherd from the shoulder of a jar with incised decoration (fig. 5.43), perhaps datable as early as Early Dynastic I<sup>51</sup> and matching observed sherds in Level XI of the Inanna Temple. There was also a “fruit stand” fragment (fig. 5.43, left), also comparable to items from Level XI of the Inanna Temple.

From Unit 13 came, along with thirty-two sherds from plain bowls, a cooking pot (fig. 5.44, bottom left) and two fragments of notched-ridged decorated fruit stands (bottom center and right).

Unit 12, the red-black mottled fill of a huge cut, produced numerous sherds from plain bowls (of which we drew only a sample) as well as plain-rimmed jars, none of which is distinctive (fig. 5.45). In the same stratum, however, were two jar rims with an internal shelf (fig. 5.45, center left), a feature that is common in the Inanna Temple sequence from Levels XI–VII, especially Level VIII. This type therefore has a range from Early Dynastic I to III, being most common in the later phase. A notched-shouldered sherd (fig. 5.45, bottom left) is similar to a type from Inanna Temple Level VIII (Early Dynastic III). Also found in Unit 12 were fragments of large storage vats that cannot be dated easily.

From Unit 11, a stratum associated with the construction of the building that included Wall C, came a number of plain bowls and a jar rim with an internal shelf and an overhanging external band (fig. 5.46, top right). This type is related to one seen already in Unit 12 (fig. 5.45, third row left), but this particular

variation is closely paralleled in Inanna Temple Level X, which has been dated to Early Dynastic III.

On Unit 10c, a plaster floor, was a layer of debris (Unit 10b) that included a spout (fig. 5.47, right) and a triangular rim (second from left), both of which appear to be Early Dynastic but cannot be dated more precisely. A fragment of an Early Dynastic I goblet (second from right) does not provide a date for the layer but indicates only that earlier material was being redeposited at this high level. Given that the great pit (Unit 12) appears to have gone below the bottom of our section, it is not surprising to find earlier material this high.

Unit 10a (fig. 5.48), a fairly thick layer of occupational debris, had numerous plain bowls, rope-decorated jars, and fragments of fruit stands (center right) that can be compared to Levels X–VII of the Inanna Temple (i.e., as late as Early Dynastic III but possibly including material brought up from below that dates to an earlier period).

Wall C, contemporary with Unit 10c through 10b, had within its mud mortar a number of sherds (fig. 5.49), including two jar fragments. One, decorated with incised curving bands, is comparable to fragments from wing-lugged Early Dynastic I jars found in Level IX of the Inanna Temple. The other is comparable to a type from Inanna Temple Level VII, which has been dated to Early Dynastic IIIa or somewhat later on the basis of a cuneiform tablet that Robert D. Biggs thinks is “post-Fara.”

Units above 10a were relatively sherd free, with nothing very diagnostic (figs. 5.50–5.51).

It is important that, in the entire pottery sample from the profile, there was nothing that had to be dated as late as the Akkadian period and probably nothing that must be assigned to Early Dynastic IIIb. This fits with the evidence of a few graves that Waelin found dug down into the red stratum; these graves contained material that was very similar to the burials in the A Cemetery, which extended from Early Dynastic IIIb into the Akkadian period.<sup>52</sup>

That there are a few sherds that date to Early Dynastic III or IIIa in units above Unit 13, which I identify as the flood level, also fits with earlier conclusions. As mentioned above, newer work on the Early Dynastic sequence tends to eliminate Early Dynastic II, so the flood level would have been an occurrence in terminal Early Dynastic I followed by Early Dynastic IIIa.

<sup>49</sup> Karen Wilson and Jean Evans, who are working on the pottery of the Inanna Temple at Nippur, examined these sherd drawings and supplied the dating for these and other sherds. I thank them for their assistance.

<sup>50</sup> Delougaz 1952, A.654.520, C.367.810.

<sup>51</sup> Delougaz, Hill, and Lloyd 1967, C526.373a–b.

<sup>52</sup> For a summation of the evidence, see Moorey 1978, p. 97.

## SUMMARY

In summary, I can state that our section cleaning did not produce as clear-cut a stratigraphy as I hoped. We did prove that there was a substantial plaster-floored building between the flood level and the red stratum, which I would like to suggest was part of a palace datable to the Early Dynastic IIIa period from which some or all of the cart burials were excavated. Of course, only excavation will be able to determine the nature of the building, and given the small area left to expose, that may not be possible. I do not think the plastered buildings were temples because I am convinced that burials were not done below temples, but rather only in houses and royal residences.

Although the section does not show a continuous laminated stratum across the exposure comparable

to what was visible in the Y trench, we have to propose that Unit 13 marks the flood level. Unit 12, a massive pit filled with fire-related orange and black debris, clearly cut through the level of Units 13 and 16, which are the best candidates for flood deposits. Watelin was incorrect in stating that the flood level isolated the lower parts of Trench Y from the upper parts.

There is still an opportunity to investigate the stratigraphy of Ingharra, including the Y trench, especially on the northwest edge, which was not removed by Watelin and has not been damaged by the presence of the United States military. I assume that sometime in the future, the Japanese expedition from Kokushikan University will return to resume work at Kish, and I hope that this will constitute one of the earlier research objectives.

WHERE KINGSHIP DESCENDED FROM HEAVEN

Unit 18

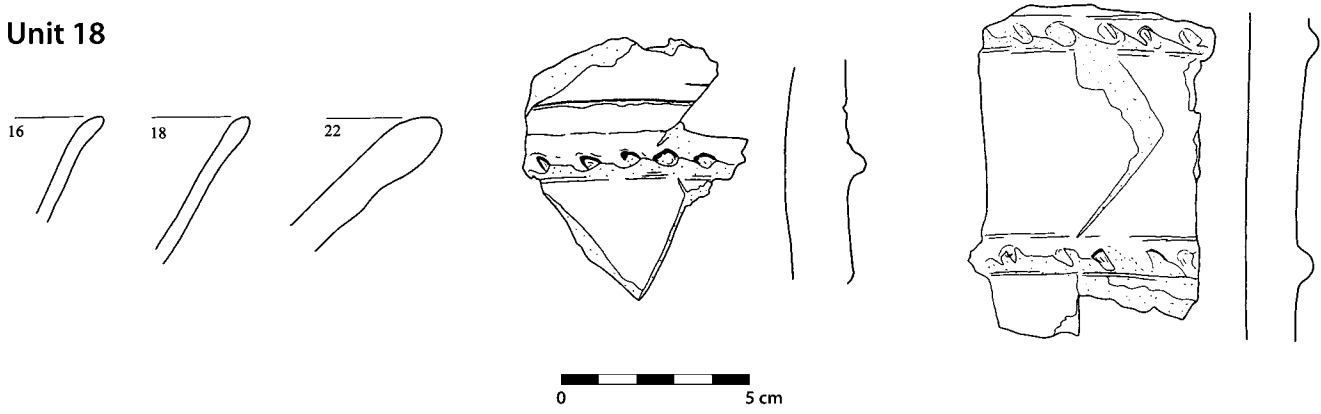


Figure 5.39. Pottery drawings, Kish section, Unit 18

Unit 16

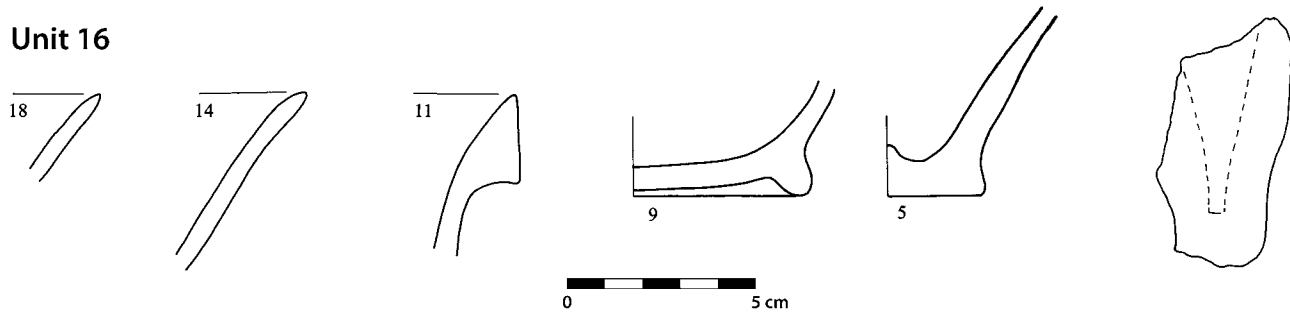


Figure 5.40. Pottery drawings, Kish section, Unit 16

Unit 15

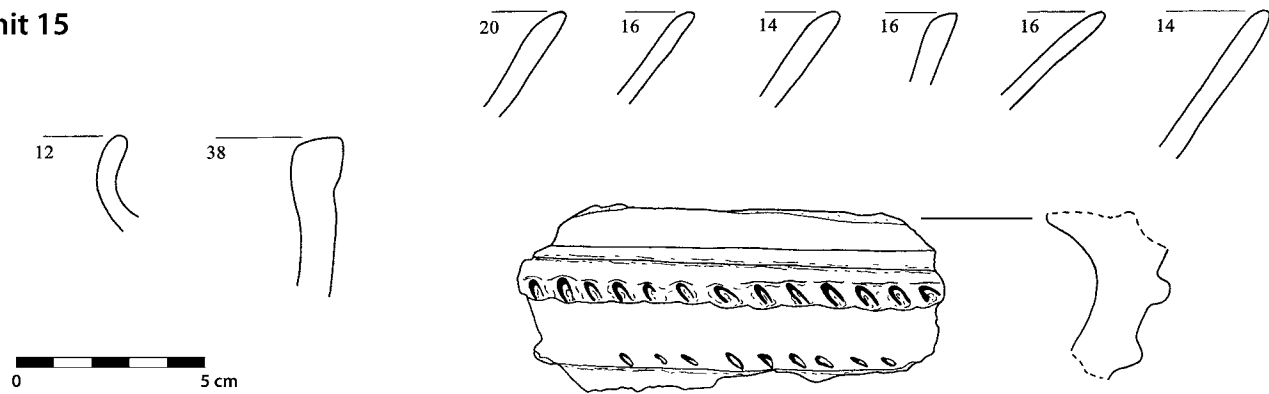


Figure 5.41. Pottery drawings, Kish section, Unit 15

Unit 14

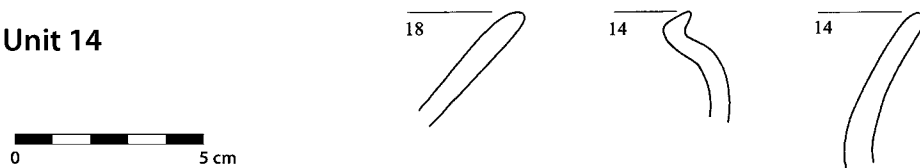


Figure 5.42. Pottery drawings, Kish section, Unit 14

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Unit 13a

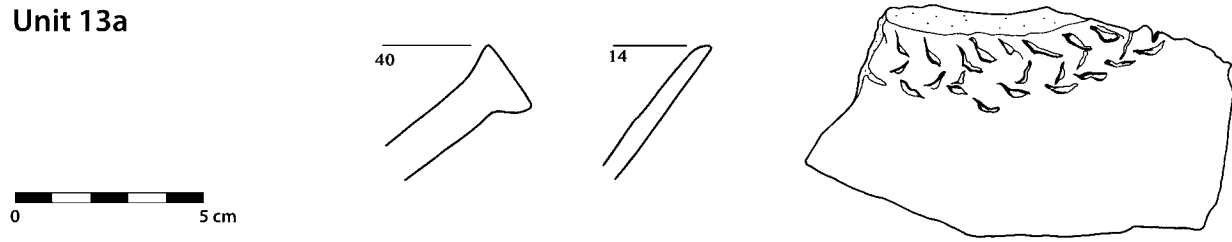


Figure 5.43. Pottery drawings, Kish section, Unit 13a

Unit 13

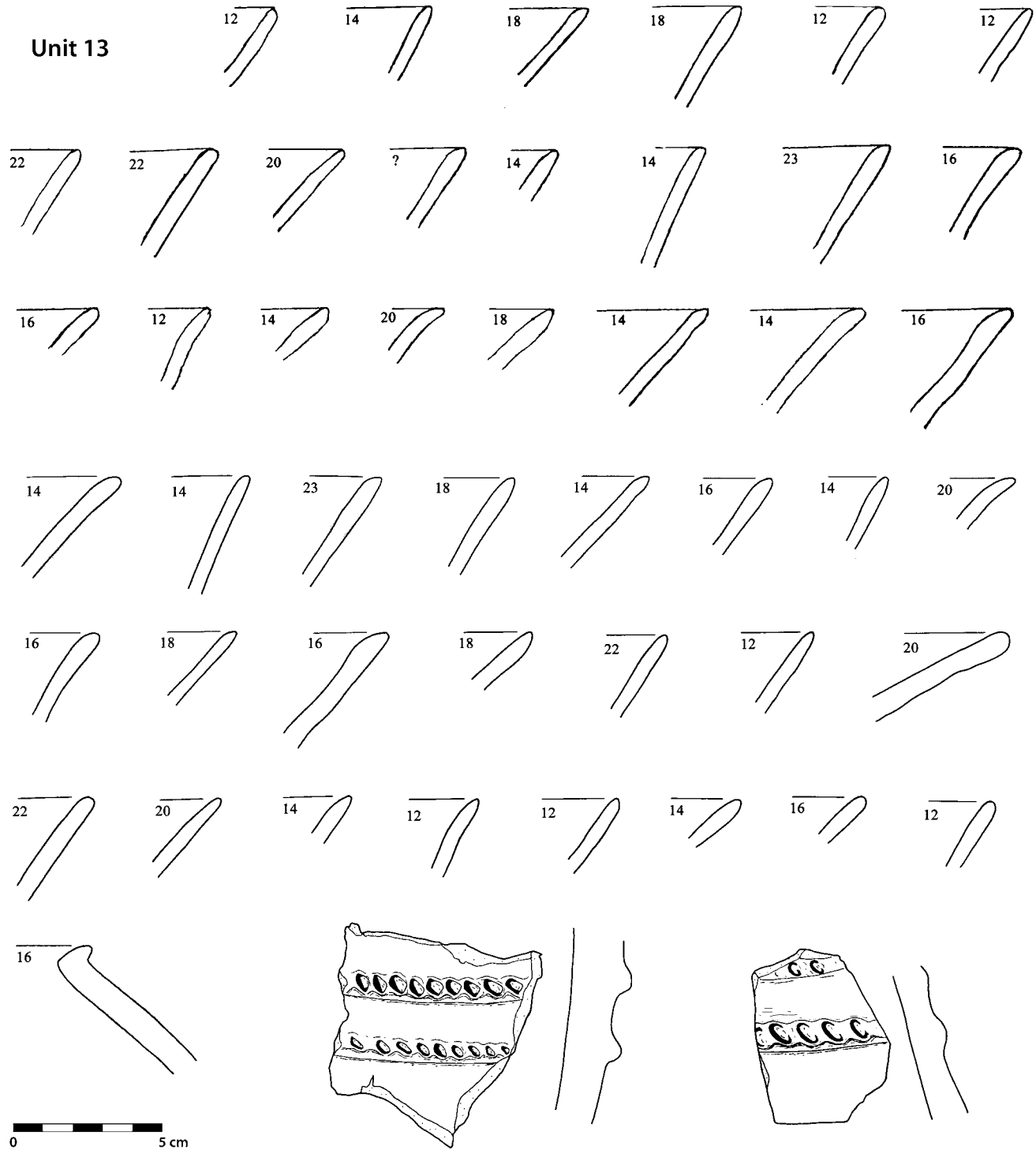


Figure 5.44. Pottery drawings, Kish section, Unit 13

WHERE KINGSHIP DESCENDED FROM HEAVEN

Unit 12

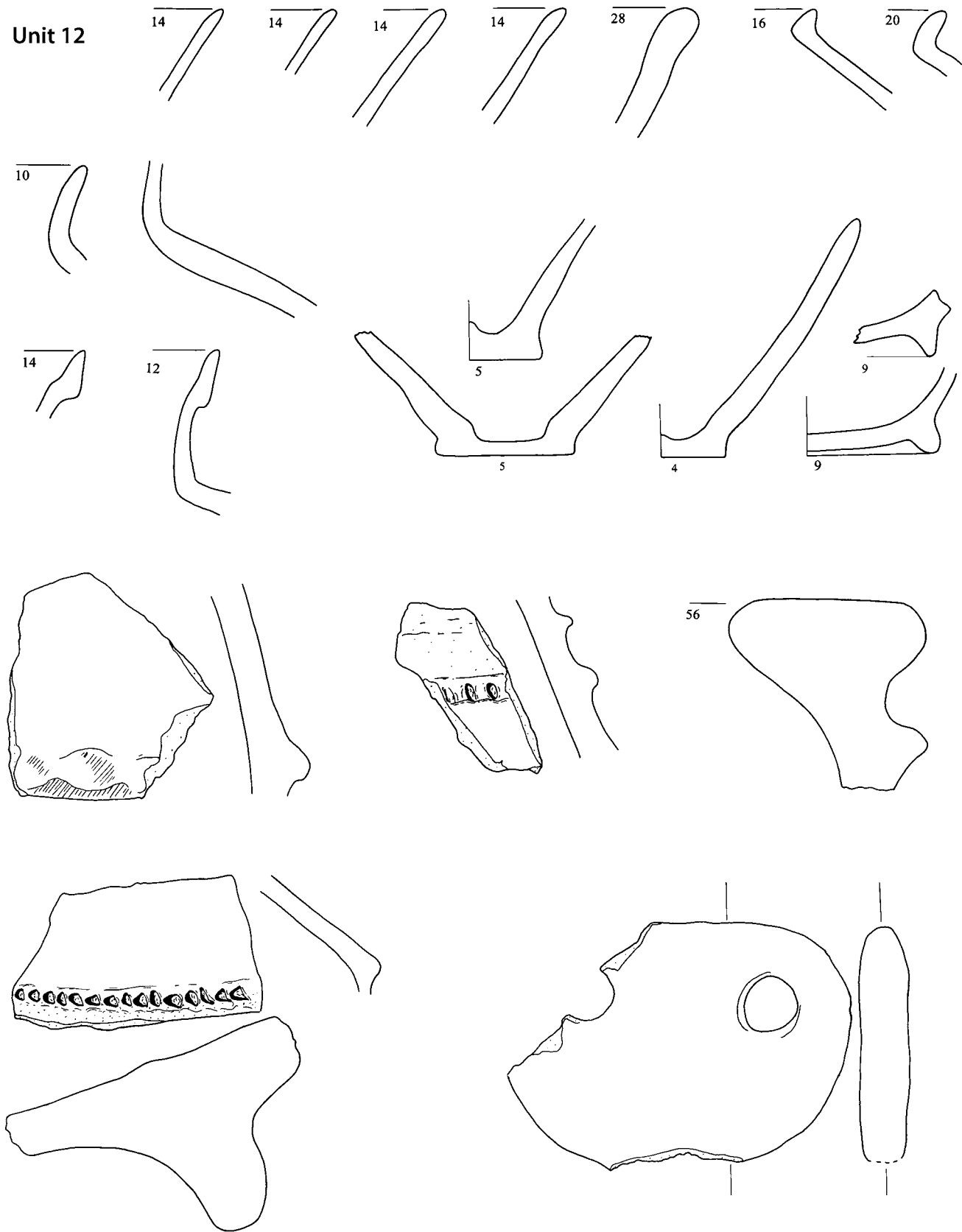


Figure 5.45. Pottery drawings, Kish section, Unit 12

CHAPTER 5. THE FIRST ACTUAL STRATIGRAPHIC PROFILE OF PART OF THE Y TRENCH

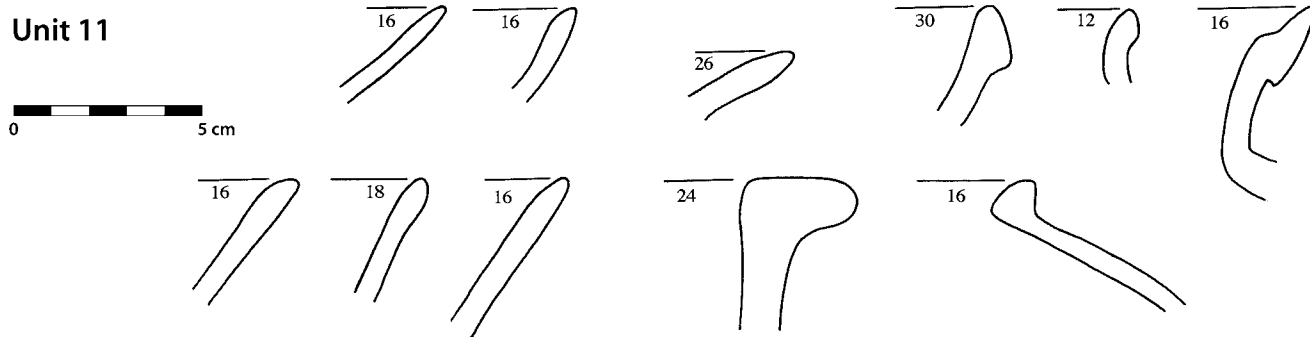


Figure 5.46. Pottery drawings, Kish section, Unit 11

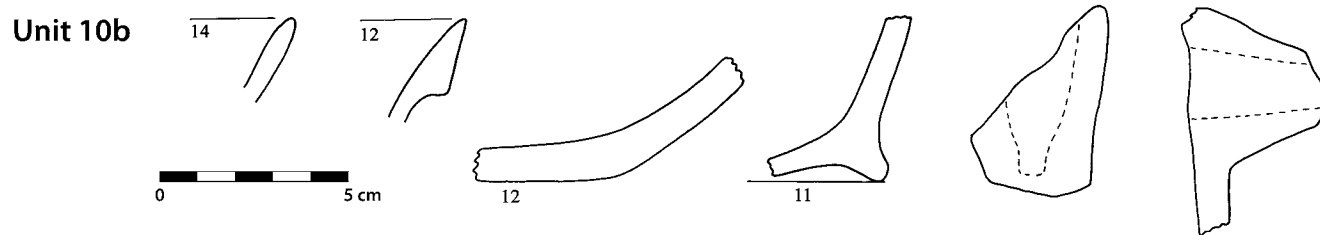


Figure 5.47. Pottery drawings, Kish section, Unit 10b

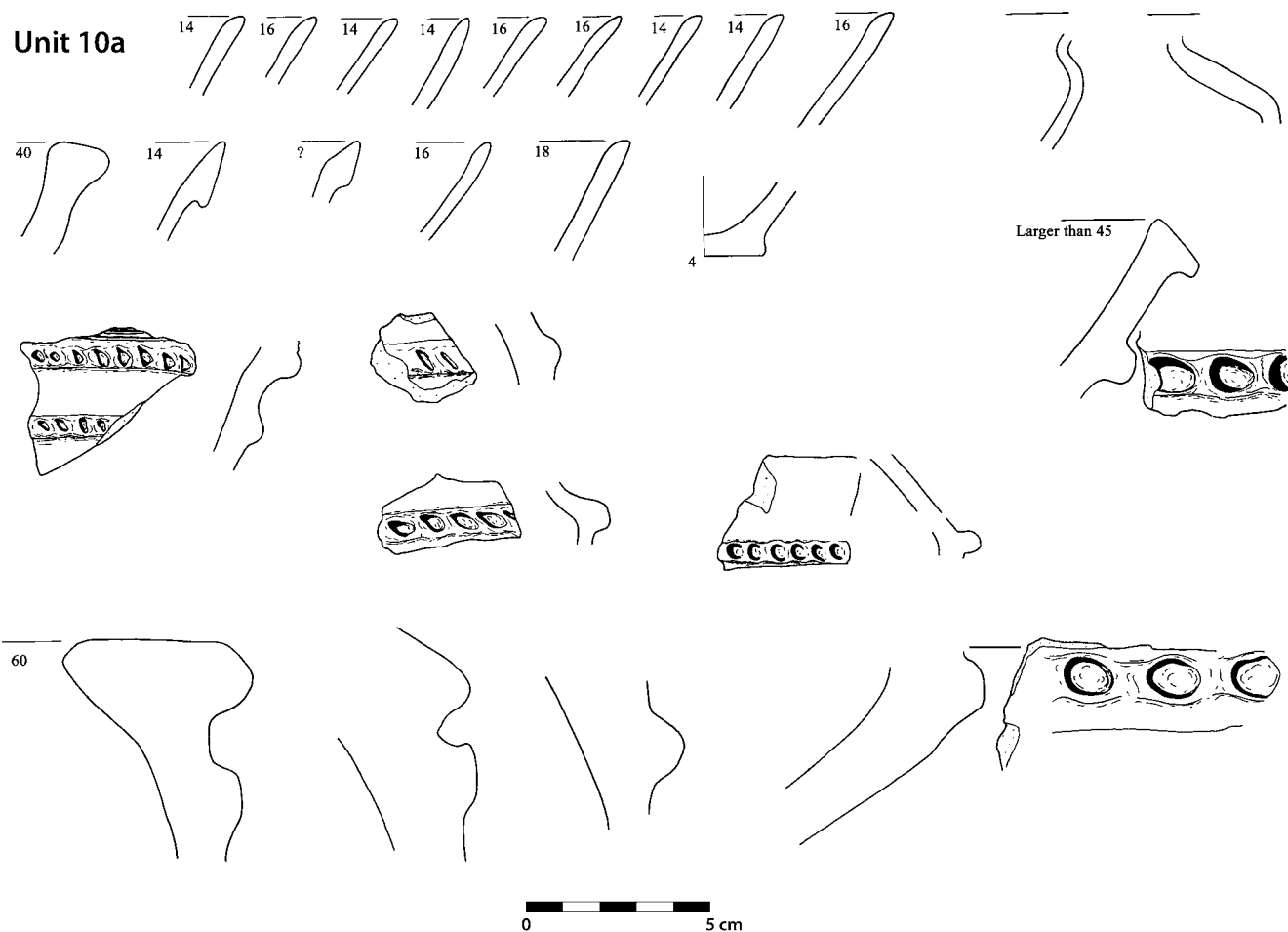


Figure 5.48. Pottery drawings, Kish section, Unit 10a

WHERE KINGSHIP DESCENDED FROM HEAVEN

Wall C

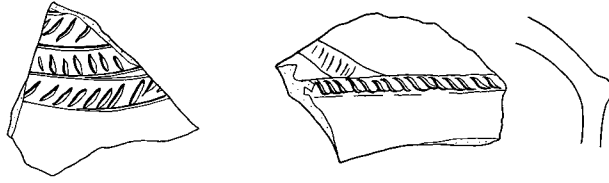


Figure 5.49. Pottery drawings, Kish section, in clay mortar of Wall C

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Unit 9

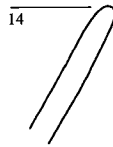


Figure 5.50. Pottery drawing, Kish section, Unit 9

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Unit 5

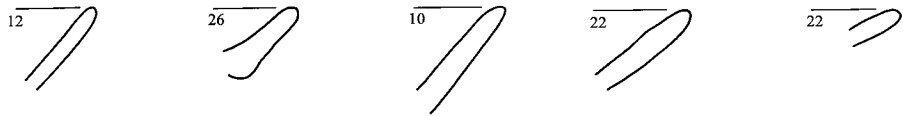


Figure 5.51. Pottery drawings, Kish section, Unit 5

## APPENDIX 5A

# ARCHAEOLOGICAL SEDIMENTATION OF THE Y TRENCH AT KISH

JOSEPH SCHULDENREIN

In autumn 1978, a series of eighteen sediment samples was collected from a semicontinuous stratigraphic column of the Y trench at Kish for sedimentological study.<sup>1</sup> The samples came from strata linked to discrete occupational phases and depositional events occurring during the Early Dynastic period (2900–2350 BC). The purpose of the analysis was to determine what processes—cultural, geomorphic, or both—could account for the stratification. It might then be possible to draw inferences on the changing nature of land use at Kish, albeit on a highly localized scale.

The composite stratigraphy (see fig. 5.35) registers the interaction of several complex sedimentation patterns. First, some strata appear as alleviated natural surfaces, produced largely by flooding, ponding, sheet wash, and other less identifiable forms of water flow. Second, they are built up by the collapse and decomposition of structural features associated with the occupation. Third, strata reflect the interdigitation of human and natural processes responsible for surface transformation. Finally, surfaces were exposed to intervals of erosion, through deflation and other forms of attrition.

Distinguishing between the individual strata is complicated because such diagnostic geological indicators as bedding planes, ancient soil horizons, or distinctive textural or structural characteristics are often lacking as a result of the interference generated by intermittent man-induced impacts. But it was felt that the application of modern analytical techniques might offer insights into the processes of site formation.

The methods utilized included chemical and more standard methods of mechanical sediment analysis to recognize the developmental history of a stratum from initial deposition through transformation and final burial.<sup>2</sup> While samples were not collected by me, they were taken from consolidated blocks and were thus amenable to limited but systematic analysis because they retained structural integrity, individual strata were identifiable visually, and units were labeled appropriately on the sample boxes. Brief descriptions of the strata were made over the course of field sample collection. They provided sufficient data to corroborate sample proveniences. Figure 5.35 indicates the proveniences of the analyzed samples on the master profile in the Y trench.

## GEOMORPHOLOGY AND FIELD RELATIONS OF THE STUDY AREA

The Y trench column documents a sequence that mainly reflects variable human impacts on the tell. But the nature of these impacts was affected by natural sedimentation patterns, and specifically by the attempts of the tell's inhabitants to regulate flooding in the interests of agriculture. Irrigation practices were well developed by Early Dynastic times, and any explanation of geomorphic process at the tell must begin with an overview of the alluviation regime.

Of the most direct consequence to the Kish landscape is the fact that the area of the site was subject

<sup>1</sup> With comments in footnotes by McGuire Gibson (MG).

<sup>2</sup> Davidson 1976; Hassan 1978; Butzer 1982; Eidt 1984; Bullard 1985.



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to seasonally regulated inundations from the Tigris-Euphrates drainage networks, whose discharges peak between March and May.<sup>3</sup> The effect of spring flooding was the progressive vertical and lateral buildup of an enormous silt-based alluvial basin. Siltation is pronounced in the Kish area because stream gradients diminish and several tributary nets converge to form reinforcing sediment traps.<sup>4</sup> Irrigation agriculture enhanced these depositional tendencies; soundings in a variety of locations in southern Iraq have suggested an average accumulation of silt in excess of 10 m over the past 5,000 years due to canalization and related practices.<sup>5</sup> Over time, exponential leaps in aggradation levels attest to the pervasiveness of siltation as a factor to be reckoned with in agrarian land use. Complementing siltation problems was the fact that alluvial soils are extremely saline. Increased salinity has been attributed, in part, to the emergence of artificial landforms to regulate flooding.<sup>6</sup> These landforms consist of long ridges, wide canal levees, and tells. The canal alignments were a major component of the Kish landscape, often delineating the perimeters of artificial drainage basins created during systematic diversion of floodwaters. It is instructive, therefore, to transfer these general observations of the hydrography to the depositional sequence of the Y trench.

Gibson notes<sup>7</sup> that the earliest excavated evidence of settlement at Kish was of the Jamdat Nasr period, an occupation that lies 9 m below the surface of the contemporary floodplain, which would represent the only naturally accreted surface. Most of the sedimentation in the trench seems to have been largely a function of building activities associated with such landmarks as the red stratum, the Retaining Wall, and Monument Z.

Two marker horizons have been identified within this central portion of the sequence: (1) the red stratum, a level basically capping the Early Dynastic IIIa sequence and consisting of plano-convex bricks, and (2) the flood level, a stratum of thinly laminated sandy beds. Gibson suggested,<sup>8</sup> and the current section cleaning confirms, that between the red stratum and the flood level was major building activity followed by accumulated layers without

obvious construction debris. The flood level was thought by the excavators to extend over the entire trench and to seal at more than 3 m of accumulation involving mudbrick buildings and hundreds of burials.

Given the site-specific background research and the hydrographic considerations outlined above, the objectives of the sedimentological studies were to

1. isolate characteristics distinguishing cultural from natural sedimentation patterns,
2. differentiate between types of sedimentation to sort siltation induced by irrigation practices from naturally occurring floods and from aeolian action,
3. register the presence of the flood level, and
4. document modes of occupation as preserved in archeostrata.

## METHOD

Sample blocks were initially examined to detect gross morphological breaks between strata.<sup>9</sup> Once these were confirmed, sediments from the individual strata were viewed under a hand lens to identify structural properties. In all cases, the sediment fabric was strongly cohesive and cemented. Both structure and textural properties were readily identifiable. The following soil characteristics were recorded for all eighteen specimens: color (Munsell reading, moist and dry), structure, texture, ped development,<sup>10</sup> organic matter presence, mottling, stoniness (abundance and lithology), voids, cementation, stickiness, plasticity, root presence, carbonates, pedogenic/sedimentary inclusions, cutans ("clay skins"), ferromanganese presence, condition of boundary to lower horizon, and unique features.

Sample blocks were then segregated into component strata, and grain and fabric morphologies were described under a microscope with 10×–100× magnification. Following visual description, 50–200 g of each stratum were bagged and mailed off to the agronomy laboratories of Utah State University in Logan, Utah, for detailed sedimentological analyses.

<sup>3</sup> Ionides 1937; Gibson 1972, with references.

<sup>4</sup> Leopold, Wolman, and Miller 1964.

<sup>5</sup> Jacobsen and Adams 1958.

<sup>6</sup> Buringh and Edelman 1955; Buringh 1956; Delver 1962.

<sup>7</sup> Gibson 1972, p. 31 and fig. 61 (= fig. 5.21 in this volume).

<sup>8</sup> Gibson 1972.

<sup>9</sup> [The samples had been taken so as to include at least two layers in each boxed sample, thus allowing a view of the contact between units. J. Schuldenrein examined the nine boxed samples then split each one to produce eighteen samples.—MG]

<sup>10</sup> ["Ped" is a geological term for a naturally formed unit of soil structure. For other terms, consult a geological dictionary.—MG]

A battery of mechanical and chemical tests was performed on all samples.

Mechanical testing consisted of total particle size analysis by sieving of the coarse fraction (larger than 0.05 mm diameter) and the hydrometer method for silts and clays following the removal of salts.<sup>11</sup> Textural classes follow those of the US Department of Agriculture.<sup>12</sup> Results are reported for relative frequencies of sands, silts, and clays. Additionally, parameters for mean grain size (Mz), sorting (So), skewness (Sk), and kurtosis (Kg) were computed by the Folk indices.<sup>13</sup> The utility of these parameters lies in the fact that for each, critical values have been outlined that may be diagnostic of particular depositional environments. The Kish samples can, therefore, be indexed against extant databases.

Chemical analysis included testing for organic matter content, carbonates, phosphate, phosphorous, potassium, and cation exchange capacity. Organic matter determinations are indicative of the nature of plant growth and surface stability as well as of possible intensity of site utilization; for this, the method of backtitration with  $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2$  solution was used.<sup>14</sup> Carbonates are measures of weathering intensity and also of source of fluvial transport; the Chittick gasometric method was applied to measure volume of carbon dioxide released after application of 1N HCl pH registers the relative alkalinity of the sediment and a very general idea of the environment of weathering. Similarly, cation exchange monitors changing balances of ions attracted to soil colloids and reflects on surface and environmental stability.

Relative changes in phosphorous and potassium concentrations are perhaps the most diagnostic barometers of cultural input in the sediment matrix. Soil phosphorous measures were utilized in a limited manner to highlight relative intensity and mode of human activity. At urban and tell sites, comprehensive phosphate fractionation procedures may differentiate between hearths, ash, sherds, food products and waste, animal dung, other organic residues, and inorganic processing remains.<sup>15</sup> At Kish, where only spot samples were available, a

more generalized elemental indicator (total P) was appropriate. Finally, potassium is a key element introduced by degraded animal and bird remains, burning of the soil, and wood-ash deposits associated with hearths or fire pits.<sup>16</sup> Any or all of these manifestations could be expected at a complex tell site such as Kish.

## ARCHAEOSTRATIGRAPHY OF THE Y TRENCH COLUMN

Initial impressions of the archaeological stratigraphy were obtained from examination of the block sediments supplemented by the written field descriptions of the individual strata. Sample numbers were designated at the time of collection and were retained for the analysis. Figure 5A.1 synthesizes the results of the various analyses, presenting all the data in column format. Accordingly, the composite gross stratigraphy is schematized in columns 1 and 2, mechanical parameters are contained in columns 3–7, and geochemical results in columns 8–13.

## DESCRIPTION OF THE LITHOSTRATA

The most visible and distinguishing properties of the lithostrata were color, structure, organic matter presence, degree of cementation, and inclusion of transported or culturally derived materials. Table 5A.1 summarizes the physical properties of the sediments by stratum from the base (Unit 17) up the sequence. Stratum designations as well as thickness of individual strata are given. In the case of strata for which two examples were described and subsequently analyzed, separate accounts are presented and are labeled “upper” and “lower.”

In general, the section’s thickest strata are those containing the most heterogeneous textures and structures. These are Units 10–17.<sup>17</sup> Variability between strata is due to strong intermixing of clasts from a broad range of sizes and origins. Perhaps the most dominant structural property in this group is the laminar beds attributable to water-laid burial. These are capped by organocultural veneers typically produced by short-term vegetation mats at seasonally ponded settings. Isolated pockets of

<sup>11</sup> Lambe 1951.

<sup>12</sup> US Department of Agriculture 1975.

<sup>13</sup> Folk 1974.

<sup>14</sup> Jackson 1958.

<sup>15</sup> Proudfoot 1976; A. Sjöberg 1976; Anderson and Schuldenrein 1983; Eidt 1984.

<sup>16</sup> Tarrant 1956; Griffith 1980; Butzer 1982.

<sup>17</sup> [Note that Unit 14 was a clay-plastered floor.—MG]

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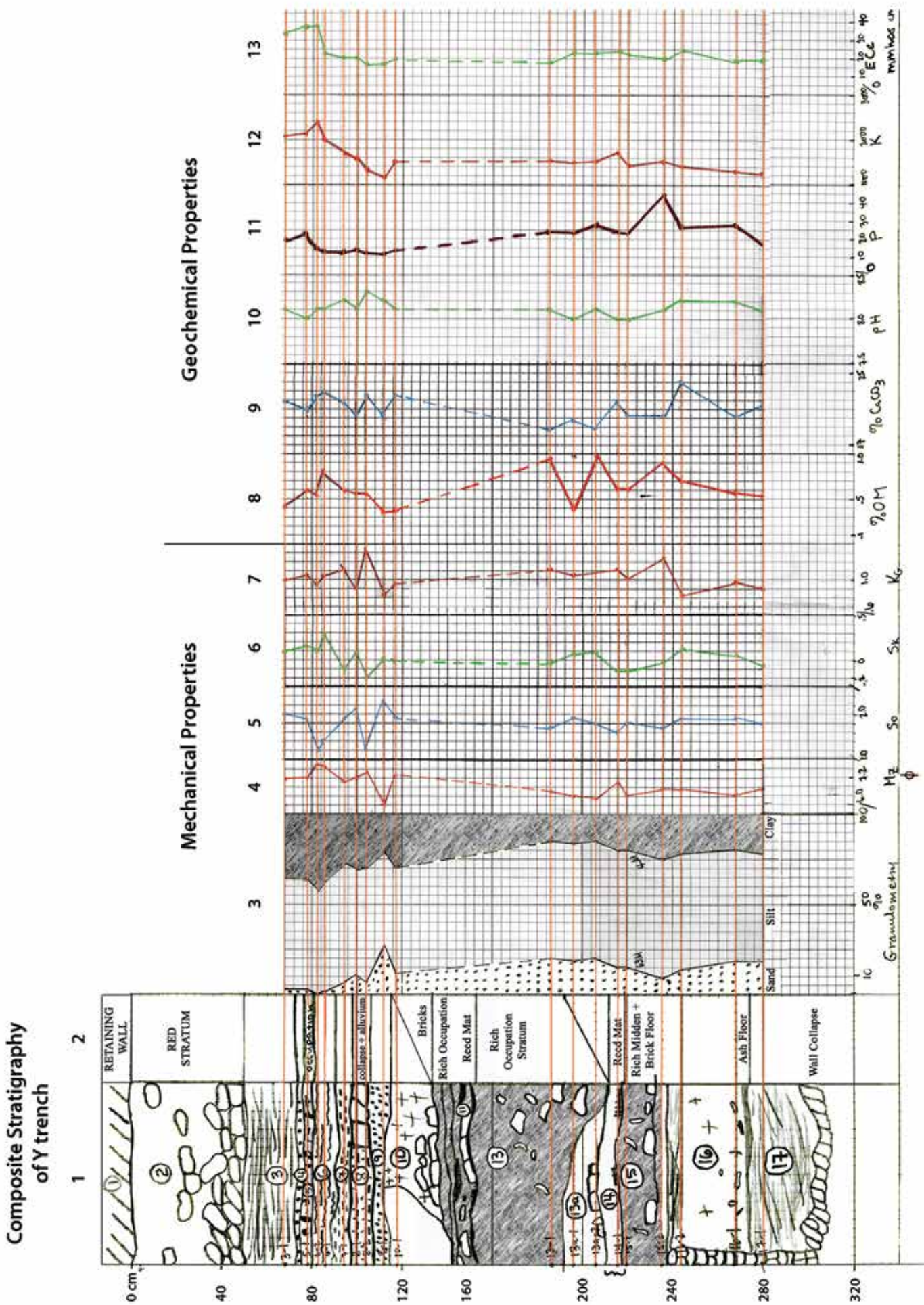


Figure 5A.1. Composite stratigraphy and sedimentology of the Y trench

## CHAPTER 5 APPENDIX. ARCHAEOLOGICAL SEDIMENTATION OF THE Y TRENCH AT KISH

Table 5A.1. Lithostrata of the archaeosedimentary column of the Y trench at Kish.

| Unit | Description   |
|------|---|
| 17   | 28 cm 10YR 5/3 sandy silt with generally medium subangular blocky structure but containing prominent laminar bedding planes. Within bedding planes are beds of 5YR 4/4 burned clay. Abundant pores are densely packed; viewed in section, these appear to be thin (<1 mm) root casts. Fibrous twigs are also in the matrix.   |
| 16   | 35 cm Lower stratum: 10YR 5/3 sandy silts with 4–6 mm thick laminar structures in a more massive cemented matrix. Deposit includes organics and evaporites (<2 mm) diffusely distributed. High percentage of pore space. Pottery concentrations and organic cultural debris increase toward the base.<br>Upper stratum: Alternating laminar beds of multisource 10YR 3/3 and 10YR 5/3 silts and sands; bedding planes are up to 4 mm thick. At laminar bedding breaks, reed matting is visible as parallel and horizontal striations, impressed into organic sheets. Heterogeneous mix of cultural residues is incorporated into the natural stratum. |
| 15   | 22 cm Lower stratum: 10YR 4/2 greasy silt-clay with abundant burned clay nodules (1–3 mm) and cultural residues including gastropod fragments, iron-stained pebbles, and decayed vegetal matter with preserved fabric.<br>Upper stratum: 10YR 4/2 sandy silt-clay with small subangular blocky structures and isolated laminar pockets. Diffuse cultural debris but considerably less dense than base of stratum.   |
| 14   | 10 cm 10YR 4/2 sandy silt primary matrix with 10YR 4/2 organic mats featuring reed matting structures; latter are associated with collapsed wall structure.   |
| 13a  | 0–15 cm Lower stratum: 10YR 4/3 fine sandy silt with weak subangular blocky structures. Matrix contains spherical carbonaceous inclusions and vegetal mat impressions with extensive pattern of root casts. There are diffuse terrestrial gastropod fragments and an intricate array of dense pores.<br>Upper stratum: 10YR 4/3 fine sandy silt with more cohesive structures than base of sequence and smaller and more poorly preserved inclusions of carbonaceous and vegetal remains.   |
| 13   | 40–50 cm 10YR 3/2 sandy silt is primary matrix of heterogeneous black greasy unit that also contains pockets of organic 10R 2/1 laminar silts with bands up to 5 mm thick. Weak subangular structures are disrupted by abundant organic inclusions between ped faces. Organics contain laminar, burned, and fire-hardened clays. There are abundant gypsum roses in interstices.  |
| 10   | 24 cm 10YR 5/4 fabric-impressed clay silts with weak and small subangular blocky structures. Fabric matting is dense with moderately sized individual impressions (<5 mm) displaying criss-crossing patterns. Deposit consists of exotic, transported grains including micas.   |
| 9    | 10 cm 2.5Y 5/4 sands with granular structures characterized by polished but poorly sorted quartz grains. There are diffuse and very small (<3 mm), friable clay inclusions. Sediment features small (<2 mm) staff-shaped burned organics and pockets of pore clusters.  |
| 8    | 10 cm Lower stratum: 10YR 5/3 clay silt with medium subangular blocky structures, very poorly sorted with abundant cultural debris including decomposed mudbrick sections, abundant burned organics with preserved fabric, and charcoal fragments. Mudbricks and burned clays are red (5YR 5/4) and often lined with thin sandy veneers. There are diffuse fabric impressions.<br>Upper stratum: 10YR 5/3 clay silt similar to basal matrix but has abundant root impressions and evidence of laterally extensive vegetal mat. Ped faces are iron stained.  |
| 7    | 8 cm 2.5YR 5/4 clay silt, strongly cemented and massively bedded. There are some silt cutans (“skins”) and a diffuse pore distribution. Some very thin (<1 mm) laminar beds are visible in section.   |
| 6    | 12 cm Lower stratum: 10YR 4/3 clay silt, cemented, well sorted, and massively structured with faint and subparallel laminations. There are diffuse pores and root casts, as well as prominent silt and clay cutans in ped microimpressions.<br>Upper stratum: Similar to basal matrix but more massive.   |
| 5    | 4 cm 10YR 4/4 massively structured clay silt that breaks off into laminar planes. Sediment is relatively well sorted and has preserved reed mat structures, as well as unidentifiable plant organics. Matting has horizontal and parallel striations and reed casts are 1–2 mm thick. Also prominent are iron-stained inclusions and burned clay spheres.   |
| 3    | 20 cm 10YR 4/3 weakly stratified clay silt that contains mudbrick sections. There is a red clay laminar facies and a darker cohesive silt with abundant organics. The red clays have faint bedding planes.  |

iron-stained pebbles attest to the high-energy fluvial origins of the structurally intact portions of the matrix. Gastropod fragments are more problematic since species were not identifiable and they may have cultural origins. Chief components of cultural debris include pottery, ashy lenses and pockets, and abundant mudbrick fragments in various states of preservation and degradation. Reed impressions at laminar interfaces may signify metastable surfaces over the lift span of a cultural stratum. Midden accumulations such as Unit 15 are characterized by greasy textures. These are produced by clay/silt matrices surrounding decomposing organic refuse

and are the most prominent examples of intensive activity areas. Units 10, 15, and 16, which accumulated as a result of wall collapse, contain massive red clay clasts from disintegrating mudbricks. Deflation would also have winnowed out unconsolidated fines at habitation loci.

The unsampled 70 cm between depths 120 and 190 cm below surface (Units 10–12) are critical because they mark a threshold between strata that are dominated by archaeological debris and those above that are sterile and of visible fluvial origin. Above Unit 10, the stratigraphy is characterized almost uniformly by thinly bedded but discrete units laid

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down by cyclical, low-energy sedimentation.<sup>18</sup> These strata average 10–20 cm in thickness and are characterized by very thin, laminar structures 1–3 mm thick, typically consisting of alternating bands of silt and clay. Often, however, band integrity is obscured by cementation, as massive structures mask the primary water-laid bedding planes. Only Unit 8 contains abundant cultural materials, including burned clays and charcoal fragments; this horizon is associated with a mudbrick structure (fig. 5.35, Wall B). Of singular interest is Unit 9, containing polished and poorly sorted quartz sands. It would appear to have accumulated under more turbulent conditions.<sup>19</sup> Units 5–7 have silt and clay cutans or “skins” indicative of some seasonal swelling and shrinking of the parent matrix.<sup>20</sup> There are reed mats interdigitated with most of the strata, but in the upper profile they are not associated with deep cultural deposits.

The gross lithostratigraphy currently suggests that at the base of the examined sequence (Units 17–10), the tell was built up by a combination of collapsed or demolished building debris and trampled sediments with minor inputs from sheetwash and irregular alluviation. Beginning with Unit 9 and continuing up to Unit 3, low-energy stream flow accounts for tell aggradation, since midden or related debris accumulation in this range was minimal. Culturally derived sedimentation intensified with the rich clays of the building materials of the red stratum (Unit 2).

In general, the gross morphology of the deposits coupled with the recorded field observations discriminated between earth surfaces versus cultural sedimentation processes. More precise identification of sediment sources demanded mechanical and chemical analyses.

## MECHANICAL PROPERTIES

Columns 3–7 of figure 5A.1 present the results of the Kish series mechanical analyses. Several major trends are apparent that reinforce the contrasts between the upper and lower parts of the sections of the sequence separated by Unit 10.<sup>21</sup> For most grain

size parameters, the variability between strata in the upper section is especially striking while the range for the lower section is considerably more limited. For the composite sequence, only mean grain sizes (Mz; column 4) are relatively uniform with depth, as strata are typically dominated by the medium-to-fine silt fractions. A notable exception to this trend is Unit 9, whose mean grain size is slightly coarser. The granulometry graph (column 3) shows that this is the only stratum with a peak in the sand fraction. Significantly, overlying strata are progressively upward fining, with upper units containing 35–40 percent clay. The more obviously cultural strata below Unit 13 generally contain 15–20 percent sands and similar proportions of clays.

In general, the lower cultural sediments at Kish are poorly sorted ( $S_o = 1.6$  to  $1.8$ ), a possible function of considerable mixing between anthropogenic and floodplain sediments. The upper sediments are poor to moderately sorted ( $S_o = 1.2$  to  $2.3$ ), but with the exception of occupation Unit 8, sorting improves as the sequence fines upward along a linear trend common to overbank deposits. The best-sorted sediments are occupation Units 5 and 8, which accumulated, at least in part, by aeolian deposition.<sup>22</sup>

Unit 9 is the most poorly sorted, as it contains a broad alluvial sediment population indicative of more turbulent depositional mechanisms. Within the lower sequence, Unit 14 is the best sorted, since it is a thin, water-laid deposit separating the thicker over- and underlying culturally stratified units. The mean grain size and sorting data suggest that the stratum represents an interval of ponding; this is also evidenced by the identifiable reed and organic mats (see table 5A.1).<sup>23</sup>

The skewness measure ( $S_k$ ; column 6) quantifies the relative proportion of the coarse and fine fractions.<sup>24</sup> In general, the upper strata tend to be finer

<sup>18</sup> [It is most probably the result of rainwash.—MG]

<sup>19</sup> [This layer need not be seen as the result of a natural event. Sand often was used as a purifying agent in Mesopotamian construction.—MG]

<sup>20</sup> [A typical formation in open spaces, such as courtyards, after rain.—MG]

<sup>21</sup> [It must be remembered that Unit 10c, the lowest subunit of Unit 10, was a clay-plastered floor.—MG]

<sup>22</sup> [Some of these upper strata (Units 4–9) appeared to be water-laid deposits but were more likely the result of the washing down during rainstorms of material from mudbrick and mud-plastered buildings in an open space, such as a courtyard, rather than an overbank deposit. Archaeologists working in southern Iraq encounter such buildups of surfaces that, although effected by natural forces, also are derived humanly. Often clean soil or sand is deposited deliberately to level a courtyard floor. And there is often an admixture of sand on and in such deposits due not only to sand in the clay deposits but also to wind-borne sand during sandstorms.—MG]

<sup>23</sup> [It is unfortunate that Unit 14 was easily identified visually as a plastered floor. The reeds and organic mats were features lying on it.—MG]

<sup>24</sup> Folk 1974.

skewed, while the lower occupation horizons display the opposite trend. Many of the more anthropogenic matrices have very prominent skewness signatures, but they register on both the coarse and fine ends of the scale. Thus Units 15 and 14 have the coarsest tails in the lower portion of the sequence, and Units 7 and 8, associated with abundant mudbrick debris, are the coarsest-skewed upper sediments. The finest skewed examples are from cultural Units 5 and 16, with the former being the only occupation stratum within the low-energy accretion sets capping the succession. Given the broad range of skewness values associated with archaeological horizons, it appears that a variety of cultural sedimentation processes were active over the course of site formation. These data also suggest that wind removal of fines affected the distributions substantially. Significantly, all fine-skewed samples feature laminar bedding structures, an argument confirming overbank flooding as the primary depositional mechanism above Unit 9.<sup>25</sup>

Kurtosis (Kg; column 7) is the measure used to compare the sorting between the tails and the central portion of the distribution. Units 8 and 15 have the poorest-sorted tails, and both are enriched with occupation debris. No strata have especially well-sorted tails, and distributions tend to indicate only minor departures from the normal distribution. Only Unit 9 (Kg = 0.82) typifies a sorting pattern associated with a broader distribution of particle sizes as may be expected in a bedload-rich fluvial deposit. An equivalent value for cultural Unit 16 may document performance of a particular activity on the ashy occupation floor.

The utility of grain size parameters for inferring natural depositional environments is problematic, especially for settings characterized by multisource sediments.<sup>26</sup> Gladfelter has pointed to analytical methods, procedures, data handling, and interpretation as possible sources of error in the abuse of particle-size studies, especially for cultural sediments.<sup>27</sup> Recently, however, workers have differentiated cultural from geological deposition by comparing grain size parameters of obvious archaeological strata with adjacent natural strata.<sup>28</sup> In this manner,

it is possible to index human transformation of the surface.

For the Kish sequence, it might be expected that potentially diagnostic measures of cultural versus natural stratification are the mean grain size (Mz) and sorting (So) parameters. Since the lithostratigraphic data (table 5A.1) suggest that the predominant mode of sedimentation was overbank flooding, it follows that a limited range of mean grain sizes characterizes the siltation strata. Since particle-size distributions are largely unimodal, sorting values would be optimal and of limited range as well. The addition of cultural materials into the matrix, such as pottery fragments, lithic debris, decomposed organics, and bone materials, would tend to broaden the ranges of both parameters. Column 3 in figure 5A.1 is a plot of mean grain sizes against sorting for the entire suite of Kish samples. Ironically, there is a clustering of the cultural deposits and a broader range of values for the natural sediments. Cultural deposits are the coarsest, with Mz = 6.8, offsetting the basal occupation strata from the upper overbank strata. Even more surprising is the variability in sorting values for the flood sediments when compared to the restricted distribution of the cultural samples. Unit 9 is a unique outlier, the coarsest and most poorly sorted sample in the sequence.<sup>29</sup> In the absence of more detailed contextual data, it is difficult to explain the inordinately homogeneous character of the anthropogenic matrices and the comparatively heterogeneous composition of the flood silts, but it is possible that repeated and similar occupations characterized Early Dynastic land use locally. The role of deflation also cannot be underestimated, as removal of fines would tend to homogenize the textures of midden deposits.

## CHEMICAL PROPERTIES

For the Kish samples' organic matter, calcium carbonate (CaCO<sub>3</sub>), pH, phosphorous (P), potassium (K), and exchangeable cation (ECe) tests were run, as shown in columns 8–13 of figure 5A.1. Multiple geochemical analyses were run on samples to isolate

<sup>25</sup> [Once again, our examination on-site led us to conclude that most of these upper units appeared to be water laid (rainwater runoff) and not overbank deposits.—MG]

<sup>26</sup> Folk and Ward 1957; Friedman 1967; Hassan 1978.

<sup>27</sup> Gladfelter 1985.

<sup>28</sup> Tankard and Schweitzer 1976; Stein 1985.

<sup>29</sup> [It is clear that there is a problem with the methodology or the identification of the nature of strata. These unexpected findings might have been offset by closer communication between Schuldenrein and me, but he was in a different part of the United States than I, and there was no consultation between the delivery of the samples with our section/notes to him and the submission of his manuscript. It was unfair to ask someone who did not examine the deposits to characterize them.—MG]

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covarying trends potentially indicative of significant alterations to the natural sediment matrix. Several overarching trends distinguish the basal from upper strata (with Unit 10 as the breaking point). First, organic matter and calcium carbonate display considerably wider spreads for the lower cultural matrices than they do for the overbank silt strata (i.e., Unit 9 and above). While both parameters can index climatic as well as anthropogenic modifications, the more restricted range of values for the upper floodplain sequence would argue that the range of paleoclimatic variability is limited. High concentrations of gypsum ( $\text{CaSO}_4$ ) do indicate, however, that aridification tendencies<sup>30</sup> characterized the top of the sequence.<sup>31</sup> Dramatic changes in organic matter concentrations may be a function of both dense vegetation covers in the vicinity of the city and performance of such subsistence activities as food preparation and processing, burning, and agricultural or horticultural land use. The basal strata feature the highest organic matter densities for the profile. Evidence for the extensive vegetation covers in the vicinity has been noted by the presence of reed mats in Units 13a, 14, and 16, and cultural origins are implicated by associations of vegetal fragments with fire-hardened clays in Units 13, 15, and 17 (see lithostratigraphic descriptions, table 5A.1).

Calcium carbonate concentrations fluctuate in both upper and lower strata, but in the former case, Unit 6 has been described as cemented—a possible example of secondary reprecipitation to a climatic shift—and Unit 8 is a cultural deposit that may have contained bone, shell, or other calcified materials (see table 5A.1).<sup>32</sup> For the basal sequence, there is an overall rise in carbonate content from 19 to 24 percent. Peak Units 14 and 16 contain both laminar beds and cultural additions, suggesting bimodal sources including evaporates precipitated out and

shell fragments transported by water.<sup>33</sup> Precise identifications of cultural organics could not be made for the samples submitted. Of the additional indicators, pH exhibits the least variability between strata. Values of 8.0 to 8.3 typify strong alkaline depositional environments consistent with Kish's basin setting in the Mesopotamian plain.

Phosphorous and potassium are among the most telling measures of archaeological sedimentation.<sup>34</sup> Column 11 of figure 5A.1 shows that the basal archaeological strata have consistently higher phosphorous values than the upper deposits. The only exception to this trend is in Unit 5, which is the most anthropogenic of the upper strata, containing burned clay and isolated clasts associated with mudbrick disintegration. The utility of the phosphorous indicator as a measure of relative intensity of occupation is exemplified by Unit 15. The horizon contains 45 parts per million phosphorous, 38 percent more than the next-highest horizon. Unit 15 incorporates cultural debris from a broad range of sources, including burned clay from firing activity, gastropod fragments, and decayed vegetal matter. This is consistent with a sheet midden identity. In general, the trend up the column is to diminished intensity of land use with time, and the upper strata have phosphorous values under 20.

Potassium (column 12) is anthropogenically worked into the substrate at sites by degraded animal and bird remains, as well as by burning activities. At Kish, the only anomalously high value for potassium was recorded for Unit 6, a relatively thick (12 cm) overbank deposit.<sup>35</sup> The value may actually have greater significance for the interpretation of occupation Unit 5, which it directly underlies. The burned-clay spheres in that unit are the only indication of firing for the entire set of thin strata in the upper sequence. For the cultural strata, the only peak in the potassium curve is in Unit 14, which is not a major occupation horizon but does laterally interfinger with Unit 13a, a carbonaceous deposit

<sup>30</sup> Watson 1983.

<sup>31</sup> [It must be remembered that sometime around Unit 10, the ziggurat was built and the area of the section underwent a drastic change, with no evidence of buildings in the immediate vicinity. Although there may have been sacred structures in the area, close to the ziggurat, the area appears to have been an open space (a courtyard), which would not have accumulated debris at the same rate as the buildings lower down in the section. The courtyard of the ziggurat would have been swept fairly often and may have been plastered on occasion.—MG]

<sup>32</sup> [Note the presence, at the north end of the section, of a fire pit (Unit 8a) that would have been used by people at Unit 7. Units 8 and 7 were occupational, in that both were laid down as the result of human action.—MG]

<sup>33</sup> [I have suggested in chapter 5 that Unit 16 may have been a flood deposit and that laminations would appear to be similar to what I had observed in the flood level (Unit 13). Unit 14, on the other hand, was clearly a plastered-clay floor or even a series of floors. That there should be shell fragments in this clay is not surprising, since clay beds, especially near rivers and canal banks, normally contain them.—MG]

<sup>34</sup> Hassan 1978; Eidt 1984.

<sup>35</sup> [Unit 6 appeared to us to be sequentially laid-down surfaces resting on a distinct floor with charcoal inclusions, rather than an overbank deposit.—MG]

with charred inclusions and burned vegetal remains.<sup>36</sup> In general, there are elevated potassium concentrations in the upper profile that diminish with depth. This may, in fact, be a result of soil weathering and ion mobility in the strongly alkaline late Holocene environments.<sup>37</sup>

Finally, the exchangeable cation data (column 13) reflect general stability down the profile. The relationship between exchangeable cations and cultural sediments is not well understood, but in soils, high cation exchange values are indicative of organically enriched horizons,<sup>38</sup> while consistent values imply environmental stability.<sup>39</sup> At Kish, the upper strata (Units 3–5) display the highest readings, while all underlying units fall into a limited range of 15–25 millimhos per centimeter. The upper strata appear to correspond to alluviated Early Dynastic IIIa deposits (see discussion below). Apparently, the higher organic values of the older strata do not measure environmental change, since fluctuations are not reflected in ECe (electrical conductivity) reading.

## SEDIMENTOLOGICAL INTERPRETATIONS AND SITE FORMATION PROCESS

Four research objectives identified at the outset of this study attempted to focus the investigations toward reconstructing sequences and processes of site formation. Interpretations were reached through laboratory study of a composite 2.3 m section that spanned much of the Early Dynastic sequence. The point of departure for the study was isolating cultural from natural sedimentation properties (Objective 1).

In general, the basal strata (Units 13–17) contained evidence for the highest degree of human activity. Strata are characterized by relatively thick and heterogeneous fill accumulations. A crude indicator for intensive cultural sedimentation at Kish was, surprisingly, a comparatively consistent grain size distribution (fig. 5A.1, column 3). This trend

appears to contrast with the sedimentation at village sites, where multiple sediment sources produce typically polymodal grain size distributions.<sup>40</sup> Processes of tell formation, however, are such that sediments may be locally recycled as a result of structure collapse and rebuilding on the same locus and utilizing the same source matrix.<sup>41</sup> Very often, the sediment source is nearby river sediments that are reasonably well sorted.<sup>42</sup> At Sitagroi, in Greece, Donald Davidson<sup>43</sup> demonstrated that sedimentological consistency between individual tell strata is attributable to cycles of wall rebuilding that began with utilization of the adjacent river deposits. Additionally, tell sedimentation processes are often activated by diverted waterflows that tend to sort materials well and to produce graded beds.<sup>44</sup> These were identified in the Kish cultural strata by discrete laminar bedding structures (see table 5A.1). A supplementary consideration is the consistence of site utilization. If the site locus in the area of the Y trench were repeatedly used for a single purpose or set of activities, discard packages would consist of uniform sediment structures and textures. The recurrent graded beds do suggest that while cultural sedimentation dominated in the basal strata, occupation phases were punctuated by minor sheetwash and/or alluviation episodes.

The most diagnostic indicators of cultural sedimentation are geochemical and include organic matter, calcium carbonate, and phosphorous. The detection of anthropogenic sedimentation at Kish was achieved by identifying matrix organic sources visually and then by measuring relative frequencies. The consummate anthropogenic stratum is Unit 15, whose filmy texture is a product of a variety of both intensive and extensive practices. The filmy texture is a smudging effect produced by discarded organic debris that has decomposed and been enhanced by repeated trampling of the surface by site occupants. Evidence for the cultural signature on the sediment matrix includes the divergence of the sediment from a normal particle size distribution (high kurtosis);

<sup>36</sup> [But it is occupational. It is a plastered floor in two coatings. And on that floor were burned vegetal remains, charcoal, etc., which I would see as the usual accumulation of occupational debris, even on a plaster floor. Schuldenrein has included that material as part of Unit 13a.—MG]

<sup>37</sup> Bunting 1967; Birkeland 1974.

<sup>38</sup> Birkeland 1974.

<sup>39</sup> Harris 1971.

<sup>40</sup> Butzer 1982; Stein 1985.

<sup>41</sup> [There is also the important factor of pits for gathering brickmaking materials (and other purposes) and drains cut down into earlier levels, resulting in the deposition of earlier material in later loci. The filling of such pits and drains deposits later material at the same level as earlier strata.—MG]

<sup>42</sup> Davidson 1973; Goldberg 1979.

<sup>43</sup> Davidson 1973, 1976.

<sup>44</sup> Wilkinson 1976.



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high organic matter concentration including reed mats, charred vegetal remains, and preserved root casts; strong calcium carbonate presence due to shell foodstuffs; and the prominent phosphorous concentration. Similar geochemical and mechanical properties were demonstrated by most strata below Unit 13.

By contrast, the upper strata (Units 3–9) exemplify characteristics of dominant alluvial sedimentation disrupted by thin occupation and deflationary episodes.<sup>45</sup> This is expressed in upward-fining grain sizes of an alluvial regime. Organic matter and calcium carbonate values are variable in response to intermittent surface stability, and phosphorous and potassium concentrations are low or diminish with depth. The exemplary alluvial sediment is Unit 9, the only high-energy stream deposit,<sup>46</sup> characterized by poor sorting but also by a distribution relatively well sorted in its central portion. More typically, the overbank deposits are moderate to poorly sorted with more extreme skewness and kurtosis measures. The origin of overbank fines is entrained sediments—complex admixtures of building debris, irrigation silts, and natural alluvium<sup>47</sup>—that ultimately settled out along the graded surface in the site vicinity. These burial processes are prevalent throughout the sequence, but the alluvial contribution intensified toward the top (below the red stratum).<sup>48</sup>

The limited lateral exposure impedes systematic inquiry into modes of natural sedimentation (Objective 2). In the absence of three-dimensional data, the only basis for inferring the source of natural sedimentation was evidence for patterns of land use and, more tentatively, the fit between the Kish grain size data and other similarly stratified sequences. The general site setting implicates one or more of three explanations to accommodate the stratigraphy:

1. Overbank flooding tied to the natural base level of the Mesopotamian plain at Kish
2. Diverted channeling as a result of water control practices and land use

3. Sheetwash, graded sedimentation, other localized forms of overland water flow, and deflation associated with site abandonment and degradation

As discussed earlier, any combination of these processes is just as possible as a single explanation.

Initially, the third explanation accounts for much of the sedimentation sealing in the thick cultural strata (Units 13–17) at the base of the sequence. Interdigitated laminar bedding planes are noted for all units with the exception of Units 13a and 14, the thinnest accumulations (see table 5A.1). These planes supported reed and organic mats on silty cover alluvium, where vegetation can take root. In most of the cultural matrices, collapse rubbles were identified; water-laid sediments tend to both bury the rubble and even out the topographic irregularities caused by their heterogeneous dispersal.<sup>49</sup> On a small scale, this leveling-off process is the mechanism by which tells develop increasingly graded surfaces with the passage of time.<sup>50</sup> As anthropogenic inputs diminished in kind and quantity up the sequence, deflation and erosion proceed. Sheetwash declined in significance and was displaced by overbank flooding. Ultimately, the rates and patterns of such alluviation were adjusted to the graded base level of the Mesopotamian plain at Kish.

The fining upward sequence may reflect more localized modifications to drainage beginning in Early Dynastic times. The development is consistent with thicker and more diverse archaeological accumulations during this period at the Y trench. Locally, the collapsed rubble strata, interdigitated and/or sealed by thin laminar silts, imply that alluviation was systematically regulated; otherwise, more turbulent floods would have left their marks on the stratigraphic record. On the other hand, no sediment matrix offers any indication of canal-derived deposition. Typically, such deposits have particle size distributions that are strongly skewed with clays and silts and are rather poorly sorted.<sup>51</sup> The upper units at Kish display minimal internal consistency in terms of grain size parameters. It remains unclear whether the overbank sedimentation that I posit for these upper units was dominantly a process of natural or artificially regulated water flow, or perhaps

<sup>45</sup> [Again, they are more likely laid plasters or sheetwash or both in a courtyard.—MG]

<sup>46</sup> [Unit 9, as observed and recorded, was almost entirely green sand. Is this an overbank deposit, or the remnants of a pile of sand or major sandstorm?—MG]

<sup>47</sup> [Which better describes Units 13/13a and 16.—MG]

<sup>48</sup> [Again, more likely to be sheetwash than overbank deposits.—MG]

<sup>49</sup> Lloyd 1963; Davidson 1976; Butzer 1982.

<sup>50</sup> Kirkby and Kirkby 1976.

<sup>51</sup> See Ortloff, Feldman, and Mosely 1985.

even a combination of both. Deflations also could have biased the analyzed samples.

One exception to the typical granulometric and geochemical characteristics of the overbank deposits is the matrix of Unit 9. This remains a singular alluvial fill because of its extreme values for most of the measured parameters. The distribution consists of twice as much sand as the next-highest deposit and only 45 percent of that fraction is fine sands, whereas the other strata average 70–75 percent in that size category. While Unit 9 is the most poorly sorted, it features an excellent spread in the tails of the distribution, a characteristic of a bimodal distribution and one capable of transporting a broad range of sediment sizes.<sup>52</sup> These interpretations are enhanced by the polished surface textures of the component quartz grains, signifying bedload transport and more competent stream flow. Geochemically, Unit 9 is low in organics, a condition expected of an abrupt deposition that did not stabilize sufficiently to promote plant growth. It also has low carbonate, phosphorous, and potassium levels, indicating minimal anthropogenic inputs into the stratum. This is, therefore, the only higher-energy deposit registered in the sequence, and it would appear to define a classic episodic inundation. This reconstruction invites comparison with the recognized flood level at Kish (Objective 3).

The flood level has been simply described as “a stratum of thinly laminated beds of sandy composition.”<sup>53</sup> It is 30 cm in thickness and lies 2.7–3.0 m below the contemporary floodplain at Kish. Assuming altimetric equivalence between the schematic reconstruction of the Y trench (see fig. 5.21) and the exposure sampled in 1978 (see fig. 5.35), the flood level would be on the approximate plane as Unit 13 or 13a. Neither these units nor bracketing sediments display dominant fluvial properties. Unit 9 is fully 1.5 m above this level, but it should not be assumed that the disposition of the flood stratum was uniformly horizontal across the extensive Y trench. As noted, it is probable that where topographic irregularities occurred across the plain, the effect of episodic inundation would have been to fill in minor depressions and to even out the surface. What is critical is that Unit 9 registers the vertical transition from anthropogenic to alluvial sedimentation at Kish. It separates the basal cultural

strata (Units 10–17) in the 1978 Y trench from the overbank strata (Units 3–9). Analogues with the reconstructed schematic section are striking (fig. 5.21). While Gibson took issue with the notions of earlier excavators who claimed that the flood level offset the basal house strata from the upper sacred area strata,<sup>54</sup> the evidence does converge about the reduction of archaeological inputs for these higher strata.<sup>55</sup>

While identifications of multiple properties of the Y trench strata at Kish have resulted in two broad groupings of sediments—anthropogenic levels at the base and stratified floodplain levels toward the top—cultural sedimentation processes were detectable in most levels to varying degrees. Thus, upper Units 5 and 8 contain fragmented building debris (mudbrick, clay spheres) and cultural organics, while thick collapse rubble Units 15 and 17 are capped by laminar flow beds.<sup>56</sup> Synthesizing the regional archaeological accounts with the present observations and analyses, it is possible to offer interpretations on modes of occupation (Objective 4).

Table 5A.2 outlines three discrete occupational modes defined by combining diagnostic signatures of each analytical parameter. All thirteen strata examined are grouped into one of these modes. Mode 1, habitation loci, contains the most abundant and diverse cultural materials and registers both intensive and extensive occupation. Intensive occupation relates to specialized activity performance that produces deep deposits and high densities of particular types of debris, while an extensive

<sup>54</sup> Moorey 1966.

<sup>55</sup> [I took issue with the statement that the flood level was unbroken over all of Y. And I have proven with the section cleaning that the flood level definitely was broken and that there is a sizable building in the layers between the flood level and the red stratum. Assuming that the cart burials came from above the flood level, I would propose that the building above the flood level was a palace rather than a temple and that only at a time later than that building was the ziggurat built and the area became a sacred precinct. But the Y trench is still not at the outskirts of the settlement and therefore subject to the usual alluviation from yearly irrigation, as I think Schuldenrein acknowledges, but well within the built-up area. The “overbank” layers at the top of the section, therefore, are not to be seen as the results of alluviation but rather as results of routine temple courtyard maintenance.—MG]

<sup>56</sup> [Unit 17 is not so much collapse and the debris created in the building of mudbrick structures, with broken bricks and mortar on trampled working floors, followed by deliberate fill within what has become a foundation for the building’s first floor, the surface between Units 17 and 16. The same is true for Unit 15, which is clearly related to the construction of the foundation of Wall I.—MG]

<sup>52</sup> Folk 1974; Friedman and Sanders 1978.

<sup>53</sup> Gibson 1972, p. 84.

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Table 5A.2. Inferred occupational modes at Y trench, by diagnostic stratigraphic and sedimentological properties.

| Occupational mode                    | Strata            | Lithostratigraphic properties   | Mechanical properties  | Geochemical properties  |
|--------------------------------------|-------------------|---|--|---|
| Habitation loci—intensive, extensive | 3, 13, 15, 16, 17 | Broad arrays and sizes of rubble and clasts; wide range of organocultural materials identifiable macroscopically; filmy matrix texture; no ped macrostructure; interdigitated, discontinuous laminar beds             | Coarsest sediment populations; poor sorting, coarse skewed, leptokurtic                          | Moderate to high organics, extreme CaCO <sub>3</sub> values, phosphorous peaks, low potassium and ECe |
| Habitation perimeters—extensive      | 5, 8, 10, 13a, 14 | Isolated concentrations of cultural clasts and debris of localized nature, generally including one or two sources (i.e., mudbrick, pottery, clay spheres); reed and identifiable root mats; macrostructure is laminar | Broadest array of grain sizes; moderate sorting, fine skewed, broad kurtosis range               | Moderate organics; moderate to high CaCO <sub>3</sub> ; moderate phosphorous, potassium, and ECe      |
| Diffuse                              | 6, 7, 9           | Intermittent, dispersed cultural materials; massive, laminar and compound sediment structures, often cemented; cutans   | Fining upward sequence, progressively dominated by clays; moderate sorting, unskewed; platyurtic | Low organics; high CaCO <sub>3</sub> ; low phosphorous, potassium, and ECe                            |

occupance leaves a shallow but widespread record of both sediment accumulation and cultural activity. The second occupance mode contains only the latter record. Effectively, it documents the spatial dimension of the habitation but not its character. Archaeological distributions are accordingly thin and may relate to isolated activities performed away from and often peripheral to primary habitation centers. The third mode has a still weaker archaeological input and consists only of diffuse artifacts that are generally transported into the sediment matrix by natural sedimentation, generally alluviation. Cultural materials are usually in secondary context.

Archaeologically, indicators of Mode 1 would include collapse rubble, mudbricks, refuse including discarded bone and shell remains, pottery, and lithic materials. It would not necessarily be expected to sort out the debris into isolated archaeosedimentary packages, although it could depending on occupational circumstances and effects of postdepositional disturbance by bioturbation and erosional mechanisms, especially deflation. In many cases, the character of the sediment matrix may be homogenized as a result of disturbance processes and as smudged greasy texture is imparted to the deep strata. Mode 2 contains localized dispersals of cultural materials in shallow geological deposits, resulting in more distinct articulations of the artifacts and assemblages. An apparent indicator of such a depositional regime is the preservation of vegetation mats, which indicate at least short-term surface stabilization suitable for occupation. Geological properties including bedding structures and ped consistence remain the signal components of the deposits. This trend is

amplified for the Mode 3 sediments, where cultural materials are actually intrusive into the natural deposition and do not alter the overall texture of the matrix and its disposition across the surface.

The mechanical and geochemical properties of the strata corroborate the reconstructed sequence of occupation modes. In the Mode 1 cultural accumulations, the coarsest and most poorly sorted deposits attest to multiple sediment sources (i.e., introduced by human and stream agency). Extreme values in the chemical measures point to variable intensity of occupation, manifest in the concentrations of subsistence resources whose residuum is organics, carbonates, and phosphates. For Mode 2, broad grain size distributions reflect both medium- and lower-energy stream depositions, mixture with localized building materials, and skewing by wind removal of fines. Moderate levels of the archaeochemical components show their long-term incorporation into the alluvium, not so much as a result of human input but as the fusion of two different types of geological sediments, one of which had been impacted by cultural activities. Mode 3 matrices are perhaps the most paradoxical of the geoarchaeological sediments, since they are essentially a stacked, upward-fining series of alluvial beds, but their composition and disposition were most directly affected by cultural activities, specifically the diversion of water flow for irrigation, canalization, and reclamation. The low organics but high carbonate values support arguments for increased salinity that inhibited vegetation and crop growth.<sup>57</sup>

<sup>57</sup> Jacobsen and Adams 1958.

Viewed in terms of the overall Kish succession (see fig. 5.35), the intensive and extensive deposits of the habitation loci (Mode 1) coincide with the deep structural features in the lower strata. Structural features as well as archaeological densities diminish up the sequence, signifying perhaps a shift in placement of domiciles, burials, and religious structures. The archaeological sediments disclose a clear replacement of anthropogenic sedimentation by alluviation processes (Mode 2). If Unit 9 is actually the flood level, then the Mode 2 occupation occurs toward the top of the Early Dynastic II period and low-level alluviation ensues at the onset of late Early Dynastic IIIa.<sup>58</sup>

## CONCLUSIONS

The objective of this study was to attempt a reconstruction of site formation process on a highly localized scale. While post hoc interpretations can be problematic,<sup>59</sup> careful field collection and documentation may allow for provisional archaeostratigraphic syntheses. Proper methods include careful mapping of site stratigraphy, standardized collection of soil sediment specimens, and precise recording of provenience information. Interpretative potential is greatly enhanced by the availability of regional chronologies and stratigraphic frameworks and, in the case of historic sites, by archival records bearing on land use practices. All of these conditions were met at Kish and provided valuable context for conducting a sedimentological study.

The geoarchaeological analysis was based on combined lithostratigraphic interpretations and granulometric and geochemical testing on eighteen samples collected from a semicontinuous stratigraphic column. Comprehensive interpretations emerged from a set of research objectives formulated post hoc against the backdrop of the general geomorphic setting of Kish, its dynamic hydrography, and a cultural landscape characterized by intensified settlement, use of water diversion and irrigation systems, and progressive adjustments to land use by the interplay of both these factors. The pivotal objective was the differentiation between several key sedimentation processes: alluviation,

human occupation, and erosion generally by deflation. While alluviation may have been the principal form of natural sedimentation, much of it was induced by human actions and specifically by the construction of irrigation-related landforms such as levees and ditches.

Lithostratigraphic observations furnished guidelines for assessing the overall patterns of sedimentation since larger-scale structural, textural, and postdepositional properties were preserved in the sediment matrices. It was possible to sort out the sequence into two principal depositional groups: basal Units 10–17 that were dominated principally by accumulations of anthropogenic debris, and upper Units 3–9 characterized by fluvial deposition. Most strata registered at least some interdigitation between both sets of processes. The geochemical and granulometric analyses identified the variability between the general groups. Granulometric properties of the matrices (including size grade breakdowns) and relative measures of sorting, skewness, and kurtosis disclosed whether alluviation (in the upper strata) was the product of low- versus high-energy flows. For the cultural sediments (lower strata), these parameters offered a crude index of human discard and site utilization. In both cases deflation winnowed out fines, affecting size sorting, but evidence for wind activity was not registered in depositional structures. Since an unexpectedly limited range of grain sizes was noted, it was suggested that inhabitants performed similar types of activities at the site locus and that structural elements, including mudbricks and ceramic clays, were recycled and derived from the same general tell and alluvial fills. Expectedly, there was a wider range of variability in the geochemical composition of the cultural fills. Most diagnostic were phosphorous readings indicative of relative intensity of site utilization and organic matter concentrations, which in combination with identifications of vegetal sources revealed an array of decayed plant remains that both stabilized the habitation surfaces and formed the site of midden accumulations. Calcium carbonate concentrations and gastropod identifications may imply dietary preferences at the site. For the alluvial strata, sequential declines in potassium and cation exchange capacity registered the alkaline and semiarid nature of the local Mesopotamian basin at the close of the Early Dynastic period. High carbonates and low organics also hinted at elevated salinity levels bespeaking local problems with irrigation agriculture.

<sup>58</sup> [There is no way it can be. It is too high in the profile, it is too thin a layer, and it dies out to the north. The flood level was, after all, 30 cm thick.—MG]

<sup>59</sup> See Farrand 1985.

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Comprehensive assessments of results produced a regrouping of the individual strata by discrete archaeostratigraphic signatures. Three groups could be classified by occupational mode:

1. Habitation loci: intensive and extensive occupation
2. Habitation perimeters: extensive occupation
3. Diffuse

In general, there is a trend toward diminished levels of occupational intensity up the sequence that corresponds to the displacement of anthropogenic by floodplain sedimentation. It may be inferred that the middle strata reveal a habitation shift away from the active flow lines. Alluviation intensifies vertically as the upper units essentially record various degrees of overbank flooding and are largely devoid of primary occupation debris. These upper accretion

deposits may relate to broader questions of land use specifically pinpointing how water diversion networks functioned across the local basin in the wake of complex land tenure practices and evidence of the salt and silt problem. Finally, while it could not be unequivocally established that Unit 9 was the local expression of the flood level,<sup>60</sup> it was demonstrated that the unit was the highest-energy stream sediment and that it marked a threshold separating the anthropogenic from water-laid depositional sequences.

Results of the present study document sedimentation and land use pattern only in the vicinity of the Y trench. They are not offered as a conclusive synthesis on processes of site formation, but rather delineate hypotheses for future testing. The study provides a more streamlined direction for problem-oriented and holistic archaeological research at Kish.

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<sup>60</sup> [See previous note.—MG]

## CHAPTER 6

# PROVENIENCE INVESTIGATIONS OF OBSIDIAN ARTIFACTS FROM THE FIELD MUSEUM OF NATURAL HISTORY'S KISH COLLECTIONS USING PORTABLE X-RAY FLUORESCENCE ANALYSIS

MARK GOLITKO

Linking obsidian from archaeological contexts to source flows via the application of elemental chemistry has a long history in the Near East, dating back to the seminal sourcing studies of Renfrew, Dixon, and Cann.<sup>1</sup> Subsequent research has documented numerous obsidian sources throughout the Near East, including those in Cappadocia (sources near Çiftlik and Acigöl, such as Göllü-Dağ and Nenezi-Dağ); those near Bingöl in the central Taurus; and numerous sources farther east in Armenia, Georgia, Azerbaijan, and Iran near Lakes Van, Urmia, and Sevan.<sup>2</sup> As noted by Williams-Thorpe,<sup>3</sup> the nomenclature employed in the literature to identify these sources varies considerably even in recent publications<sup>4</sup>—sometimes community names are used, sometimes the names of specific volcanoes, sometimes the names of particular slopes or flows. In the present context, sources and source names identified in the International Association for Obsidian Studies world source catalog<sup>5</sup> were generally utilized, although on occasion source names more commonly occurring in the literature were preferred. Source locations are displayed in figure 6.1, although it should be noted that many sources outside of Turkey represent named collect-

ing locations or names of specific volcanoes, not necessarily chemically distinct flows. The multitude of source outcrops in Armenia have been grouped into six geochemical provinces, for instance,<sup>6</sup> while several chemically distinctive obsidian flows are present east of Lake Urmia<sup>7</sup>—Sahand and Sabalan are the names of major volcanoes.

Most previous sourcing studies in the Near East have focused on the distribution of obsidian during the late Pleistocene (Geometric Kebaran and Natufian) and Neolithic periods (Pre-Pottery Neolithic and Pottery Neolithic cultures), during which time the distribution of obsidian gained an ever-greater geographic expanse.<sup>8</sup> Both Cappadocian and eastern Anatolian sources were in use during the Geometric Kebaran and Natufian periods, but with relatively localized distributions. During the Pre-Pottery Neolithic A, both obsidians made their way down the Levantine corridor, while Bingöl obsidians are present along the eastern Hilly Flanks. During the Pre-Pottery Neolithic B, both obsidians appear for the first time in northern Mesopotamia, a distribution pattern that continued into the Pottery Neolithic.<sup>9</sup> Cappadocian obsidian is known to have been distributed westward as far as as Sitagroi in northeastern Greece during the Pre-Pottery Neolithic B.<sup>10</sup> While

<sup>1</sup> Cann and Renfrew 1964; Dixon 1976; Renfrew and Dixon 1976; Renfrew, Dixon, and Cann 1966. See also Frahm 2012a.

<sup>2</sup> Cauvin et al. 1998; Nadooshan et al. 2007; Niknami, Amirkhiz, and Glascock 2010; Williams-Thorpe 1995, pp. 232–33.

<sup>3</sup> Williams-Thorpe 1995, p. 232.

<sup>4</sup> Compare Ghorabi et al. 2010 with Cherry, Faro, and Minc 2010, for instance.

<sup>5</sup> [https://www.sourcecatalog.com/sourcecatalog/s\\_home.html](https://www.sourcecatalog.com/sourcecatalog/s_home.html).

<sup>6</sup> Chataigner et al. 2003; Cherry, Faro, and Minc 2010; Keller et al. 1996; Oddone et al. 2000.

<sup>7</sup> Niknami, Amirkhiz, and Glascock 2010.

<sup>8</sup> Cauvin et al. 1998.

<sup>9</sup> Cauvin et al. 1998.

<sup>10</sup> Williams-Thorpe 1995, p. 234.

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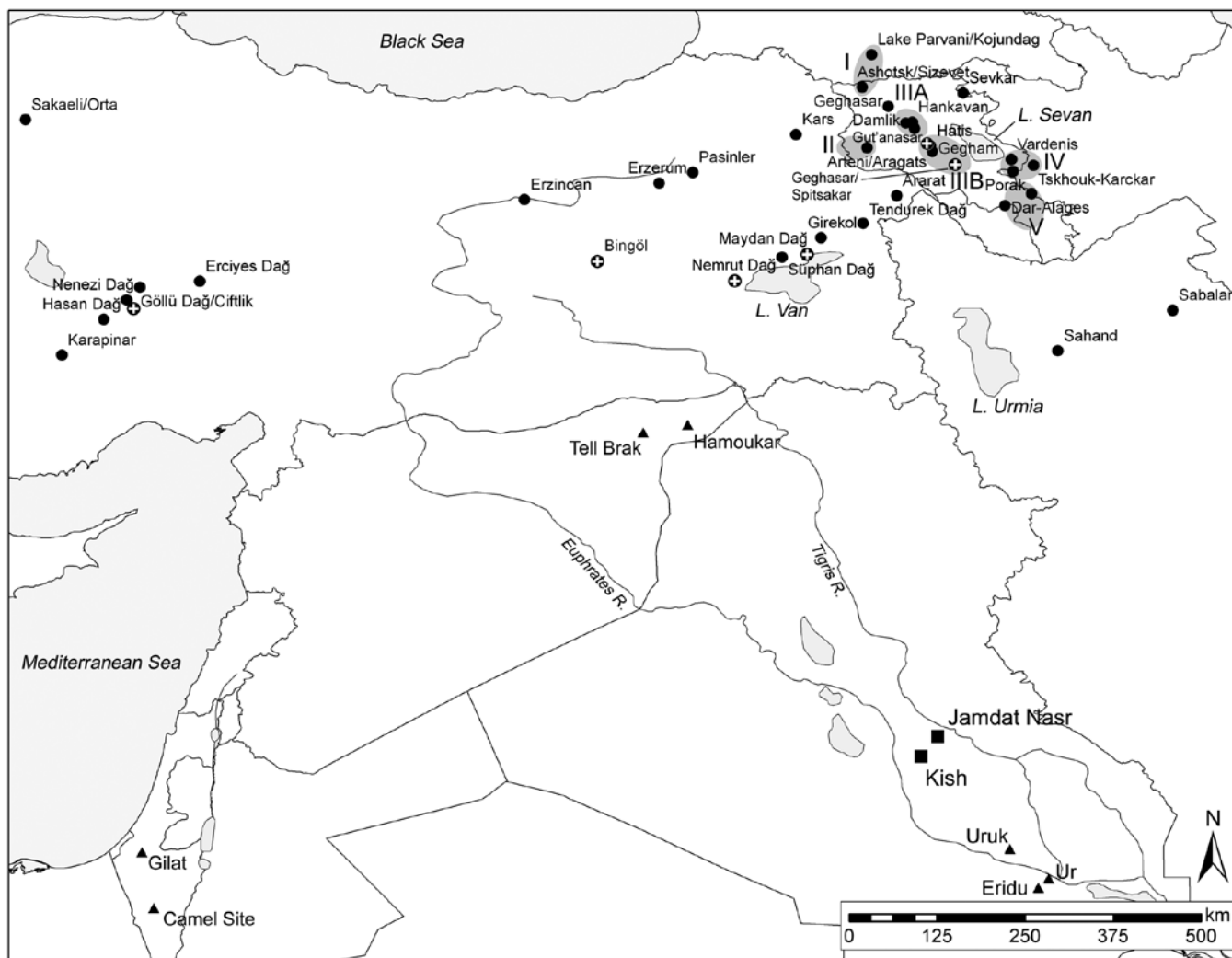


Figure 6.1. Map of the study region showing the major sources of obsidian and the location of Jamdat Nasr, Kish, and other Chalcolithic/Early Bronze Age sites mentioned in the text. Source regions in Armenia are Kechut/Ashotsk (I), Aragats (II), Gegham (IIIA, B), Vardenis (IV), and Syunik (V).

Bingöl- and Lake Van-area obsidians appear at low frequencies in some Neolithic assemblages nearer to the Cappadocian sources,<sup>11</sup> material from these sources is more common at Chalcolithic sites such as Gilat in the Negev<sup>12</sup> and the large protourban centers of Tell Brak and Tell Hamoukar in Syria. Tell Hamoukar may have served as an important redistributive center for Bingöl obsidian during the Late Chalcolithic 2 period.<sup>13</sup> Farther south in Mesopotamia, Woolley recovered large amounts of obsidian in his excavations at Ur dating to the Uruk phase, but obsidian seems to have become generally less utilized during the Jamdat Nasr and later phases,<sup>14</sup>

particularly as a component of flaked-stone industries. Despite an evident drop in the volume of obsidian that may have been transported during the later fourth millennium BC, distribution of obsidian over relatively large distances still occurred—Bingöl obsidian was recovered at the Bronze Age Camel Site (ca. 3000 BC) in the Negev,<sup>15</sup> a straight-line distance of more than 1,000 km.

The distribution of obsidian from Armenian/Georgian sources is less well known—they were utilized in Armenia and northern Iran but appear in assemblages further west only sporadically. Iranian (Lake Urmia) sources appear to have been utilized only locally, and rarely even then.<sup>16</sup>

<sup>11</sup> Carter et al. 2008.

<sup>12</sup> Yellin, Levy, and Rowan 1996.

<sup>13</sup> Khalidi, Gratuze, and Boucetta 2009.

<sup>14</sup> Moorey 1999, p. 70.

<sup>15</sup> Rosen, Tykot, and Gottesman 2005.

<sup>16</sup> Blackman 1984; Chataigner et al. 2003; Ghorabi et al. 2010; Niknami, Amirkhiz, and Glascock 2010; Williams-Thorpe 1995,

## OBSIDIAN FROM KISH AND JAMDAT NASR

This report concerns the analysis by X-ray fluorescence (XRF) of fifty-nine lithic objects cataloged as obsidian contained in the Field Museum of Natural History's Kish collections, including five objects excavated at Jamdat Nasr and fifty-four objects excavated at Kish (table 6.1). The Jamdat Nasr obsidian likely dates to the Jamdat Nasr/Uruk III (ca. 3000–2900 BC) through Early Dynastic phases, while material from Kish, when provenience was recorded, was excavated from the Y trench (table 6.1) and therefore probably dates to the Early Dynastic I (ca. 2900–2800 BC) period.<sup>17</sup> While it remains possible that pieces are present at the Baghdad Museum, it is believed that this represents the totality of obsidian collected and retained from the 1923–33 excavations at Kish and Jamdat Nasr. As is the case for other stone tool types from Kish present in the Field Museum collections, the obsidian assemblage likely represents only a tiny fraction of the total recovered from excavations there and excludes any smaller debitage that may have been recovered if excavated sediments had been screened. The total amount of obsidian contained in the collection constitutes only 0.6 percent of the total lithic assemblage recovered from Kish (54 of 9,181 objects) currently housed in the Field Museum collections.

It is clear, however, that the pieces included in the Field Museum collections were not systematically selected to include only finished tools or other objects. While the majority of these pieces can be classified as bladelets or tools on bladelets, implements on flakes, cores, core rejuvenation flakes, and nodules were also among the pieces analyzed (table 6.1). In light of the use of obsidian in prestige objects such as carved bowls and statuary inlays at other important Mesopotamian sites such as Eridu, Uruk, and Ur,<sup>18</sup> it is somewhat surprising that the material recovered from Kish comprises only flaked stone tools and associated cores and rejuvenation flakes.

The function of most of the finished pieces is difficult to assess—one medial segment of a flaked axe-bit was analyzed, as was a blade segment used as a sickle blade. None of the obsidian tools appears to be a borer or drill—unlike the flint industry recovered

at Kish, the obsidian pieces from Kish and Jamdat Nasr do not necessarily appear to be associated with the carving of cylinder seals or other objects made of soft stones.<sup>19</sup> Unfortunately, the limited number of pieces available, and the scant provenience information recorded for them, makes a detailed assessment of obsidian acquisition and use at Kish and Jamdat Nasr impossible at present, and this report is concerned primarily with assessing the number and location of sources that were accessed at Kish and Jamdat Nasr.

## METHOD

Analysis was conducted at the Field Museum Elemental Analysis Facility using an Innov-X Systems Alpha portable XRF device. X-rays were produced using a tungsten target and were collected by a Si PIN diode detector, with an energy resolution of less than 230 eV FWHM at the 5.95 keV Mn K-alpha line. In the present study, the fundamental parameters program supplied by Innov-X Systems was used to calculate concentrations, with the instrument set to “soils” mode, which utilizes a 40 keV beam voltage and 20  $\mu$ A current to excite the specimen for mid-Z elements (Zn, Rb, Sr, Zr, Nb) and a 15 keV beam voltage for lighter elements (K, Ca, Ti, Mn, Fe). Data were collected for a total of sixty seconds per analysis, with three analyses performed per archaeological specimen and averaged.

Values generated by the instrument's fundamental parameters algorithm were corrected<sup>20</sup> using a set of standards that included Sierra de Pachuca and Glass Buttes obsidian standards,<sup>21</sup> US Geological Survey basalt standard BCR-2, and a series of in-house obsidian standards measured using both laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) and a Bruker portable XRF unit calibrated against a series of obsidian standards measured at several laboratories. As BCR-2 is a basalt, with some elements at concentrations well outside those found in obsidians, this certified standard was used only to generate calibration curves for elements within the range present in measured archaeological specimens. Precision is on the order of 5–10 percent for all elements included in the present study (see

pp. 233–34.

<sup>17</sup> Algaze 1983–84; Gibson 1972, p. 140; Moorey 1978.

<sup>18</sup> Moorey 1999, p. 70.

<sup>19</sup> See chapters 8 and 10 in this volume.

<sup>20</sup> Frahm 2012b.

<sup>21</sup> Glascock 1999.



Table 6.1. Specimens analyzed by portable XRF. All values expressed as parts per million.

| Sample Site | Field Museum ID | Context        | Type                                  | Group   | Coloration                            | K     | Ca   | Ti   | Mn  | Fe    | Zn   | Rb  | Sr  | Zr   | Nb |
|-------------|-----------------|----------------|---------------------------------------|---------|---------------------------------------|-------|------|------|-----|-------|------|-----|-----|------|----|
| JN001       | Jamdat Nasr     | T2002.1.478-2  | Medial blade fragment                 | Group 1 | Greenish                              | —     | —    | 956  | 434 | 15867 | 1794 | 225 | —   | 1203 | 65 |
| JN002       | Jamdat Nasr     | T2002.1.478-3  | Medial bladelet fragment              | Group 1 | Gray-green                            | —     | —    | 918  | 444 | 21336 | 1747 | 253 | —   | 1304 | 69 |
| JN003       | Jamdat Nasr     | T2002.1.478-4  | Proximal bladelet fragment            | Group 3 | Opaque black                          | —     | —    | 515  | 434 | 7616  | 93   | 233 | 23  | 296  | 42 |
| JN004       | Jamdat Nasr     | T2002.1.478-5  | Proximal bladelet fragment            | Group 1 | Greenish                              | —     | —    | 914  | 398 | 20158 | 195  | 250 | —   | 1289 | 75 |
| JN005       | Jamdat Nasr     | T2002.1.478-6  | Sickle on medial bladelet fragment    | Group 1 | Greenish                              | —     | —    | 935  | 434 | 18109 | 194  | 238 | —   | 1267 | 68 |
| KH001       | Kish            | 159704-1       | Core, flake                           | Group 1 | Greenish                              | 38680 | 813  | 950  | 355 | 15777 | 167  | 230 | —   | 1212 | 64 |
| KH002       | Kish            | 159914         | Sickle blade, inverse retouch         | Group 3 | Gray with abundant black streaking    | 38993 | 2796 | 576  | 360 | 7942  | 70   | 213 | 13  | 275  | 32 |
| KH003       | Kish            | 231479         | Core, primary                         | Group 7 | Gray-clear                            | 36998 | 4090 | 628  | 296 | 4387  | 37   | 127 | 26  | 69   | 26 |
| KH004       | Kish            | T2002.1.505-5  | Bladelet, medial                      | Group 4 | Clear                                 | 38269 | 2469 | 512  | 277 | 5096  | 40   | 188 | 15  | 101  | 39 |
| KH005       | Kish            | T2002.1.505-9  | Bladelet, medial                      | Group 4 | Clear                                 | 39969 | 2574 | 499  | 273 | 4998  | 35   | 199 | 15  | 94   | 38 |
| KH006       | Kish            | T2002.1.505-10 | Bladelet, proximal                    | Group 4 | Gray with abundant black streaking    | 42106 | 3139 | 583  | 291 | 5521  | 36   | 209 | 23  | 120  | 48 |
| KH007       | Kish            | T2002.1.505-16 | Bladelet, proximal                    | Group 1 | Greenish                              | 39812 | 930  | 960  | 332 | 16691 | 184  | 240 | —   | 1259 | 68 |
| KH008       | Kish            | T2002.1.505-17 | Bladelet, proximal                    | Group 1 | Greenish                              | 41600 | 1320 | 1030 | 369 | 16342 | 175  | 240 | —   | 1269 | 68 |
| KH009       | Kish            | T2002.1.505-25 | Flake                                 | Group 1 | Greenish                              | 37299 | 1463 | 907  | 325 | 15577 | 174  | 224 | —   | 1180 | 65 |
| KH010       | Kish            | T2002.1.505-37 | Blade, medial                         | Group 1 | Greenish                              | 40321 | 1904 | 929  | 360 | 15706 | 167  | 230 | —   | 1231 | 67 |
| KH011       | Kish            | T2002.1.505-38 | Bladelet, edge, proximal              | Group 2 | Clear-tan                             | 47886 | 5932 | 1037 | 231 | 10497 | 56   | 246 | 36  | 323  | 20 |
| KH012       | Kish            | T2002.1.505-2  | Blade, distal, truncated              | Group 2 | Gray-brown                            | 52024 | 5378 | 1029 | 209 | 10259 | 41   | 232 | 36  | 310  | 17 |
| KH013       | Kish            | T2002.1.505-3  | Bladelet, proximal                    | Group 4 | Clear                                 | 39875 | 2476 | 571  | 344 | 5848  | 39   | 220 | 23  | 123  | 49 |
| KH014       | Kish            | T2002.1.505-6  | Bladelet, medial                      | Group 4 | Clear                                 | 41338 | 2533 | 541  | 322 | 5738  | 42   | 217 | 25  | 121  | 46 |
| KH015       | Kish            | T2002.1.505-14 | Bladelet, medial                      | Group 1 | Greenish                              | —     | —    | 934  | 342 | 15414 | 177  | 230 | —   | 1219 | 66 |
| KH016       | Kish            | T2002.1.505-15 | Bladelet, medial                      | Group 1 | Greenish                              | 39802 | 1176 | 953  | 394 | 17188 | 186  | 243 | —   | 1295 | 75 |
| KH017       | Kish            | T2002.1.505-20 | Bladelet, medial                      | Group 2 | Brown                                 | —     | —    | 941  | 205 | 9805  | 51   | 233 | 36  | 306  | 17 |
| KH018       | Kish            | T2002.1.505-21 | Flake                                 | Group 1 | Greenish                              | 42105 | 1614 | 967  | 345 | 15656 | 172  | 225 | —   | 1179 | 62 |
| KH019       | Kish            | T2002.1.505-22 | Flake                                 | Group 1 | Greenish with weathered surface       | 38946 | 3655 | 1041 | 338 | 16212 | 187  | 228 | —   | 1194 | 62 |
| KH020       | Kish            | T2002.1.505-24 | Flake                                 | Group 1 | Greenish                              | 40076 | —    | 1067 | 401 | 15683 | 173  | 228 | —   | 1217 | 64 |
| KH021       | Kish            | T2002.1.505-26 | Flake                                 | Group 5 | Clear with gray streaking             | 35542 | 4314 | 502  | 372 | 4124  | 41   | 209 | 7   | 62   | 45 |
| KH022       | Kish            | T2002.1.508-17 | Flake, primary                        | Group 1 | Greenish                              | 52876 | 3888 | 872  | 318 | 16073 | 177  | 239 | 4   | 1153 | 63 |
| KH023       | Kish            | T2002.1.505-1  | Bladelet, bilateral retouch, proximal | Group 2 | Gray-brown with black streaking       | 44743 | 5514 | 1065 | 259 | 11696 | 49   | 233 | 37  | 310  | 19 |
| KH024       | Kish            | T2002.1.505-11 | Bladelet, medial                      | Group 6 | Translucent gray with black streaking | 37924 | 7878 | 910  | 505 | 8174  | 51   | 186 | 137 | 200  | 51 |
| KH025       | Kish            | T2002.1.505-12 | Bladelet, medial                      | Group 5 | Clear with dark-gray streaking        | 38943 | 4220 | 509  | 503 | 4682  | 37   | 226 | 10  | 68   | 50 |

|       |                           |                    |          |                        |              |                               |       |       |      |     |       |     |     |     |      |    |
|-------|---------------------------|--------------------|----------|------------------------|--------------|-------------------------------|-------|-------|------|-----|-------|-----|-----|-----|------|----|
| KHO26 | Kish                      | T2002.1.505-13     | Y4-6     | Bladelet, medial       | Group 1      | Greenish with black streaking | 39134 | 1407  | 826  | 410 | 17865 | 182 | 231 | —   | 1205 | 64 |
| KHO27 | Kish                      | T2002.1.505-18     | Y4-6     | Bladelet, medial       | Group 1      | Greenish                      | 41972 | 2299  | 899  | 411 | 18478 | 202 | 255 | 4   | 1326 | 75 |
| KHO28 | Kish                      | T2002.1.505-19     | Y4-6     | Bladelet, proximal     | Group 1      | Greenish                      | 45427 | 1317  | 872  | 431 | 18091 | 197 | 250 | —   | 1291 | 70 |
| KHO29 | Kish                      | T2002.1.505-23     | Y4-6     | Flake                  | Group 1      | Greenish                      | 40132 | 3447  | 874  | 424 | 17957 | 180 | 232 | —   | 1216 | 70 |
| KHO30 | Kish                      | T2002.1.505-27     | Y4-6     | Flake                  | Group 1      | Greenish                      | 41628 | 2602  | 960  | 417 | 18547 | 184 | 235 | —   | 1238 | 67 |
| KHO31 | Kish                      | T2002.1.505-28     | Y4-6     | Chunk                  | Group 1      | Greenish                      | 39495 | 1254  | 837  | 407 | 17709 | 172 | 223 | —   | 1195 | 60 |
| KHO32 | Kish                      | T2002.1.505-29     | Y4-6     | Flake, retouched       | Group 1      | Greenish                      | 39943 | 1599  | 876  | 408 | 17895 | 185 | 239 | —   | 1225 | 67 |
| KHO33 | Kish                      | T2002.1.505-30     | Y4-6     | Flake                  | Group 1      | Greenish                      | 40272 | 1703  | 848  | 387 | 17848 | 183 | 234 | —   | 1237 | 66 |
| KHO34 | Kish                      | T2002.1.505-31     | Y4-6     | Flake                  | Group 1      | Greenish                      | 39159 | 2758  | 850  | 412 | 17830 | 171 | 226 | —   | 1179 | 65 |
| KHO35 | Kish                      | T2002.1.505-32     | Y4-6     | Blade, medial          | Group 1      | Greenish                      | 40198 | 2534  | 877  | 421 | 18067 | 190 | 238 | —   | 1219 | 66 |
| KHO36 | Kish                      | T2002.1.505-33     | Y4-6     | Blade, medial          | Not obsidian | Matte black                   | 4305  | 4036  | 376  | 29  | 3175  | 20  | 15  | 99  | 4    | —  |
| KHO37 | Kish                      | T2002.1.505-34     | Y4-6     | Blade, proximal        | Group 1      | Greenish                      | 46582 | 2213  | 847  | 388 | 17984 | 173 | 229 | —   | 1231 | 68 |
| KHO38 | Kish                      | T2002.1.505-35     | Y4-6     | Flake                  | Group 1      | Greenish                      | 41243 | 1550  | 922  | 423 | 22307 | 218 | 300 | —   | 1357 | 66 |
| KHO39 | Kish                      | T2002.1.505-36     | Y4-6     | Chunk                  | Group 1      | Greenish                      | 40312 | 668   | 952  | 424 | 18116 | 175 | 227 | —   | 1197 | 61 |
| KHO40 | Kish                      | T2002.1.505-4      | Y4-6     | Bladelet, medial       | Group 4      | Clear with black streaking    | 42453 | 2423  | 624  | 357 | 5670  | 39  | 225 | 23  | 123  | 50 |
| KHO41 | Kish                      | T2002.1.505-40     | Y4-6     | Flake                  | Group 1      | Greenish                      | 41030 | 1680  | 844  | 408 | 18200 | 162 | 228 | —   | 1207 | 65 |
| KHO42 | Kish                      | T2002.1.505-7      | Y4-6     | Bladelet, medial       | Group 4      | Clear with black streaking    | 43038 | 3144  | 595  | 359 | 5846  | 48  | 264 | 30  | 145  | 57 |
| KHO43 | Kish                      | T2002.1.505-8      | Y4-6     | Bladelet, medial       | Group 4      | Clear                         | 41378 | 2978  | 615  | 347 | 5700  | 41  | 207 | 21  | 116  | 46 |
| KHO44 | Kish                      | T2002.1.505-39     | Y4-6     | Blade, primary, medial | Not obsidian | Tan                           | 4330  | 5219  | 338  | 86  | 4817  | 17  | 15  | 220 | —    | 2  |
| KHO45 | Kish                      | T2002.1.505-41-44a | Y4-6     | Chip                   | Group 1      | Greenish                      | 40838 | 2746  | 910  | 421 | 18220 | 200 | 244 | 3   | 1266 | 70 |
| KHO46 | Kish                      | T2002.1.505-41-44b | Y4-6     | Chip                   | Group 1      | Greenish                      | 40183 | 2236  | 869  | 418 | 18154 | 201 | 251 | —   | 1351 | 80 |
| KHO47 | Kish                      | T2002.1.505-41-44c | Y4-6     | Chip                   | Group 1      | Greenish                      | 42681 | 2168  | 876  | 435 | 17656 | 204 | 263 | 15  | 1367 | 75 |
| KHO48 | Kish                      | T2002.1.505-41-44d | Y4-6     | Chip                   | Group 1      | Greenish                      | 41728 | 1253  | 852  | 415 | 18221 | 182 | 242 | —   | 1257 | 67 |
| KHO50 | Kish                      | 159525             | Y trench | Flake, retouched       | Group 1      | Black with greenish edges     | 40627 | 1359  | 986  | 439 | 18496 | 183 | 229 | —   | 1224 | 59 |
| KHO51 | Kish                      | 159956             | —        | Axe, medial            | Group 1      | Greenish                      | 68283 | 8460  | 930  | 444 | 18400 | 192 | 240 | —   | 1170 | 57 |
| KHO52 | Kish                      | 159704-2           | Y4-6     | Platform rejuvenation  | Group 2      | Gray-brown                    | 43495 | 6136  | 1236 | 257 | 12040 | 45  | 229 | 38  | 308  | 16 |
| KHO53 | Kish                      | 159704-3           | Y4-6     | Flake                  | Group 1      | Greenish                      | 38503 | 1514  | 903  | 419 | 18343 | 166 | 221 | —   | 1201 | 61 |
| KHO54 | Kish                      | T2002.1.508-25     | YW4-7    | Flake, backed          | Group 3      | Matte black (weathered)       | 39491 | 3553  | 741  | 439 | 9510  | 79  | 206 | —   | 259  | 32 |
| KHO55 | Kish                      | T2002.1.527-1      | YWZ      | Core, bullet           | Not obsidian | Clear                         | —     | —     | —    | —   | 1741  | —   | —   | —   | —    | —  |
| BCR-2 | Columbia River, OR        |                    |          |                        |              | Mean                          | 13684 | 50931 | —    | —   | —     | 102 | 48  | 272 | 153  | 17 |
| SPCH  | Sierra de Pachuca, Mexico |                    |          |                        |              | Mean                          | 37144 | 593   | 884  | 869 | 12715 | 214 | 231 | —   | 1004 | 85 |
| GBO   | Glass Buttes, OR          |                    |          |                        |              | 1- $\sigma$                   | 790   | 130   | 76   | 36  | 314   | 7   | 5   | —   | 14   | 3  |
|       |                           |                    |          |                        |              | Mean                          | 33771 | 6736  | 660  | 248 | 5793  | 40  | 116 | 59  | 93   | 12 |
|       |                           |                    |          |                        |              | 1- $\sigma$                   | 655   | 140   | 97   | 26  | 127   | 3   | 3   | 2   | 3    | 1  |

## WHERE KINGSHIP DESCENDED FROM HEAVEN

table 6.1 for results of repeat measurements on the Pachuca and Glass Buttes standards).

Archaeological specimens were compared to source data published primarily by Gratuze and colleagues<sup>22</sup> and Khalidi, Gratuze, and Boucetta,<sup>23</sup> whose studies were carried out using LA-ICP-MS at the Centre Ernest-Babelon in Orléans, France. Since values for Pachuca and Glass Buttes standards measured there have been published,<sup>24</sup> it was possible to directly compare values measured at the Elemental Analysis Facility with those generated in Orléans. Additional comparisons were made with data from central Anatolian sources published by Carter and Shackley;<sup>25</sup> with data for Armenian sources published by Blackman,<sup>26</sup> Cherry, Faro, and Minc,<sup>27</sup> Francaviglia,<sup>28</sup> and Oddone and colleagues;<sup>29</sup> and with Iranian source data published by Niknami, Amirkhiz, and Glascock<sup>30</sup> and Ghorabi and colleagues.<sup>31</sup> It should be stressed that source assignments made in the present study would benefit from direct measurement of source samples at the Elemental Analysis Facility in the future.

## RESULTS

Hierarchical cluster analysis (average-linkage method on mean Euclidean distances) of logged concentration values resulted in the identification of seven distinct chemical compositional profiles among the archaeological specimens, labeled Groups 1 through 7 (fig. 6.2). Three measured specimens (KH036, KH044, and KH055) have compositions inconsistent with volcanic glass. The first two appear to be made on pitchstone, chert, or other similar materials, while the third is a small weathered bullet core produced on what appears to be perfectly opaque quartz. The seven-group structure identified in the chemical data is readily evident on a plot of logged (base 10) Zr and Nb concentrations (fig. 6.3). Group 1, which contains the majority of

the measured obsidian pieces, is distinguished by particularly high zinc, zircon, and iron concentrations. This is also true of chemical Groups 2 and 3, although to a lesser degree. The relatively high zircon and zinc values in these samples rule out an assignment to any Cappadocian source flows, and comparison to published data confirms Group 1 as deriving from the Bingöl A or Nemrut Dağ peralkaline sources (fig. 6.4). Visual inspection of coloration in the analyzed specimens (table 6.1) also indicates that all these pieces have a greenish tint characteristic of peralkaline obsidians,<sup>32</sup> while all other pieces are tan, black, or grayish to translucent. The Bingöl A and Nemrut Dağ sources, though well separated geographically, have proven difficult to distinguish geochemically.<sup>33</sup> The range of zircon concentrations measured in the Kish and Jamdat Nasr specimens generally falls into the range measured in the Bingöl A source and outside those measured in the various Nemrut Dağ sub-sources,<sup>34</sup> but it remains possible that some specimens in Group 1 originated at Nemrut Dağ.

Group 2 pieces are chemically consistent with published data for the Bingöl B calc-alkaline source and can be confidently assigned to an origin there. These pieces are all of a distinctive brownish coloration trending toward tan or gray in some pieces (table 6.1). Group 3 specimens match published values for the Maydan Dağ source near Lake Van. Although the Group 3 specimens are similar to the West Erzerum source on a plot of Zr and Zn concentrations (fig. 6.4), a bivariate plot of Mn and Fe concentrations (fig. 6.5) clearly distinguishes the Group 3 specimens from the West Erzerum source mean. One of the Group 3 pieces is translucent with a grayish coloration and black streaking, while the other two are solid opaque black in color (table 6.1).

Group 4 contains the second-largest number of pieces after Group 1. Comparison with data published both by Gratuze<sup>35</sup> and by Carter and Shackley<sup>36</sup> for the Göllü Dağ/Ciftlik sources indicates that Group 4 specimens are chemically consistent with assignment to the Göllü Dağ source (figs. 6.6–6.7). Since this source is known to be compositionally

<sup>22</sup> Gratuze 1999; Gratuze et al. 2003.

<sup>23</sup> Khalidi, Gratuze, and Boucetta 2009.

<sup>24</sup> Glascock 1999.

<sup>25</sup> Carter and Shackley 2007.

<sup>26</sup> Blackman 1984.

<sup>27</sup> Cherry, Faro, and Minc 2010.

<sup>28</sup> Francaviglia 1994.

<sup>29</sup> Oddone et al. 2000.

<sup>30</sup> Niknami, Amirkhiz, and Glascock 2010.

<sup>31</sup> Ghorabi et al. 2010.

<sup>32</sup> Williams-Thorpe 1995, p. 221.

<sup>33</sup> Khalidi, Gratuze, and Boucetta 2009, p. 883; but see Frahm 2012c.

<sup>34</sup> Chataigner 1994, p. 13.

<sup>35</sup> Gratuze 1999.

<sup>36</sup> Carter and Shackley 2007.

## CHAPTER 6. PROVENIENCE INVESTIGATIONS OF OBSIDIAN ARTIFACTS

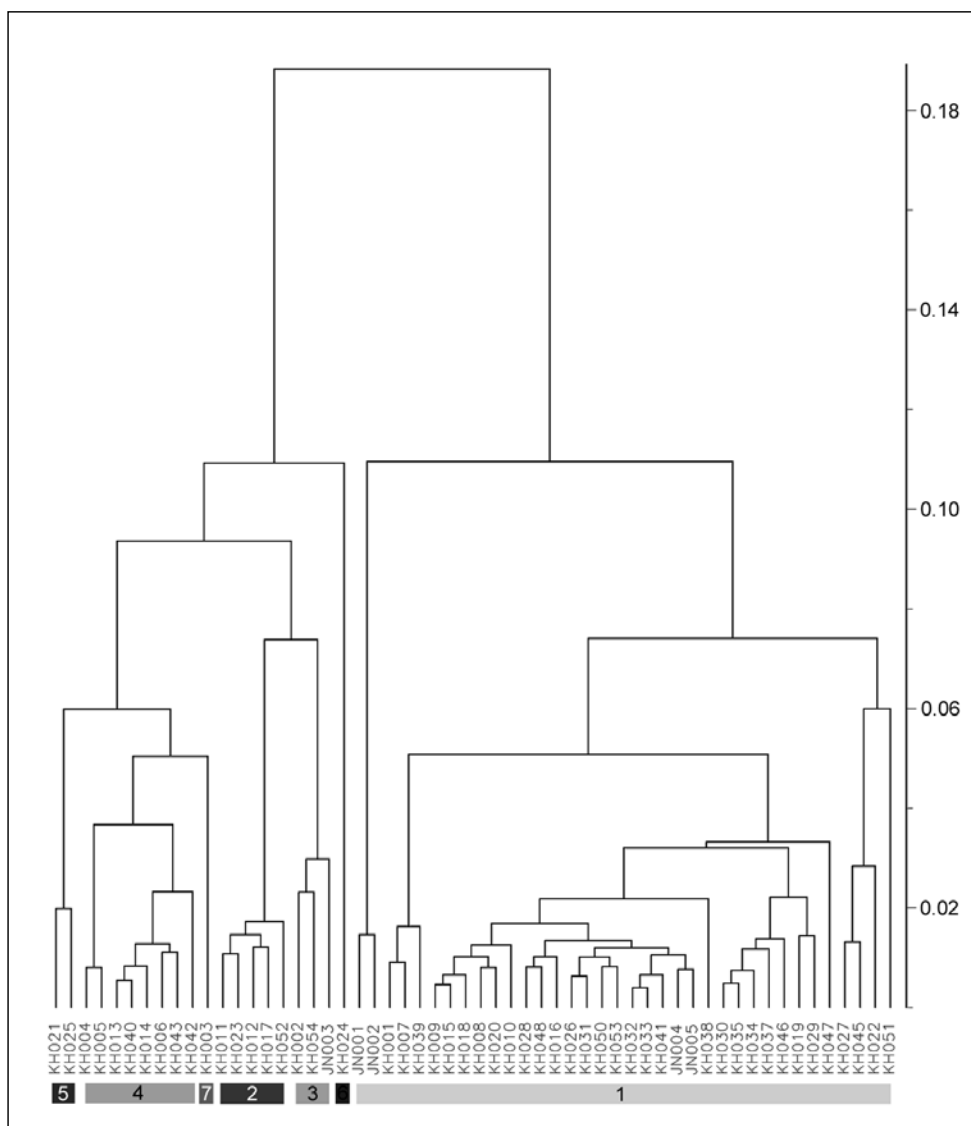


Figure 6.2. Dendrogram produced by average-linkage cluster analysis showing the seven chemical groups identified among the Kish and Jamdat Nasr obsidian pieces.

complex, with a number of distinct subflows,<sup>37</sup> it is possible that the Group 4 specimens represent several of these subflows. In general, the specimens included in Group 4 are more similar to those flows grouped by Gratuze<sup>38</sup> as “West Göllü Dağ” than those labeled “East Göllü Dağ.” Many of the Group 4 specimens are nearly perfectly clear, with some black streaking evident in several pieces (table 6.1).

The two specimens included in Group 5 exhibit low zircon and zinc concentrations consistent with Cappadocian sources, and generally overlap with Group 4 on some elements. However, Group 5 specimens have relatively low iron concentrations and relatively high zinc and niobium concentrations in

comparison to the Göllü Dağ sources (fig. 6.4), while sources in southern Armenia, though having low strontium concentrations similar to the Group 5 specimens, have much lower zirconium concentrations.<sup>39</sup> The proximal central Armenian sources of Geghasar and Spitakasar provide the best matches for these pieces (fig. 6.6). These sources are located within the southern portion of the Gegham B (IIIB) volcanic region.<sup>40</sup> Group 5 glass is clear with occasional dark gray streaking.

The single specimen making up Group 6 differs from Groups 4 and 5 obsidian in having substantially higher concentrations of strontium and moderately higher concentrations of iron, rubidium, and

<sup>37</sup> Binder et al. 2011; Gratuze et al. 2003.

<sup>38</sup> Gratuze 1999.

<sup>39</sup> Cherry, Faro, and Minc 2010.

<sup>40</sup> Oddone et al. 2000.

WHERE KINGSHIP DESCENDED FROM HEAVEN

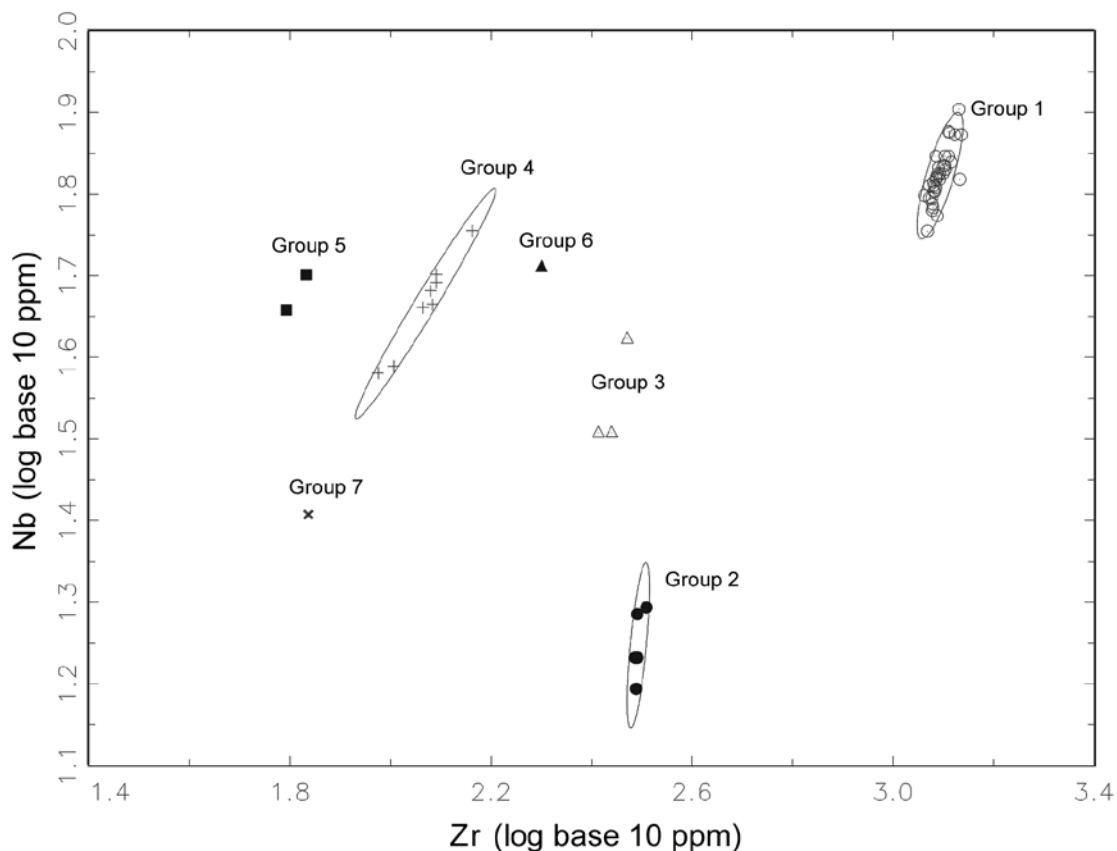


Figure 6.3. Bivariate plot of logged (base 10) Zr and Nb concentrations in obsidian pieces from Kish and Jamdat Nasr showing the division into seven chemical profiles. Ellipses represent 95% confidence intervals for groups with four or more members.

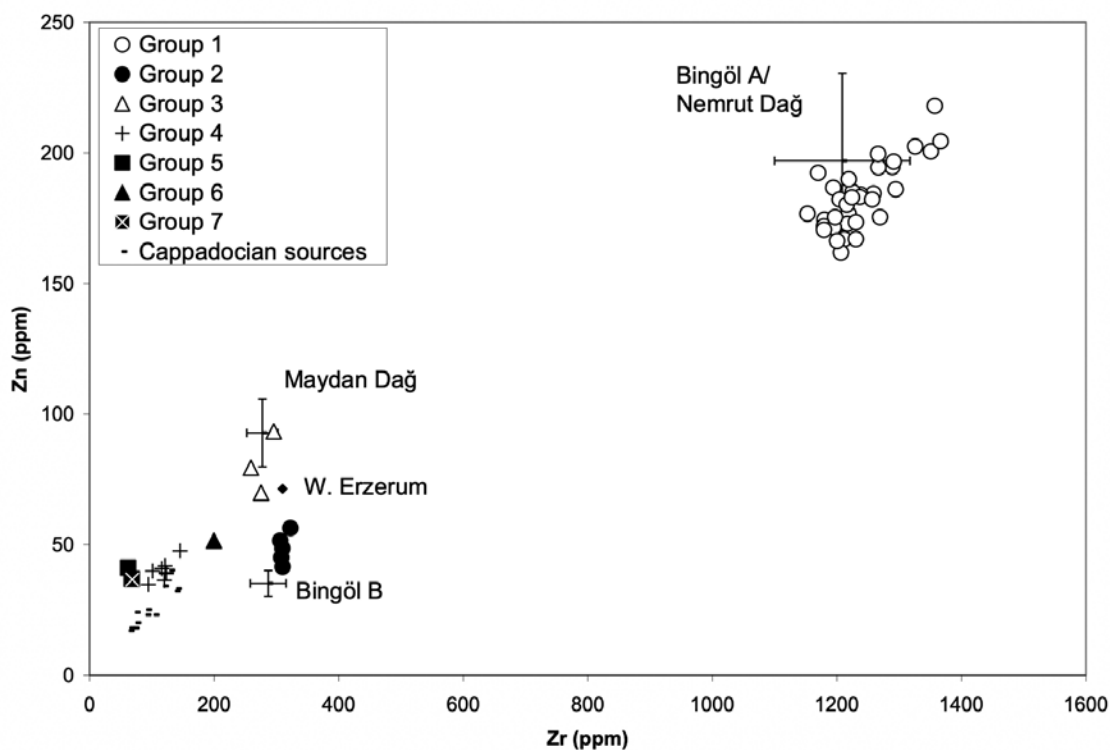


Figure 6.4. Bivariate plot of Zr and Zn concentrations compared to the corrected mean concentration values for sources obtained from Gratuze (1999) and Khalidi, Gratuze, and Boucetta (2009). Error bars indicate one-sigma ranges. Samples JN001 and JN002 (Group 1) have unusually high measured Zn concentrations and are not visible on the scale range shown.

CHAPTER 6. PROVENIENCE INVESTIGATIONS OF OBSIDIAN ARTIFACTS

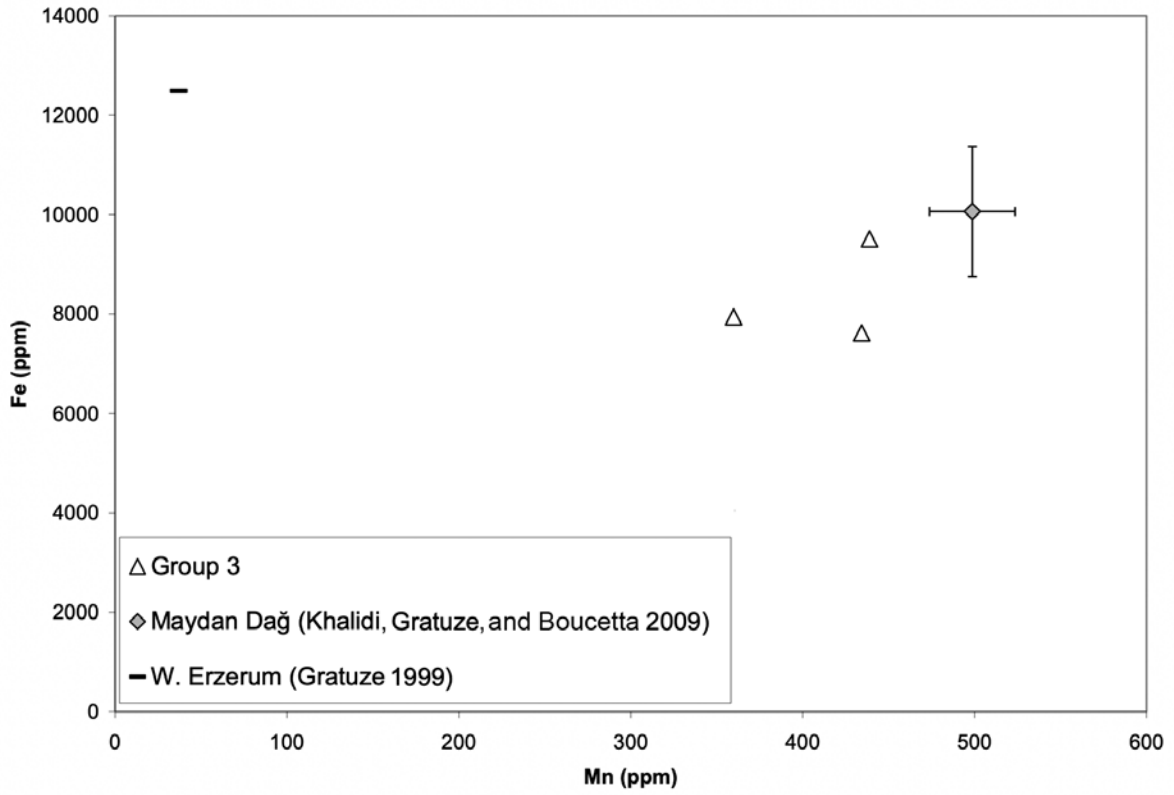


Figure 6.5. Bivariate plot of Mn and Fe concentrations showing the chemical separation between the W. Erzerum and Maydan Dağ obsidian sources and the association between archaeological specimens included in chemical Group 3 and the Maydan Dağ source. Error bars represent one-sigma ranges.

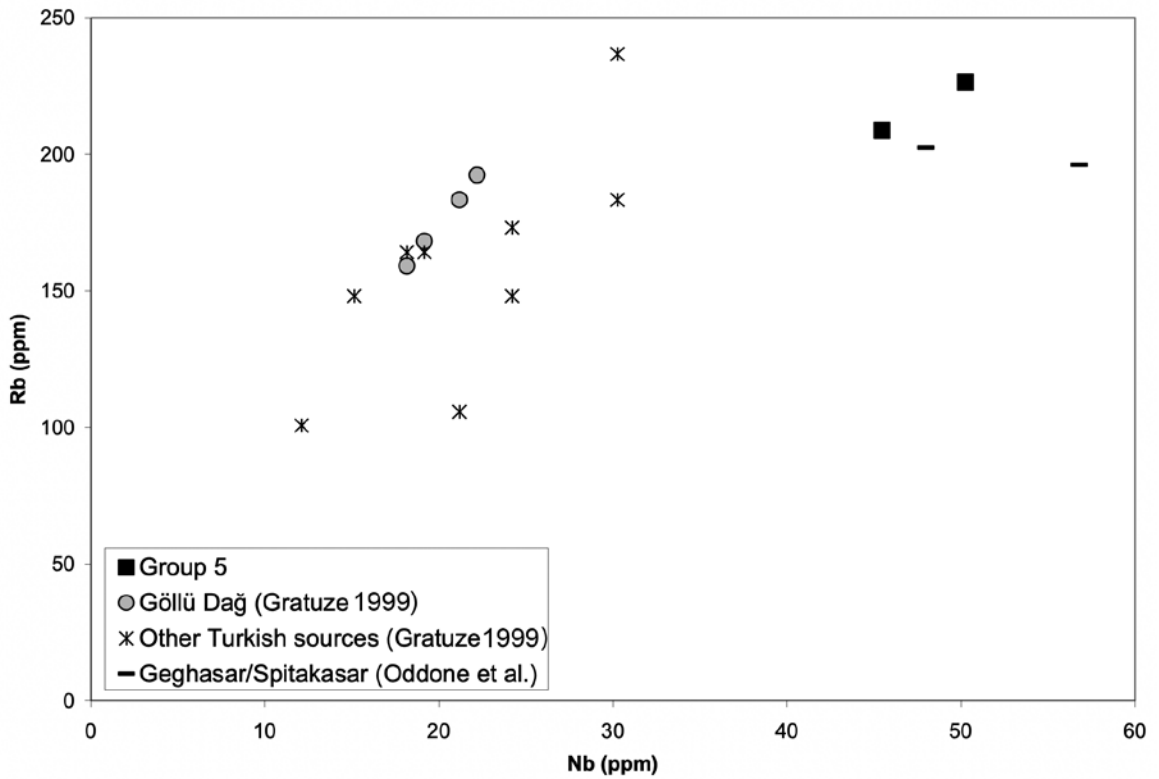


Figure 6.6. Bivariate plot of Nb and Rb mean concentrations for Göllü Dağ and other Turkish sources, Geghasar/Spitakasar sources (Armenia), and concentrations measured in Group 5 specimens.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

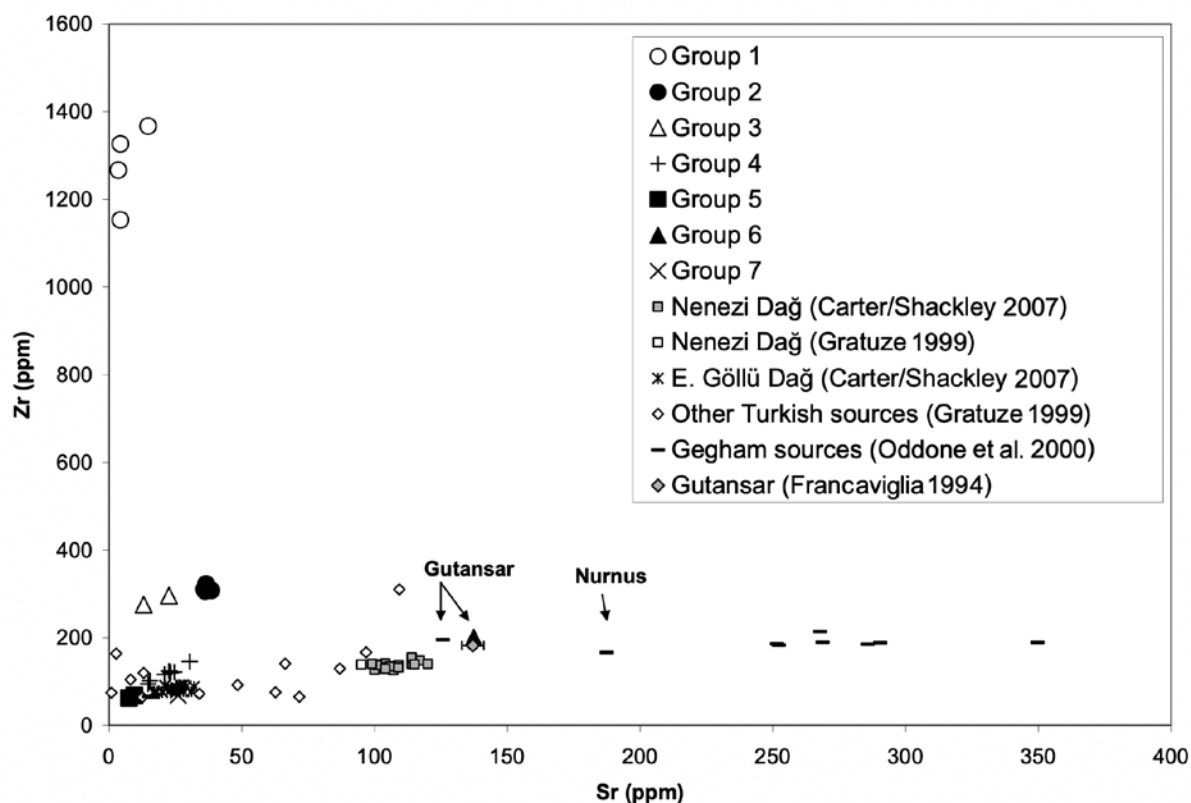


Figure 6.7. Bivariate plot of Sr and Zr concentrations in archaeological specimens compared to published compositional data for Turkish and Armenian sources. Only four specimens in Group 1 and two specimens in Group 3 had measurable concentrations of Sr; remaining data points from Groups 1 and 3 have been omitted. Error bars represent one-sigma ranges.

zircon—uniformly high concentrations of rubidium, strontium, and zircon (greater than 130 ppm) distinguish these pieces from all sources in southern Armenia<sup>41</sup> and Iran,<sup>42</sup> and all sources in Turkey<sup>43</sup> except for Nenezi Dağ in Cappadocia. However, the measured strontium content in this piece is higher than that reported by either Gratuze<sup>44</sup> or Carter and Shackley<sup>45</sup> for the Nenezi Dağ source (fig. 6.7). The closest published match for this piece is the Gutansar source (Zone IIIB) in central Armenia,<sup>46</sup> part of volcanic zone IIIB but located approximately 40 km north of the Geghasar and Spitakasar flows that are likely sources of the two Group 5 specimens. The Group 6 specimen is translucent gray with black streaking (table 6.1).

<sup>41</sup> Cherry, Faro, and Minc 2010.

<sup>42</sup> Niknami, Amirkhiz, and Glascock 2010; Ghorabi et al. 2010.

<sup>43</sup> Gratuze 1999.

<sup>44</sup> Gratuze 1999.

<sup>45</sup> Carter and Shackley 2007.

<sup>46</sup> Francaviglia 1994 and Oddone et al. 2000 divide this into Gutanasar and Nurnus flows.

Group 7 cannot be matched to a source based on available data—its chemistry and coloration are most similar to Group 4 samples, but the combination of low measured Rb (127 ppm) and Sr (26 ppm) is outside the ranges of any published source. However, cluster analysis weakly links this specimen to Group 4, and KH003 may represent a chemical outlier originating at Göllü Dağ/Ciftlik.

## DISCUSSION

The majority of obsidian at both Jamdat Nasr and Kish derives from sources either near Bingöl or Lake Van (table 6.2). At Jamdat Nasr, four of five (80 percent) of the specimens were sourced to the Bingöl A or Nemrut Dağ sources, with the remaining piece assignable to the Maydan Dağ source near Lake Van. Sixty-three percent of the Kish specimens derived from the Bingöl A or Nemrut Dağ sources, with an additional five (10 percent) from the Bingöl B source and two pieces (4 percent) from Maydan Dağ. Since these are geographically among the closest sources to both sites (Bingöl is some 780 km from Kish,

## CHAPTER 6. PROVENIENCE INVESTIGATIONS OF OBSIDIAN ARTIFACTS

Table 6.2. Source assignments by site.

| Site/source | Group 1                | Group 2  | Group 3    | Group 4   | Group 5                 | Group 6                 |            | Total |
|-------------|------------------------|----------|------------|-----------|-------------------------|-------------------------|------------|-------|
|             | Bingöl A<br>Nemrut Dağ | Bingöl B | Maydan Dağ | Göllü Dağ | Armenia IIIB<br>(south) | Armenia IIIB<br>(north) | Unassigned |       |
| Jamdat Nasr | 80% (4)                | —        | 20% (1)    | —         | —                       | —                       | —          | 5     |
| Kish        | 63% (32)               | 10% (5)  | 4% (2)     | 16% (8)   | 4% (2)                  | 2% (1)                  | 2% (1)     | 51    |
| Total       | 36                     | 5        | 3          | 8         | 2                       | 1                       | 1          | 56    |

Nemrut Dağ ca. 700 km, and Maydan Dağ ca. 710 km), it is perhaps not surprising to find that these sources are in the majority in both assemblages. The Bingöl sources in particular are very close to the headwaters of the Tigris, and it is quite plausible that obsidian was simply moved down the river by boat to Jamdat Nasr and Kish. The predominance of these sources is also consistent with data from other Chalcolithic and Bronze Age sites as noted above, although the important centers at which Bingöl and Lake Van obsidians were present during the Chalcolithic—Tell Brak and Tell Hamoukar—were apparently no longer receiving large quantities of obsidian during the Early Bronze Age, despite growing into large urban centers at that time.<sup>47</sup> While finished blades and other tools may have been transported from the Bingöl/Nemrut Dağ and Maydan Dağ sources to Kish, the presence of flake cores, numerous flakes, and several pieces with substantial amounts of cortex suggest that raw nodules or blocks were also at times transported southward into Mesopotamia.

Within the present sample, Cappadocian obsidian was found only at Kish—Göllü Dağ/Ciftlik obsidian makes up 16 percent of the Kish material analyzed in the present study. These pieces would have traveled some 1,100 km from their sources to reach Kish. Group 4 contains only blade fragments, suggesting that Cappadocian obsidian may have reached Kish primarily in the form of finished tools. Obsidian was also obtained from sources in central Armenia, composing 6 percent of the assemblage at Kish—these pieces comprise flakes and blade fragments. The central Armenian sources are some 870 km from Kish, and it is therefore evident that simple distance falloff does not adequately account for the relative proportions of Cappadocian and Armenian obsidian reaching Kish—in other words, Cappadocian obsidian appears to be more frequent than distance considerations would suggest, or alternatively Armenian obsidian less frequent. This likely reflects a variety of factors, including ease of

transport down the Tigris and Euphrates Rivers but also probably less intensive exploitation of sources in Armenia relative to those in Cappadocia. Both are absent at Jamdat Nasr, although it is questionable whether this absence represents changes in procurement between the Jamdat Nasr and Early Dynastic I phases, access to broader networks of exchange at Kish relative to Jamdat Nasr, or simply an artifact of the larger number of specimens analyzed from Kish.

## CONCLUSION

The present study involved the chemical characterization by portable XRF analysis of fifty-six obsidian objects excavated at Kish and Jamdat Nasr housed in the Field Museum Kish collections. The majority of these pieces were linked to sources near Bingöl in the central Taurus and Lake Van in eastern Anatolia, while a number of pieces could be confidently linked to sources near Göllü Dağ/Ciftlik in Cappadocia, over 1,000 km from Kish and Jamdat Nasr. A small portion of the Kish obsidian likely originated at sources in central Armenia. The data presented here provide further demonstration of the wide-ranging exchange that early urban centers in Mesopotamia were linked into. The growth of these extensive social and economic networks was likely an important contributing factor to the development of urbanism in Mesopotamia,<sup>48</sup> particularly at locations such as Kish that were advantageously positioned to control the transport of raw materials and finished goods.

## ACKNOWLEDGMENTS

The XRF device used in this study (project EAF072) was purchased with funds from the Field Museum Grainger Foundation Fund. Many thanks to Erin Rice, who analyzed some of the obsidian pieces discussed here.

<sup>47</sup> Khalidi, Gratuze, and Boucetta 2009; Ur, Karsgaard, and Oates 2007.

<sup>48</sup> E.g., Menze and Ur 2012.





## CHAPTER 7

## THE “SASANIAN” STUCCOS OF MOUND H

TRUDY S. KAWAMI

## MOUND H AND ITS REMAINS

After excavating Mounds X and Y, Stephen Langdon and Louis Charles Watelin turned their attention southward to Mound H in 1930. A total of seven structures were identified and cleared. The elaborate stucco decor of two structures led to the assumption that they were palaces, and they have since been customarily called Palace 1 and Palace 2 (fig. 7.1).<sup>1</sup> It has also been suggested that Palace 2 was a Christian church,<sup>2</sup> which is unlikely. A non-Christian sacral or religious function has also been proposed for both structures.<sup>3</sup> The absence of entrances for either building, their differing floor plans, and the eroded area between them raise the possibility that both buildings were portions of the same complex (fig. 7.2).<sup>4</sup> The labels “Palace 1” and “Palace 2” have been retained here for the sake of convenience, but it is likely that they were not separate buildings.

The stuccos from Palaces 1 and 2 at Kish have been remarkably unlucky since their excavation. The findspots of the stucco pieces were not always noted with precision.<sup>5</sup> While many pieces can be associated with a specific room in a specific palace, others are attributable to only one or the other palace, and a few are noted simply as coming from Mound H. There is no indication of depth or level or even of associated groupings. Some stuccos were given

K numbers, written in black ink, presumably at the site. On occasion, all examples of one motif were given a single K number even though there were several discrete pieces.<sup>6</sup> Most of the stucco was sent to the Field Museum of Natural History in Chicago; some works went to the Iraq Museum in Baghdad; and one, K.1436 (Oxford 1932.980; see fig. 7.6a), went to the Ashmolean Museum of Art and Archaeology in Oxford. Some K-numbered works were given museum accession numbers upon reaching Chicago, Baghdad, and Oxford. One group of works was unrecorded until it was found in the Field Museum’s storage in 2002 and 2003. The restoration and replication of various elements to reconstruct the stuccos for display in the Field Museum in the 1930s permanently immured many fragments in a heavy plaster matrix side by side with plaster reproductions treated to appear ancient. Over the years, these reproductions acquired accession numbers and were sometimes used to illustrate finds from the site. Further confusion resulted from drawings, some of which seem to be composites or reconstructions.<sup>7</sup> Other pieces were drawn and redrawn for later publications.<sup>8</sup> One may see the change of small details and larger stylistic characteristics by comparing the mouflon head K.1392 (fig. 7.38a) with a drawing by Rowland Rathbun from the early 1930s (fig. 7.38b) and the illustration used by P. R. S. Mooney in 1978 (fig. 7.38c). A battered oval plaque with bead-and-reel edging

<sup>1</sup> Watelin 1938.

<sup>2</sup> *Illustrated London News*, April 25, 1931, p. 697; Gibson 1972, p. 77.

<sup>3</sup> Kröger 1982, pp. 268–70.

<sup>4</sup> Mooney 1978, p. 134; Bier 1993, pp. 57, 65, fig. 1.

<sup>5</sup> The *Illustrated London News* of March 7, 1931, p. 369, quotes Langdon: “The sculptures were found scattered in great disorder, and it will be difficult to arrange them in their original relations.”

<sup>6</sup> Mooney 1978, p. 130. The designation K.1406 is applied to both the fragment in Chicago (FM 236360) and the plaque in Baghdad (IM 18603).

<sup>7</sup> See Baltrušaitis 1938, p. 602, and figs. 7.14 and 7.15 in this chapter.

<sup>8</sup> A drawing made in the 1930s based on an already restored K.1430 was redrawn for Herrmann 1977, p. 146, with more additions and omissions.

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(K.1399; fig. 7.38d–e)<sup>9</sup> was called a stucco relief,<sup>10</sup> then a niche head with classical molding, and was given two different locations in the same building.<sup>11</sup> Another problem is that two distinct stuccos from two different rooms were identified as K.1438.<sup>12</sup> I have attempted to sort out the conflicting attributions and to establish the identity of as many items as possible. Chapter appendix 7A is a list of the recorded stuccos based in part on the K numbers written on the pieces themselves. Nonetheless, some problems remain and will be noted.

The date of the structures on Mound H was originally based on the presence of “Mandaean” incantation bowls at the site. Assumed to date no later than 600 AD, the bowls provided a terminal date for the Sasanian level.<sup>13</sup> We now know that these inscribed bowls were made well into the Abbasid period,<sup>14</sup> which unmoors the building(s) and the stucco decor from the presumed chronological anchor. Despite being excavated, the Kish stuccos are archaeological orphans. The aim of this study is to identify the ancient Kish stuccos in the Field Museum, to determine what original locations can be established for these pieces, and to find a larger cultural context in which to place them.

## A SHORT HISTORY OF ARCHITECTURAL STUCCO IN THE ANCIENT NEAR EAST

Stucco and related plasters have a long history of usage in the ancient Near East, beginning in the Pre-Pottery Neolithic period (eighth to seventh millennium BC) with the striking statues from Ain Ghazal in Jordan.<sup>15</sup> Both gypsum (calcium sulphate dihydrate) and limestone-derived plasters were used for floor and wall coatings, as well as for small items. Further use can be documented from at least the fourth millennium BC.<sup>16</sup> The decorative use of stucco in the

Achaemenid period has recently been established at Dahan-e Ghulaman in southeastern Iran,<sup>17</sup> but it was not until the later Parthian period that the widespread use of stucco as architectural decoration appeared in Mesopotamia. The growing wealth in this period would have made the labor-intensive lime plaster—the basic material of stucco—more affordable as a decorative material that was, at the same time, less costly than the carved stone it mimics. Stucco was an important architectural decoration at Seleucia on the Tigris, with ornamentation applied to major entrances, courtyards, and reception rooms. A wide variety of geometric forms in high relief picked out in colors provided tapestry-like ornament to the plain mudbrick walls.<sup>18</sup> To the north, at Assur, the first-century AD palace featured stucco moldings and other architectural elements used to unify and ornament an inward-oriented facade. Although the vocabulary of the decor, applied columns, capitals, and architraves was Hellenic in origin, the use of stucco, paired columns, blind arches, and horizontal patterned bands reflects a West Asian architectural aesthetic.<sup>19</sup> Applied lime-plaster figures in high relief ornamented the porticoed court north of the temple of Ba'alshamin at Palmyra, Syria (ca. 200 AD) and comprised family portraits in some of the tomb towers, and stucco was used to enhance or complete stone sculptures.<sup>20</sup> In southern Mesopotamia, the Gareus temple at Warka and the Greek theater at Babylon were ornamented with stucco,<sup>21</sup> some of which was gilded.<sup>22</sup>

In Iran, stucco was used to articulate and decorate the brick fortress at Qaleh-ye Zohak, much as it had at Mesopotamian Assur.<sup>23</sup> The most elaborate Iranian stuccos were found at Qaleh-ye Yazdigird, a late Parthian fortress in western Iran near Kermanshah.<sup>24</sup> Decorative stucco from Parthian-period Iran has also been reported from near Shushtar in the southwest, but no specific details have appeared

<sup>9</sup> Kröger 1982, pl. 79:1.

<sup>10</sup> Baltrušaitis 1938, p. 601, fig. 175.

<sup>11</sup> Moorey 1978, pp. 130 (location A), 132 (location D).

<sup>12</sup> Moorey 1978, pp. 132 (location D), 133 (location B<sub>1</sub>).

<sup>13</sup> Moorey 1978, pp. 122–24, 141–42.

<sup>14</sup> For a survey of these bowls, see Yamauchi 1999–2000, pp. 258–62; for an even later date for the Mandaean's major religious documents, see Yamauchi 2005, p. 55.

<sup>15</sup> Rollefson 1990.

<sup>16</sup> See Moorey 1994, pp. 330–31; for the use of lime mortar in Iran, see Kawami 1984.

<sup>17</sup> Sajjadi and Maghaddam 2004, pp. 287–88, 295, fig. 8:c; Sajjadi 2007.

<sup>18</sup> Colledge 1977, pp. 72–74.

<sup>19</sup> Andrae and Lenzen 1933, pls. 14–17, 19, 21, 34; Colledge 1977, pp. 50, 72, pl. 2; Herrmann 1977, pp. 56–58; Kawami 1987, p. 21 n. 73.

<sup>20</sup> Colledge 1976, pp. 57, 72, 104, 120, pl. 136.

<sup>21</sup> Heinrich and Falkenstein 1935, pp. 33–36, pls. 12–13; Hopkins 1942, pp. 1–2, 18; Schmidt 1970, pp. 76–86, pls. 24–26.

<sup>22</sup> Koldewey 1925, pp. 297–99; Kröger 1982, pp. 180–90, pl. 77:2.

<sup>23</sup> Kleiss 1973; Herrmann 1977, p. 82.

<sup>24</sup> Keall, Leveque, and Willson 1980; Herrmann 1977, pp. 67–72, 82–83.

to date. The relationship between the Central Asian stucco sculptures from Ai Khanoum (mid-second century BC), Begram (first century AD),<sup>25</sup> and Buddhist Dalverzhin Tepe<sup>26</sup> and those of Parthian Iran and Mesopotamia has yet to be fully traced. Nonetheless, given the long and widespread use of architectural stucco in West Asia, its continued use in the Sasanian period is no surprise.

## THE KISH STUCCOS

All the Kish stuccos have the same style—plastic, tactile, and three-dimensional—even though they are fixed against a wall, ceiling, or arch. The forms depicted are realistic but are not naturalistic; rather, they are decorative with regularly repeated details and little sense of observation from nature. Their visual effect is a strongly patterned surface with deep shadows and strong highlights that merge specific forms into larger rhythmic patterns with a textile-like effect. They obscure and transform the brick and mudbrick architecture that supports them.

### PALACE 2

The best-known of the Kish stuccos come from Palace 2, so we begin with this structure. The most recognizable remains from Palace 2 are twelve life-size male busts (figs. 7.3–7.7) from the Square Court (location B) whose headgear, hair, beards, and jewelry follow Sasanian royal style and gave the excavators the first suggestion of date.<sup>27</sup> With bases 0.5 m deep and formed so that they protruded from the surface to which they were attached, the busts dominated the Square Court. Rathbun’s drawings eliminated the mass of the royal busts, showing them as flat slabs mounted on the wall (fig. 7.6b). One wonders if these drawings were made from photographs rather than from the actual sculptures, as their volume is clear when they are actually viewed. Illuminated by light entering through circular rosette window grills (fig. 7.8), the dramatic bulk of the busts would have

been accentuated by the play of light and shadow. The light would also have caught the decorative cornices of rosettes and tulips set along a beaded baseline (fig. 7.9). The single palmette-like forms were set with a wedge of mortar at their back so that they tipped forward away from the wall surface (fig. 7.10d), further embellishing the room. Reconstruction drawings of the Square Court show the busts mounted midway up the wall between half-columns.<sup>28</sup> With no record of the arrangement in which these disparate elements were found, any reconstruction is completely hypothetical. Indeed, the mass and weight of the busts, as well as the flat base that a few still retain (fig. 7.6a, c), suggest that they were installed on a supportive ledge or pier. The applied half-columns shown in reconstructions of the room are known only from the remains of their bases. Their original height is unknown, as is any association with the busts.

The Square Court has been considered to be a religious installation of some sort,<sup>29</sup> but the repetitive, undifferentiated busts suggest ornamentation rather than portraiture. Indeed, there is nothing remotely Zoroastrian about the ornament of the space. The entrance to this impressive room is peculiar, as there is no large or obvious doorway. The only way to enter is via one of two very narrow doors on the south side. The published plans suggest that the only way to reach these doorways is by circumambulating the court, starting at the northeast corner. Given the large size and ornate decor of the Square Court, this approach is extremely odd and suggests that access to the Square Court was highly restricted.

The Pillared Hall to the south of the Square Court and on the same axis does not communicate directly with it, according to published plans. Nonetheless, Moorey describes a “main ivan arch” at this point ornamented with a fragmentary knot-and-leaf pattern (K.1374; fig. 7.11).<sup>30</sup> This would be a logical location for a connecting arch, and it may be that the solid wall shown in Watelin’s plan (fig. 7.1) is hypothetical rather than real. The reconstruction drawing of the Pillared Hall with patterned stucco tiles on its walls, arch, pillar capitals, and bases is equally hypothetical.<sup>31</sup> No documentation—either photographs

<sup>25</sup> Heibert and Cambon 2008, cat. nos. 12, 183.

<sup>26</sup> Abdullaev, Rtveladze, and Shishkina 1991, vol. 1, pp. 123–40.

<sup>27</sup> Watelin (1938, p. 587) describes fourteen royal busts and fourteen applied columns. The columns, or rather their bases, do and did exist, but I have been able to document only twelve royal busts in Palace 2. *The Illustrated London News* of March 7, 1931, p. 369, quotes Langdon on Portal B<sub>1</sub> of Palace 1: “There are in all fourteen heads on this doorway design.” Perhaps this is the source of the confusing numbers.

<sup>28</sup> Watelin 1938, p. 589, fig. 172.

<sup>29</sup> Kröger 1982, pp. 182–93, 270.

<sup>30</sup> Moorey 1978, pp. 134, 138.

<sup>31</sup> Watelin 1938, p. 586, fig. 170; Moorey 1978, fig. N, p. 138 (K.1439).

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or actual stucco fragments—for this ornamentation exists. Thus, this room, its decor, and its connection to the Square Court remain problematic.

The Niched Eivan (location A) at the southern end of the Pillared Hall was set off by a diamond-patterned arch with curving, petal-like terminals (K.1368; fig. 7.12). Comparing the Rathbun drawings with the actual stucco, one may see that the twentieth-century draftsman has regularized and refined what had been rather irregular geometric patterns. The soffit of the eivan was covered with a key-and-rosette pattern that is thicker, coarser, and less precise than the drawings suggest (fig. 7.13).

Assigned to Palace 2, but having no known location, are a number of teardrop or petal-like forms (fig. 7.14) belonging to two different series. One is tall and slender with three internal divisions; the other is shorter and broader with four internal divisions. Although these lobes or rays have been mounted in a row in modern times, they were made as distinct elements. Each has a wedge of mortar on the back, showing that it was installed to tip forward, away from the wall. The arrangement given by Rathbun, showing both types arranged along a diamond-patterned molding (fig. 7.14c), has no documentation.

Two other fragments may also belong to Palace 2 (fig. 7.15a–b), but the assemblage drawn by Rathbun (fig. 7.15c) is clearly erroneous. The molding with the two palmettes (no K number; FM 236336) has a flat base, not a curving one, which would be necessary to fit on an arch. Likewise, the small fragment of bound foliage(?) (FM 2002.1.92b) has no known parallels as a terminal element.

## PALACE 1

The entrance to the decorated areas of Palace 1 is more obvious than that of Palace 2. Access to that portion of the complex seems to have been through a room or court with two pillars on the eastern side of the published plan (fig. 7.1). There are two access points, one larger than the other. The larger doorway is reached by walking past the pillars, making a right turn, then a quick left. This brings the pedestrian to the northeast corner of the central rectangular space. The second entrance is located just before the two pillars, where a left turn and an immediate right brings one to Portal B<sub>1</sub>–B<sub>1</sub>. This doorway, slightly narrower than the first, is richly decorated with an arch scaled like a bent palm trunk. If we are to believe an archival photograph (fig. 7.16), the

underside of the arch had female (or at least beardless) heads alternating with vegetal motifs embedded in the soffit. An examination of the photograph shows that the head, the vegetal squares, and the scaly moldings are all separate elements that have been hastily assembled for the camera. At present, these pieces are embedded in a large plaster matrix now in storage at the Field Museum. It is impossible to determine how they really fit together.

Just to the south of Portal B<sub>1</sub>–B<sub>1</sub> is Room B, where fragments of three-dimensional animals, including a boar, a recumbent herbivore, and a possible ram's horn, suggest a hunting scene in high relief (fig. 7.18). The scene may have been topped by a palmette border.<sup>32</sup> Portal B<sub>1</sub>–B<sub>1</sub> led to a large eivan with a profusion of decorative motifs. One curved surface, presumably the arched ceiling near the eastern wall of the eivan (location E) was solidly covered with a fleur-de-lis-like pattern (K.1390; fig. 7.19a–c). Symmetrical pairs of curving wings tied by a floating ribbon (K.1402; fig. 7.19d–e) decorated the cornice. The dispositions of the associated narrow meander panels (fig. 7.20a–e) and the small section of zigzag molding (fig. 7.20f–g) are unknown. They could have been arranged vertically rather than horizontally. Some lemon- or pomegranate-like forms (fig. 7.21a) suggest additional decor but cannot be organized into a coherent scheme.

At the south end of the Large Eivan (location D), fragments of a cornice featuring pomegranates between paired leaves (K.1438; fig. 7.22a–b) were found along with small, daisy-like flowers and small, simple pointed forms (K.1388; fig. 7.22c–d) similar to those attributed to Palace 2 (fig. 7.14). The large, three-dimensional animal head (K.1423; fig. 7.22e) attributed to this area suggests another hunting scene in the round. Identified as a horse by Moorey, the straight neck and bristly mane are boar-like, not equine. The badly damaged ear is quite broad and placed higher on the actual stucco head than the short, pointed equine ear in the Moorey drawing (fig. 7.22f).

Opposite the Large Eivan on the north side of a Square Court was the Small Eivan (locations A and C), whose intimate space and rich ornament are notable. The opening of this eivan (location C) was decorated with a proliferation of human figures: female busts with fluted crowns (K.1418; fig. 7.23a–d); at least one fragmentary male bust (K.1407;

<sup>32</sup> Moorey (1978, p. 130) cites K.1387, but there is no known image of this piece.

## CHAPTER 7. THE “SASANIAN” STUCCOS OF MOUND H

fig. 7.23e–f); two large torsos (K.1413 and K.1414; fig. 7.24a–b); and three or four small plaques showing young boys wearing very short tunics (K.1396 and K.1397; fig. 7.24c–f). In style, the male and female busts recall the royal busts of Palace 2, but they are far smaller, being only about one-third the size. The fluted headgear of the females and the jewelry of both the males and the females mark them as royal figures in the Sasanian style. But the lack of distinction between the female busts suggests that, like the royal busts of Palace 2, these images were decorative and not depictions of specific individuals. The two large, almost life-size torsos (fig. 7.24a–b) are female, to judge by their long pendant curls and lack of beard. Their narrow bodies and uplifted shoulders suggest atlantid figures with raised, supportive arms. The young boys on the small plaques had separately affixed heads and arms, to judge by the smooth neck and shoulder surfaces. The apparently uplifted pose of the now-lost arms suggests that these, too, were atlantid figures supporting something with their arms.

The walls may have been completely covered with patterned stucco. At least eight rectangular plaques with pairs of four-lobed flowers (K.1404<sup>bis</sup>; figs. 7.25–7.26) and rectangular panels with large, pointed rosettes (K.1419; fig. 7.27), cruciform leaves (K.1404; fig. 7.28a, c–d), pomegranate patterns (K.1415 and K.1416; figs. 7.28e–f, 7.29), and leafy tendrils (K.1408; fig. 7.30) suggest a dazzlingly complex decor. A number of disparate grape clusters and leaves from the same location were immediately reconstructed as vine-covered panels (K.1406; fig. 7.31). However, the photograph from 1931 was already heavily retouched, and the Field Museum panel is a composite, so the exact appearance of the pattern is uncertain.<sup>33</sup> Added to the decor were smaller, apparently inset plaques showing a female head in a foliate frame (K.1417; fig. 7.32a–b) and a beribboned, winged mouflon (K.1409; fig. 7.32c–f), a grazing stag (K.1378; fig. 7.33a), a lion attacking a zebu (K.1377 and K.1411; fig. 7.33b–d), and *nišan* (monogram) plaques (K.1410; fig. 7.34). A disconnected series of leaves, fruits(?), and branches (K.1383; fig. 7.35a–c), as well as perhaps three birds (K.1393; fig. 7.35d–e), decorated this area, which had an elaborate floral cornice (K.1426; fig. 7.36a–d) and vegetal molding (K.1389; fig. 7.36e–f). Perhaps the patterned arch

fragment, as well as the piece of soffit with similar patterns (fig. 7.25), came from this location too.

The arched ceiling of the Small Eivan was covered with a pattern of interlocking, petal-like forms (K.1440; fig. 7.37). The western corner (location A) at the back of the Small Eivan was the locus for a frontal mouflon head in the round (K.1392; fig. 7.38a–c), perhaps centered on or framed by an ornamental arch ending in flying ribbons (K.1381; fig. 7.39). Moorey<sup>34</sup> placed the oval plaque (K.1399; fig. 7.38d–e) in this area, though he labeled it an ornamental niche head.<sup>34</sup>

To Palace 1, but with no known location, belong an arrow-like palmette (K.1384; fig. 7.40a–b) and the lower quadrant of a square plaque with a circular, beribboned form in its center (K.1394; fig. 7.40c). This square fragment can be reconstructed on the basis of an unprovenanced parallel now in the Louvre as a simplified bust in a roundel, another example of figural decorative motifs in Palace 1.

#### LOCUS NOT KNOWN

Several other substantial stuccos from Mound H at Kish have no locus at all. One group has been described as “moldings” but are probably applied columns with patterned surfaces (fig. 7.41). Some have zigzags; others have diamonds, overlapping hatching, or floral forms; and several have thick, overlapping scale-like motifs. Since all of them are characterized by straight profiles, they were not parts of patterned arches. Two small, curving stucco panels are likewise without any locus (fig. 7.42). Both have extant framing on at least one side, which suggests that they decorated narrow arches. One panel retains small portions of pointed floral forms on the same side.

#### SUMMARY

The stuccos of Mound H at Kish are astoundingly varied in motif and pattern. The excavator, L. C. Watelin,<sup>35</sup> noted two groups based on style and imagery. The first group was clearly Sasanian in inspiration, such as the royal busts, the decorated arches with floating terminal ribbons, the *nišan* plaques,<sup>36</sup> the beribboned rams, and the pomegran-

<sup>33</sup> *Illustrated London News*, February 14, 1931, p. 261 center, where the photos are credited to Prof. Stephen Langdon.

<sup>34</sup> Moorey 1978, p. 132.

<sup>35</sup> Watelin 1938, p. 590.

<sup>36</sup> For a discussion of this auspicious symbol, see Kröger 1982, pp. 52–54.

ates between wing-like leaves and tulip motifs. The animal forms in high relief recall the hunting scenes of Sasanian royal silver vessels and the rock-carved grotto at Taq-e Bustan in Iran.<sup>37</sup> The second group—the circular rosette-like window grills, a plaque with a crowned female head in a foliate frame (fig. 7.32a–b), beardless heads with cropped hair decorating an arch (fig. 7.16), and fragments showing young boys clad only in a short shirt or tunic (fig. 7.24c–f)—relate more closely to the Late Antique/Byzantine visual realm. The uniform mixing of these two strands is a distinguishing characteristic of the stucco art of Kish.

## CONTEMPORANEOUS PARALLELS IN MESOPOTAMIA

The closest parallels in style and subject matter to the Kish stuccos are found in Mesopotamia at sites clustered around Ctesiphon, primarily on the east bank of the Tigris, and excavated in the 1920s and 1930s. Ctesiphon was the capital of Parthian and Sasanian Mesopotamia and remained an important center into the Islamic era. Like the Sasanian remains at Kish, the buildings excavated at Ctesiphon in the early twentieth century were not well documented, and the records do not always indicate where items were found.<sup>38</sup> The remains have often been published under the label “Ctesiphon” even though each site had an individual designation and some were far from both the Tigris and each other.

The so-called South Building (Sudbau), which was decorated with stucco, is closest to the famed Taq-e Khisra, the great arched structure attributed to Khusro I (r. 531–579). At least six roundels filled with symmetrical palmettes and heart-shaped leaves and framed with bead-and-reel borders, as well as fragments of bird and animal images, have been documented. Fragments of richly jeweled riders, horses, an elephant, and boars indicate the existence of a royal hunting scene in high relief.<sup>39</sup> The numerous bits of colored marble and colored, gilded glass cubes that littered the site in the 1920s show that the decor was not limited to stucco but also included marble paneling and glass mosaics.<sup>40</sup>

<sup>37</sup> Harper 1978; 1981, pls. 5–32, 37–38; Abka'i-Khavari 2000, pp. 289–93; Movassat 2005, pp. 86–106, pls. 28–37.

<sup>38</sup> Kühnel 1933, pp. 32–34; Kröger 1982, p. 13.

<sup>39</sup> Kröger 1982, pp. 13–32, pls. 2:2, 3, 7.

<sup>40</sup> Reuther 1929, pp. 444–46.

Ma'aridh (modern Madina al-<sup>c</sup>Atiqā), a residential area well north of the Taq-e Khisra, comprised at least six structures, five of which had stucco decoration. The exact date of this complex is uncertain, as coins dating to as early as the Parthian era and as late as the Abbasid period (second half of the eighth century) were found. The motifs of the stucco decor include patterned archivolt with thick floral bands (Ma'aridh I, V, and VI; fig. 7.43a);<sup>41</sup> palmette friezes and grape-vine wall panels;<sup>42</sup> wall panels with symmetrical, wing-like vegetation (Ma'aridh I, IV, and V; fig. 7.46); *nišan* plaques (Ma'aridh I, VI; fig. 7.44b);<sup>43</sup> and human figures—dancing females at Ma'aridh I and IV,<sup>44</sup> a nude male musician at Ma'aridh V, and square plaques with framed human busts at Ma'aridh IV (fig. 7.44d–e). Fragments of large animals and humans point to a hunting scene in relief in Ma'aridh II.<sup>45</sup>

Umm Za'atir (Um as-Sa'atir, Omm Satir), a building with a main court on a hillock northeast of the Taq-e Khisra, yielded stuccos from two eivans—one on the east side of the court, the other on the west side.<sup>46</sup> Arches with a braid-like pattern, floral borders, and terminal ribbons (fig. 7.43b–c), and wall panels with a key or meander pattern (fig. 7.45a–b), were found in both eivans.<sup>47</sup> The west eivan had circular *nišan* plaques (fig. 7.44a) and guinea fowl in roundels.<sup>48</sup> The east eivan featured rectangular plaques with a boar in a swamp, a bear in mountains,<sup>49</sup> and female busts in foliate squares (fig. 7.44c).<sup>50</sup>

The decorative schemes seen at Ma'aridh and Umm Za'atir were not restricted to the presumably Zoroastrian population of the region. A Christian church on the west bank of the Tigris in the region called Veh Ardashir in the Sasanian period was lavishly decorated with stucco in its later second phase. Stucco half-pillars with painted and gilded zigzag patterns, chevron archivolt, a rayed cornice with

<sup>41</sup> Kröger 1982, pls. 45, 47.

<sup>42</sup> Reuther 1929, pl. 5; Kröger 1982, p. 53, pls. 26:5, 53:3, and 55:3.

<sup>43</sup> Kröger 1982, pls. 22:2–3, 23:2.

<sup>44</sup> Kröger 1982, pls. 27; 28:1, 3, 5; 41; 43.

<sup>45</sup> Kröger 1982, pl. 33.

<sup>46</sup> Kühnel 1933, pp. 4–6, 32–34.

<sup>47</sup> Kühnel 1933, p. 17, figs. 8, 21–25; Kröger 1982, pls. 15, 18, 20–21.

<sup>48</sup> Kröger 1982, pl. 14.

<sup>49</sup> Kühnel 1933, figs. 26–27; Kröger 1982, pls. 16–17.

<sup>50</sup> Kühnel 1933, p. 31, fig. 9; Kröger 1982, pls. 22:1, 23:1.

pointed elements like K.1388 from Kish (fig. 7.22c-d), a palmette frieze, and a nearly life-size robed male(?) figure display the same style.<sup>51</sup>

To this loose cluster around Ctesiphon we can add the remains at Tell Daroz (30 km east of Ctesiphon), which include a royal male bust similar to the Kish busts, three square panels with winged Sasanian-style horses, several elephants, and fragments of grape clusters and grape leaves (fig. 7.47).<sup>52</sup> All the Mesopotamian parallels are so close in style and imagery to the Kish stuccos that they must be contemporaneous.

### SASANIAN IRAN

A survey of Sasanian stucco in Iran, including well-dated royal structures, provides a different picture. The earliest Sasanian stucco is found at Firuzabad, the palace of Ardashir I (r. 224–ca. 243), where the moldings are flat, linear, and architectonic. They include Achaemenid cavetto cornices; slender bead-and-reel moldings; and flat, three-step door surrounds.<sup>53</sup> The stuccos from the palace (or vaulted reception hall) of Shapur I (r. 242/43–273) at Bishapur decorate blind niches with pilasters; moldings featuring a flat, linear key pattern; and an elegant, leafy scroll evocative of Roman decorative motifs.<sup>54</sup>

A manor house complex at Hajiabad, in eastern Fars, occupied in the fourth and fifth centuries, exhibits stucco decoration in a less monumental situation (figs. 7.48–7.49).<sup>55</sup> Parts of Section A of the complex, probably an audience facility, were extensively decorated with both stucco sculpture and murals. The stuccos included portrait-like princely images with squared beards, sinuous mustaches, and long thick hair in high relief. Facial details are naturalistically rendered, and even the regular patterns of the beards and hair do not overwhelm the realism of the faces. That no two images are identical reinforces the idea that they portray specific individuals. The decor of Area C, a two-part shrine to the goddess Anahita and to fire, is more restrained, with bead-and-reel moldings and flat key or meander patterns like those of the Firuzabad and Bishapur stuccos. A

now-headless female figure wearing a long, clinging, pleated garment with fluttering folds at the hem in the Sasanian style provides a counterpart to the male images (fig. 7.48d).<sup>56</sup>

The Hajiabad stuccos are not unique in Iran. Stucco fragments of a nude female figure, portions of the bouffant royal hairdo, and bits of key or meander molding show that other ornate manor houses existed in Fars.<sup>57</sup> A female bust with a strong classical flavor from Susa in southwestern Iran and now in the Louvre Museum provides another example.<sup>58</sup>

A royal figure in high relief (fig. 7.50a–b) from the north facade of the terrace at Kuh-e Khwaja in Sistan, southeastern Iran, displays a similar preference for naturalistic modeling and suggests that this may have been a royal style, not a regional one limited to Fars and the southwest.<sup>59</sup>

A different style is represented by the stucco decor of a fire temple dating to the fifth century recently excavated at Bandian, Khorasan,<sup>60</sup> where the naturalistic plasticity seen at Kuh-e Khwaja and Hajiabad is replaced by a flat, linear aesthetic that renounces any perception of depth and modeling (fig. 7.50c). A similar aesthetic may be found in the stucco remains of a fire temple dating to the fifth century at Mele Hairan in Turkmenistan,<sup>61</sup> where the foliage and knot motif known from Palace 2 at Kish is rendered in the same flat style.

The only Iranian stuccos that display the same style and motifs as those of Kish and the Ctesiphon region come from the Takht-e Solaiman in the northwest. Currently dated to the sixth century, they are a stylistic anomaly.<sup>62</sup>

### THE PROBLEMS OF KISH

The style of the Kish stuccos is problematic in that it does not resemble well-dated Sasanian stucco-work in Iran. Sasanian stucco in Iran retains an architectonic frame and a preference for crisp lines and thin shadows. Human figures have realistic,

<sup>51</sup> Reuther 1929, pp. 449–500, pl. 6; Kröger 1982, pp. 45–50.

<sup>52</sup> Kröger 1982, pp. 188–89, pl. 76.

<sup>53</sup> Reuther 1929, pl. 146B; Kröger 1982, pl. 91:8; Ghirshman 1962, p. 124, fig. 163.

<sup>54</sup> Ghirshman 1962, p. 140, figs. 178–79; Kröger 1982, pls. 90:2–4, 91.

<sup>55</sup> Azarnoush 1987, 1991, 1994.

<sup>56</sup> Azarnoush 1994, p. 142, fig. 148, pl. 21.

<sup>57</sup> Kröger 1982, p. 198, pl. 92:1.

<sup>58</sup> Essad-Arseven 1947, fig. 6 center; Kröger 1982, pl. 92:2.

<sup>59</sup> Kawami 1987, pp. 18–19, fig. 3; Kawami 2005, pp. 182–83, 205–6, 208. The date of the patterned stucco panel at Kuh-e Khwaja is unclear; see Kröger 1982, pp. 226, 257–58.

<sup>60</sup> Rahbar 2004.

<sup>61</sup> Kaim 2002.

<sup>62</sup> Herrmann 1977, pp. 113–18; Kröger 1982, pls. 59–60.



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almost classical anatomy, and faces are detailed and individualistic. Provincial Sasanian examples tend to be flat and linear. The Kish and other contemporaneous stuccos from Mesopotamia are deeply and sometimes irregularly modeled, covering the surface with a riot of patterns and textures that obliterates any awareness of the architecture beneath. The Kish royal heads are only superficially Sasanian. Close inspection indicates that they were well removed from canonical royal form and exhibit none of the detailed naturalism seen in the Hagiabad stuccos, for example. Although each Sasanian king had his own distinctive crown, the Kish representations are generic. There is no agreement as to which ruler or rulers the Kish heads depict.<sup>63</sup> Details of the hair diverge from royal exemplars. The curls of hair on either shoulder spring upward and out as if growing from the neck rather than descending from the head. The beard is rendered with rows of applied knobs rather than curls, and the end of the beard is an odd loop rather than a tuft of gathered hair. Unlike all Sasanian princely images, the Kish heads lack mustaches.

The Kish female heads are equally removed from the royal Sasanian canon. Their thin lips, sharp noses, and pointed chins do not look like Sasanian female heads, which are characterized by softer features and round, full jaws. The fluted headgear of the female busts from Palace 1 finds only a vague echo in the headgear of Sasanian queens and completely omits the ball or puff of hair rising from the top of the head. The female busts also lack the short, curling sidelocks of Sasanian female representations. Instead, the long sausage-like ropes of hair fall across the chest.

The beardless heads with short, bobbed hair that apparently decorated the underside of Portal B<sub>1</sub>–B<sub>1</sub> in Palace 1 are unparalleled in Sasanian art. Other anomalies are the seminude boys from Palace 1, the rosette window grills from Palace 2, and the teardrop or petal-like decorative elements found in both palaces. One curving stucco panel of unknown location (fig. 7.42b–c) features dwarf arcades with double columns and horseshoe arches filled with tulip-like forms. One side of this curving panel retains fragments of petal-like pointed forms, indicating that this side was exposed to view. Dwarf arcades with double columns and horseshoe arches are unknown

in Sasanian art but have structural counterparts at Ma'aridh II and later in the Umayyad (late seventh to early eighth century) palaces of Jordan and Syria.<sup>64</sup>

The knowledge that the incantation bowls were used into the late eighth century, the presence of the stucco panel with the dwarf arcade and tulip motif, and the stylistic anomalies of the Kish “royal” stuccos together suggest that the stuccos are not Sasanian but rather post-Sasanian. If this is the case, the Ctesiphon-area parallels should also be post-Sasanian. Thus, the stucco from Kish and Ctesiphon may be considered Islamic in date. The surface around Ctesiphon was covered with fragments of early Islamic stucco, pottery, and glass in the earlier twentieth century, suggesting the continuing presence of a substantial and wealthy population after the decline of Sasanian power.<sup>65</sup>

## UMAYYAD ART

Early Islamic art—that is, art produced during the first Islamic dynasty, the Umayyads (661–750)—is poorly understood and often hard to distinguish from non-Islamic post-Sasanian art. The human figure, for instance, appears frequently, particularly in secular contexts.<sup>66</sup> Umayyad architectural decor is characterized by varied surface decoration with a notable plasticity of form.<sup>67</sup> The Umayyad artists “botanize geometry and geometrize vegetation,”<sup>68</sup> and the art has been called “more Sasanian than Sasanian art.”<sup>69</sup> The stonework of the Amman citadel (second quarter of the eighth century) with its double columns and horseshoe arches (fig. 7.51) provides a clear parallel to the Kish stucco, reminding us that stucco was a less costly substitute for carved stone.<sup>70</sup>

<sup>63</sup> Shapur II (r. 310–379): Pope 1945, p. 55, pl. 35; Moorey 1978, p. 136. Bahram V (r. 420–438): Moorey 1978, p. 136; Harper 1978, p. 108; Herrmann 1977, p. 110.

<sup>64</sup> Kühnel 1933, pp. 7–8; Kröger 1982, pls. 31:1, 32:1; Hamilton 1959, pls. LXV–LXVI.

<sup>65</sup> Reuther 1929, pp. 447–49. A gold coin of the Byzantine emperor Heraclius (r. 610–641) from Ma'aridh II underscores the wealth of the population.

<sup>66</sup> Baer 1999, pp. 32–35. Christian figural art also continued under Umayyad rule; see Bowersock 2006, p. 23.

<sup>67</sup> Bacharach 1996, p. 37; Grabar 1993, p. 95: “the originality and variety of decorations in Umayyad palaces are quite astounding.”

<sup>68</sup> Hillenbrand 1999, p. 308.

<sup>69</sup> Thompson 1976, p. 54.

<sup>70</sup> Creswell 1989, pp. 169–73; Bacharach 1996, pp. 36–37.

The closest well-dated Islamic parallels to Kish, considered by Moorey as forerunners,<sup>71</sup> are stuccos from Khirbat al-Mafjar, a winter palace complex in the Jordan valley near Jericho built by Hisham ibn Abd al-Malik (r. 724–743) or perhaps Caliph Al-Walid II (743–744).<sup>72</sup> It was destroyed in the catastrophic earthquake of 748/49, when the Amman citadel was also damaged. At Khirbat al-Mafjar, stucco, stone, carved wood, and painted plaster were used to produce structures of intricately detailed and varied surface decoration. The reception hall, sometimes called a bath house, was built before the palace proper and featured an elaborate porch with patterned cornices having radiating petal-like forms,<sup>73</sup> scantily clad atlantid figures, and roundels with winged horses in the pendentives (figs. 7.52–7.53). Large stucco figures of the “master” and attendant ladies provide evidence of figural sculpture in the round.<sup>74</sup> The columned central hall was paved with an intricately patterned, carpet-like mosaic,<sup>75</sup> and a naturalistic mosaic of gazelles and a predatory lion beneath a lush fruit tree filled the floor of the divan or small reception chamber off the columned hall.<sup>76</sup> The dome of the divan was richly decorated with stucco centered on a wheel-like arrangement of beardless human heads set in dense bands of foliage with bead-and-reel edging (fig. 7.53a). The same ornate surface was also employed in the entrance hall of the palace, and balustrade panels from the forecourt are carved with rows of dwarf arcades.<sup>77</sup>

Stucco decor in the same style also appears at Qasr al-Hayr al-Gharbi, a palace on the Syrian steppe west of Palmyra, where an inscription on the lintel identifies the builder as Hisham ibn Abd al-Malik. Here, the stucco is exterior rather than interior decor, with a richly textured frieze of alternating pedimental and arched niches enhancing the second story (fig. 7.54). A female bust with fluted crown and pendant braids placed between the patterned exterior arches and pediments is very like the Kish female busts in her strong stare, sharp nose, and pointed

chin. A fruitful tree in an adjacent space recalls the vegetal ornament at Kish.<sup>78</sup> A roughly contemporaneous, though less elaborate, palace in the Syrian steppe, Qasr al-Hayr al-Sharqi, also had stucco decor in vegetal and geometric form.<sup>79</sup>

With the exception of the Dome of the Rock, the Umayyad buildings of Jerusalem have not survived as well as the more remote palaces have. Nonetheless, carved wood panels from the Al-Aqsa mosque resemble two-dimensional versions of the Kish stuccos (fig. 7.55).<sup>80</sup> The patterned columns of the Al-Aqsa panels parallel the applied columns at Kish (figs. 7.21b–c, 7.41), and the floral and vegetal forms that energize every available space display the same aesthetic.

## POST-SASANIAN STUCCO IN IRAN

A brief survey of stucco from post-Sasanian Iran finds numerous parallels to the Kish stuccos. A number of sites cluster around Tehran. Best known is Chal Tarkhan/Eshqabad,<sup>81</sup> where the decoration of the subsidiary palace included patterned arches with floral borders, patterned walls and vine panels, spike or rayed cornices, three-dimensional hunting scenes with people and animals, and female busts framed by wings (fig. 7.56–7.57). Other sites in the same region with similar stucco decor are Nizamabad;<sup>82</sup> Varamin, 45 km southeast of Tehran;<sup>83</sup> and Tepe Mil, 10 km from Rayy, where a residential complex (a manor house?) was decorated with stucco vines, leaves, and birds.<sup>84</sup>

The taste for deeply modeled stucco decor extended to Khorasan in northeastern Iran, where the site of Tepe Hissar yielded a palatial building having patterned arches with flying ribbons, patterned walls and columns, hunting scenes in high relief, beaded roundels with rosette and palmette interiors, and Pahlavi *nišan* (fig. 7.58)<sup>85</sup>—the same subject matter rendered in the same style as at Kish. And far to the north, the palace of Toghshada (r. 709–732) at Varakhsha near Bukhara had beaded borders, walls

<sup>71</sup> Moorey 1978, p. 126.

<sup>72</sup> Hamilton 1959; for additional bibliography, see Behrens-Abouseif 1997, p. 17 n. 1; Bacharach 1996, p. 37.

<sup>73</sup> Hamilton 1959, pl. XL:6.

<sup>74</sup> The figure of the “master” may have been added later; see Bier 1993, p. 59.

<sup>75</sup> Grabar 1973, fig. 71; Hamilton 1959, pls. LXXVI–XCII, XCVIIa–XCIX.

<sup>76</sup> Behrens-Abouseif 1997.

<sup>77</sup> Hamilton 1959, pls. LXVI, LXXV.

<sup>78</sup> Meinecke 1985.

<sup>79</sup> Grabar 1970, p. 79, fig. 45, pl. 12.

<sup>80</sup> Hillenbrand 1999.

<sup>81</sup> Thompson 1976.

<sup>82</sup> Kröger 1982, pls. 62–75; Ghirshman 1962, p. 186, fig. 227.

<sup>83</sup> Ghirshman 1962, p. 189, fig. 231.

<sup>84</sup> Kröger 1982, pp. 202–3, pls. 96, 97:1–4.

<sup>85</sup> Schmidt 1937, pp. 327–46.

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patterned with trees and vines, floral borders with wing-like palmettes, and hunting scenes in high relief.<sup>86</sup> The striking similarities in both subject matter and style at Kish and Varakhsha, like “the close relationship between the paintings and sculptures from Qasr al-Hayr and the art of Sogd in Central Asia,”<sup>87</sup> may be a reflection of the political and social influence of the Umayyads, who as early as the reign of Muawiya I (r. 661–680) controlled the north Iranian plateau as far east as Khorasan.<sup>88</sup> Rina Talgam<sup>89</sup> has forcefully noted the close association of Sogdian and Umayyad art. It may also be a continuation of the stucco tradition noted in the region during the Parthian (and Kushan) periods (first to third century AD).<sup>90</sup>

It is also in this later, post-Sasanian period that some of the Bishapur stuccos may be placed: roundels with symmetrical palmette interiors, tulip-like forms, and beaded borders, as well as stepped merlons with elongated, symmetrical palmette ornaments.<sup>91</sup>

## SOME CONCLUSIONS

The probable date of the Kish stuccos, as well as of those from Umm Za’atir, Ma’aridh, and other sites in and around Ctesiphon, is the very late seventh century or first half of the eighth century AD. They are contemporaneous with stuccos from Chal Tarkhan, Tepe Hissar, and other sites in northern and north-eastern Iran; thus, the Kish stuccos should be considered Umayyad rather than Sasanian in date.<sup>92</sup> Reassessment of the surface remains from Kish, especially the glass (see Laure Dussubieux’s chapter in this volume), as well as fragments of Islamic ceramics now housed in the Ashmolean Museum, support this later dating.<sup>93</sup> Kish was not abandoned with the fall of the Sasanian empire but remained occupied and prosperous in the Abbasid period and as late as

the twelfth century. The major area of development in this later period was to the south of Mound H, at a mound called Abu Sudairah. The numerous sherds of glazed Syrian ware on the surface, the octagonal twelfth-century tower, and the seven levels of Islamic occupation noted in a test trench demonstrate the importance of Kish in Islamic times.<sup>94</sup> The Abbasid coin from Ma’aridh underscores that this continuity was widely spread.<sup>95</sup>

The exuberant variety of the Kish stuccos is best understood in comparison with Umayyad architectural decor. Palace 1 appears to have been a lavishly decorated reception suite like the so-called bath house at Khirbat al-Mafjar. The Small Eivan, with its intimate space and rich ornamentation, as well as its location in the structure, echoes the divan at Khirbat al-Mafjar.

The organization of Palace 2 is less clear. The entrance to the extant portion of the building is not preserved, and the only way to enter the Square Court is by circumambulating it and slipping in through one of two narrow doors. Although the Square Court is on the same axis as the Pillared Hall with its eivan, it does not communicate directly with it. The Pillared Hall was filled with six stout supports that physically and visually filled much of the space. This space was relatively plain; only a few fragments, now lost, suggest that the pillars were decorated. And the excavator’s reconstruction is highly doubtful.<sup>96</sup>

The identification of the Kish stuccos as specifically Umayyad is, however, unlikely because of their iconography. The decorated arches of Umayyad structures lack floating terminal ribbons, and the rooms do not feature Sasanian-style royal busts or Pahlavi *nišan* plaques. These elements directly associated with Sasanian royal imagery would be inappropriate in an Umayyad palace.

If the Umayyads did not build, or at least decorate, the buildings at Kish, who did? The Ghassanids, an Arab-Christian entity often allied with a branch of the Umayyads,<sup>97</sup> have been linked to the palace at Qasr al-Hayr al-Gharbi and are possible patrons.<sup>98</sup> Originally an Arab tribe or polity (the Banu Ghassem) from southern Yemen, they moved into the

<sup>86</sup> Šiškin 1963.

<sup>87</sup> Grabar 1993, p. 96.

<sup>88</sup> Hawting 2000, pp. 8–9, 39, 79–80.

<sup>89</sup> Talgam 2004, pp. 69–70.

<sup>90</sup> Talgam 2004, pp. 69–72.

<sup>91</sup> Ghirshman 1962, p. 185; Herrmann 1977, pp. 102–3.

<sup>92</sup> It is remarkable how many scholars have noted the parallels to early Islamic art without considering the possibility that the stuccos could be Islamic: Reuther 1929, p. 447; 1938, p. 538; Moorey 1978, p. 129; Kröger 1982, pp. 32–33, 172.

<sup>93</sup> Ashmolean accession nos. EAP.102, 9010, 9307, 9720, 9798, 10017, 10266, 10385, and 16880.

<sup>94</sup> Reitlinger 1935, pp. 198–99.

<sup>95</sup> Kühnel 1933, p. 27.

<sup>96</sup> Moorey 1978, p. 134.

<sup>97</sup> Bacharach 1996, pp. 30–31; Walmsley 2007, pp. 140–41. For a portrait of Ghassanid culture, see Shahīd 2009, ch. 6.

<sup>98</sup> Walmsley 2007, p. 91.

Syrian steppe in the third century AD and flourished first as Roman and then as Byzantine clients. But Kish is far south of the territory they are known to have controlled, and their power waned by the sixth century AD.<sup>99</sup>

A more likely patron was the Lakhmids (the Banu Lakhm), another tribe from Yemen that controlled a large portion of the Arabian Peninsula in the second century AD and exercised naval power in the Persian Gulf as far as Bahrain.<sup>100</sup> They established a Mesopotamian capital and trade depot at Al-Hirah near Kufa, and at least some elements were Christianized.<sup>101</sup> By the fourth century, they were clients of the Byzantine empire in an attempt to stay independent from the Sasanians. When Byzantine aid was no longer forthcoming, they shifted to the Sasanian sphere and were opponents of the Ghassanids.<sup>102</sup> The Lakhmids benefited from their profession of Nestorian Christianity,<sup>103</sup> which was favored by the Sasanians partially in opposition to the monophysite Byzantines.

The Lakhmids were powerful enough to be involved with Sasanian dynastic succession.<sup>104</sup> They did not side with the Persian Sasanians as the Arabs rose to power in the seventh century AD, however, and were credited by Arab historians for playing a significant role in the Sasanian downfall.<sup>105</sup> The complexity of ethnic, religious, and political identities in the Umayyad period is also demonstrated by the existence of Arabic Christian texts written in Greek script.<sup>106</sup>

The Lakhmid capital at Al-Hirah was a major center of Arabic culture before the Islamic period and is credited in some circles with being the birthplace of Arabic script.<sup>107</sup> Excavations in 1931 at Al-Hirah revealed small, private houses with ornamental stuccos related stylistically to the Kish stuccos, as well as two churches with inlaid and painted stucco.<sup>108</sup>

<sup>99</sup> Talgam 2004, pp. 113–15.

<sup>100</sup> Morony 2005, pp. 151, 219–20.

<sup>101</sup> Shahīd 1989, pp. 161–66.

<sup>102</sup> Shahīd 1984, pp. 468–69; Potts 1993; Talgam 2004, p. 116.

<sup>103</sup> Morony 2005, pp. 256–59, 376, 380.

<sup>104</sup> Christensen 1944, p. 275; Morony 2005, pp. 143, 219–20, 319–20.

<sup>105</sup> Morony 2005, p. 62 n. 18.

<sup>106</sup> Hawting 2000, p. 10. See also Morony 2005, pp. 167–73.

<sup>107</sup> Shahīd 1984, pp. 466–68; Shahīd 1989, pp. 408–10.

<sup>108</sup> Talbot Rice 1932; Ashmolean accession nos. EAX.6001–EAX.6018. For the importance of Al-Hirah in the early understanding of Islamic architecture, see Leisten 2005.

The decorative stucco from Al-Hirah has been linked to late Umayyad remains in northern Syria.<sup>109</sup> Kish is approximately 30 km south of Kufa, easily within the Lakhmid sphere of control and artistic influence. The ornate “palaces” of Kish were likely the dwellings of the Lakhmid elite, whose decor—an amalgam of Late Antique and Sasanian themes—reflected the power and political complexity of their heritage.

Although the Lakhmids ceased to exist as an independent polity by 633, they retained their identity and their reputation for beautiful buildings for centuries.<sup>110</sup> The *Khamsa* (Quintet or Five Treasures) of the Persian poet Nizami (d. 1209) includes the *Haft Peykar* (Seven Pavilions)—a romance featuring the Sasanian ruler Bahram Gur, who was brought up in the Lakhmid court.<sup>111</sup> Nizami describes how a locked room in the magical palace of Khwarnaq at Al-Hirah provoked Bahram Gur’s curiosity. He demanded that it be opened and promptly fell in love with the seven beauties whose portraits decorated the room.<sup>112</sup> While the ladies from Palace 1 at Kish may not strike us as enchanting now, the lavishly ornamented palaces of the Lakhmids at Kish stand behind, and live on in, Nizami’s romantic tale.

## ACKNOWLEDGMENTS

I am indebted to Karen Wilson, who asked me to look at a stucco head, and when I exclaimed “What the heck is that?” immediately replied, “Do you want to research it?” The result was a decade-long adventure. As I moved far from my usual sphere of interest, I benefited greatly from the generous help and advice of Robert Hillenbrand and Alastair Northedge. I so appreciate their kindnesses to an interloper from the Iron Age. Without the scholarship and help of Edwin Yamauchi and Erica C. D. Hunter, I would not have understood the implication of the Mandaean bowls that once provided an end date for the Mound H stuccos. The conclusions, and any errors, of the resulting study are of course mine. Finally, I wish to acknowledge the encouragement of my former colleague Stephanie Morillo Collazo, and the help of the editors in the OI publications office. Truly, it takes a village.

<sup>109</sup> Haase 2007.

<sup>110</sup> Leisten 2005, p. 376; Grabar 1973, p. 79.

<sup>111</sup> Chs. 9–11 in the romance; see Meisami 1995, pp. 34–94; Wilson 1924.

<sup>112</sup> Ch. 15 in the romance; Meisami 1995, pp. 51–53.

WHERE KINGSHIP DESCENDED FROM HEAVEN

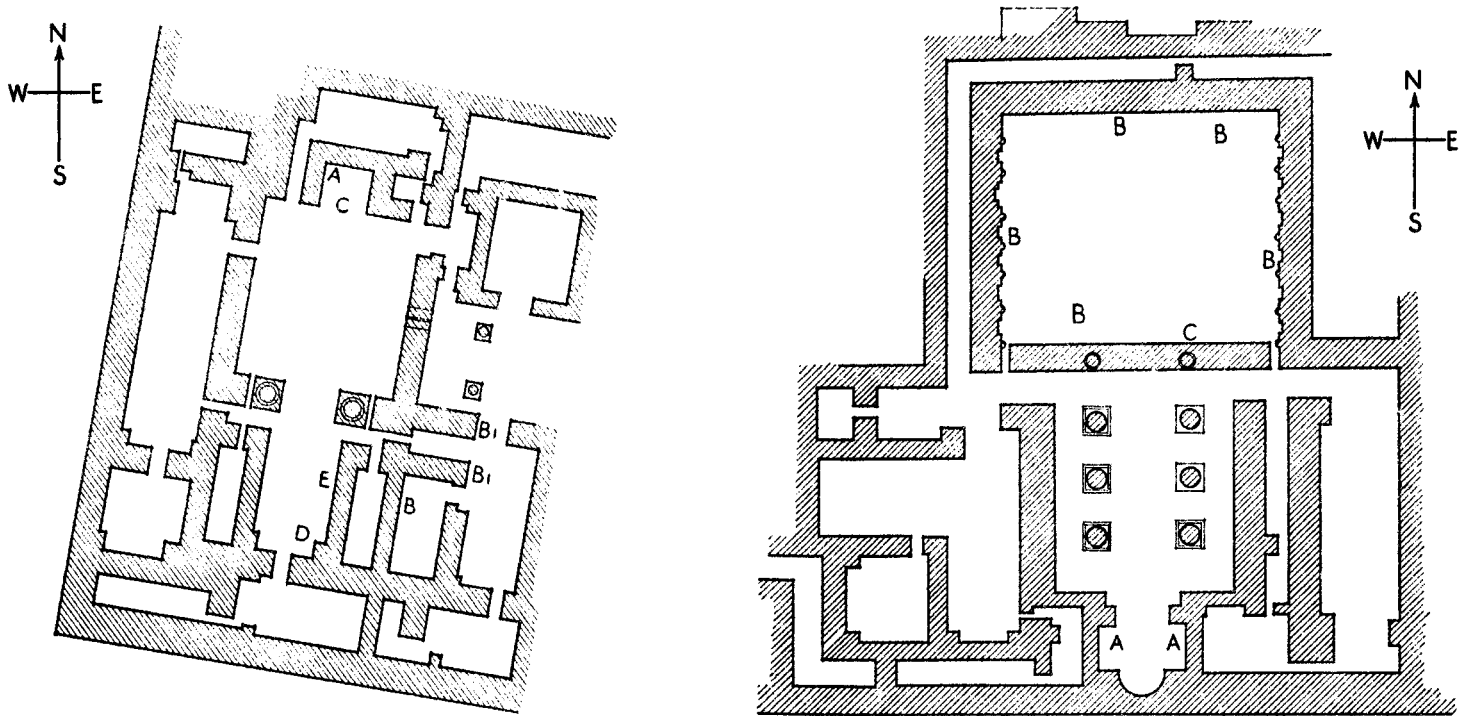


Figure 7.1. Watelin's plans of Palace 1 (left) and Palace 2 (right) (Watelin 1938, fig. 169).

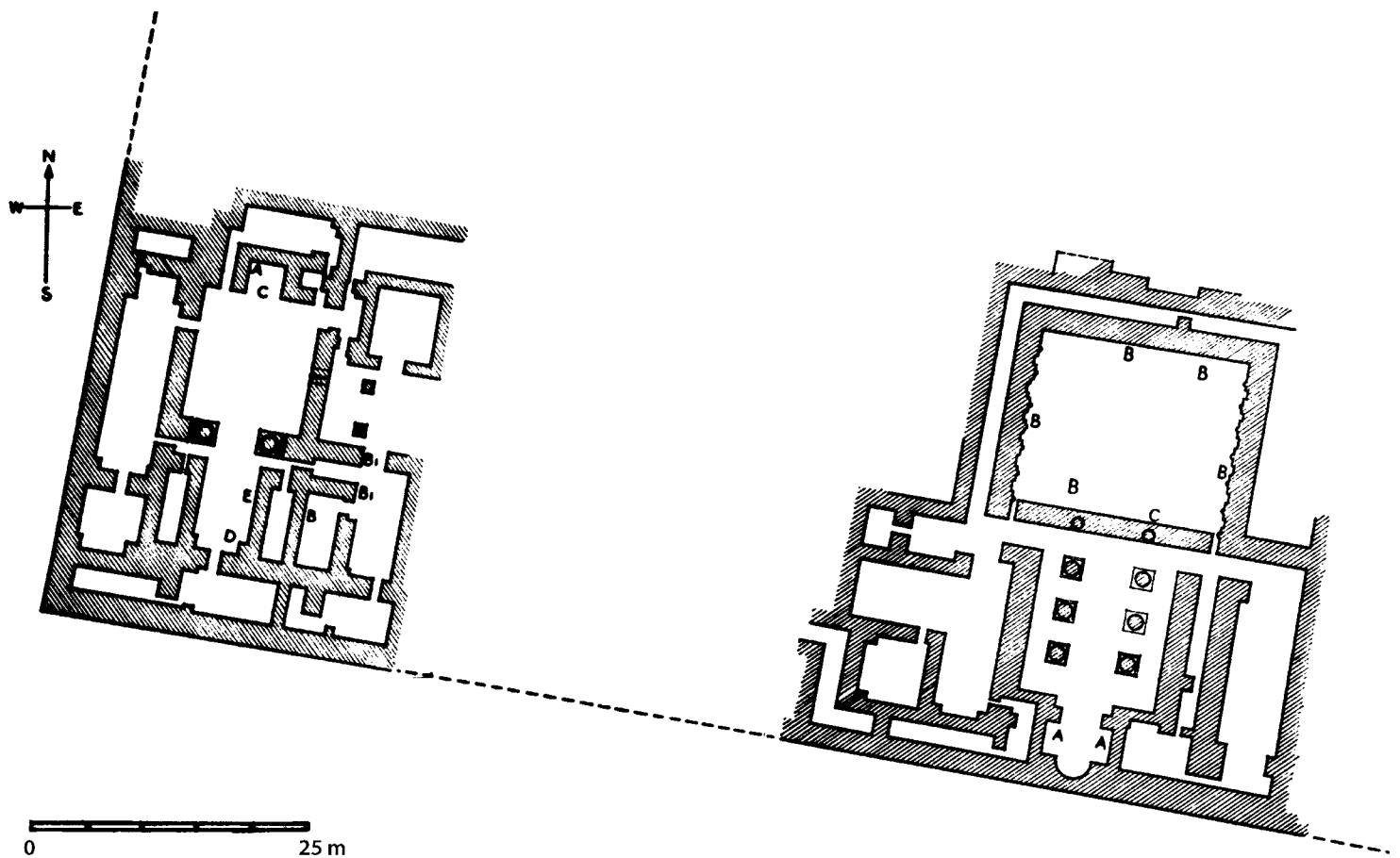


Figure 7.2. Bier's proposed plan of the two palaces as part of one complex (Bier 1993, fig. 1).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1427 (FM 236400b)



b. K.1429 (IM 18596)



c. K.1430 (FM 236400a)

Figure 7.3. Royal male busts from Palace 2, Square Court (location B).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1431 (left: FM 2002.1.140; right: FM 2002.1.143)



b. K.1432 (FM 2002.1.144); dowel holes are indicated by lines



c. K.1433 (FM 2002.1.137)

Figure 7.4. Royal male busts from Palace 2, Square Court (location B) (*continued*).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1434  
(top: FM 2002.1.139a; bottom: FM 2002.1.136)



b. K.1435 (FM 2002.1.141)

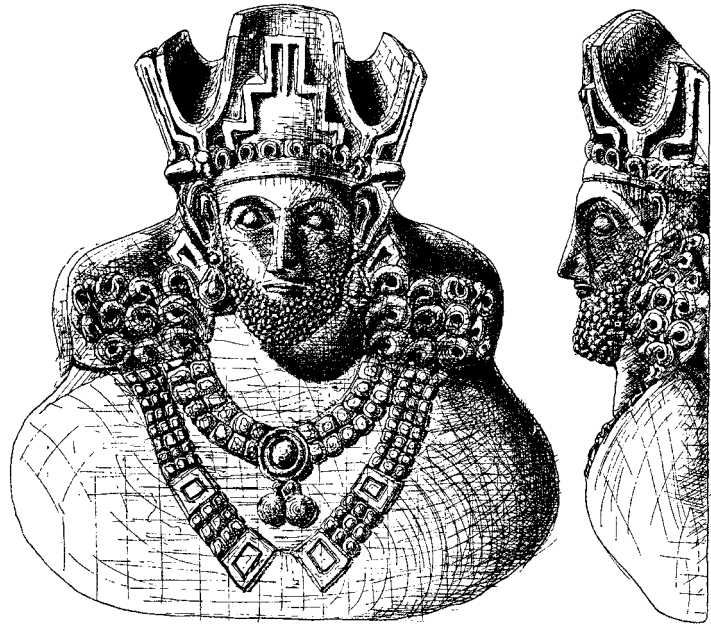
Figure 7.5. Royal male busts from Palace 2, Square Court (location B) (continued).



WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1436 (Oxford 1932.980)



b. K.1436, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 211)



c. K.1437  
(top left: FM 2002.1.95; top right: FM 2002.1.130;  
bottom: FM 2002.1.142)

Figure 7.6. Royal male busts from Palace 2, Square Court (location B) (continued).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1437 (FM 236613)



b. K.1437 (FM 2002.1.135)



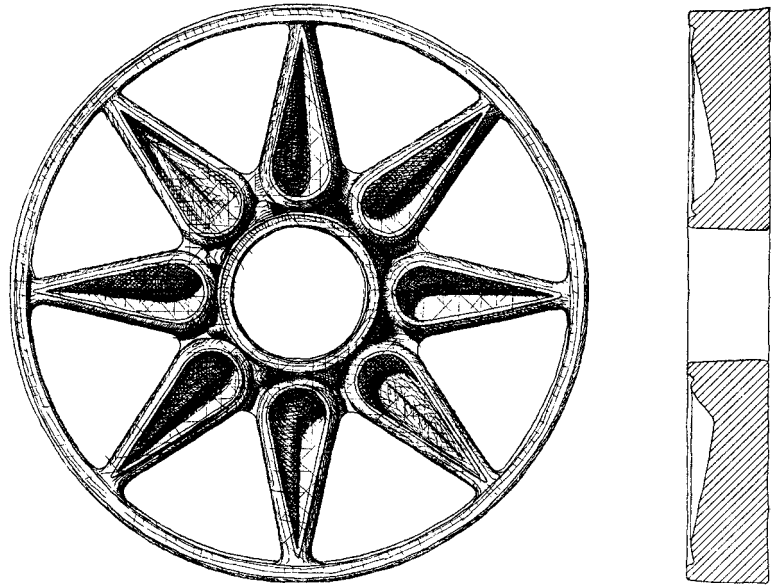
c. K.1437 (FM 2002.1.138)

Figure 7.7. Royal male busts from Palace 2, Square Court (location B) (*continued*).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1422 (FM 229261a)



b. K.1422, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 193a)



c. K.1422 (FM 229261b)



d. K.1422 (FM 229261c)

Figure 7.8. Circular rosette window grills from Palace 2, Square Court (location B).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1426 (FM 236378)



b. K.1426 (FM 236377)



c. K.1426 (FM 236334)



d. K.1426 (FM 236347)

Figure 7.9. Tulips from Palace 2, Square Court (location B).

WHERE KINGSHIP DESCENDED FROM HEAVEN



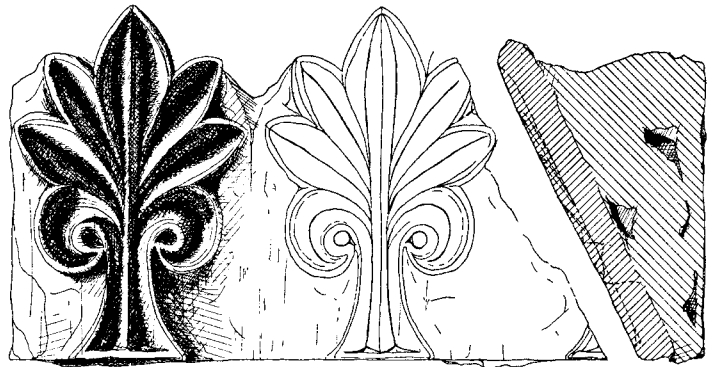
a. K.1372 (FM 2002.1.97) (original)



b. K.1372 (FM 236380) (restored)



c. K.1372 (FM 236379) (restored)



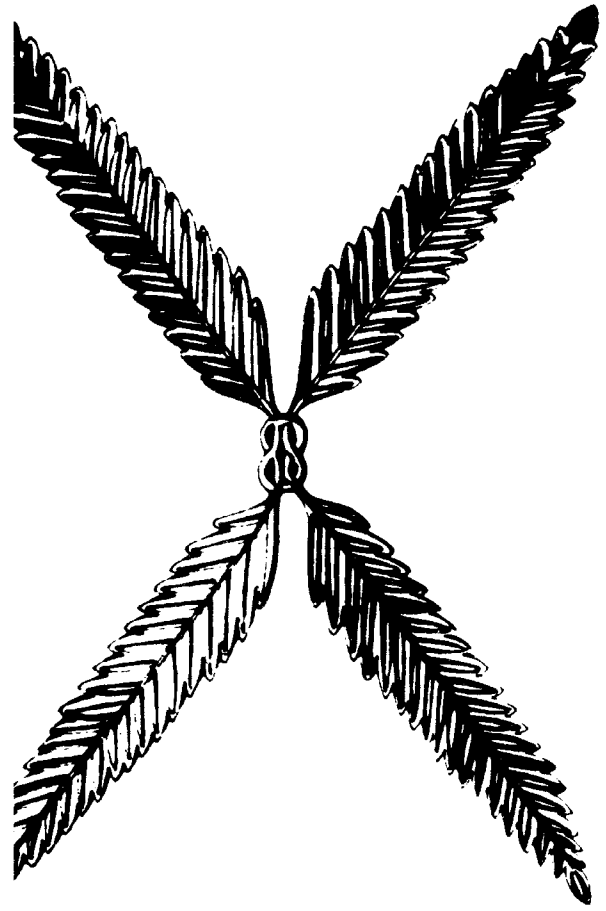
d. Rathbun's drawing  
(Pope and Ackerman 1938, fig. 186a)

Figure 7.10. Palmettes from Palace 2, Square Court (location B).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



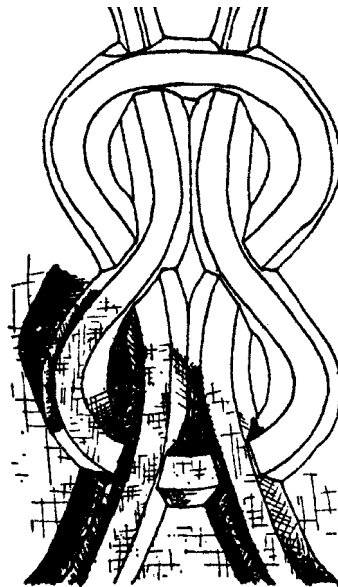
a. K.1374 (FM 228138a) (FM negative 87122)



b. K.1374 (FM 228138a) (Moorey 1978, fig. N)



c. K.1374 (FM 2002.1.99)



d. Rathbun's drawing  
(Pope and Ackerman 1938,  
fig. 178, detail)



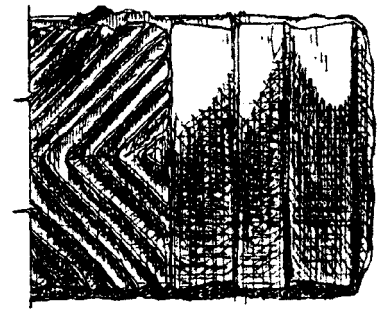
e. K.1374 (FM 236873)

Figure 7.11. Knot-and-leaf pattern from Palace 2, "main arch" between Square Court (location B) and Pillared Hall (location C).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1368 (FM 2002.1.295)



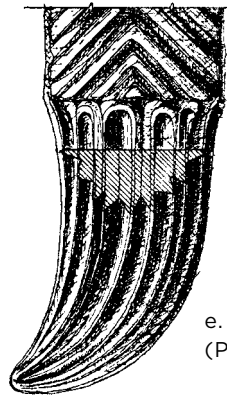
b. Rathbun's drawing  
(Pope and Ackerman 1938, fig. 176c)



c. K.1368  
(FM 2002.1.240)



d. K.1368  
(FM 2002.1.294)



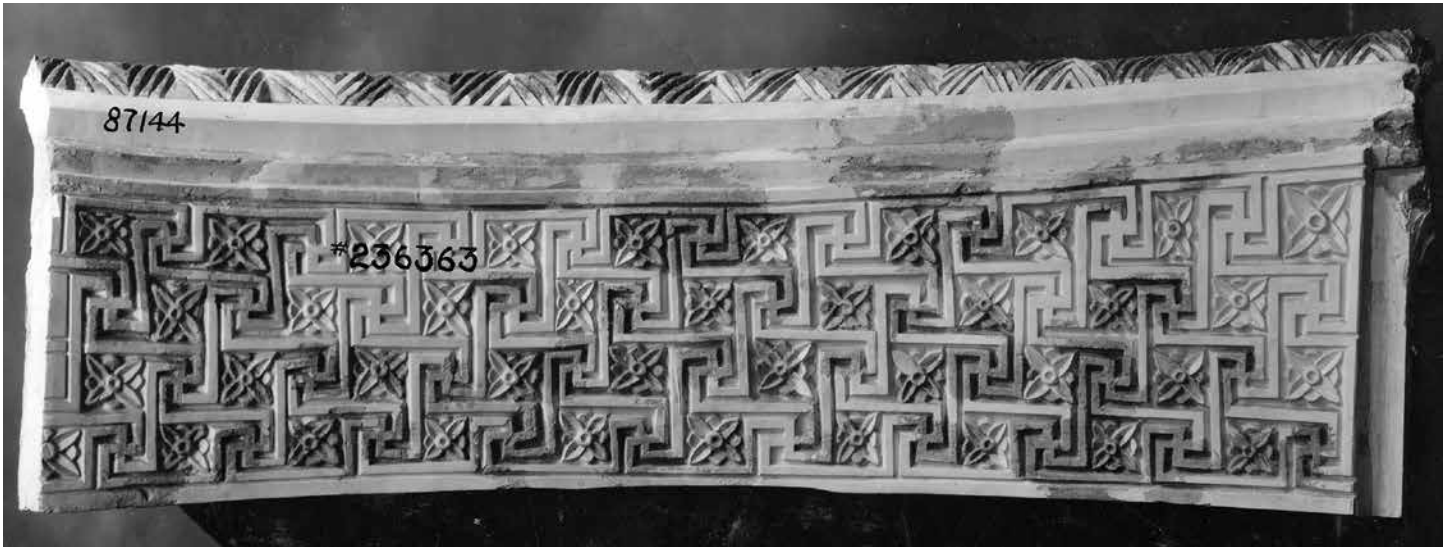
e. Rathbun's drawing  
(Pope and Ackerman 1938, fig. 176d)



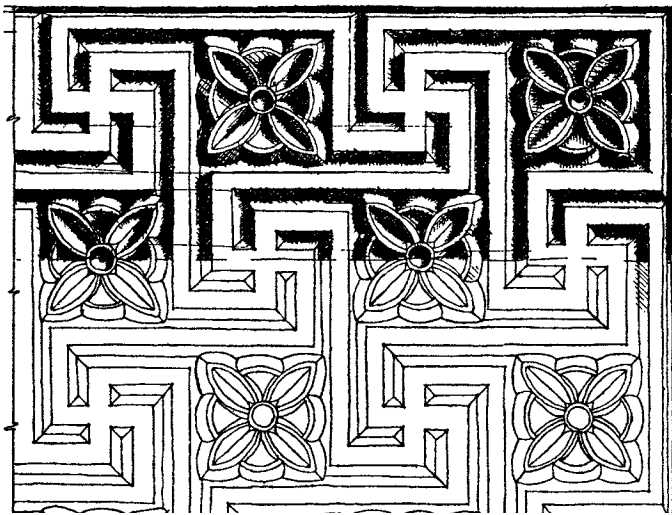
f. FM 2002.1.296, FM 2002.1.104, and FM 2002.1.105  
(the latter two are K.1368)

Figure 7.12. Archivolt moldings from Palace 2, Niched Eivan (location A).

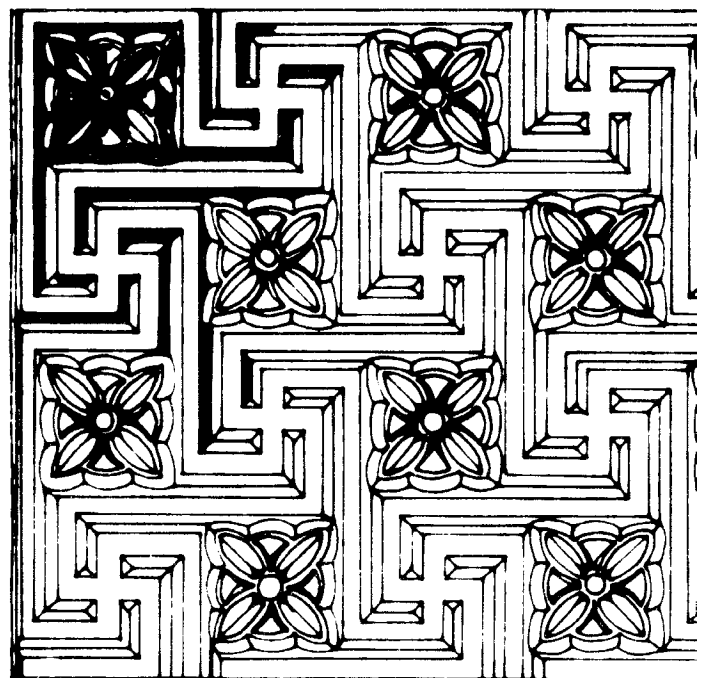
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1376 (FM 236363) (FM negative 87144)



b. K.1376, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 181, detail)

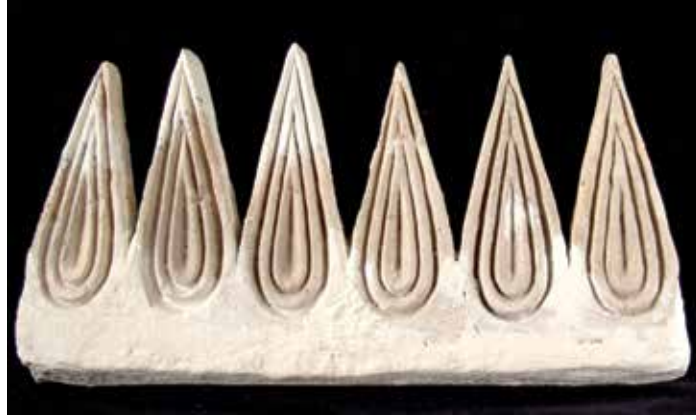


c. K.1376 (Moorey 1978, fig. N, detail)

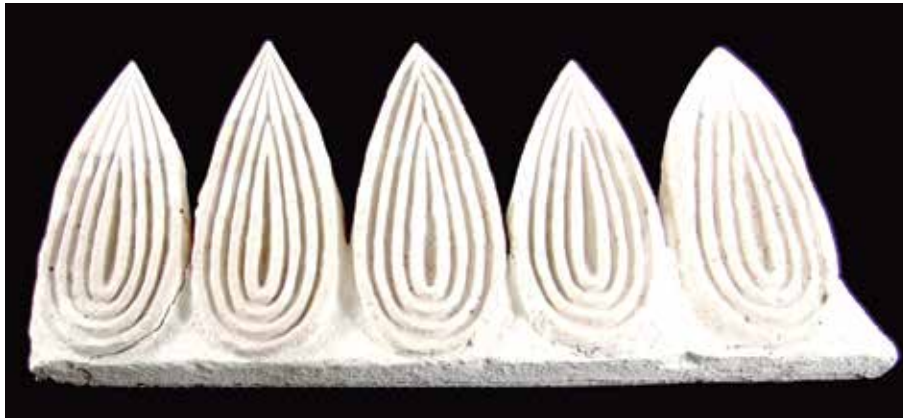
Figure 7.13. Eivan soffit with key-and-rosette pattern from Palace 2, Nixed Eivan (location A).



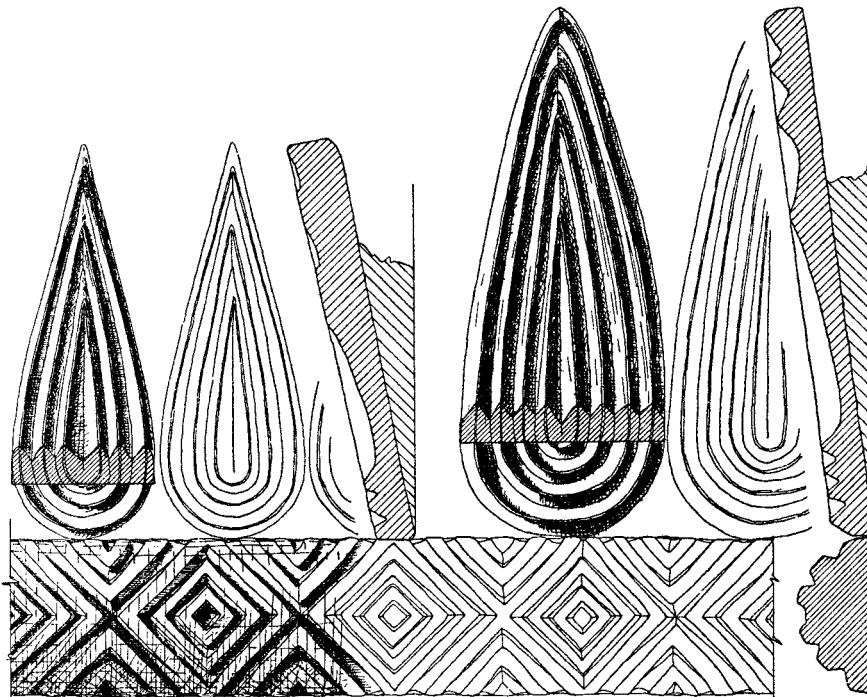
WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1369 (FM 229262)



b. K.1370 (FM 236376)



c. Rathbun's drawing showing hypothetical assemblage (Pope and Ackerman 1938, fig. 177)

Figure 7.14. Teardrop or petal forms from Palace 2, unknown location.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. FM 236336



b. FM 2002.1.92b



c. Rathbun's drawing showing hypothetical assemblage (Pope and Ackerman 1938, fig. 197)

Figure 7.15. Moldings with palmettes and bound foliage(?), probably from Palace 2, unknown location.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1438 (FM 156500), reconstructed portal in Field Museum  
(*Illustrated London News*, February 14, 1931, p. 369; FM negative 74537)



b. K.1438 (FM 156500a)



c. IM 18569 and IM 18590

Figure 7.16. Arch elements from Palace 1, Portal B<sub>1</sub>-B<sub>1</sub>.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. FM 236371



b. FM 2002.1.93



c. FM 2002.1.92a

Figure 7.17. Moldings from Palace 1, unknown location.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1400 (FM 236403), recumbent herbivore



b. FM 2002.1.89, ram's horn(?)



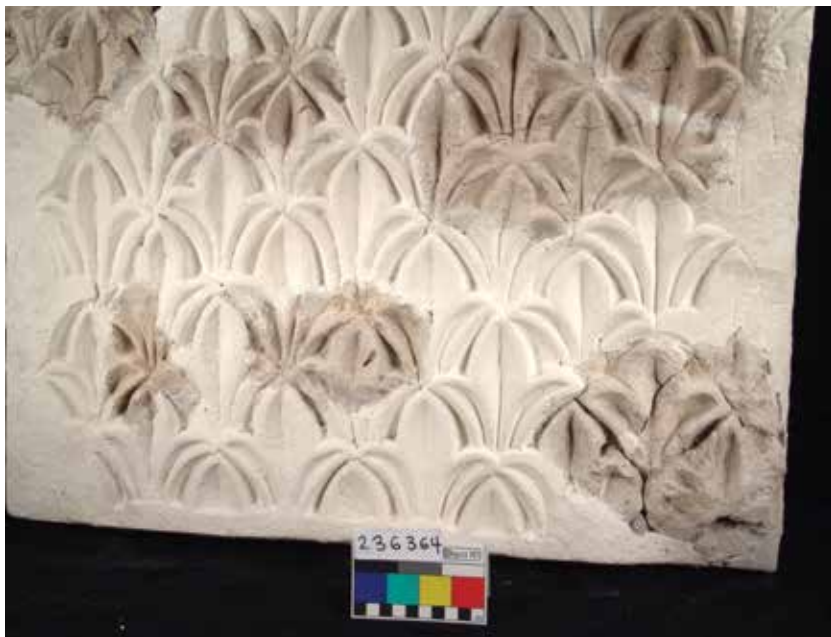
c. K.1380 (FM 2002.1.131),  
fragment of the head of an animal (boar?)



d. K.1380 (FM 236402), boar muzzle  
(only the snout is original; the rest is reconstructed)

Figure 7.18. Animal stuccos from Palace 1, Room B south of Portal B<sub>1</sub>-B<sub>1</sub> (location B).

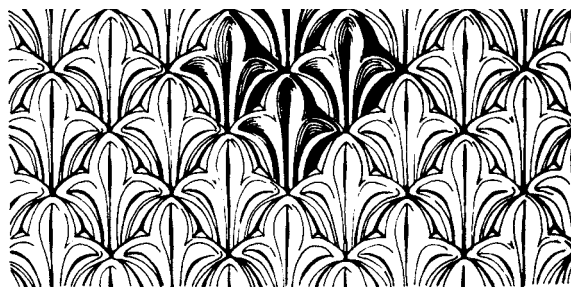
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1390 (FM 236364), fleur-de-lis pattern



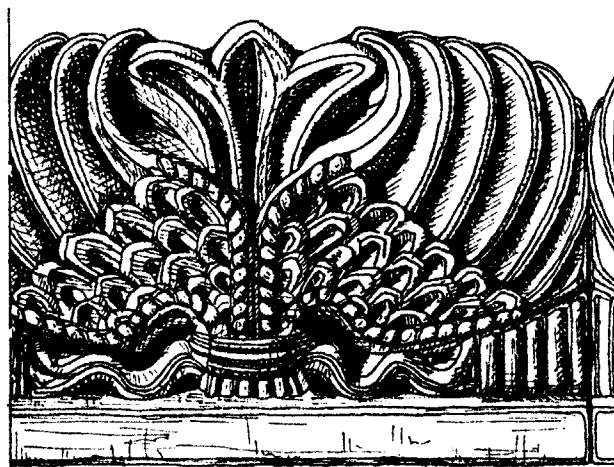
b. K.1390, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 187c, detail)



c. K.1390 (Moorey 1978, fig. M)



d. K.1402 (FM 228870)  
(lower left corner, right side, and other areas reconstructed)



e. K.1402, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 187a, detail)

Figure 7.19. Fleur-de-lis and wing patterns from Palace 1, Large Eivan, east wall (location E).

WHERE KINGSHIP DESCENDED FROM HEAVEN



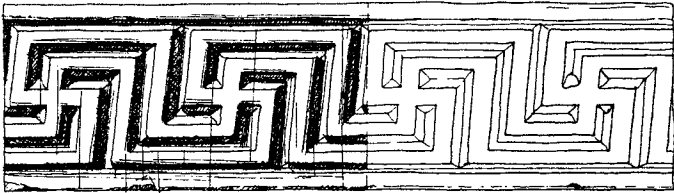
a. K.1421 (FM 236311)



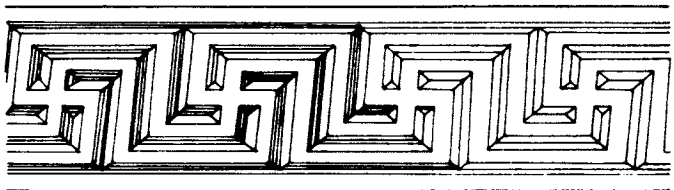
b. FM 236362, heavily restored meander  
(from unknown location)



c. FM 2002.1.239



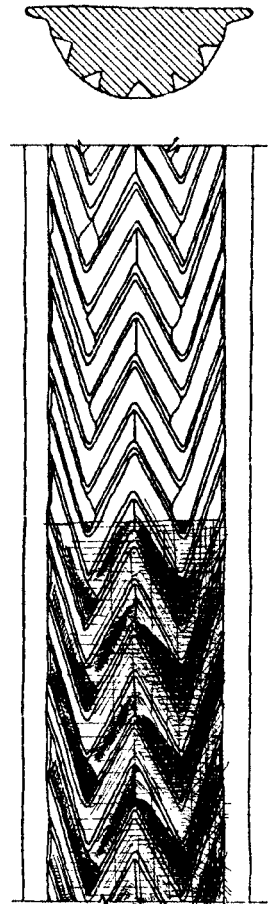
d. Rathbun's drawing (Pope and Ackerman 1938, fig. 179b)



e. Moorey 1978, fig. M



f. FM 2002.1.299



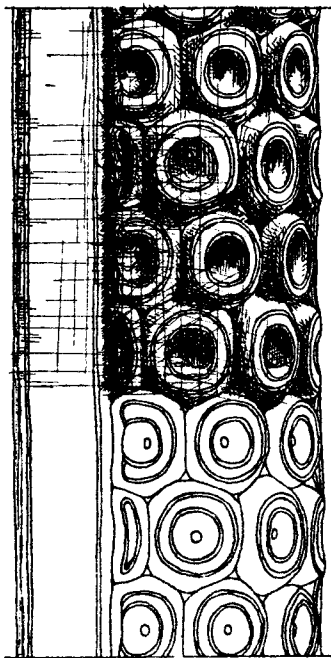
g. Rathbun's drawing  
(Pope and Ackerman 1938, fig. 176a)

Figure 7.20. Meander and zigzag patterns from Palace 1, Large Eivan, east wall (location E) and unknown location.

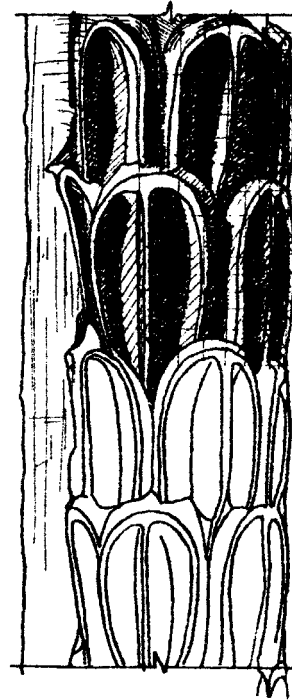
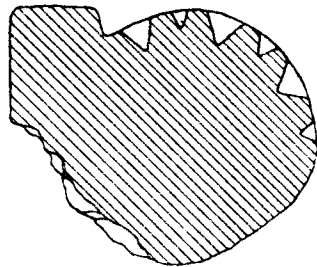
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1382 (FM 2002.1.100a-b),  
lemon or pomegranate forms



b. Rathbun's drawing  
(Pope and Ackerman 1938, fig. 176e)



c. Rathbun's drawing  
(Pope and Ackerman 1938, fig. 187b)

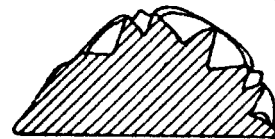


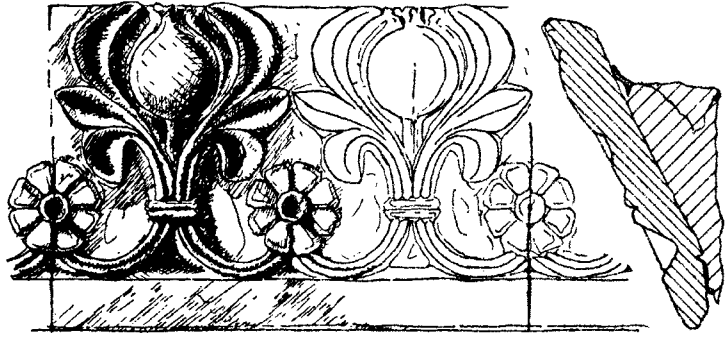
Figure 7.21. Lemon or pomegranate forms and moldings from Palace 1, Large Eivan, east wall (location E).



WHERE KINGSHIP DESCENDED FROM HEAVEN



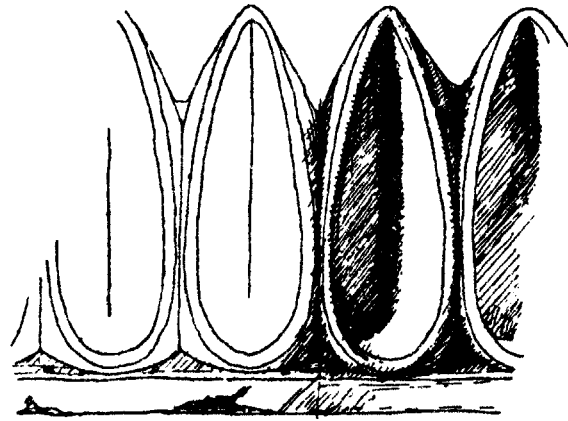
a. K.1438 (FM 236597a-b),  
pomegranates between paired leaves  
between paired leaves



b. K.1438, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 188g-h)



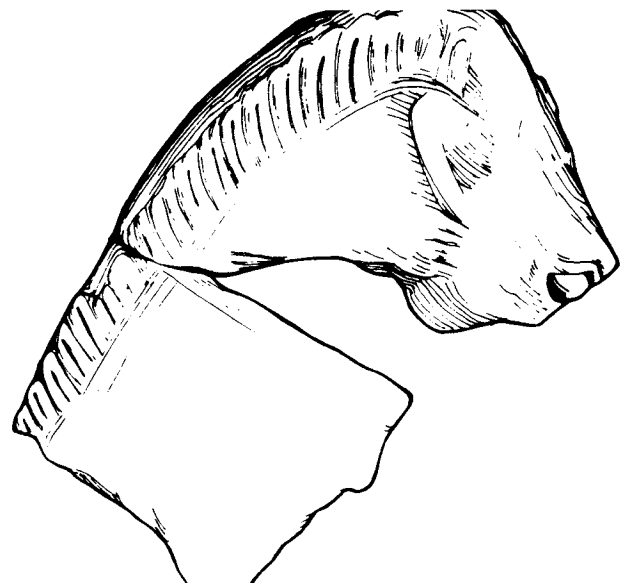
c. K.1388 (FM 228836)



d. Rathbun's drawing (Pope and Ackerman 1938, fig. 188f)



e. K.1423 (FM 236405), large boar or horse head



f. K.1423 (Moorey 1978, fig. M)

Figure 7.22. Corniche elements and animal head from Palace 1, Large Eivan, southeast corner (location D).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1418 (FM 236322a)



b. K.1418 (Moorey 1978, fig. L, incorrectly as K.1414)



c. K.1418 (FM 236322b)  
(same as K.1379?)



d. K.1418 (FM 236322c)  
(same as K.1395?)



e. K.1407 (*Illustrated London News*, March 7, 1931, p. 369)



f. K.1407 (Moorey 1978, fig. L)

Figure 7.23. Busts from Palace 1, front of Small Eivan (location C).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1414 (FM 236401)  
(face, top of head, and much of torso restored)

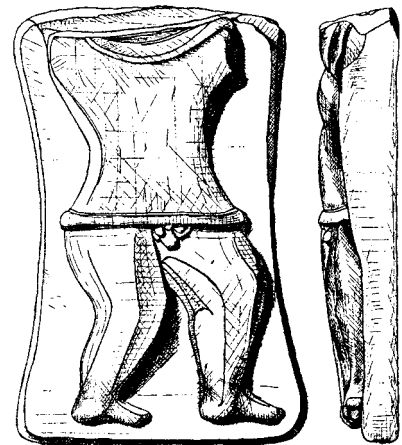


b. K.1413 (FM 2002.1.133)



c. (right) K.1397 (FM 236396)

d. (far right) K.1397, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 212, left)



e. (right) K.1396 (FM 236397/2002.1.231)

f. (far right) K.1396, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 212, right)

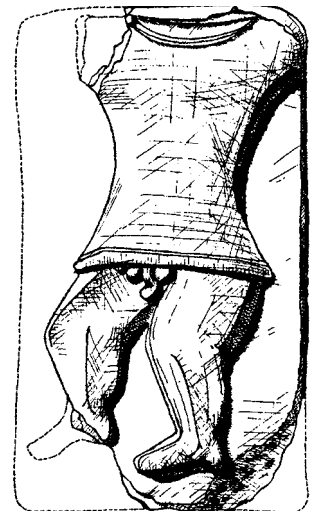


Figure 7.24. Life-size female torsos and plaques with male children from Palace 1, front of Small Eivan (location C).

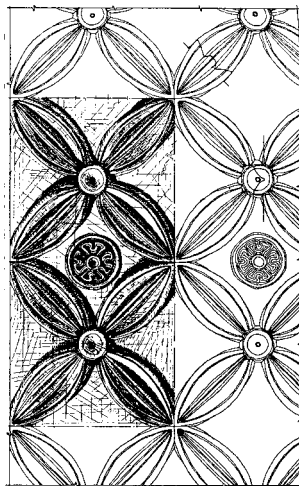
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



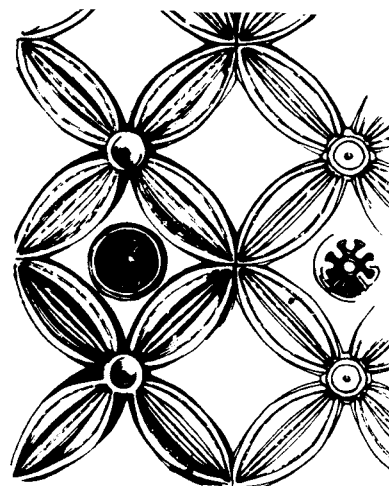
a. K.1404<sup>bis</sup> (FM 228838)



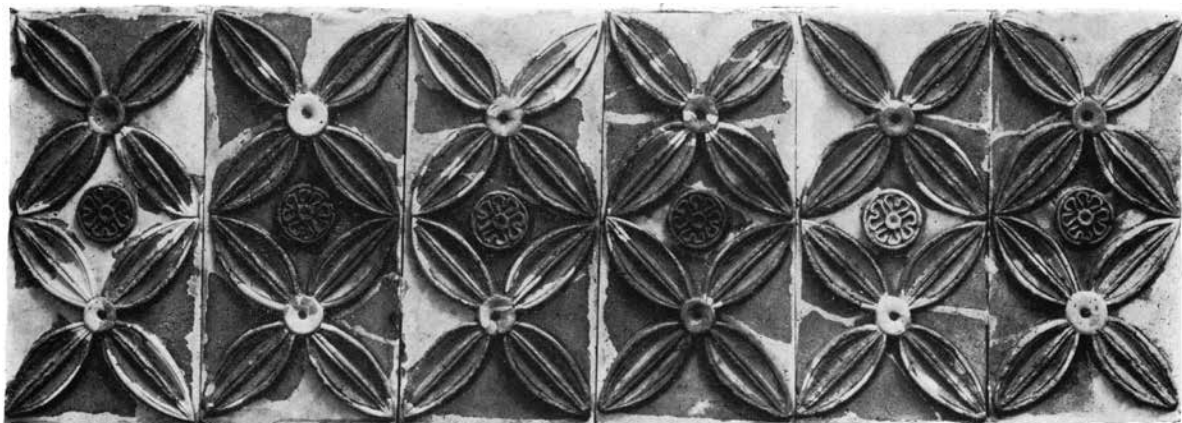
b. K.1404<sup>bis</sup> (FM 228839), heavily restored



c. K.1404<sup>bis</sup>, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 182)



d. K.1404<sup>bis</sup> (Moorey 1978, fig. K)



e. K.1404<sup>bis</sup>, six restored panels

Figure 7.25. Plaques with pairs of four-lobed flowers from Palace 1, front of Small Eivan (location C).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. FM 236372



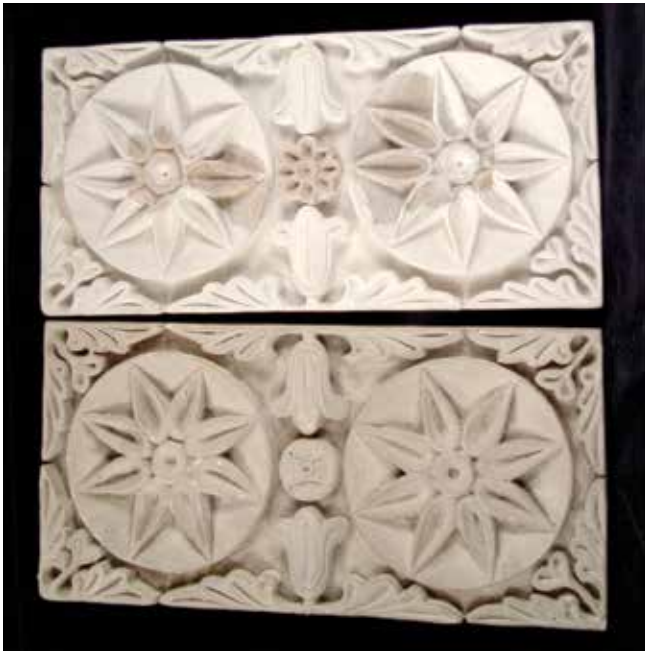
b. FM 236381

Figure 7.26. Plaques with four-lobed flowers from Palace 1, unknown location.

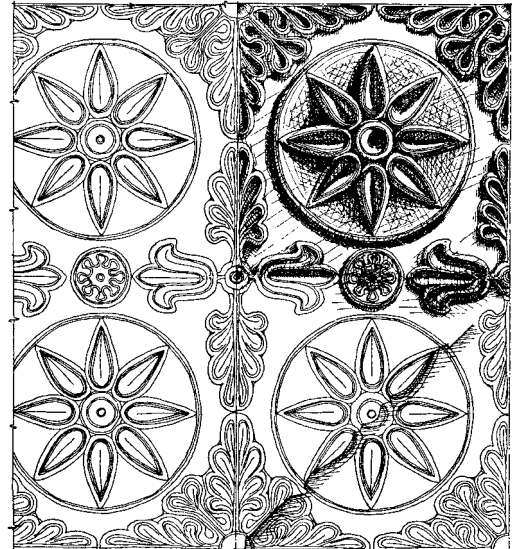
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



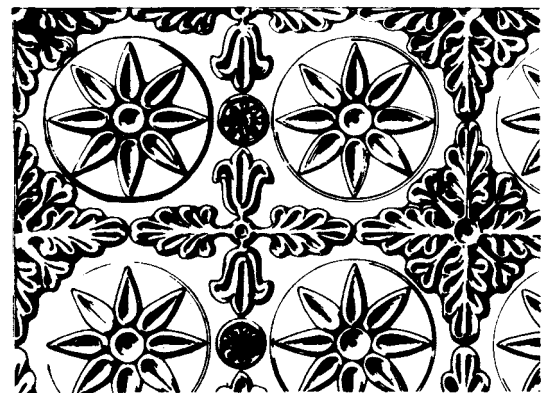
a. K.1419 (FM 236345a)



b. K.1419 (FM 236346), two modern panels incorporating a few ancient pieces



c. Rathbun's drawing (Pope and Ackerman 1938, fig. 189)



d. Moorey 1978, fig. K

Figure 7.27. Panels with large, pointed rosettes from Palace 1, front of Small Eivan (location C).

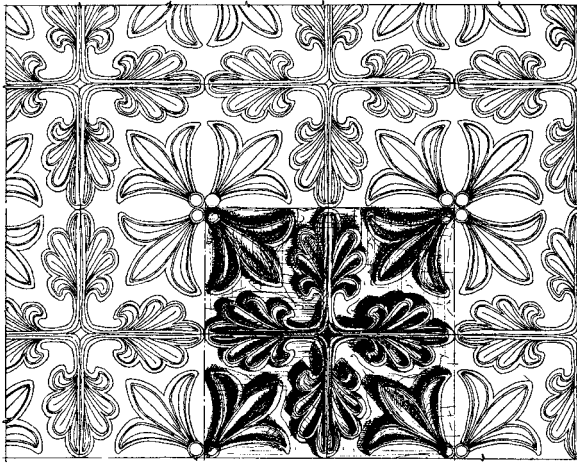
WHERE KINGSHIP DESCENDED FROM HEAVEN



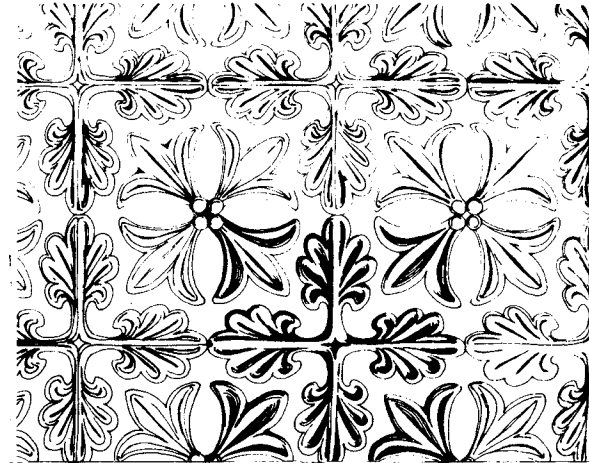
a. K.1404 (FM 228869), heavily restored



b. FM 2002.1.94  
(from unknown location)



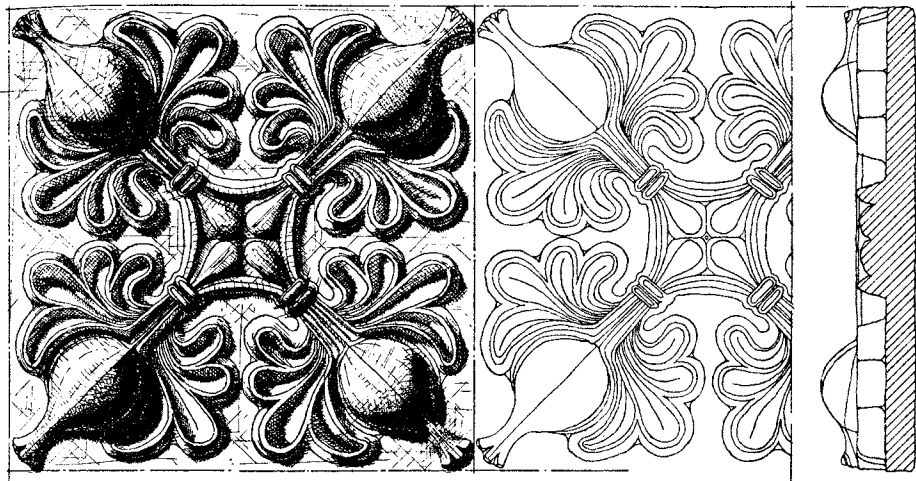
c. Rathbun's drawing (Pope and Ackerman 1938, fig. 192, detail)



d. Moorey 1978, fig. K



e. K.1415 (FM 229328), heavily restored



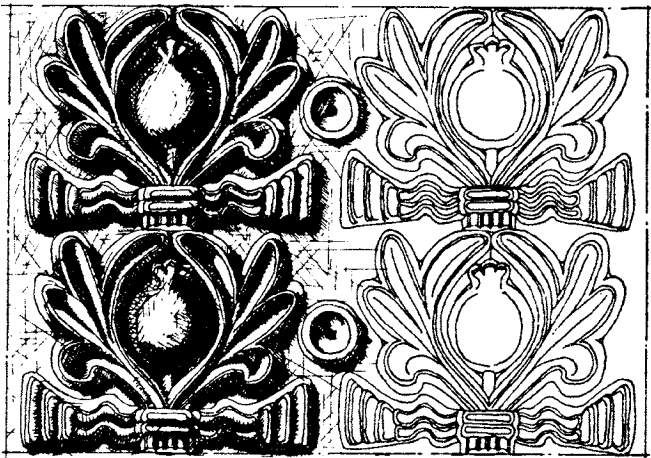
f. Rathbun's drawing (Pope and Ackerman 1938, fig. 190, detail)

Figure 7.28. Vegetal patterns from Palace 1, front of Small Eivan (location C) and unknown location.

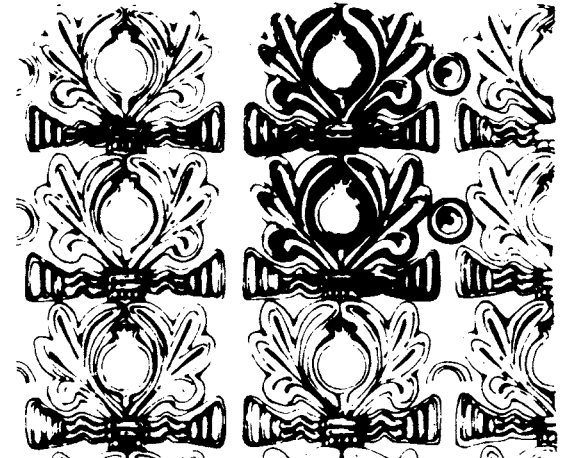
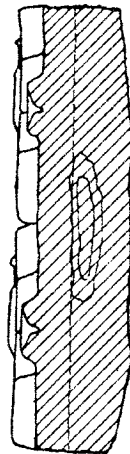
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1416 (FM 228832)



b. K.1416, Rathbun's drawing (Pope and Ackerman 1938, fig. 186b, detail)



c. Mooney 1978, fig. K

Figure 7.29. Pomegranate patterns from Palace 1, front of Small Eivan (location C).



WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1408 (FM 228843, reconstruction; FM 228842, original)



b. K.1408, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 194a)



c. Moorey 1978, fig. K

Figure 7.30. Leafy tendrils from Palace 1, front of Small Eivan (location C).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1406 (FM 228837)



b. K.1406 (FM 228868)



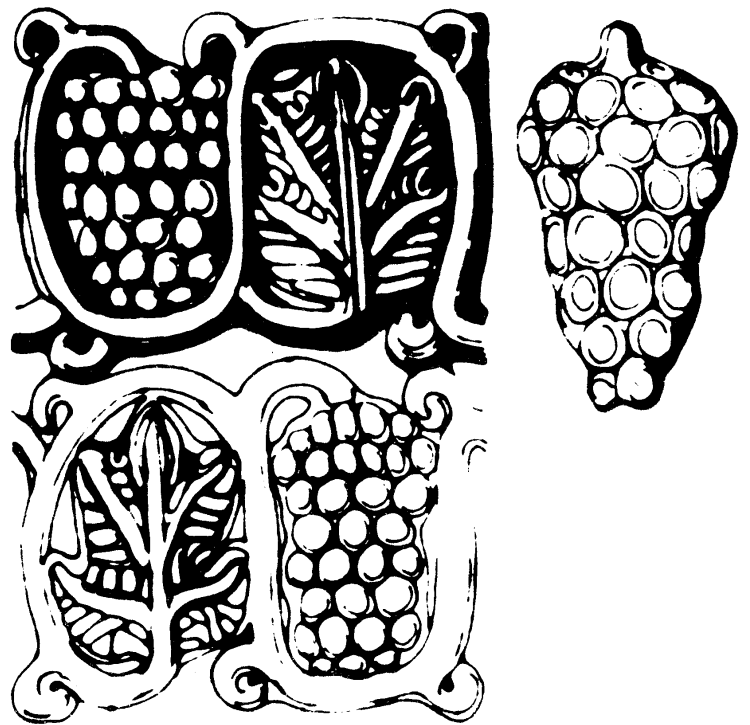
c. K.1406 (FM 236369)



d. K.1401b (FM 228829)



e. K.1406 (FM 236360) (*Illustrated London News*, February 14, 1934, p. 261)



f. Moorey 1978, fig. K

Figure 7.31. Grape clusters and leaves from Palace 1, front of Small Eivan (location C).

WHERE KINGSHIP DESCENDED FROM HEAVEN



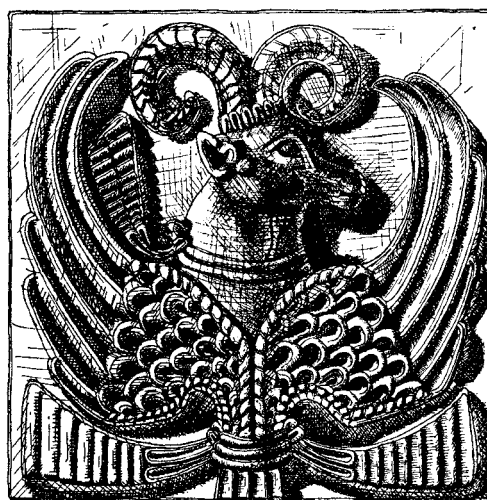
a. K.1417 (IM 11950) (*Illustrated London News*, February 14, 1931, p. 261)



b. K.1417 (Moorey 1978, fig. L)



c. K.1409 (FM 228840)



d. K.1409, Rathbun's drawing (Pope and Ackerman 1938, fig. 214)



e. K.1409 (FM 228841), heavily restored



f. K.1409 (IM 18598) (photo by Stanislaw Jasiewicz, courtesy of the Adam Mickiewicz Institute, Poznan, Poland)

Figure 7.32. Female head in foliate frame and winged mouflon from Palace 1, front of Small Eivan (location C).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



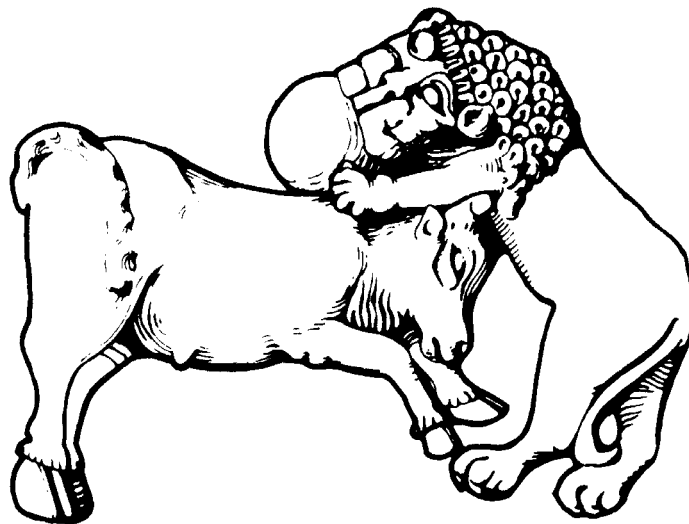
a. K.1378 (FM 236398), grazing stag



b. K.1377 (FM 228073), lion attacking a zebu  
(entire left portion reconstructed)



c. K.1411 (IM 18597), lion attacking a zebu



d. Lion attacking a zebu (Moorey 1978, fig. L)

Figure 7.33. Plaques from Palace 1, front of Small Eivan (location C).

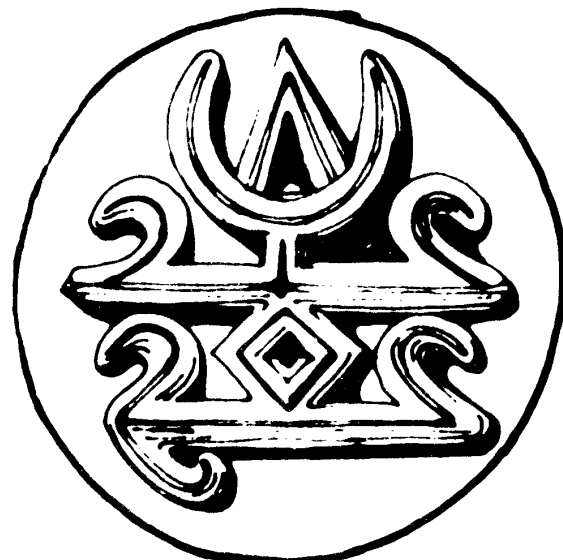
WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1410, original (left: FM 2002.1.241a) and heavily restored (right: FM 2002.1.241b)



b. K 1410 (IM 18603)



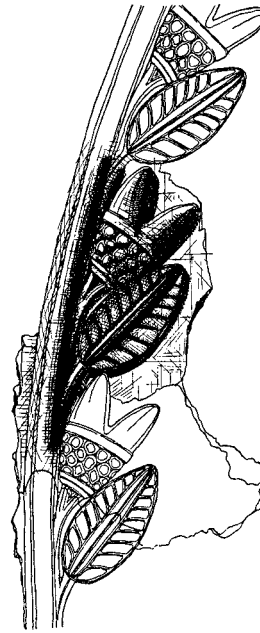
c. K.1410 (Moorey 1978, fig. L)

Figure 7.34. *Nišan* plaques from Palace 1, front of Small Eivan (location C).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1383 (FM 236370)



b. K.1383, Rathbun's drawing (Pope and Ackerman 1938, fig. 184a)



c. K.1383 (Moorey 1978, fig. K)



d. K.1393 (FM 2002.1.233), birds



e. K.1393 (FM 2002.1.232), bird

Figure 7.35. Leafy branches and birds from Palace 1, front of Small Eivan (location C).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1426 (FM 236382), floral cornice



b. K.1426 (FM 236383), heavily restored



c. K.1426 (FM 2002.1.537a-b)



d. K.1426 (FM 2002.1.536)



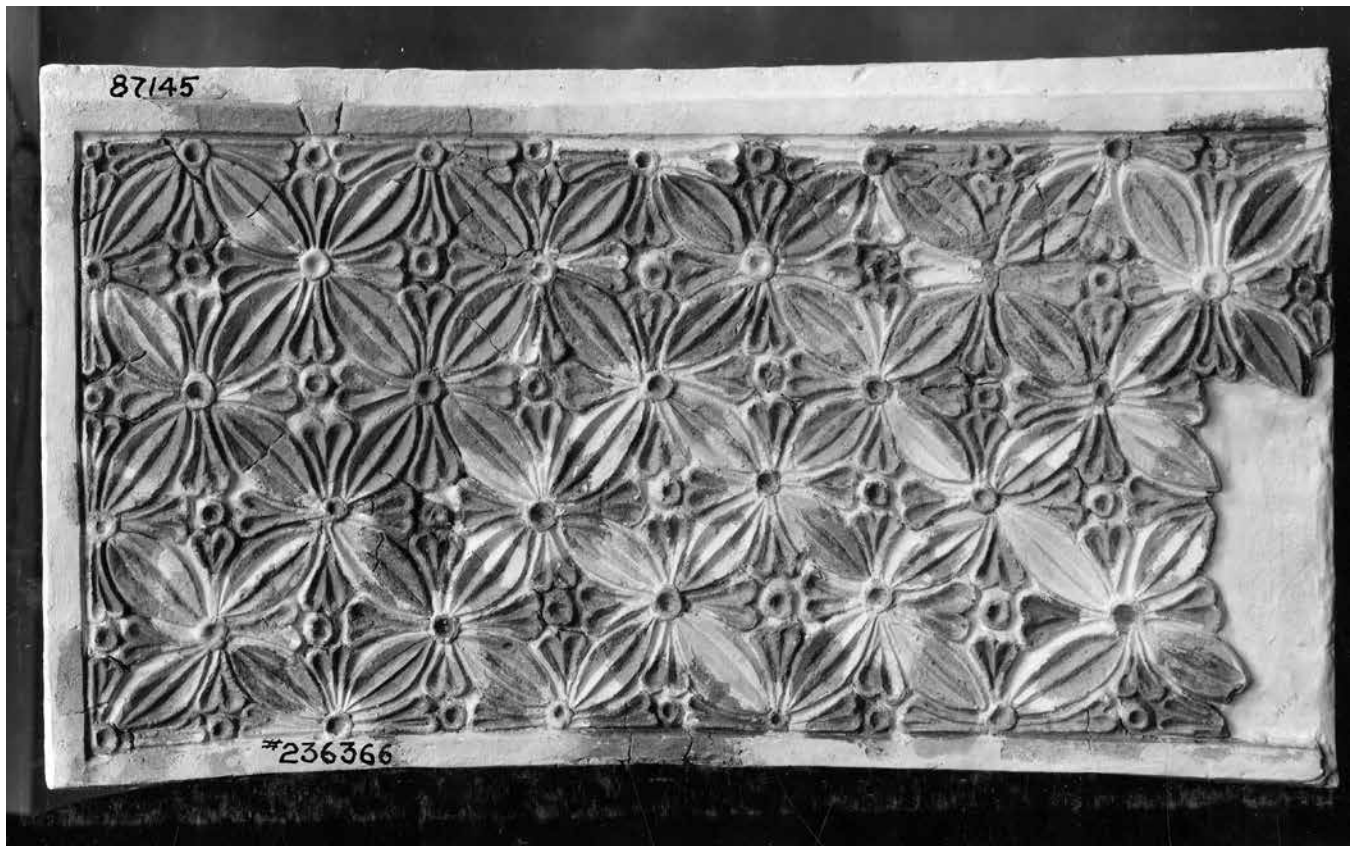
e. K.1389 (FM 236321), narrow vegetal molding



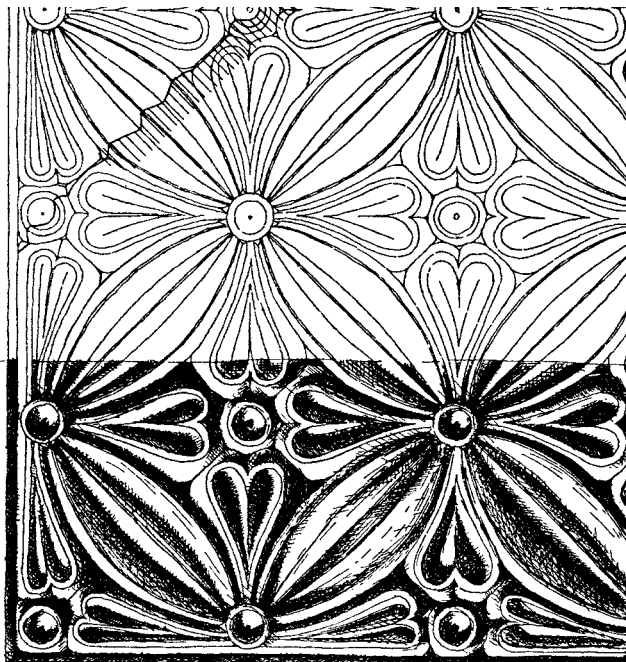
f. K.1389 (FM 236343), narrow vegetal molding, heavily restored

Figure 7.36. Floral cornice and vegetal moldings from Palace 1, front of Small Eivan (location C).

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1440 (FM 236366) (FM negative 87145)



b. K.1440, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 182, detail)



c. K.1440 (Moorey 1978, fig. K, as K.1404)

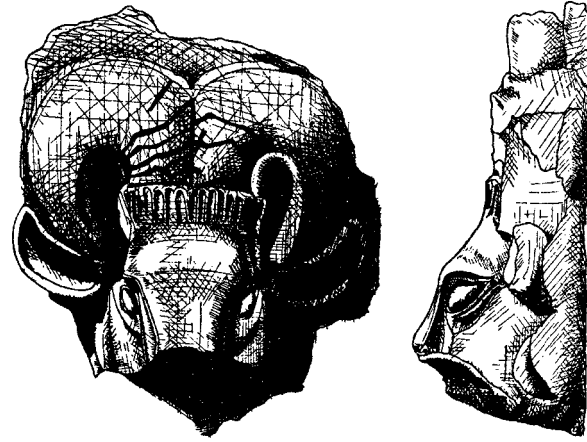
Figure 7.37. Reconstructed soffit panel from Palace 1, Small Eivan (location A).



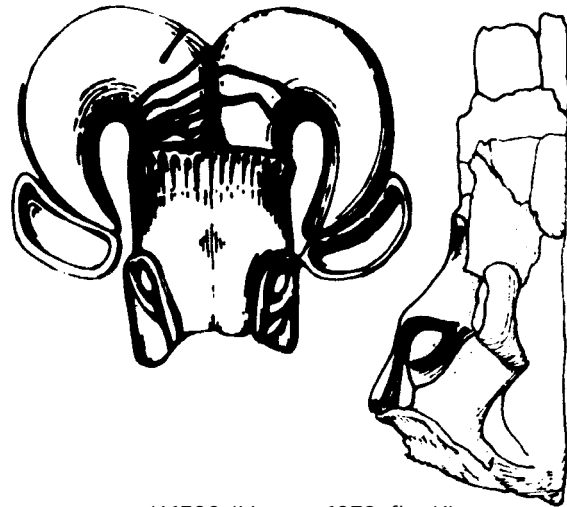
WHERE KINGSHIP DESCENDED FROM HEAVEN



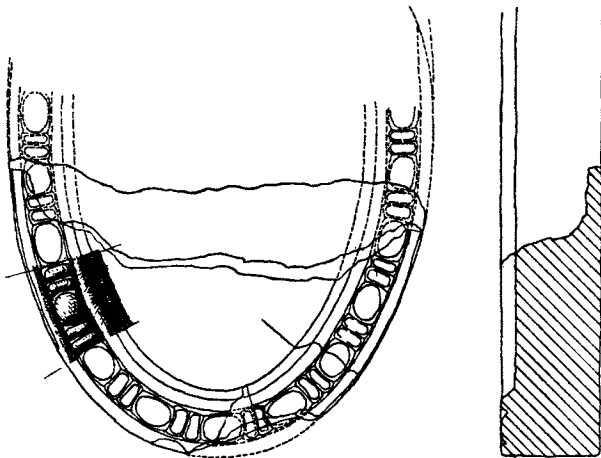
a. K.1392 (FM 236332), mouflon head



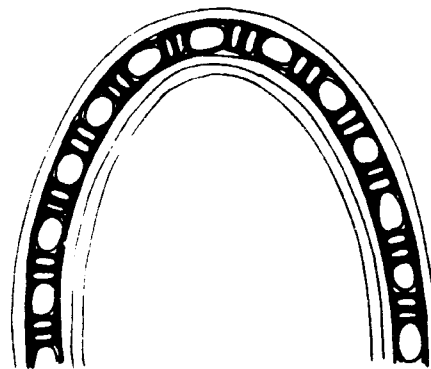
b. K.1392, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 213)



c. K.1392 (Moorey 1978, fig. K)



d. K.1399, bead-and-reel edging, Rathbun's drawing  
(Pope and Ackerman 1938, fig. 175)



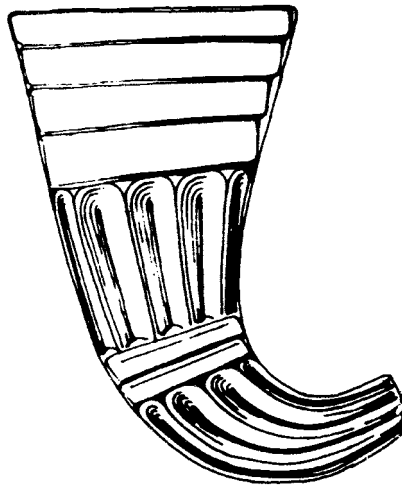
e. K.1399 (Moorey 1978, fig. K)

Figure 7.38. Mouflon head and oval plaque from Palace 1, Small Eivan (location A).

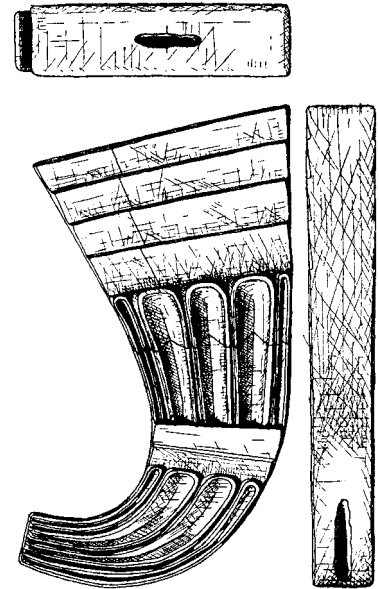
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. K.1381 (FM 2002.1.234)



b. K.1381 (Moorey 1978, fig. K)



c. K.1381, Rathbun's drawing (Pope and Ackerman 1938, fig. 148)



d. K.1381 (FM 2002.1.145)



e. K.1381 (FM 2002.1.146)



f. FM 2002.1.235 (from unknown location)



g. FM 2002.1.236 (from unknown location)



h. FM 2002.1.147 (from unknown location)



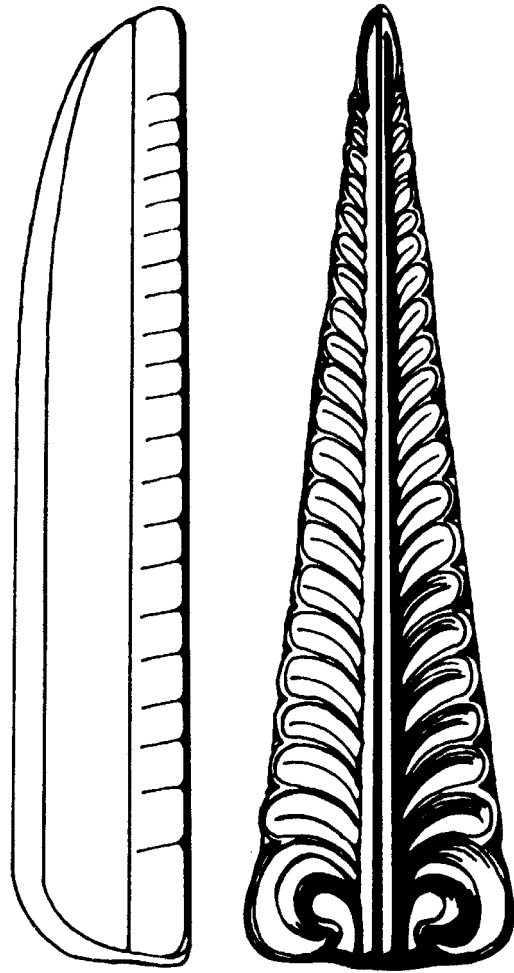
i. FM 2002.1.148 (from unknown location)

Figure 7.39. Restored ribbon terminals from Palace 1, Small Eivan (location A) and unknown locations.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1384 (FM 2002.1.286), palmette



b. K.1384 (Moorey 1978, fig. M)



c. K.1394 (FM 2002.1.90)



d. Louvre SB 3800

Figure 7.40. Arrow palmette and square plaque with circular form from Palace 1, unknown location.

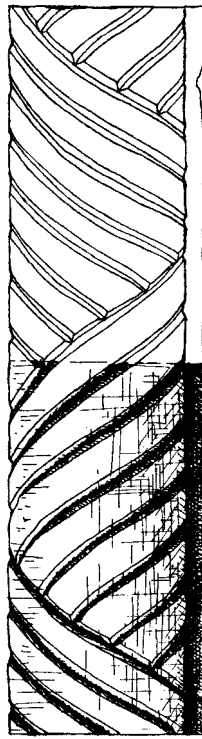
CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. FM 236348



b. FM 236367



c. Rathbun's drawing  
(Pope and Ackerman 1938,  
fig. 147a)



d. FM 236368



e. FM 2002.1.300



f. FM 2002.1.102



g. FM 2002.1.291



h. FM 236341

Figure 7.41. Applied columns from unknown location.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. K.1428 (FM 236361)



b. FM 236365, front view



c. FM 236365, side view (fragments)

Figure 7.42. Panels from unknown location.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. Ma'aridh V  
(Kühnel 1933, fig. 40)



b. Umm Za'atir  
(Pope and Ackerman 1938,  
pl. 171A)



c. Umm Za'atir  
(Schmidt 1934, pl. I:G)

Figure 7.43. Stucco arches from the Ctesiphon region.

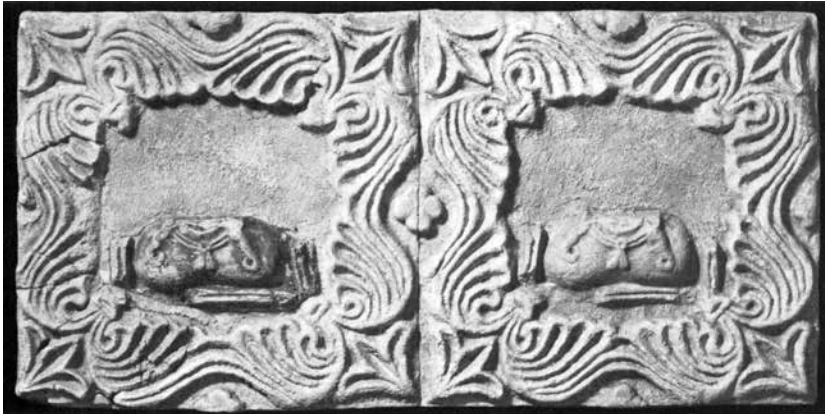
WHERE KINGSHIP DESCENDED FROM HEAVEN



a. *Nišan* plaque from Umm Za'atir (Pope and Ackerman 1938, pl. 174A)



b. *Nišan* plaque from Ma'aridh VI (Pope and Ackerman 1938, pl. 174B)



c. Framed busts from Umm Za'atir (Kröger 1982, pl. 22:1)



d. Framed busts from Ma'aridh IV (Kröger 1982, pl. 22:2)



e. Fragments of framed busts from Ma'aridh IV (Kröger 1982, pl. 22:3)

Figure 7.44. *Nišan* plaques and framed busts from the Ctesiphon region.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. (Kröger 1982, pl. 20:8)



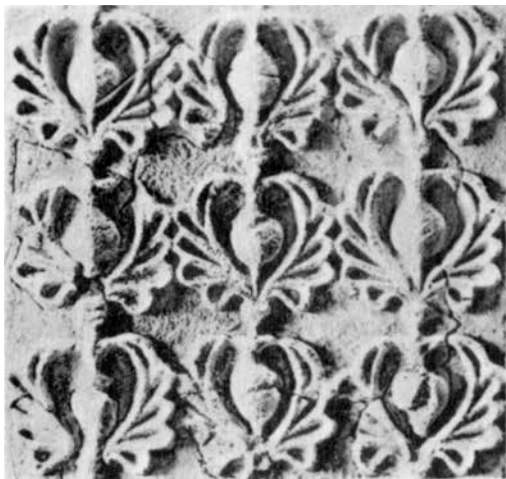
b. (Kröger 1982, pl. 24:1)



c. (Kröger 1982, pl. 36:6)



d. (Kröger 1982, pl. 19:5)



e. (Schmidt 1934, pl. II:C)

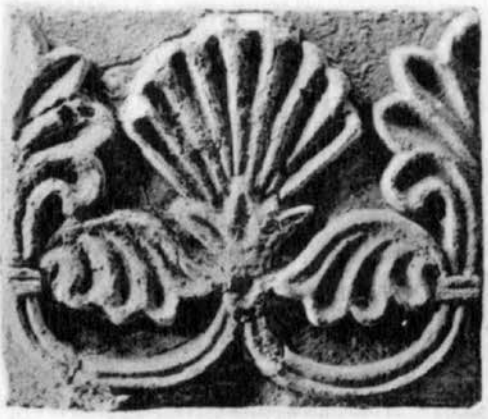


f. (Kröger 1982, pl. 20:1)

Figure 7.45. Stucco borders from Umm Za'atir.



WHERE KINGSHIP DESCENDED FROM HEAVEN



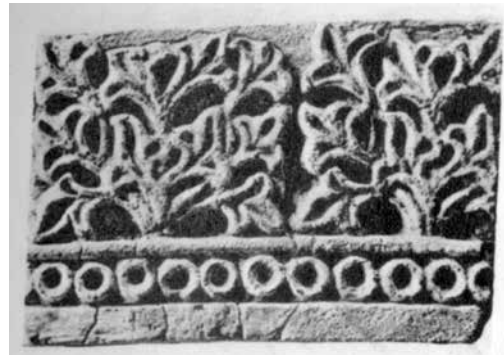
a. (Schmidt 1934, pl. II:F)



b. (Kröger 1982, pl. 38:2)



c. (Schmidt 1934, pl. II:D)



d. (Schmidt 1934, pl. I:A)



e. (Kröger 1982, pl. 38:5)



f. (Schmidt 1934, pl. II:H)

Figure 7.46. Stucco panels and borders from Ma'aridh.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. IM 23563 (Kröger 1982, pl. 76:1)



b. Iraq Museum  
(Kröger 1982, pl. 76:2)



c. IM 23470 and IM 23557 (Kröger 1982, pl. 76:3)



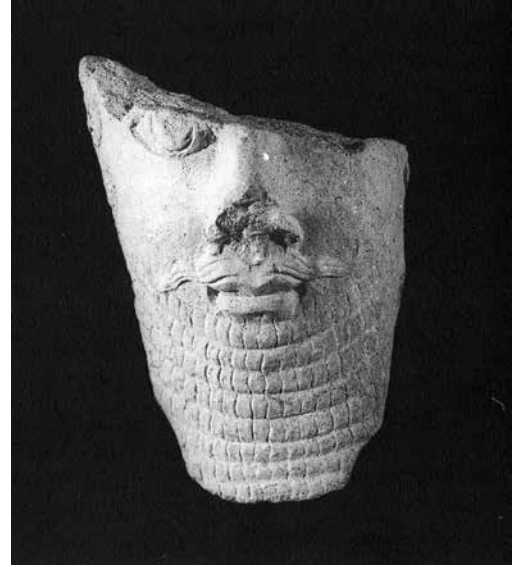
d. Photo by Stanislaw Jasiewicz,  
courtesy of the Adam Mickiewicz  
Institute, Poland

Figure 7.47. Stucco ornaments from Tell Daroz.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. No. 114-85-5 (Azarnoush 1994, pl. IX and fig. 93)



b. No. 31 (Azarnoush 1994, fig. 110)



c. No. 1219-1-2 (Azarnoush 1994, pl. VIII)



d. Unit 114, niche h (Azarnoush 1994, fig. 148)



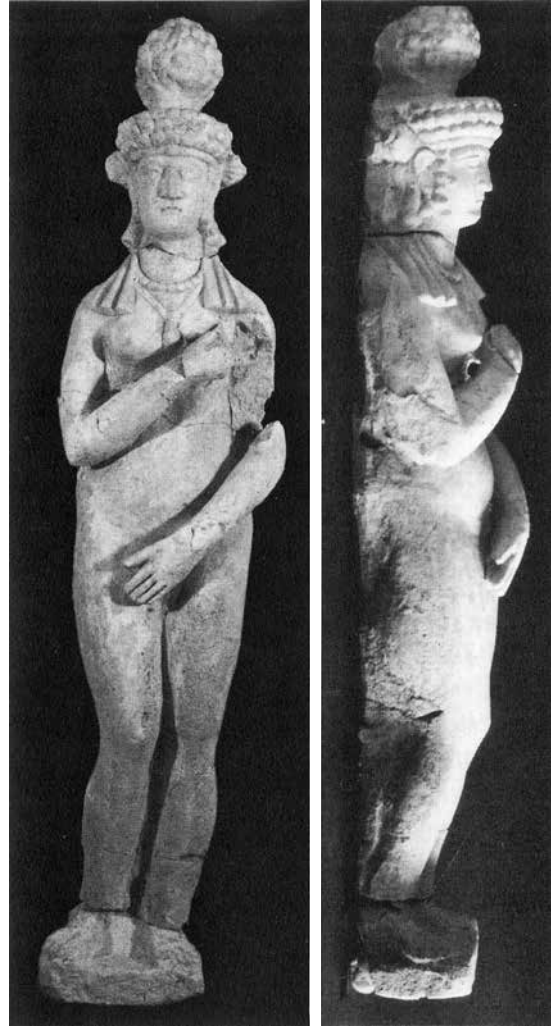
e. No. 178-W. 1b-53 (Azarnoush 1994, fig. 67)

Figure 7.48. Stuccos from the Manor House complex, Hajiabad, Iran.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. No. 4 (Azarnoush 1994, fig. 113)



b. No. 114-92-26 (Azarnoush 1994, figs. 120-21)



c. No. S-2-6 (Azarnoush 1994, fig. 61)



d. No. 3 (Azarnoush 1994, fig. 63)



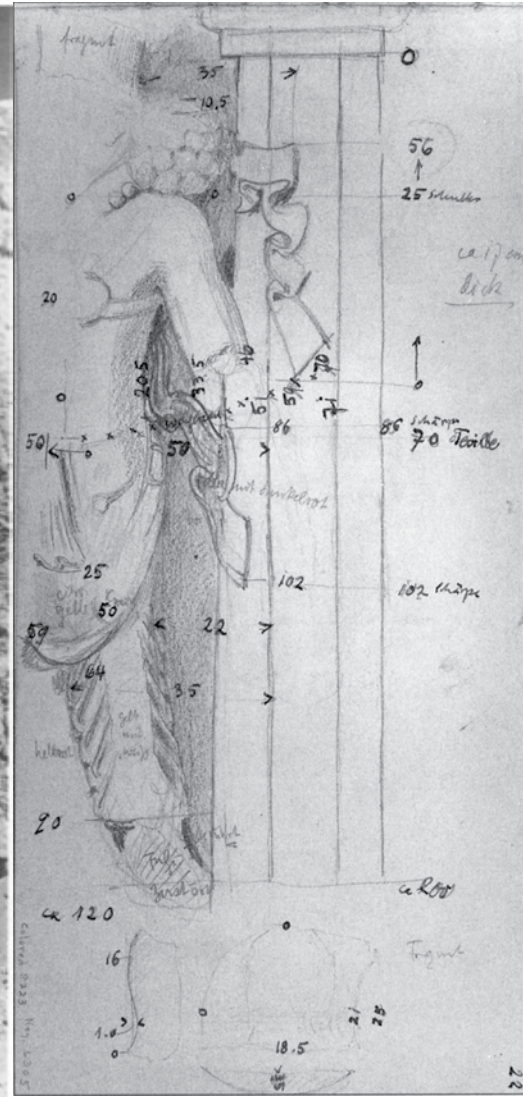
e. No. S-66-18 (Azarnoush 1994, fig. 62)

Figure 7.49. Stuccos from the Manor House complex, Hajiabad, Iran (*continued*).

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. Kuh-e Khwaja, north facade of the Central Court, with remains of a figure on the east side of the doorway (1929 photo: Ernst Herzfeld Archive, negative no. 1173; Kawami 1987 p. 18, fig. 3)



b. Stucco figure from north facade of the Central Court (Kawami 2005, fig. 9—Ernst Herzfeld Papers, sketchbook SK-XV, 22)

c. Bandian fire temple, Khorasan: standing female figure in worship scene (photo courtesy of Iran Tourism and Touring Organization)

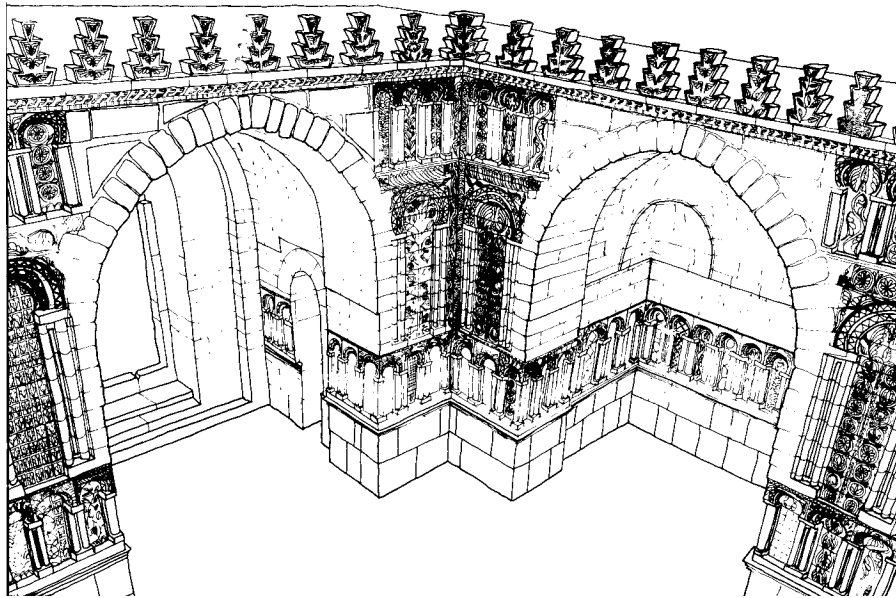


Figure 7.50. Stuccos from Kuh-e Khwaja, Iran.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



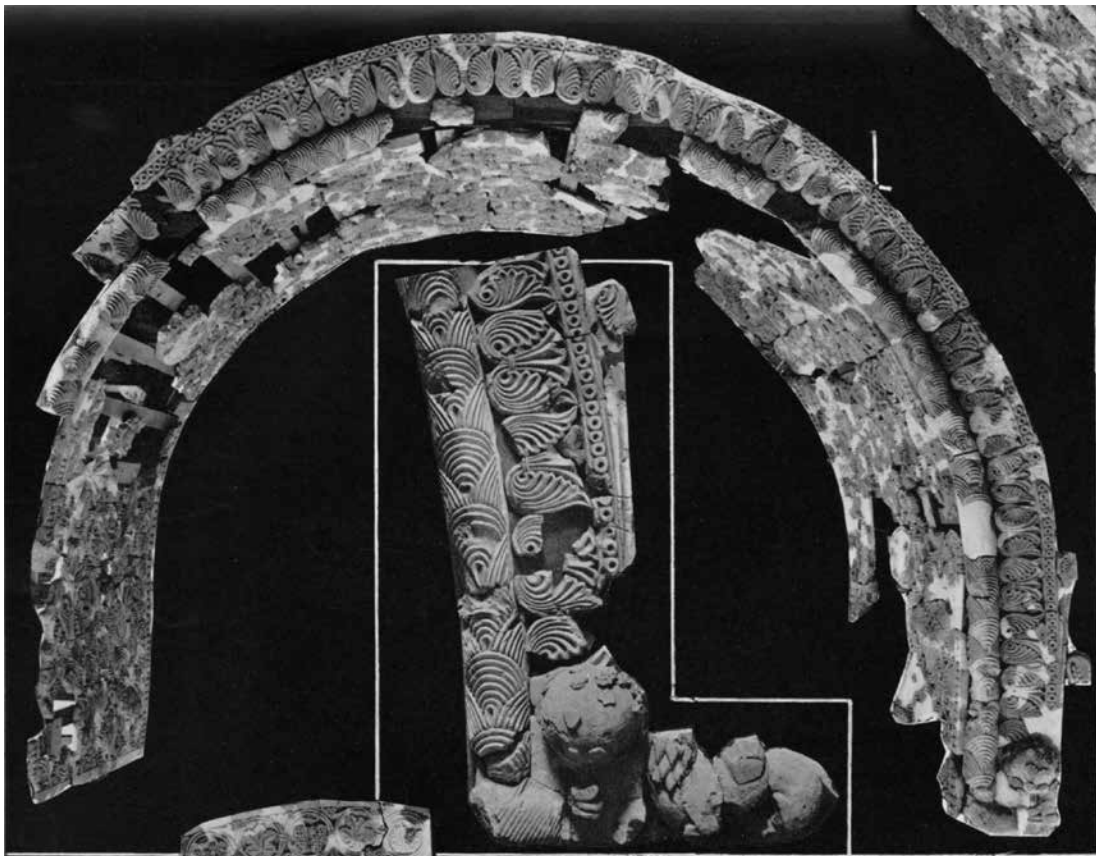
a. Citadel court, Amman, Jordan (photo by K. A. C. Creswell, image EA.CA.5423, courtesy Ashmolean Museum, University of Oxford)



b. Amman, reconstruction of reception hall (Northedge 1992, fig. 40)

Figure 7.51. Stonework in Amman citadel, court.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a. (Hamilton 1959, pl. XLI:1-2)



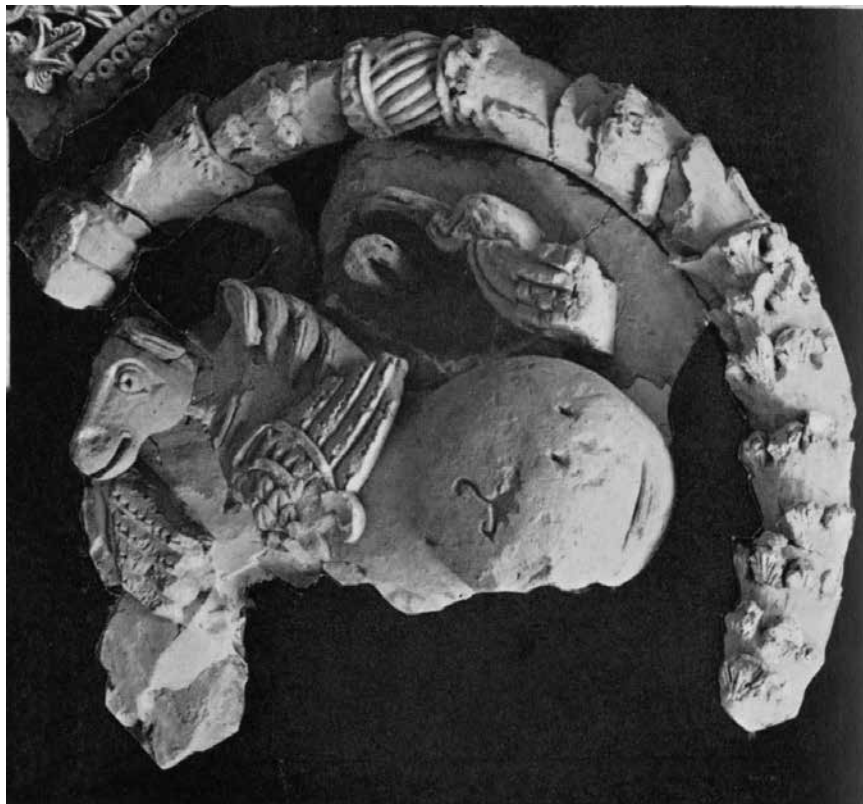
b. (Hamilton 1959, pl. XLIV:5)

Figure 7.52. Stuccos from the reception hall (bath house), Khirbat al-Mafjar.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



a. Divan dome (Hamilton 1959, pl. LIV:7)

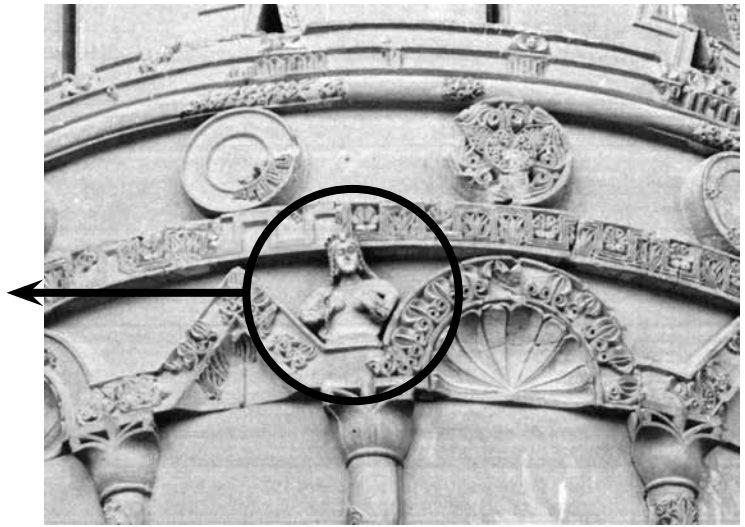


b. Roundel from divan pendentive (Hamilton 1959, pl. LIV:2)

Figure 7.53. Stuccos from Khirbat al-Mafjar.



WHERE KINGSHIP DESCENDED FROM HEAVEN



a. Meinecke 1985, pp. 510-11, cat. no. 251



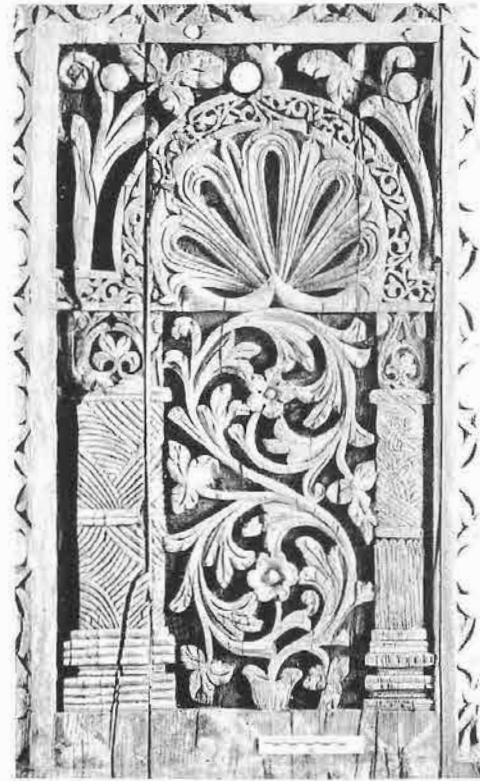
b. Meinecke 1985, pp. 511-12, cat. no. 252

Figure 7.54. Stuccos from the facade of Qasr al-Hayr al-Gharbi, Syria.

CHAPTER 7. THE "SASANIAN" STUCCOS OF MOUND H



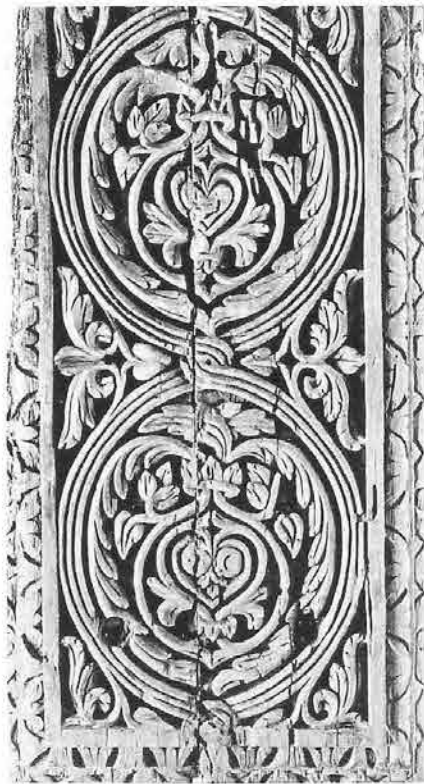
a. Panel 1E



b. Panel 6E



c. Panel 19E



d. Panel 18E

Figure 7.55. Wooden panels from Al-Aqsa Mosque, Jerusalem (Hillenbrand 1999, figs. 56-59).

WHERE KINGSHIP DESCENDED FROM HEAVEN



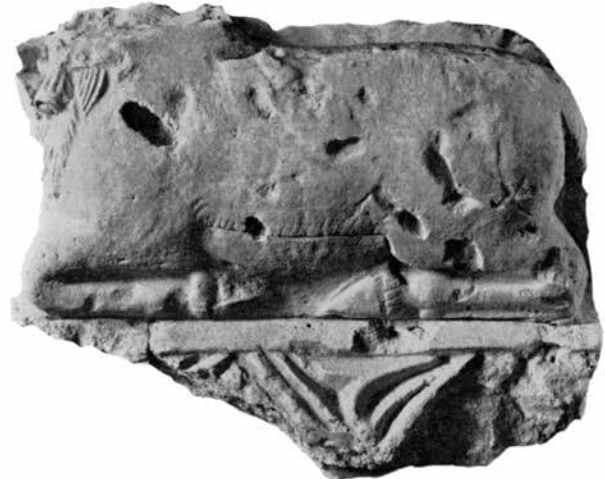
a. C.113 (Thompson 1976, pl. V:6)



b. C.116 (Thompson 1976, pl. V:5)



c. C.143 (Thompson 1976, pl. VII:1)



d. C.212 (Thompson 1976, pl. X:3)



e. C.58 (Thompson 1976, pl. IV:2)



f. C.426 (Thompson 1976, pl. XVI:1)

Figure 7.56. Stucco ornaments from Chal Tarkhan, Iran.

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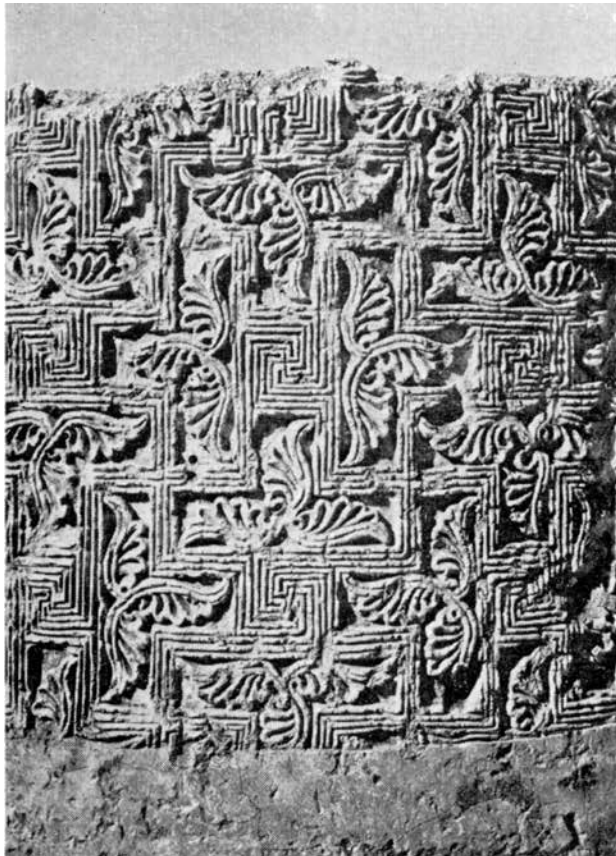
a. C.427 (Thompson 1976, pl. XVI:2)



b. C.437 (Thompson 1976, pl. XVI:5)



c. C.428 (Thompson 1976, pl. XVI:6)



d. C.312 (Thompson 1976, pl. XI:2)



e. C.264 (Thompson 1976, pl. X:6)

Figure 7.57. Stucco ornaments from Chal Tarkhan, Iran (*continued*).

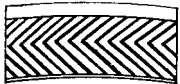
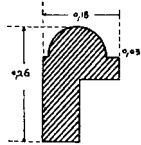
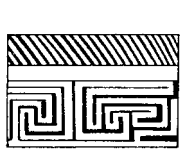
WHERE KINGSHIP DESCENDED FROM HEAVEN



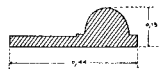
a



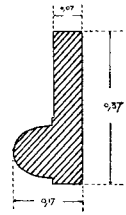
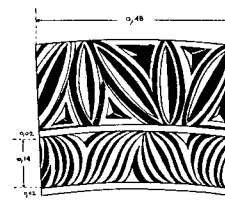
b



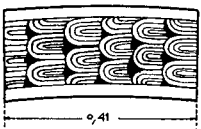
c



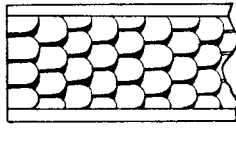
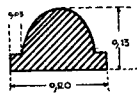
d



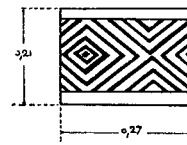
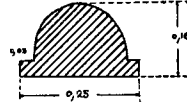
e



f



g



h



i



j

Figure 7.58. Stucco ornaments from Tepe Hissar, Iran (line drawings from Schmidt 1937, pls. LXXVI, LXXVIII, LXXIX; photos from Pope and Ackerman 1938, pls. 174C, 176B, 178D).

## APPENDIXES TO CHAPTER 7

# STUCCOS FROM MOUND H, KISH

TRUDY S. KAWAMI

### APPENDIX 7A. STUCCO FROM MOUND H, BY LOCATION

| Field number  | Accession number | Description  | Figure  |
|---|------------------|--|---------|
| Palace 1, Small Eivan (location A)                          |                  |  |         |
| K.1381  | 2002.1.145       | Ribbon terminal  | 7.39d   |
|   | 2002.1.146       | Ribbon terminal  | 7.39e   |
|   | 2002.1.234       | Ribbon terminal  | 7.39a   |
| K.1392  | 236332           | Frontal mouflon head   | 7.38a   |
| K.1399  | —                | Oval plaque with bead-and-reel border  | 7.38d-e |
| K.1440  | 236366           | Reconstructed soffit panel with many pieces; FM negative 87145   | 7.37a   |
| Palace 1, portal (location B <sub>1</sub> -B <sub>1</sub> ) |                  |  |         |
| K.1438  | 156500a-b        | Two modern reproductions of beardless heads  | 7.16b   |
|   | 156500c          | Modern reproduction of square with foliate pattern   | —       |
|   | IM 18569         | Beardless head   | 7.16c   |
|   | IM 18590         | Beardless head   | 7.16c   |
| Palace 1, room B (location B)                               |                  |  |         |
| K.1380  | 236402           | Boar muzzle  | 7.18d   |
|   | 2002.1.131       | Animal head fragment (boar?)   | 7.18c   |
| K.1387  | —                | Palmette frieze, according to Moorey (1978, p. 130)  | —       |
| K.1389  | 2002.1.89        | Ram's horn(?)  | 7.18b   |
| K.1400  | 236403           | Couchant herbivore   | 7.18a   |
| Palace 1, front of Small Eivan (location C)                 |                  |  |         |
| K.1377  | 228073           | Plaque with lion and zebu in combat (restored); same as Moorey's "headless lion rampant" (1978, p. 133); see also K.1411 | 7.33b   |
| K.1378  | 236398           | Plaque with grazing fallow stag  | 7.33a   |
| K.1379  | 236322b          | Fragmentary female bust  | 7.23c   |
| K.1383  | 236370           | Branch(es) with leaves and fruit (highly restored)   | 7.35a   |
| K.1389  | 236321           | Narrow vegetal molding   | 7.36e   |
|   | 236343           | Narrow vegetal molding   | 7.36f   |
| K.1391  | —                | Fragment of bird   | —       |

| Field number          | Accession number   | Description   | Figure  |
|-----------------------|--------------------|---|---------|
| K.1393                | —                  | Fragment of bird  | —       |
|                       | 2002.1.232         | Headless bird (original)  | 7.35e   |
|                       | 2002.1.233         | Two restored birds  | 7.35d   |
| K.1395                | —                  | Neck and shoulders from a female bust, according to Moorey (1978, p. 133)                 | 7.23c   |
| K.1396                | 236397, 2002.1.231 | Plaque with male child (fragment)   | 7.24e-f |
| K.1397                | 236396             | Plaque with male child  | 7.24c-d |
| K.1398                | 228830             | Three-lobed palmette border   | —       |
|                       | 228831             | Three-lobed palmette border (long, restored border)                                       | —       |
| K.1401a               | 228828             | Leaf (Moorey 1978, p. 133: "circular pattern block; single grape leaf; 2 slots in back")  | —       |
|                       | —                  | Single grape leaf   | —       |
| K.1401b               | 228829             | Fragmentary leaf  | 7.31d   |
| K.1404                | 228869             | Square panel with cruciform leaves  | 7.28a   |
| K.1404 <sup>bis</sup> | 228838             | Rectangular plaques with pairs of four-lobed flowers; sides have slots                    | 7.25a   |
|                       | 228839             | Rectangular plaque with pairs of four-lobed flowers; sides have slots                     | 7.25b   |
| K.1405                | —                  | Plaque with pomegranates and ribbon (illustrated in Moorey 1978, fig. K; see also K.1416) | —       |
| K.1406                | IM 18603           | Panel with grape vine   | —       |
|                       | 236360             | Panel with grape vine (much restored)   | 7.31e   |
|                       | 236369             | Grape leaf  | 7.31c   |
|                       | 228837             | Grape cluster   | 7.31a   |
|                       | 228868             | Grape cluster   | 7.31b   |
| K.1407                | —                  | Fragmentary male torso with necklace and "harness" (original missing)                     | 7.23e   |

*Note:* Based on information in Pope and Ackerman 1938, vol. 1; the work of P. R. S. Moorey; and examination of the pieces located in the Field Museum of Natural History, Chicago. Accession numbers are FM unless otherwise specified.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

| Field number   | Accession number | Description   | Figure |
|--|------------------|---|--------|
| K.1408   | 228842           | Plaque of tendril with leaves (original, with keying slots at stems)                      | 7.30a  |
|  | 228843           | Plaque of tendril with leaves (reconstructed)   | 7.30a  |
| K.1409   | 228840           | Square plaque with winged mouflon   | 7.32c  |
|  | 228841           | Square plaque with winged mouflon   | 7.32e  |
|  | IM 18598         | Square plaque with winged mouflon   | 7.32f  |
| K.1410   | IM 18603         | <i>Nišan</i> (monogram)   | 7.34b  |
|  | 2002.1.241a      | Original <i>nišan</i>   | 7.34a  |
|  | 2002.1.241b      | Heavily restored <i>nišan</i>   | 7.34a  |
|  | 236333           | Two duplicate <i>nišan</i> plaques?   | —      |
| K.1411   | IM 18597         | Lion attacking a zebu; see also K.1377  | 7.33c  |
| K.1412   | —                | Plaque with male child, headless (piece missing); see also K.1396-97                      | —      |
| K.1413   | 2002.1.133       | Life-size female torso, broken at waist; flat back with dowel holes                       | 7.24b  |
| K.1414   | 236401           | Life-size female head and torso, broken at waist. Flat back with dowel holes              | 7.24a  |
| K.1415   | 229328           | Square plaque with four corner pomegranates   | 7.28e  |
| K.1416   | 228832           | Plaque with four pomegranates with ribbons (see K.1405; only one example in Field Museum) | 7.29a  |
| K.1417   | IM 11950         | Female head in floral frame   | 7.32a  |
| K.1418   | 236322a          | Small female bust (relatively intact)   | 7.23a  |
|  | 236322b          | Small female bust   | 7.23c  |
|  | 236322c          | Small female bust   | 7.23d  |
| K.1419   | 236345a          | Original panel with two large, eight-petaled rosettes                                     | 7.27a  |
|  | 236346           | Two modern panels incorporating a few ancient pieces                                      | 7.27b  |
| K.1424   | 236357           | Three leaflets on roundel   | —      |
|  | 236358           | Leaflet fragment  | —      |
| K.1426   | 236382           | Border with donuts, daisies, and tulips   | 7.36a  |
|  | 236383           | Border with donuts, daisies, and tulips   | 7.36b  |
|  | 2002.1.536       | Restored tulip frieze   | 7.36d  |
|  | 2002.1.537a-b    | Two single restored tulips  | 7.36c  |
| Palace 1, Large Eivan, southeast corner (location D) |                  |   |        |
| K.1388   | 228836           | Border with pointed elements  | 7.22c  |
| K.1423   | 236405           | Large boar head (Moorey says horse); head curves outward                                  | 7.22e  |
| K.1438   | —                | Pomegranate with wing-like leaves; original with slots                                    | —      |
|  | 236597a          | Pomegranate with wing-like leaves (reconstruction of one piece)                           | 7.22a  |
|  | 236597b          | Pomegranate with wing-like leaves (total reconstruction of end piece)                     | 7.22a  |

| Field number                                  | Accession number | Description   | Figure  |
|---|------------------|---|---------|
| Palace 1, Large Eivan, east wall (location E) |                  |   |         |
| K.1382  | 2002.1.100a-b    | Two pomegranates or lemons?   | 7.21a   |
| K.1390  | 236364           | Curved surface solidly covered with a fleur-de-lis-like pattern (FM panel has six fragments in one reconstructed revetment) | 7.19a   |
|   | —                | —   | —       |
| K.1402  | 228870           | Symmetrical pair of curving wings tied by a floating ribbon   | 7.19d   |
|   | IM 18602         | Symmetrical pair of curving wings tied by a floating ribbon   | —       |
| K.1403  | 228834           | Five-lobed palmette border (reproduction unit)  | —       |
|   | 228835           | Five-lobed palmette border (long, restored panel)   | —       |
| K.1421  | 236311           | Meander/key border with side slots  | 7.20a   |
|   | —                | —   | —       |
| —   | 2002.1.239       | Meander border  | 7.20c   |
| —   | 2002.1.289       | Fine zigzag molding (none match Rathbun)  | —       |
| —   | 2002.1.297       | Half-round molding with fine zigzags in relief  | —       |
| —   | 2002.1.298       | Fine zigzag molding   | —       |
| —   | 2002.1.299       | Fine zigzag molding   | 7.20f   |
| K.1438 (Moorey)                               | —                | "Niche head"  | —       |
| Palace 1, unknown location                    |                  |   |         |
| K.1384  | 2002.1.286       | "Palm leaf" (long, thin leaf)   | 7.40a   |
| K.1385  | —                | Gazelle head fragment (same as 2002.1.89?)  | —       |
| K.1394  | 2002.1.90        | Square plaque with base of human bust   | 7.40c   |
| K.1441  | 2002.1.91        | Molding with three "chevrons" (?)   | —       |
| —   | 2002.1.92a       | Fragment with a rosette and palmette border   | 7.17c   |
| —   | 2002.1.93        | Fragment with a rosette and palmette border   | 7.17b   |
| —   | 2002.1.94        | Fragment with vegetal pattern   | 7.28b   |
| —   | 2002.1.102       | Applied column with thick scales  | 7.41f   |
| —   | 2002.1.147       | Restored ribbon terminal  | 7.39h   |
| —   | 2002.1.148       | Restored ribbon terminal  | 7.39i   |
| —   | 2002.1.235       | Restored ribbon terminal  | 7.39f   |
| —   | 2002.1.236       | Restored ribbon terminal  | 7.39g   |
| —   | 2002.1.291       | Applied column with thick scales  | 7.41g   |
| —   | 2002.1.300       | Applied column  | 7.41e   |
| —   | 236341           | Applied column with thick scales  | 7.41h   |
| —   | 236348           | Applied column  | 7.41a   |
| —   | 236362           | Meander with central line   | 7.20b   |
| —   | 236365           | Panel with arcades and tulips   | 7.42b-c |
| —   | 236367           | Applied column  | 7.41b   |
| —   | 236368           | Applied column  | 7.41d   |
| —   | 236371           | Fragment with scales and a rosette and palmette border  | 7.17a   |
| —   | 236372           | Section of arch   | 7.26a   |
| —   | 236381           | Arch fragment   | 7.26b   |

## CHAPTER 7 APPENDIX. STUCCOS FROM MOUND H, KISH

| Field number  | Accession number | Description  | Figure |
|---|------------------|--|--------|
| Palace 2, Nighed Eivan (location A)   |                  |  |        |
| K.1368  | 2002.1.104       | Section of archivolt molding with diamond pattern  | 7.12f  |
|   | 2002.1.105       | Section of archivolt molding with diamond pattern  | 7.12f  |
|   | 2002.1.240       | Diamond-patterned archivolt molding with ribbon (proper right)   | 7.12c  |
|   | 2002.1.294       | Diamond-patterned archivolt molding with ribbon (proper left)  | 7.12d  |
|   | 2002.1.295       | Crown of arch with diamond pattern   | 7.12a  |
|   | 2002.1.296       | Section of archivolt molding with diamond pattern  | 7.12f  |
| K.1373  | 236320           | "Leaf" with curve (restored)   | —      |
| K.1375  | 236351           | Rosette/roundel with two layers  | —      |
|   | 236331           | Rosette fragment   | —      |
| K.1376  | 236363           | Reconstructed eivan soffit with key-and-rosette pattern  | 7.13a  |
| K.1420  | —                | Fragment of winged pattern from curve(?) (original missing)  | —      |
| K.1428  | 236361           | Framed plaque with five-lobed palmettes; location uncertain but probably Palace 2, location A  | 7.42a  |
| Palace 2, walls of Square Court (location B)  |                  |  |        |
| K.1372  | 236379           | Two palmettes, different details (restored)  | 7.10c  |
|   | 236380           | Palmette (restored)  | 7.10b  |
|   | 2002.1.97        | Original palmette, very worn   | 7.10a  |
| K.1422  | 229261a          | Circular window grill, rebuilt with eight pieces   | 7.8a   |
|   | 229261b          | Circular window grill, rebuilt   | 7.8c   |
|   | 229261c          | Circular window grill, rebuilt   | 7.8d   |
| K.1426  | 236334           | Fragment plaque with single tulip  | 7.9c   |
|   | 236347           | Rectangular plaque with corner tulips (restored)   | 7.9d   |
|   | 236377           | Five small tulips mounted together   | 7.9b   |
|   | 236378           | Four tall, narrow tulips mounted together plus two more fragments; the outer petals drop back noticeably giving the flower a rounded profile, not flat like the drawing; were mounted with flowers tipping outward | 7.9a   |
| K.1427  | 236400b          | Royal male bust  | 7.3a   |
| K.1429  | IM 18596         | Royal male bust  | 7.3b   |
| K.1430  | 236400a          | Royal male bust (partly restored)  | 7.3c   |
| K.1431  | 2002.1.140       | Royal male head fragment; holes on proper right reverse for attaching  | 7.4a   |
|   | 2002.1.143       | Royal male bust base with jewelry and brick attached to back; proper left side shows the flat panel with figure added to big(?) back form  | 7.4a   |
| Field number  | Accession number | Description  | Figure |
| K.1432  | 2002.1.144       | Chest fragment of royal male bust; little detail, one tile in back   | 7.4b   |
| K.1433  | 2002.1.137       | Royal male head fragment with crown  | 7.4c   |
| K.1434  | 2002.1.136       | Royal male proper right shoulder with jewelry  | 7.5a   |
|   | 2002.1.139a      | Royal male head, proper right fragment with hair; water damage   | 7.5a   |
|   | 2002.1.139b      | Royal male proper left shoulder  | —      |
| K.1435  | 2002.1.141       | Royal male bust/base; very deep, with bricks in it   | 7.5b   |
| K.1436  | Oxford 1932.980  | Royal male bust  | 7.6a   |
| K.1437  | 236613           | Fragment of crown in two joining pieces; break looks modern  | 7.7a   |
|   | 2002.1.95        | Fragment of crown with front merlon  | 7.6c   |
|   | 2002.1.130       | Fragment of royal male head  | 7.6c   |
|   | 2002.1.134       | Modern head  | —      |
|   | 2002.1.135       | Proper right side of royal head; very fragile and crumbly  | 7.7b   |
|   | 2002.1.138       | Royal male bust, proper left shoulder with some jewelry?   | 7.7c   |
|   | 2002.1.142       | Royal male bust, fragment of proper left shoulder and hair   | 7.6c   |
| Palace 2, arch on south side of Square Court (location C) (Moorey's "main ivan arch") |                  |  |        |
| K.1374  | 2002.1.99        | Knot   | 7.11c  |
|   | 228138a          | Knot-and-leaf panel (restored)   | 7.11a  |
|   | 236873           | Interlace  | 7.11e  |
| Palace 2, Pillared Hall (Location D)  |                  |  |        |
| K.1439  | —                | Capital with floral decor (reconstruction with no known documentation)   | —      |
| Palace 2, other pieces  |                  |  |        |
| K.1369  | 229262           | Six pointed leaves or rays made into a border  | 7.14a  |
| K.1370  | 236376           | Five wide leaves or rays mounted together  | 7.14b  |
| —   | 236336           | Cornice molding with palmettes   | 7.15a  |
| —   | 2002.1.92b       | Fragment of bound foliage(?)   | 7.15b  |



## WHERE KINGSHIP DESCENDED FROM HEAVEN

APPENDIX 7B. STUCCO FROM MOUND H, BY K NUMBER  
(WITH RELATED PIECES)

| Field number | Accession number      | Provenience                | Description   | Figure  |
|--------------|-----------------------|----------------------------|---|---------|
| K.1368       | 2002.1.104            | Palace 2, location A       | Section of archivolt molding with diamond pattern   | 7.12f   |
|              | 2002.1.105            | Palace 2, location A       | Section of archivolt molding with diamond pattern   | 7.12f   |
|              | 2002.1.294            | Palace 2, location A       | Diamond-patterned archivolt molding with ribbon (proper left)   | 7.12d   |
|              | 2002.1.295            | Palace 2, location A       | Crown of arch with diamond pattern  | 7.12a   |
|              | 2002.1.296            | Palace 2, location A       | Section of archivolt molding with diamond pattern   | 7.12f   |
|              | 2002.1.240            | Palace 2, location A       | Diamond-patterned archivolt molding with ribbon (proper right)  | 7.12c   |
| K.1369       | 229262                | Palace 2, unknown location | Six pointed leaves or rays made into a border   | 7.14a   |
| K.1370       | 236376                | Palace 2, unknown location | Five wide leaves or rays mounted together   | 7.14b   |
| K.1372       | 236379                | Palace 2, location B       | Two palmettes, different details (restored)   | 7.10c   |
|              | 236380                | Palace 2, location B       | Palmette (restored)   | 7.10b   |
|              | 2002.1.97             | Palace 2, location B       | Original palmette, very worn  | 7.10a   |
| K.1373       | 236320                | Palace 2, location A       | "Leaf" with curve (restored)  | —       |
| K.1374       | 2002.1.99             | Palace 2, location C       | Knot  | 7.11C   |
|              | 228138a               | Palace 2, location C       | Knot-and-leaf panel (restored)  | 7.11a-b |
|              | 236873                | Palace 2, location C       | Interlace   | 7.11e   |
| K.1375       | 236351                | Palace 2, location A       | Rosette/roundel with two layers   | —       |
|              | 236331                | Palace 2, location A       | Rosette fragment  | —       |
| K.1376       | 236363                | Palace 2, location A       | Reconstructed eivan soffit with key-and-rosette pattern   | 7.13a   |
| K.1377       | 228073                | Palace 1, location C       | Plaque with lion and zebu in combat (restored); same as Mooney's "headless lion rampant" (1978, p. 133); see also K.1411    | 7.33b   |
| K.1378       | 236398                | Palace 1, location C       | Plaque with grazing stag  | 7.33a   |
| K.1379       | 236322b               | Palace 1, location C       | Fragmentary female bust   | 7.23c   |
| K.1380       | 236402                | Palace 1, location B       | Boar muzzle   | 7.18d   |
|              | 2002.1.131            | Palace 1, location B       | Animal head fragment (boar?)  | 7.18c   |
| K.1381       | 2002.1.146            | Palace 1, location A       | Ribbon terminal   | 7.39e   |
|              | 2002.1.234            | Palace 1, location A       | Ribbon terminal   | 7.39a   |
|              | 2002.2.145            | Palace 1, location A       | Ribbon terminal   | 7.39d   |
| K.1382       | 2002.1.100a-b         | Palace 1, location E       | Two pomegranates or lemons?   | 7.21a   |
| K.1383       | 236370                | Palace 1, location C       | Branch(es) with leaves and fruit (highly restored)  | 7.35a   |
| K.1384       | 2002.1.286            | Palace 1, unknown location | "Palm leaf" (long, thin leaf)   | 7.40a   |
| K.1385       | —                     | Palace 1, unknown location | Gazelle head fragment (same as 2002.1.89?)  | —       |
| K.1387       | —                     | Palace 1, location B       | Palmette frieze, according to Mooney (1978, p. 130)   | —       |
| K.1389       | 2002.1.89             | Palace 1, location B       | Ram's horn(?)   | 7.18b   |
| K.1388       | 228836                | Palace 1, location D       | Border with pointed elements  | 7.22c   |
| K.1389       | 236321                | Palace 1, location C       | Narrow vegetal molding  | 7.36e   |
|              | 236343                | Palace 1, location C       | Narrow vegetal molding  | 7.36f   |
| K.1390       | 236364                | Palace 1, location E       | Curved surface solidly covered with a fleur-de-lis-like pattern (FM panel has six fragments in one reconstructed revetment) | 7.19a   |
| K.1391       | —                     | Palace 1, location C       | Fragment of bird  | —       |
| K.1392       | 236332                | Palace 1, location A       | Frontal mouflon head  | 7.38a   |
| K.1393       | —                     | Palace 1, location C       | Fragment of bird  | —       |
|              | 2002.1.232            | Palace 1, location C       | Headless bird (original)  | 7.35e   |
|              | 2002.1.233            | Palace 1, location C       | Two restored birds  | 7.35d   |
| K.1394       | 2002.1.90             | Palace 1, unknown location | Square plaque with base of human bust   | 7.40c   |
| K.1395       | —                     | Palace 1, location C       | Neck and shoulders from a female bust, according to Mooney (1978, p. 133)   | 7.23c   |
| K.1396       | 236397,<br>2002.1.231 | Palace 1, location C       | Plaque with male child (fragment)   | 7.24e   |

Note: Accession numbers are FM unless otherwise specified.

## CHAPTER 7 APPENDIX. STUCCOS FROM MOUND H, KISH

| Field number          | Accession number | Provenience          | Description   | Figure  |
|-----------------------|------------------|----------------------|---|---------|
| K.1397                | 236396           | Palace 1, location C | Plaque with male child  | 7.24c   |
| K.1398                | 228830           | Palace 1, location C | Three-lobed palmette border   | —       |
|                       | 228831           | Palace 1, location C | Three-lobed palmette border (long, restored border)                                       | —       |
| K.1399                | —                | Palace 1, location A | Oval plaque with bead-and-reel border   | 7.38d-e |
| K.1400                | 236403           | Palace 1, location B | Recumbent herbivore   | 7.18a   |
| K.1401a               | 228828           | Palace 1, location C | Leaf (Moorey 1978, p. 133: “circular pattern block; single grape leaf; 2 slots in back”)  | —       |
|                       | —                | Palace 1, location C | Single grape leaf   | —       |
| K.1401b               | 228829           | Palace 1, location C | Leaf fragment   | 7.31d   |
| K.1402                | 228870           | Palace 1, location E | Symmetrical pair of curving wings tied by a floating ribbon                               | 7.19d   |
|                       | IM 18602         | Palace 1, location C | Symmetrical pair of curving wings tied by a floating ribbon                               | —       |
| K.1403                | 228834           | Palace 1, location E | Five-lobed palmette border (reproduced unit)  | —       |
|                       | 228835           | Palace 1, location E | Five-lobed palmette border (long, restored panel)   | —       |
| K.1404                | 228869           | Palace 1, location C | Square panel with cruciform leaves  | 7.28a   |
| K.1404 <sup>bis</sup> | 228838           | Palace 1, location C | Rectangular plaque with pairs of four-lobed flowers; sides have slots                     | 7.25a   |
|                       | 228839           | Palace 1, location C | Rectangular plaque with pairs of four-lobed flowers; sides have slots                     | 7.25b   |
|                       | —                | Palace 1, location C | Six panels restored together  | 7.25e   |
| K.1405                | —                | Palace 1, location C | Plaque with pomegranates and ribbon (illustrated in Moorey 1978, fig. K; see also K.1416) | —       |
| K.1406                | IM 18603         | Palace 1, location C | Panel with grape vine   | —       |
|                       | 228837           | Palace 1, location C | Grape cluster   | 7.31a   |
|                       | 228868           | Palace 1, location C | Grape cluster   | 7.31b   |
|                       | 236360           | Palace 1, location C | Panel with grape vine (much restored)   | 7.31e   |
|                       | 236369           | Palace 1, location C | Grape leaf  | 7.31c   |
| K.1407                | —                | Palace 1, location C | Fragmentary male torso with necklace and “harness” (original missing)                     | 7.23e   |
| K.1408                | 228842           | Palace 1, location C | Plaque of tendril with leaves (original, with keying slots at stems)                      | —       |
|                       | 228843           | Palace 1, location C | Plaque of tendril with leaves (reconstructed)   | 7.30a   |
| K.1409                | 228840           | Palace 1, location C | Square plaque with winged mouflon   | 7.32c   |
|                       | 228841           | Palace 1, location C | Square plaque with winged mouflon   | 7.32e   |
|                       | IM 18598         | Palace 1, location C | Square plaque with winged mouflon   | 7.32f   |
| K.1410                | IM 18603         | Palace 1, location C | <i>Nišan</i> (monogram)   | 7.34b   |
|                       | 2002.1.241a      | Palace 1, location C | Original <i>nišan</i>   | 7.34a   |
|                       | 2002.1.241b      | Palace 1, location C | Heavily restored <i>nišan</i>   | 7.34a   |
|                       | 236333           | Palace 1, location C | Two duplicate <i>nišan</i> plaques?   | —       |
| K.1411                | IM 18597         | Palace 1, location C | Lion attacking a zebu; see also K.1377  | 7.33c   |
| K.1412                | —                | Palace 1, location C | Plaque with male child, headless (piece missing); see also K.1396-97                      | —       |
| K.1413                | 2002.1.133       | Palace 1, location C | Life-size female torso, broken at waist; flat back with dowel holes                       | 7.24b   |
| K.1414                | 236401           | Palace 1, location C | Life-size female head and torso, broken at waist; flat back with dowel holes              | 7.24a   |
| K.1415                | 229328           | Palace 1, location C | Square plaque with four corner pomegranates   | 7.28e   |
| K.1416                | 228832           | Palace 1, location C | Four pomegranates with ribbons (see also K.1405; only one example in Field Museum)        | 7.29a   |
| K.1417                | IM 11950         | Palace 1, location C | Female head in floral frame   | 7.32a   |
| K.1418                | 236322a          | Palace 1, location C | Small female bust (relatively intact)   | 7.23a   |
|                       | 236322b          | Palace 1, location C | Small female bust   | 7.23c   |
|                       | 236322c          | Palace 1, location C | Small female bust   | 7.23d   |
| K.1419                | 236345a          | Palace 1, location C | Original panel with two large, eight-petaled rosettes                                     | 7.27a   |
|                       | 236346           | Palace 1, location C | Two modern panels incorporating a few ancient pieces                                      | 7.27b   |
| K.1420                | —                | Palace 2, location A | Fragment of winged pattern from curve(?) (original missing)                               | —       |

## WHERE KINGSHIP DESCENDED FROM HEAVEN

| Field number    | Accession number | Provenience                                       | Description  | Figure          |
|-----------------|------------------|---|--|-----------------|
| K.1421          | 236311           | Palace 1, location E                              | Meander border   | 7.20a           |
| —               | 2002.1.239       | Palace 1, location E                              | Meander border   | 7.20c           |
| K.1422          | 229261a          | Palace 2, location B                              | Circular window grill, rebuilt with eight pieces   | 7.8a            |
|                 | 229261b          | Palace 2, location B                              | Circular window grill, rebuilt   | 7.8c            |
|                 | 229261c          | Palace 2, location B                              | Circular window grill, rebuilt   | 7.8d            |
| K.1423          | 236405           | Palace 1, location D                              | Large boar head (Moorey says horse); head curves outward   | 7.22e           |
| K.1424          | 236357           | Palace 1, location C                              | Three leaflets on roundel  | —               |
|                 | 236358           | Palace 1, location C                              | Leaflet fragment   | —               |
| K.1426          | 236334           | Palace 2, location B                              | Fragment plaque with single tulip  | 7.9c            |
|                 | 236347           | Palace 2, location B                              | Rectangular plaque with corner tulips (restored)   | 7.9d            |
|                 | 236377           | Palace 2, location B                              | Five small tulips mounted together   | 7.9b            |
|                 | 236378           | Palace 2, location B                              | Four tall, narrow tulips mounted together plus two more fragments; the outer petals drop back noticeably giving the flower a rounded profile, not flat like the drawing; were mounted with flowers tipping outward | 7.9a            |
|                 | 236382           | Palace 1, location C                              | Border with donuts, daisies, and tulips  | 7.36a           |
|                 | 236383           | Palace 1, location C                              | Border with donuts, daisies, and tulips  | 7.36b           |
|                 | 2002.1.536       | Palace 1, location C                              | Five tulip fragments mounted together  | 7.36d           |
|                 | 2002.1.537a-b    | Palace 1, location C                              | Two single restored tulips   | 7.36c           |
|                 | K.1427           | 236400b   | Palace 2, location B   | Royal male bust |
| K.1428          | 236361           | Palace 2, location A(?)                           | Framed plaque with five-lobed palmettes  | 7.42a           |
| K.1429          | IM 18596         | Palace 2, location B                              | Royal male bust  | 7.3b            |
| K.1430          | 236400a          | Palace 2, location B                              | Royal male bust (partly restored)  | 7.3c            |
| K.1431          | 2002.1.140       | Palace 2, location B                              | Royal male head fragment; holes on proper right reverse for attaching  | 7.4a            |
|                 | 2002.1.143       | Palace 2, location B                              | Royal male bust base with jewelry and brick attached to back; proper left side shows the flat panel with figure added to big(?) back form  | 7.4a            |
| K.1432          | 2002.1.144       | Palace 2, location B                              | Chest fragment of royal male bust; little detail, one tile in back   | 7.4b            |
| K.1433          | 2002.1.137       | Palace 2, location B                              | Royal male head fragment with crown  | 7.4c            |
| K.1434          | 2002.1.136       | Palace 2, location B                              | Royal male proper right shoulder with jewelry  | 7.5a            |
|                 | 2002.1.139a      | Palace 2, location B                              | Royal male head, proper right fragment with hair; water damage   | 7.5a            |
|                 | 2002.1.139b      | Palace 2, location B                              | Royal male proper left shoulder  | —               |
| K.1435          | 2002.1.141       | Palace 2, location B                              | Royal male bust/base; very deep, with bricks in it   | 7.5b            |
| K.1436          | Oxford 1932.980  | Palace 2, location B                              | Royal male bust  | 7.6a            |
| K.1437          | 2002.1.95        | Palace 2, location B                              | Fragment of crown with front merlon  | 7.6c            |
|                 | 2002.1.130       | Palace 2, location B                              | Royal male bust  | 7.6c            |
|                 | 2002.1.135       | Palace 2, location B                              | Proper right side of royal head, very fragile and crumbly  | 7.7b            |
|                 | 2002.1.138       | Palace 2, location B                              | Royal male bust, proper left shoulder with some jewelry?   | 7.7c            |
|                 | 2002.1.142       | Palace 2, location B                              | Royal male bust, fragment of proper left shoulder and hair   | 7.6c            |
|                 | 236613           | Palace 2, location B                              | Fragment of crown in two joining pieces; break looks modern  | 7.7a            |
| K.1438          | 156500           | Palace 1, location B <sub>1</sub> -B <sub>1</sub> | Portal with heads, reconstructed in Field Museum   | 7.16a           |
|                 | 156500a-b        | —   | Two modern reproductions of beardless heads  | 7.16b           |
|                 | 156500c          | —   | Modern reproduction of square with foliate pattern   | —               |
|                 | 236597a          | Palace 1, location D                              | Pomegranate with wing-like leaves (reconstruction of one piece)  | 7.22a           |
|                 | 236597b          | Palace 1, location D                              | Pomegranate with wing-like leaves (total reconstruction of end piece)  | 7.22a           |
|                 | —                | Palace 1, location D                              | Pomegranate with wing-like leaves; original with slots   | —               |
| K.1438 (Moorey) | —                | Palace 1, location D                              | "Niche head"   | —               |
| K.1439          | —                | Palace 2, location D                              | Capital with floral decor (reconstruction with no known documentation)   | —               |

## CHAPTER 7 APPENDIX. STUCCOS FROM MOUND H, KISH

| Field number | Accession number | Provenience                | Description  | Figure |
|--------------|------------------|----------------------------|--|--------|
| K.1440       | —                | Palace 1, location A       | Fragment of arch voussoirs (Moorey; no pictures)               | —      |
|              | 236366           | Palace 1, location A       | Reconstructed soffit panel with many pieces; FM negative 87145 | 7.37a  |
| K.1441       | 2002.1.91        | Location unknown           | Molding with three “chevrons”(?)                               | —      |
|              | 236311           | Palace 1, location D       | Key pattern with slot on each end                              | —      |
| —            | 2002.1.239       | Palace 1, location E       | Fine zigzag molding  | 7.20c  |
| —            | 2002.1.289       | Palace 1, location E       | Fine zigzag molding  | —      |
| —            | 2002.1.297       | Palace 1, location E       | Fine zigzag molding  | —      |
| —            | 2002.1.298       | Palace 1, location E       | Fine zigzag molding  | —      |
| —            | 2002.1.299       | Palace 1, location E       | Fine zigzag molding  | 7.20f  |
| —            | 2002.1.94        | Palace 1, location unknown | Fine zigzag on half-round molding                              | 7.28b  |
| —            | 2002.1.236       | Palace 1, location unknown | Restored ribbon terminal                                       | 7.39g  |
| —            | 2002.1.297       | Palace 1, location unknown | Half-round with chevrons                                       | —      |
| —            | 2002.2.147       | Palace 1, location unknown | Restored ribbon terminal                                       | 7.39h  |
| —            | 2002.2.148       | Palace 1, location unknown | Restored ribbon terminal                                       | 7.39i  |
| —            | 2002.2.235       | Palace 1, location unknown | Restored ribbon terminal                                       | —      |

## APPENDIX 7C. TECHNICAL OBSERVATIONS

The stuccos were probably produced by molds, but because they were produced in several stages and hand finished with a final coat of gesso and sometimes pigment, it is difficult to document the use of molds. The color of the stucco varies from beige to tan to almost brown, and differs from piece to piece. The larger, three-dimensional pieces have a mud-colored core. The eruption of salts has further altered the color of the stucco, creating splotches of white. A red pigment very like iron oxide occurs occasionally on the more protected surfaces, and yellow pigment has been noted on one piece, along with blue, indicating that they were once colored. The individual elements were installed in a thick layer of pale mortar noticeably harder than the stucco. On occasion, this mortar actually pulled fired bricks with it when the pieces fell from the wall (fig. 7.5b). Border elements, such as tulips and palmettes, were attached with a thick glob of mortar behind the base so that the stucco tipped forward from the wall, creating a stronger interplay of light and shadow. The almost life-size human busts and the animal sculptures were formed virtually in the round and then fastened to the wall with mortar and reinforced with two to four rods or dowels (fig. 7.4b). Watelin refers to iron hooks that he found,<sup>1</sup> but no examples or other documentation of these hooks are known. The flat pieces that were inset had small slots on either side (figs. 7.29b, 7.39c), for small shims that keyed them into the surrounding plaques.<sup>2</sup>

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<sup>1</sup> Watelin 1938, p. 590.

<sup>2</sup> Kröger 1982, pl. 18:4.

## CHAPTER 8

# PIERCERS, BORERS, AND PERFORATORS: USE WEAR AND CYLINDER SEAL MANUFACTURE

THOMAS J. LOEBEL

## INTRODUCTION AND METHODS

Artifacts examined in this study were subjected to what has come to be called the “high-powered magnification” approach (50× to 500×), where the observation and description of distinctive polishes, striations, and characteristic patterns of edge damage are emphasized.<sup>1</sup> Pioneered by S. A. Semenov<sup>2</sup> and refined by Lawrence Keeley,<sup>3</sup> the high-powered magnification approach has demonstrated that variability in polish formation on utilized edges is related to tool use on different materials (e.g., soft tissue, hide, bone, wood). In this manner, the identification of distinct surface alteration of tools can be related to prehistoric patterns of activity and utilized in the reconstruction of the organization of cultural behaviors.

Prior to examination, all items received for this study were subjected to a cleaning process to remove any surface deposits that may have obscured or distorted the accurate observation of microwear traces. This involved washing and immersing the item in ammonia-based detergent to remove any finger grease and residual soil deposits. Pieces were then placed in warm hydrochloric acid (HCl; 10% solution) to remove any lime or mineral deposits and then immersed in potassium hydroxide (KOH; 20%–30% solution) to remove any extraneous organic deposits.

After cleaning, all items were examined at magnifications ranging from 50× to 500× using an

Olympus BHM incident light microscope with photo attachment. All working edges and artifact surfaces were examined for evidence of micro polishes, striations, and edge damages. Pieces were recleaned as necessary to remove any grease or oil picked up during handling. Photographs of representative damage or use-wear polishes were obtained using a Nikon Coolpix 995 3.3 megapixel digital camera.

## ARTIFACT SAMPLE

Artifacts examined during this study were recovered from the Mesopotamian site of Kish during the 1923–33 joint archaeological expeditions conducted by the Field Museum of Natural History and Oxford University. A total of thirty artifacts were randomly selected by museum curators from among more than 5,000 chipped stone tools in the Field Museum’s Kish collection and were received for examination. The studied sample included twenty-six items classified as perforators or microborers, three projectile points, and one endscraper/perforator. Twenty of these items had no specific provenience greater than site level; however, ten were recovered from both Trench Y and Trench YW at depths ranging from 2 to 4 m and 6 to 10 m, indicating that they relate to the Early Dynastic I and II periods (ca. 3000–2700 BC). Table 8.1 provides summary information regarding individual artifacts included in the present study.

## LIMITATIONS OF STUDY

Although the artifacts included in this study were recovered in a buried and apparently minimally

<sup>1</sup> Keeley 1980, p. 2; Odell 2001, p. 50; Yerkes and Kardulias 1993, pp. 101–2.

<sup>2</sup> Semenov 1964.

<sup>3</sup> Keeley 1980.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

Table 8.1. Summary of microwear results.

| Field Museum no. | Sub no. | Tool type                 | Recovery location | Edge damage                        | Contact material                    | Use                | Photo log—magnification       |
|------------------|---------|---------------------------|-------------------|------------------------------------|-------------------------------------|--------------------|-------------------------------|
| 158758           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Too grainy, but probably soft stone | Scraping, planing  | N/A                           |
| 158775           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | 4147,49—100x; 4148,50—200x    |
| 158777           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | 4154—100x; 4152,53,55—200x    |
| 158892           | —       | Point on a primary flake  | N/A               | Light step fractures               | Too grainy, but possibly hide       | ?                  | N/A                           |
| 158975           | —       | Perforator, double        | N/A               | Light step fractures, rounding     | Dry hide                            | Boring?            | 4141,42—100x                  |
| 159009           | —       | Perforator                | N/A               | Crushing and rounding              | Patinated/burned                    | ?                  | N/A                           |
| 159026           | —       | Perforator                | N/A               | Light step fractures, rounding     | Patinated/burned                    | ?                  | N/A                           |
| 159051           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | N/A                           |
| 159055           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | N/A                           |
| 159066           | —       | Perforator, double        | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | N/A                           |
| 159080           | —       | Perforator                | N/A               | Alternate step fractures, rounding | Patinated/burned                    | Drilling, boring   | N/A                           |
| 159093           | —       | Perforator, double        | N/A               | Alternate edge crushing, rounding  | Soft stone                          | Drilling, boring   | N/A                           |
| 159109           | —       | Perforator                | N/A               | Light step fractures, rounding     | Patinated, probably soft stone/hide | Scraping, planing? | N/A                           |
| 159144           | —       | Perforator                | N/A               | Light step fractures, rounding     | Patinated, soft stone/bone/antler   | Scraping, planing? | N/A                           |
| 159183           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Patinated, probably soft stone      | Scraping, planing  | N/A                           |
| 159232           | —       | Perforator, micro         | N/A               | Light step fractures, rounding     | Patinated, probably soft stone/hide | Scraping, planing  | N/A                           |
| 159264           | —       | Perforator                | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | N/A                           |
| 159551           | —       | Perforator, truncated     | N/A               | —                                  | Soft stone/bone/antler              | Scraping, planing  | 4168,69—200x                  |
| 159552           | —       | Point/perforator          | N/A               | —                                  | Soft stone                          | Scraping, planing  | 4170—100x                     |
| 159558           | —       | End scraper perforator    | N/A               | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | N/A                           |
| T2002.1.413      | Sub 180 | Perforator                | YW3-4/7           | —                                  | Soft stone                          | Scraping, planing  | 4158,59—100x; 4160—200x       |
| T2002.1.488      | Sub 180 | Perforator, micro         | Y6-9              | —                                  | Dry hide                            | Boring/perforating | 4138,39—100x; 4140—200x       |
| T2002.1.507      | Sub 033 | Perforator, double        | Y6-9              | —                                  | Soft stone                          | Scraping, planing  | 4165,66—100x; 4167—200x       |
| T2002.1.511      | Sub 084 | Perforator, micro, double | YW                | —                                  | Soft stone                          | Scraping, planing  | 4163—100x; 4164—200x          |
| T2002.1.531      | Sub 009 | Perforator                | Y2-4              | —                                  | Soft stone                          | Scraping, planing  | 4143,44—100x; 4145,46—200x    |
| T2002.1.531      | Sub 015 | Perforator, double        | Y2-4              | Heavy edge crushing, rounding      | Too grainy, probably soft stone     | Scraping, planing  | N/A                           |
| T2002.1.531      | Sub 174 | Perforator, double        | Y2-4              | Heavy edge crushing, rounding      | Soft stone                          | Scraping, planing  | N/A                           |
| T2002.1.531      | Sub 222 | Perforator                | Y2-4              | —                                  | Soft stone                          | Scraping, planing  | 4161—100x; 4162—200x          |
| T2002.1.531      | Sub 380 | Perforator, double, micro | Y2-4              | —                                  | Soft stone                          | Scraping, planing  | 4158—100x; 4159—200x          |
| T2003.1.148      | Sub 025 | Point/perforator          | YW4-7             | —                                  | Bone/antler                         | —                  | 4133,34,36—100x; 4135,37—200x |

disturbed setting, a few artifacts displayed varying degrees of patination or thermal exposure, which sufficiently altered surfaces and prevented use-wear interpretation. An additional small number of pieces, although unpatinated, were made on chert too grainy in nature to permit accurate observation and interpretation of use-wear polishes. However, the majority of the artifacts showed minimal signs of chemical patination and presented observable evidence of use wear and polishes along working edges and interior surfaces.

## RESULTS

The following section contains descriptions of microwear observations made and interpretations. While specific surface or edge conditions and microwear polishes were often observed at multiple locations on artifacts, photomicrographs of representative polishes were obtained only at select locations on certain pieces. Table 8.1 and figures 8.1–8.13 provide summary use-wear findings and representative photographs of microwear polishes observed.

As table 8.1 shows, of the thirty pieces examined, seventeen displayed edge damage and surface alteration found to be consistent with use on “soft stone,” two suggest use on hide in drier stages of preparation, one indicated use on either bone or antler, three were manufactured on raw material too grainy to accurately observe and identify surface alterations, and seven were either chemically or thermally patinated and unsuitable for analysis.

## SOFT STONE

At least seventeen of the artifacts examined displayed distinctive edge damage and surface alteration indicating use on what has been termed “soft stone.” The majority of this tool type consists of unifacial tools manufactured on thick, cross-sectioned blades or blade-like flakes and exhibit working margins with steep edge angles and heavy edge damage in the form of overhanging step fractures. Working edges are often slightly concave and, when convergent, give the appearance of stout graving spurs (fig. 8.1). As a result, these tools have traditionally been interpreted as “borers,” “microborers,” or perforators.

Initial examination of many of the artifacts included in the study resulted in the observation of

an unfamiliar combination of edge damage and surface alteration, although the nature of damage along the working margins suggested contact with a relatively hard material. Examination under a range of magnification, from 50× to 200×, revealed working edges that displayed extensive step fracturing that was heavily rounded over, undetached use-wear spalls, and a surface alteration characterized by a slightly “greasy”-appearing rough matte texture displaying little actual polish formation. Striations occurred only rarely. Small isolated patches of a bright, smooth, nonsiliceous stone-on-stone polish were also occasionally noticed (see figs. 8.5 and 8.6).

The immediate nature of this use wear was unknown; however, after conversations with Dr. James Phillips of the Field Museum, it was suspected that these implements could have been involved in the production of cylinder seals. To test this hypothesis, a series of replications in the graving and planing of soft stone were carried out to provide a control set of experimental pieces for comparison.

Three series of experimental uses were conducted on soapstone and pipestone as a means of providing comparative examples of edge damage and use-wear polish generated by use on soft stone. Two experimental tools were fashioned on chert of similar grain and color to the archaeological specimens and were used for approximately fifteen minutes each. Separate working margins were used in graving, scraping/planing, and sawing experiments. After use, the experimental pieces were subjected to the same cleaning procedure as the archaeological specimens and were then examined under a range of magnifications of 50× to 200×. Similar patterns of edge damage formation were noted during use, particularly the rapid formation of step fractures during scraping and planing. Under magnification, these working edges exhibited heavy rounding and a rough, matte surface. Little polish formation was noted, and striations were uncommon (figs. 8.3 and 8.4). Isolated patches of a bright, smooth polish were also occasionally noted and are thought to result from use-wear spalls detaching and contacting working edges during use, thus generating a stone-on-stone-like polish.

The lack of overall polish formation and rarity of striations is puzzling but may be related to the generation of large amounts of talc dust during use, which may have a slight lubricating effect. In general, experimental replications working soft stone generated edge damage and surface



## WHERE KINGSHIP DESCENDED FROM HEAVEN

alterations within a range of variation compatible to that observed within the archaeological sample. While the rarity of striations limited the ability to discern use motion, the characteristic nature and consistent unifacial placement of edge damage on the archaeological specimens (figs. 8.8 and 8.9) indicates that these tools were used in either a scraping or planing motion rather than in a boring, awling, or drilling motion. Multiple working edges are also frequently present, suggesting periodic reorientation as utilized margins became too heavily dulled from use. The small size and heavily utilized nature of many of these tools also suggests that they were used while hafted, although no definitive traces of haft wear could be detected. Figures 8.5–8.9 provide representative examples of soft-stone wear identified during this study.

Results of the microwear examination indicate that the typological designation of these pieces as borers or microborers is a misnomer and may belie their true functional classification. Only two artifacts examined during this study showed evidence of use as borers. Item 159080 displays alternate inverse retouch or edge damage consistent with use in a drilling or boring motion; however, it was unsuitable for use-wear analysis due to thermal patination. Artifact 159093 also displayed alternate inverse edge damage and microwear alteration consistent with use on soft stone in a drilling or boring motion.

## DRY HIDE

Two artifacts (158975, T2002.1.488) were used on dry hide (fig. 8.10). A dull, matte polish and heavy edge rounding characteristic of polish caused by contact with hide in a drier state of preparation were observed (figs. 8.11 and 8.12). Although no striations were observed, heavy edge rounding on dorsal flake scar surfaces and working margins of the well-defined “spurs” on these items suggests use in a perforating manner.

## BONE/ANTLER

A single artifact (T2003.1.148) showed evidence of use in scraping or planing of bone and/or antler. Unless well developed, bone and antler polish can be difficult to differentiate. Edge rate attrition often exceeds the rate of polish formation when working on hard materials like bone, antler, and some

woods, making detection and identification of hard contact material use-wear polishes difficult in some instances. This artifact displayed a continuous use-wear polish consisting of a bright, smooth surface alteration usually confined to microtopographic highs and concentrated along the edge of the working margin (fig. 8.14). Edge damage consisting of micro step fractures and edge rounding also indicated contact with a relatively hard material. Although striations were not observed, the placement and nature of edge damage suggests use primarily in a scraping or planing fashion.

## SUMMARY AND DISCUSSION

A total of thirty chipped stone tools from the Field Museum of Natural History’s Kish collection were subjected to a high-powered microwear analysis (table 8.1). Although a range of tool types were included in the present study, the microwear analysis was primarily conducted in an effort to determine the functional use of a distinctive tool type that has been found in impressive numbers at the site of Kish. Most of the tools examined in the present study display relatively thick cross sections and multiple working edges that are extremely steep in edge angle and often converge to form “spurs.” Working edges also display heavy unifacial edge damage in the form of step fractures, edge rounding, and crushing. Most of these tools have historically or typically been called “borers” or “microborers” because of these typological characteristics, often with the implicit but untested notion that they were utilized for drilling objects such as shell.<sup>4</sup>

The most common form of microwear polish encountered was a previously unrecognized (to this observer) but distinctive combination of edge damage and surface alteration that superficially resembled that of severe dry hide in edge damage characteristics but lacked the distinctive surface alteration and polish formation that distinguishes hide working. A series of experimental replications were conducted that allowed the unknown microwear to be confidently identified as that caused by the working of soft stone such as steatite or soapstone.

Edge damage on these tools was consistently unifacial, indicating use in a planing or scraping motion. Striations were only rarely observed but

<sup>4</sup> Moorey 1999, p. 106.

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Figure 8.1. “Borers” or “microborers/perforators” used on soft stone.



Figure 8.2. Representative photomicrograph of working edge displaying undetached use-wear spall, heavy edge rounding, and rough matte surface alteration from contact with unidentified material. (artifact T2002.1.413; photomicrograph 4158–100×).

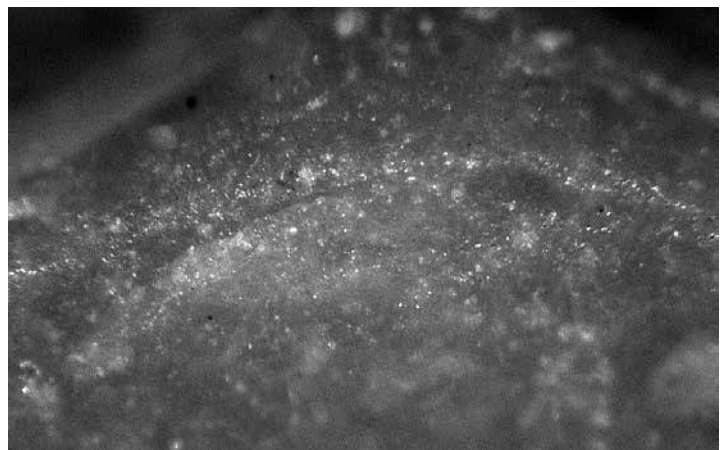


Figure 8.3. Experimental piece used in scraping/planing soapstone for fifteen minutes (100×); note heavy edge rounding, rounded-over step fracture, and general lack of polish formation.

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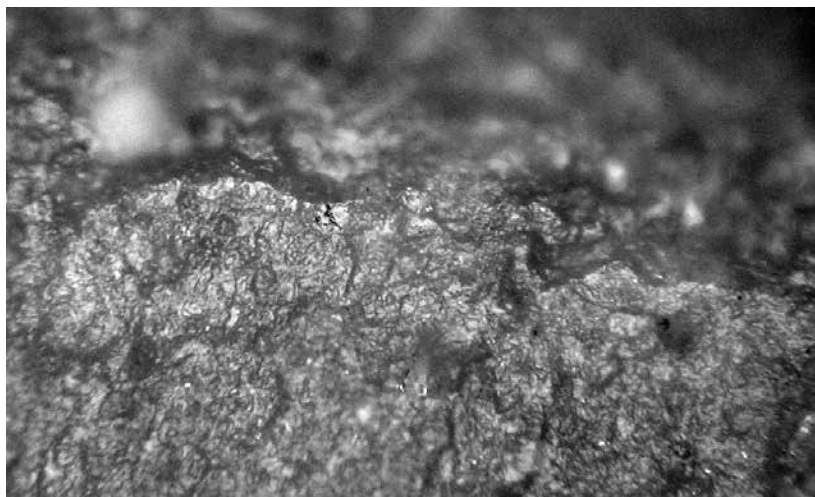


Figure 8.4. Experimental piece used in scraping/planing soapstone for fifteen minutes (200 $\times$ ). Note heavy edge rounding, rough matte surface, and isolated patches of bright polish caused by stone-on-stone contact.

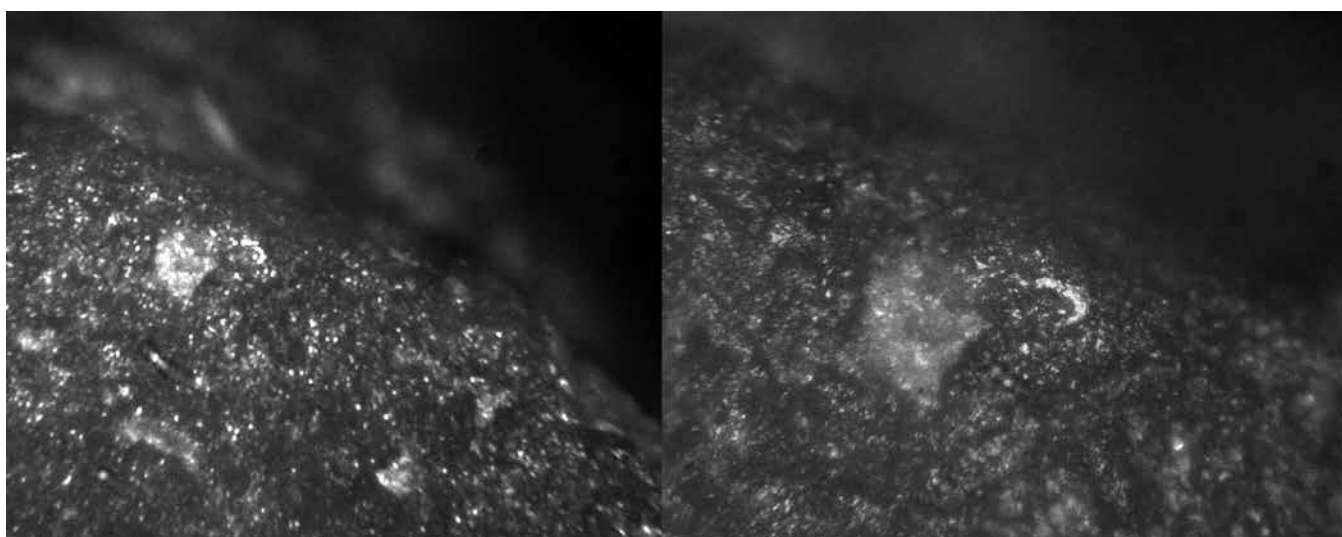


Figure 8.5. Soft stone use wear on artifact 158775 (left 50 $\times$ , right 100 $\times$ ). Note heavy edge rounding, rough matte surface, and isolated bright patch caused by stone-on-stone contact.

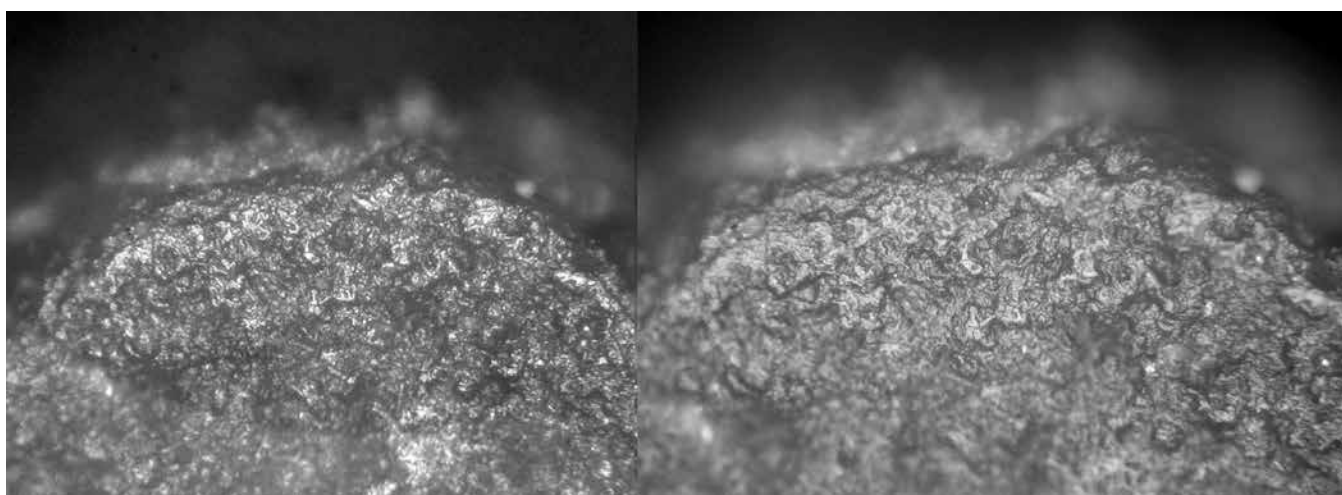


Figure 8.6. Well-developed soft stone use wear on artifact T2002.1.507 (left 100 $\times$ , right 200 $\times$ ). Note heavy edge rounding, rough matte surface, and isolated bright patches.

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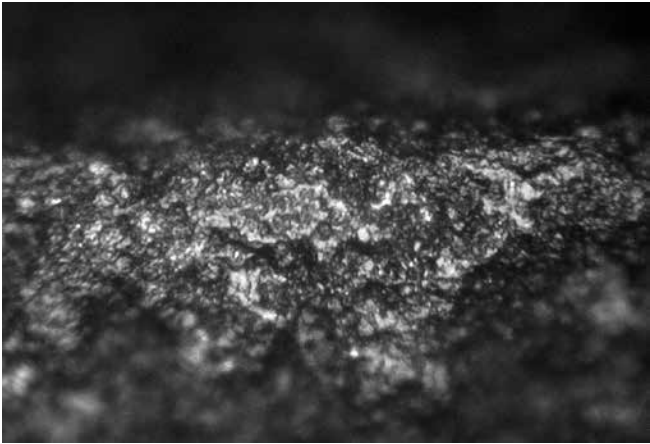


Figure 8.7. Well-developed soft stone wear on artifact 158777 (photomicrograph 4155–100×).

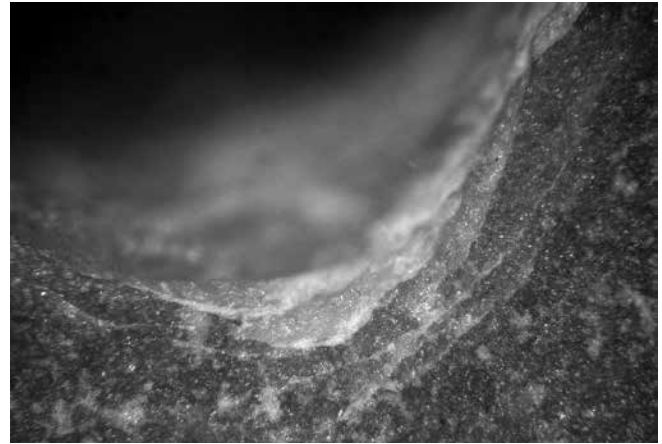


Figure 8.8. Heavy edge crushing and rounding caused by scraping or planing on soft stone. (artifact 159552; photomicrograph 4170–100×).

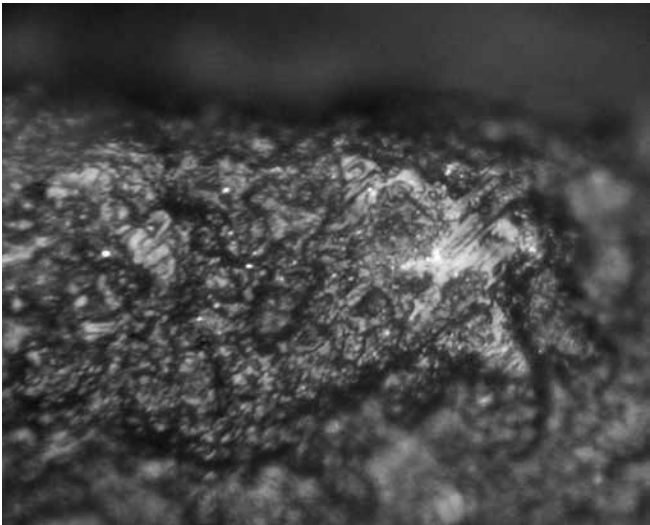


Figure 8.9. Well-developed soft stone wear with striations formed in stone-on-stone polish indicating use in a scraping or planing motion (artifact 159551; photomicrograph 4169–200×).



Figure 8.10. Artifacts 158975 (left) and T2002.1.488 (right). Boxes indicate locations of photomicrographs of use-wear polish obtained on ventral surfaces and displayed in figures 8.11 and 8.12.

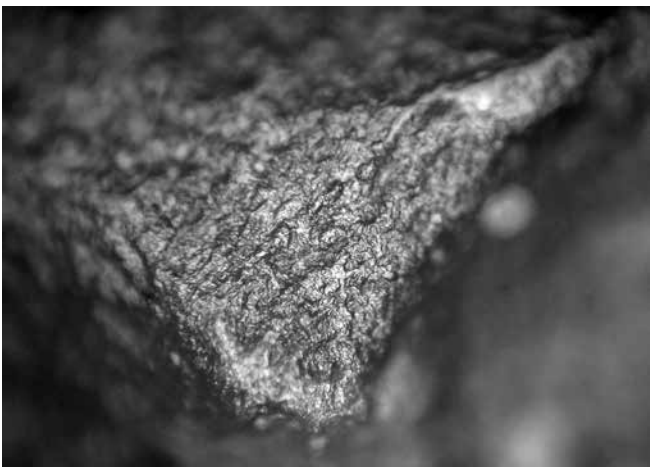


Figure 8.11. Artifact T2002.1.488. Dull, rough, matte polish and edge rounding indicating contact with dry hide (photomicrograph 4140–200×).



Figure 8.12. Artifact 158975. Heavy edge rounding lacking step fractures and dull matte polish indicating contact with dry hide (photomicrograph 4142–100×).

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Figure 8.13. Artifact T2003.1.148. White line indicates extent of bone/antler use polish; box indicates location of photomicrograph of representative polish displayed in figure 8.14.

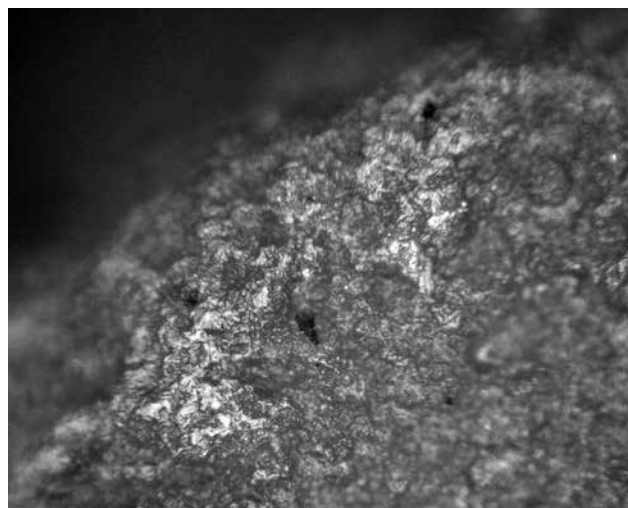


Figure 8.14. Artifact T2003.1.148, illustrating bone/antler polish along working edge (photomicrograph 4137–200x).

may be related to the copious amounts of dust generated during the working of soft stone. Striations likely formed only rarely as use-wear spalls detached and were infrequently caught between the working edge and contact material. The small size and heavily used state of these tools suggests that they were used while hafted. This is also suggested by the severe nature and amount of edge wear present on these tools. Although the present study failed to find any definite evidence of haft wear, the presence of multiple working margins on many of these tools, sometimes forming converging working edges, also suggests periodic reorientation and rehafting as edge angles became unsuitable for use.

Unfortunately, a great deal of the chipped stone material contained in the Field Museum's Kish collection lacks detailed provenience information. Of the thirty artifacts examined during the study, only ten were associated with specific recovery data. Although the examined sample is small, the existing provenience information allows a brief discussion of possible interpretations. Artifacts T2002.1.531.9, T2002.1.531.15, T2002.1.531.174, 2002.1.531.222, and 2002.1.531.380 were recovered from Trench Y at a depth of 2–4 m. All show evidence for use in scraping/planing of soft stone. Artifacts T2002.488.180 and 2002.507.33 were also recovered from Trench Y, but at a depth of 6–9 m, and show evidence for use on dry hide and soft stone, respectively. Perhaps excavations in this area sampled an activity area (workshop?) where the working of soft stone was a persistent task. The number of artifacts examined that were recovered from Trench YW is

smaller, but two of the three chipped stone tools, 2002.1.413 (YW3–4/7) and 2002.1.511.84 (YW), displayed evidence of use on soft stone. The third tool examined, 2003.1.148.25 (YW4–7), was used on either bone or antler.

The overall results of the microwear analysis also included the identification of additional contact materials, including bone and/or antler and dry hide. A small number of artifacts examined were either too patinated for analysis or were manufactured on cherts that were too coarse grained and unsuitable for microwear analysis. While most of these items were unsuitable for confident use-wear identification, edge damage characteristics on a number of them are highly suggestive of contact with soft stone. Although the identification of striations indicating the mechanics of use were only rarely identified, the nature and placement of edge damage suggests that a variety of tasks are reflected in the microwear results, including the use of unifacial tools in the scraping and planing of soft stone objects, the drilling or perforation of hide, and the probable use of some items as multi-purpose tools that came into contact with multiple materials.

Both cylinder seals and these distinctive tools have apparently been found in impressive numbers at the site of Kish.<sup>5</sup> Cylinder seals in the Field Museum's Kish collection are manufactured on limestone, gypsum, serpentine, and soapstone, minerals that are relatively soft (2.0–4.5 on the Mohs scale)

<sup>5</sup> James Phillips, personal communication.

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and would have been easily worked with steep-edged chipped stone tools such as those examined. Although conducted on a relatively small sample, the results of the present study are of interest in that they suggest the previous designation of these distinctive tools as “borers” or “microborers” is incorrect and they are more likely to have been involved in the (specialized?) manufacture of cylinder seals at the site, possibly in formal workshops where cylinder seal blanks were cut and shaped. While much attention has been devoted to the function and development of cylinder seals,<sup>6</sup> little effort has been

aimed at the production of cylinder seals—clearly the first step in the process of transforming raw stone into an implement of commerce.

Future studies would benefit from a larger sample size from well-provenienced excavations and from additional areas of the site. This would allow the exploration of questions aimed at examining the organization of activities across the site, conduct and persistence of activities over time, and changing patterns of use of raw material favored for cylinder seal production over time. It is hoped this study has made a small contribution toward that end.

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<sup>6</sup> Gorelick and Gwinnett 1981.



## CHAPTER 9

# LIFE AND DEATH AT KISH: REANALYSIS OF THE HUMAN SKELETAL REMAINS

WILLIAM J. PESTLE, CHRISTINA TORRES-ROUFF, AND BLAIR M. DAVERMAN

While centuries of archaeological research in Mesopotamia have yielded extensive collections of material culture and valuable insights into many of the region's ancient societies, shockingly little attention has been given to the physical remains of ancient Mesopotamian people themselves. The little work that has been conducted on skeletal material has far too often been informed by an outmoded epistemology bound up with matters of racial typology. In this chapter, we present an analysis of the remains of some 757 individuals from the excavations at Kish, which represent the single largest collection of human remains from any ancient Mesopotamian site and provide an unequalled opportunity for advancing knowledge of the lifeways of the city's and the region's ancient peoples. Using modern bioarchaeological techniques, the present study seeks to glean both synchronic and diachronic information on health, disease, death, and mortuary practice to better understand the relationship of these phenomena to broader issues of class, urbanization, gender, and politics among the individuals who walked the streets of the ancient city of Kish millennia ago.

## INTRODUCTION

The excavation of the city of Kish in the early part of the twentieth century produced not only a valuable collection of artifacts documenting the material culture of Mesopotamian peoples over a span of several millennia but also a skeletal collection of unrivaled size and importance for understanding life and death in this early city, and perhaps in ancient Mesopotamia writ large. In general, large-scale excavations of the type conducted by the Field

Museum–Oxford University expedition to Kish in 1923–33 were focused on monumental architecture and art-historically valuable pieces. As Pollock and Bernbeck have noted,<sup>1</sup> excavations were “more like treasure hunts by today's standards,” and human skeletal material, as well as other quotidian finds such as faunal remains, were frequently overlooked or left behind. It has been noted in particular that the excavations at Kish proceeded as if “no advances in techniques had been made since the 1880s,”<sup>2</sup> much to the detriment of all later research on the site and particularly of the present attempts at recontextualization of grave groups.

While the work performed at Kish may be an extreme example, most excavations in the ancient Near East in the nineteenth and early twentieth centuries placed minor, if any, emphasis on skeletal collections. Many legacy collections from ancient Mesopotamia in the care of American and British institutions—including the British Museum, the Ashmolean Museum of Art and Archaeology at the University of Oxford, and the University of Pennsylvania Museum of Archaeology and Anthropology—contain some human remains but are predominantly or overwhelmingly artifact centered. In more recent decades, “great quantities of new sites of all periods have been located, but very few of them have been subjected to detailed, long-term excavation,”<sup>3</sup> and even at those sites where quality excavations have been conducted recently, the attention given to the skeletal material is nowhere near that devoted to the ceramics or other forms of material culture.

<sup>1</sup> Pollock and Bernbeck 2005, p. 7.

<sup>2</sup> Matthews 2003, p. 15.

<sup>3</sup> Matthews 2003, p. 17.



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The current policy of the Iraq Museum not even to retain human skeletal material encountered during excavation is perhaps the starkest example of the second-class-citizen status of human remains and osteological studies in Mesopotamian archaeology.

In this context, then, the retention of the large skeletal collections from Kish appears all the more exceptional. As a result of the Field Museum's interest in broader anthropological collections and its historical ties to physical anthropology, its participation in the Field Museum–Oxford University expedition guaranteed that a sizable portion of the skeletal remains from the Kish expedition was retained. The collection of human remains recovered from Kish spans the millennia of the site's occupation. Much like the goddess-handled jars and chariot burials that have secured the site's place in our archaeological memory, the skeletal remains are of tremendous value, in large part because they provide us with a glimpse of the lived experiences of the inhabitants of Kish. Realizing this potential, a number of scholars have, over the decades since the completion of the expedition to Kish, investigated this collection.<sup>4</sup> However, while these remains have been studied in the past, the paradigm shifts in physical anthropology over the past century dictate the importance of their reevaluation.<sup>5</sup> Here, as part of the ongoing reanalysis of the entire Kish collection, we present a study of the skeletal material that approaches these human remains from a contemporary bioarchaeological perspective.

As coined by Jane Buikstra<sup>6</sup> and employed by contemporary scholars, the term *bioarchaeology* encompasses more than the simple description of human remains; it is a problem-oriented approach that integrates physical anthropology directly with archaeology. By considering the context(s) in which humans lived and died, bioarchaeology can provide insights into the experiences of ancient peoples that go beyond simple statements about mortality. Moreover, bioarchaeology provides a multidisciplinary perspective on human life by consciously engaging with anthropological theory and practice regarding cultural phenomena such as gender and class. Advances in the methods used in skeletal biology allow us the opportunity to explore more thoroughly

issues such as population affinity without reverting to normative typological constructs such as race. As such, bioarchaeological approaches are well poised to explore the lived experiences of Kish's inhabitants by addressing questions of demography, pathology, and relatedness in a manner that integrates the individuals with their context.

## RESEARCH PROBLEM

Our bioarchaeological reassessment of the Kish skeletal human remains aims to distill several distinct types of information. We first consider most basically the demographic breakdown of the population writ large, as well as across time and space. We next explore changes in health and well-being and attempt to link observed health trends to historical events, changes in city size, areal differences, and individual status. We then consider questions of relatedness, addressing whether portions of the city's population in different periods of its history might reflect the influx of migrant or conquering groups. Finally, we focus on a detailed examination of the remains from the A Cemetery, which, as a result of its limited use life during the late Early Dynastic III and early Akkadian periods, allows us to glimpse life during a "snapshot" in time for the Kish population. We conclude with our thoughts for potential future research, especially ways in which new technologies can advance our knowledge of the people of Kish. Our hope is that the bioarchaeological approach, one that aims to answer anthropological questions and seeks to situate the study of human remains within their archaeological framework, can offer a unique perspective on the lived experiences of the citizens of Kish.<sup>7</sup> We firmly believe that detailed and contextualized analyses of human remains can help to assess at a human level the impact of cultural, social, and political phenomena.

## THE GRAVES OF KISH

Given that a bioarchaeological approach demands close control over mortuary context, we begin by exploring the available contextual data for the graves of Kish. Although scattered burials were encountered in many of the trenches excavated by the Field Museum–Oxford University expedition, the

<sup>4</sup> Buxton 1924; Buxton and Rice 1931; Carbonell 1958, 1960, 1966; Field 1930, 1932; Neiburger 2000; Neiburger et al. 1998; Penniman 1934; Rathbun 1975.

<sup>5</sup> E.g., Buikstra and Beck 2006; Spencer 1982.

<sup>6</sup> Buikstra 1977.

<sup>7</sup> Buikstra 1977; Buikstra and Beck 2006; Larsen 1997.

preponderance of identifiable graves was found in three areas: Mound A, Ingharra, and Mound W. The general disposition, dating, and mortuary treatment of the graves from these mounds/areas are here discussed in turn.

## MOUND A

The 154 graves encountered on Mound A, a low and generally unimpressive tell situated directly south of Ingharra, were excavated and documented by Ernst Mackay, and as such they provide the most detailed contextual data and were the best published following excavation.<sup>8</sup> It would appear that the Mound A graves were likely dug down from the floors of buildings or houses that immediately overlay the remnants of a palace that was built early in Early Dynastic III and destroyed later in that period.<sup>9</sup> While there has been some disagreement in the years since the excavation about the chronology of the entire corpus of the Mound A burials,<sup>10</sup> there is a general consensus that, with the exception of four or five late burials (nos. 0, 41 [FM 192776], 44, 111, and 114), the remaining 150 graves date to a relatively restricted period of time.<sup>11</sup> Roger Moorey argues fairly convincingly that the A Cemetery was in use only for “two or three generations”<sup>12</sup> or “no more than a century or so,”<sup>13</sup> and we concur with his reckoning that this usage fell during the late Early Dynastic III or early Akkadian period.

Most grave cuts in Mound A were simple and rectangular in shape<sup>14</sup> and extended to widely varying depths (from 20 to 406 cm below the ground level).<sup>15</sup> While a handful of graves showed evidence of brick flooring<sup>16</sup> or mud plastering,<sup>17</sup> most were unembellished. The bodies of the deceased were not placed in coffins of any sort, although some graves do have evidence of reed or rush matting either placed underneath or wrapped around the body.<sup>18</sup>

<sup>8</sup> Mackay 1925, 1929.

<sup>9</sup> Gibson 1972, pp. 79–80; Mackay 1929, p. 76; Moorey 1970, pp. 64–65.

<sup>10</sup> Gibson 1972; Moorey 1970, 1978; Whelan 1978.

<sup>11</sup> Contra Hrouda and Karstens 1967.

<sup>12</sup> Moorey 1978, p. 74.

<sup>13</sup> Moorey 1970, p. 104.

<sup>14</sup> Mackay 1925, p. 11.

<sup>15</sup> Mackay 1929, p. 131.

<sup>16</sup> Mackay 1925, p. 11.

<sup>17</sup> Mackay 1929, p. 130.

<sup>18</sup> Mackay 1925, p. 11; 1929, p. 130.

While neither the orientation of the body (direction in which the head was facing) nor the side on which the body was placed appears to have followed set rules of placement, the legs were generally contracted with knees drawn to the chest, and the hands were typically drawn to the face as if bringing a cup to the mouth or placed under the head as a pillow for the dead.<sup>19</sup> Both the lack of consistent orientation and the placement of the limbs are familiar from contemporary graves at sites such as Fara,<sup>20</sup> Ur,<sup>21</sup> and Abu Salabikh.<sup>22</sup> While a portion of the Mound A graves had been looted by the time of their excavation, their grave furnishings were still impressive in both number and quality. These goods are discussed in detail elsewhere,<sup>23</sup> as well as in other chapters of the present volume, and are thus not discussed individually here. As we expand upon below, however, there are differences in the number and type of goods accompanying the deceased—differences that can be attributed to social status or class. Of the 154 graves excavated in Mound A, we were able to associate with this location the skeletal remains of sixty-three individuals.

## INGHARRA

Despite the higher quality of the early work on the graves of the A Cemetery, no set of graves from Kish has received as much attention as those from Ingharra. The execution, stratigraphy, and contents of these graves have been the subject of several publications, and much controversy, in the years since excavation.<sup>24</sup> Ingharra was the largest and most intensively excavated tell within the confines of Kish and prominently features two ziggurats and a Neo-Babylonian temple. A tangled mess of excavations was made on the mound in at least six of the expedition’s field seasons. Several hundred graves, dating to almost every period of the city’s occupation, were found on Ingharra—from Early Dynastic I graves in the deepest parts of the Y trench (see chapter 5) to Neo-Babylonian and later burials in the trenches nearest the mound’s surface. Given the temporal differences between the various graves, the extremely complex stratigraphy of the mound, and

<sup>19</sup> Mackay 1925, pp. 12–13; 1929, pp. 129–30.

<sup>20</sup> Heinrich 1931.

<sup>21</sup> Woolley 1934.

<sup>22</sup> Postgate 1980a.

<sup>23</sup> Mackay 1925, 1929; Moorey 1978.

<sup>24</sup> Algaze 1983–84; Gibson 1972; Lloyd 1969; Moorey 1978.

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the very poor recording of the graves (in particular those excavated in the expedition's later seasons), it is difficult and perhaps inadvisable to make uniform statements about mortuary behaviors on Ingharra. It is not the goal of the present work to reassess in detail the stratigraphic complexities of Ingharra. And we are less qualified than others to assess the precise chronological sequence of the burials made therein (a task that has been carried out both in this volume and elsewhere). Therefore, we limit ourselves here to a brief discussion of the various clusters of graves found on Ingharra, their temporal placements, and their mortuary dispositions.

Closest to the surface of the mound, in the B and C trenches, were discovered numerous graves of a contested but apparently late period (anywhere from Akkadian to Achaemenid, depending on the source).<sup>25</sup> At least ten of these individuals were buried in ceramic sarcophagi, while others were interred in simple earthen cuts. The bodies in the earthen graves were in a "bent" position,<sup>26</sup> and the graves were capped with gypsum or brick covering layers. The bodies in the ceramic coffins were placed in similar positions, with the knees drawn to the chest. Some consistent orientation of the head toward the northwest is seen among the burials of this cluster.<sup>27</sup>

Slightly deeper in the mound, between Monument Z and the red stratum (0–2 m above the plain level), were numerous graves dating to sometime between the end of Early Dynastic III and the Akkadian period. Some of these graves appear to be contemporary with the burials found in Mound A.<sup>28</sup> Burials at these depths were made in earthen cuts, and the bodies were placed in a fetal position.<sup>29</sup>

Some 2 to 3 m below the red stratum was the flood stratum, the result of an inundation of the site late in the Early Dynastic period.<sup>30</sup> Numerous graves were found below the red stratum and above the level of the flood, strata that Gibson identifies as belonging to the Early Dynastic II period.<sup>31</sup> The hundreds of graves found below the flood stratum,

and specifically the cart or chariot burials from the Y trench, are the most thoroughly studied of any graves at Kish. In particular, the chronology of the chariot burials has been a subject of great contention.<sup>32</sup> Similarly, the exact chronology of the other (nonchariot) graves from below the flood stratum has been the subject of debate, although there seems to be a consensus that these particularly deep burials can be attributed to the Early Dynastic periods. Algaze has demonstrated that the Y trench burials found at or below 4 m beneath the plain level may be associated with intramural burial from houses dating to the Early Dynastic I,<sup>33</sup> a conclusion that accords with the findings of both Gibson<sup>34</sup> and Moorey.<sup>35</sup> Gibson further suggests that many of the graves between the flood stratum and the houses at 4 m below the plain level are of an Early Dynastic II date,<sup>36</sup> and Moorey identifies the ceramics from the graves as belonging to both Early Dynastic I and Early Dynastic II.<sup>37</sup> For the purposes of the present work, we have identified all burials below the flood stratum as being Early Dynastic I, all burials between the flood stratum and the red stratum as being of an irresolvable Early Dynastic I/Early Dynastic III date, and all those above the red stratum as being of an Early Dynastic III or later date. For further discussion on these decisions and the issue of any burials that previously may have been attributed to Early Dynastic II, see below.

As mentioned, the burials in the deepest part of the Y trench were intramural in nature, having been dug down from the floors of the houses of the so-called Early Houses Stratum.<sup>38</sup> This practice is familiar from contemporary levels at Khafajah and Abu Salabikh.<sup>39</sup> Burials were often placed in the inside corners of rooms with additional brick walls built inside the grave cut for support.<sup>40</sup> The body of the deceased was often wrapped in a mat made of plant material and was most typically placed in a semifetal

<sup>25</sup> Gibson 1972, p. 91; Moorey 1978, pp. 91–92; Watelin and Langdon 1934, pp. 52–55.

<sup>26</sup> Watelin and Langdon 1934, p. 52.

<sup>27</sup> Watelin and Langdon 1934, pp. 52–54.

<sup>28</sup> Gibson 1972, p. 87; Moorey 1978, p. 97; Watelin and Langdon 1934, pp. 49–51.

<sup>29</sup> Watelin and Langdon 1934, p. 50.

<sup>30</sup> Gibson 1972; Lloyd 1969; Moorey 1978.

<sup>31</sup> Gibson 1972, p. 86.

<sup>32</sup> Algaze 1983–84; Gibson 1972; Lloyd 1969; Moorey 1978.

<sup>33</sup> Algaze 1983–84.

<sup>34</sup> Gibson 1972, p. 86.

<sup>35</sup> Moorey 1978, pp. 110–14.

<sup>36</sup> Gibson 1972, p. 84.

<sup>37</sup> Moorey 1978, p. 113.

<sup>38</sup> Algaze 1983–84, p. 140.

<sup>39</sup> On Khafajah, see Delougaz, Hill, and Lloyd 1967. On Abu Salabikh, see Postgate 1977, 1980a, 1980b; Postgate and Moorey 1976.

<sup>40</sup> Watelin and Langdon 1934, p. 18.

or contracted position.<sup>41</sup> The orientation of the body and the side on which it was placed are inconsistent, as was the case in Mound A. Also as in Mound A, the hands of the deceased were often drawn up to the face, holding a cup from which the dead could drink.<sup>42</sup> The grave goods found in these deep levels of the Y trench varied greatly, from extremely rich and diverse assemblages in a few burials to little or nothing in other graves. Besides the cup in the hands of the deceased, several domestic vessels were usually deposited in the grave,<sup>43</sup> and the list of optional inclusions ran from additional ceramic vessels of myriad shapes and sizes to ceramic stands, weapons and tools of metal (copper alloys) and stone, toiletry kits, mirrors, jewelry, beads (of carnelian, calcite, lapis lazuli, quartzite, steatite, and faience), seashells (both as beads and as makeup containers and possibly oil lamps), fine imported stone vessels of numerous forms, a few press-and-roll seals, and, in just a few cases, carts and full sets of draft animal tack.<sup>44</sup> The grave furniture has been amply documented elsewhere and, as such, is not further detailed here.<sup>45</sup> The skeletal remains of 399 individuals from Ingharra were identified for this study.

## MOUND W

Finally, there are the graves of Mound W, a large tell due west of the Ingharra complex. In addition to being the source of a huge number of cuneiform tablets, Mound W also contained a large number of graves dating to the middle of the first millennium BC. Work under the direction of Stephen Langdon in 1924 revealed a substantial but unspecified number of these graves, and excavations by Mackay and Father Burrows in the 1925–26 season exposed an additional eighty-seven burials. Stratigraphic, mortuary, epigraphic, and artifactual evidence support Achaemenid (fifth or fourth century BC) dates for most, if not all, of these graves.<sup>46</sup> As was typical of this period, most adult burials in Mound W were in bathtub-style ceramic coffins, with younger individuals buried in oval tubs (*hubbs*).<sup>47</sup> Grave goods

were notably meager, typified by both glazed and unglazed ceramic vessels, some metal objects for personal adornment, and, intriguingly, seals and beads dating to far earlier periods, attesting to the practice of ancient grave robbing and artifact reuse in the periods in question.<sup>48</sup> The graves of Mound W yielded the remains of only the sixteen individuals included in this study.

In terms of the research presented here, the samples provide us with different perspectives concerning life at Kish. On the one hand, the large number of individuals from Ingharra in particular, many of whom are attributed to a succession of chronological periods, allows us to study *diachronic* trends in population health, as well as to investigate possible changes in the biological makeup of Kish's inhabitants over time. On the other hand, the large sample size from the A Cemetery permits a detailed view of *synchronic* variability that may have resulted from, for example, differences in gender, social status, or class affiliation. Finally, the availability of samples from three distinct areas of the site allows for comparisons of health and population biology among and between different parts of the ancient cityscape.

## PREVIOUS RESEARCH ON THE KISH SKELETAL REMAINS

Since the excavation of the site, a number of American and British physical anthropologists and anatomists have studied the Kish skeletal material. Unfortunately, the poor quality of the excavation, a lack of good chronological control for the burials (which has either led to or been exacerbated by erroneous assumptions about their chronology), and the physical division of the retained skeletal material between the United States and United Kingdom have impeded the type and quality of research that could be done. Moreover, many of the earlier works on the Kish skeletons were based in a racialist epistemology that has little use in modern contexts. Together, these factors have effectively precluded a full consideration of the Kish skeletal material in a meaningful culturally contextualized and temporally controlled manner, an omission that we have sought to remedy through our recent reanalysis. Before discussing the methods we employed in our study and the results

<sup>41</sup> Watelin and Langdon 1934, p. 18.

<sup>42</sup> Watelin and Langdon 1934, p. 18.

<sup>43</sup> Watelin and Langdon 1934, p. 18.

<sup>44</sup> Watelin and Langdon 1934, pp. 19–34.

<sup>45</sup> Moorey 1978, pp. 110–14, fiche #2 E09–G03; Watelin and Langdon 1934, pp. 19–34.

<sup>46</sup> Moorey 1978, pp. 49–53.

<sup>47</sup> Moorey 1978, p. 51.

<sup>48</sup> Moorey 1978, p. 53.

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we obtained, it seems worthwhile to place the current work in the context of these earlier studies of the Kish remains.

In the 1920s and 1930s, Dudley Buxton published a brief appendix to the first volume of *Excavations at Kish*<sup>49</sup> and, with Talbot Rice, a longer piece in the *Journal of the Royal Anthropological Institute* on some skeletal remains from the A Cemetery and Mound W, along with the anthropometric measurement of many of the Kish project's field workers and nearby residents.<sup>50</sup> Both works are, in large part, discussions of the racial origins of the inhabitants of Kish and, as such, are replete with long-outmoded anthropological constructs, such as idealized physical types (Eurafrican, Mediterranean, and Armenoid). Such typologies, although the mainstay of physical anthropology in the first half of the twentieth century, have since been roundly rejected as lacking in evidentiary basis and being inherently biased. Within the discipline, physical anthropology of this sort is now seen as representative of little more than an unfortunate historical moment and of little use to modern researchers.<sup>51</sup> Thus, while Buxton's and Rice's early works on the Kish skeletal materials are interesting as historical documents, they provide precious little insight into the lived experiences of the inhabitants of Kish.

While still a student at Oxford, Henry Field (a nephew of then-Field Museum president Stanley Field) served as the consulting physical anthropologist to the Kish expedition for two seasons. Besides publishing a brief report on the Jamdat Nasr remains<sup>52</sup> and an even briefer note on possible Neo-Babylonian child sacrifice in the Field Museum's membership publication,<sup>53</sup> Field's only other contribution to the physical anthropology of Kish is an unpublished catalog of remains from the 1925–26 and 1927–28 seasons.<sup>54</sup> While this final work is almost solely descriptive and free of interpretation, it provides the only contextual data for many of the remains excavated during those two field seasons.

T. K. Penniman, who would appear to have been the most capable of the physical anthropologists associated with the original fieldwork at Kish, published only one short note in volume 4 of *Excavations*

at Kish regarding the skeletons encountered in the Y trench during the excavation season of 1928–29.<sup>55</sup> Like those described above, this discussion focused largely on the matter of the racial makeup of the ancient city of Kish, although a fair degree of contextual data for a handful of Y trench graves is also provided. More useful still is Penniman's fairly detailed correspondence with his superiors at both Oxford and the Field Museum and the catalog of remains excavated from the C trenches on Ingharra during the 1928–29 season. The graves excavated during this season are the best documented of any from Ingharra, and several authors have used Penniman's letters and drawings to reconstruct their contexts and stratigraphic relationships.<sup>56</sup> Unfortunately, a potentially invaluable catalog of Y trench graves equivalent to that provided for the C trenches and alluded to in several of Penniman's letters appears since to have been lost.

In the 1950s and 1960s, Virginia Carbonell, then of the Department of Anthropology at the University of Chicago, produced a master's thesis that attempted to assess the evolutionary position and significance of the Kish dentition through metric and nonmetric analyses.<sup>57</sup> Carbonell used the data she collected as the basis for two later articles; one dealt with the frequency of the expression of Carabelli's cusp in the Kish materials,<sup>58</sup> and the other examined the frequency of various dental pathologies in the portion of the Kish skeletal material held by the British Museum of Natural History.<sup>59</sup> Unfortunately, the usefulness of all three works is largely mitigated by the author's assumption that all the Kish individuals are roughly contemporary when, in fact, the burials span millennia.

Similarly, in recent years Ellis Neiburger, a Chicago-area dentist, and colleagues published two brief articles that focus primarily on the dental health of the Kish skeletal population.<sup>60</sup> In both of these works, the authors argue that the Kish population was generally short-lived and that many individuals suffered from a range of serious skeletal and dental pathologies while alive. Unfortunately, although both articles allude to the temporal distribution of the skeletal materials, in other instances the

<sup>49</sup> Buxton 1924.

<sup>50</sup> Buxton and Rice 1931.

<sup>51</sup> Gould 1981; Spencer 1982.

<sup>52</sup> Field 1932.

<sup>53</sup> Field 1930.

<sup>54</sup> Field 1946.

<sup>55</sup> Penniman 1934.

<sup>56</sup> Algaze 1983–84; Gibson 1972; Moorey 1978.

<sup>57</sup> Carbonell 1958.

<sup>58</sup> Carbonell 1960.

<sup>59</sup> Carbonell 1966.

<sup>60</sup> Neiburger 2000; Neiburger et al. 1998.

population is discussed as largely synchronic (the collection is referred to as dating to ca. 2000 BC, the “time of Abraham”). No data on temporal trends in health or information about the basis for chronological attribution of the skeletal remains are presented in these works, and in discussing the prevalence of various pathologies, the population is treated as monolithic and contemporary.

In contrast to the above works, the most comprehensive and useful treatment of the Kish skeletal remains produced to date is undoubtedly the volume written by Ted Rathbun.<sup>61</sup> This work, published by Henry Field, is the only opus dealing with the Kish skeletal remains that is of any value strictly for its physical anthropological content, and free of the racialist epistemology that dogged earlier researchers. Rathbun also was the only scholar to attempt a thorough study of the full complement of Kish skeletal remains curated at the Field Museum in their appropriate chronostratigraphic context, a goal we are also attempting to meet here. Rathbun’s study is also admirably intensive in scope, as metric, nonmetric, pathological, and traumatic indices for all available skeletal and dental elements were analyzed and a large amount of data are presented. The one limiting factor, as Rathbun himself notes, is the small number of individuals who could be assigned to any given temporal period, archaeological context, or both. Given the importance of large sample sizes for the type of bioarchaeological research Rathbun was attempting, the inability to assign more individuals to any given period or mound was significant and substantially limited the interpretations and conclusions that he was able to make. The present chapter aims to build on the type of analysis Rathbun conducted with the added benefit of many more temporally and spatially contextualized individuals.

### CHALLENGES INHERENT IN ANALYZING THE KISH SKELETAL MATERIAL

In the course of our reanalysis of the Kish remains, we have faced a set of challenges that made our task more difficult and rendered our ultimate conclusions rather more tenuous and conditional than we would have hoped. While some of these challenges

have been amply documented elsewhere,<sup>62</sup> some are specific to the skeletal materials and their study.

First, the size, pace, and manner of the excavations at Kish were largely incompatible with the recovery of the sort of fine-grained data that would facilitate a full reconstruction of the mortuary practices and lived experiences of the people of Kish (a state of affairs familiar to any Kish researcher). Given the difficult stratigraphy, poor condition of the bones, rushed pace of excavation, and lack of adequate supervision, many skeletons went unnoticed, were only partially recovered, or, if recovered, were only partially documented. As a result, we now possess many skeletons from graves for which we have little or no contextual data, and we know of many graves for which we have no information on the existence or disposition of the bones that were originally inside. Moreover, the inconsistent numbering of finds from the excavation is particularly problematic in the case of the tombs. As a consequence, some of the grave numbers that can be associated with particular skeletons currently held in museums are either confusing or of limited value for the reconstruction of context, if not utterly meaningless.

In addition to these more general challenges inherent to the Kish collections, we have confronted some specific and persistent issues in our examination of the skeletal remains that have limited or confounded our study. Foremost among these are the related issues of poor representation (completeness) and poor preservation of the remains. A full adult skeleton consists of 206 bones, but of the nearly 800 individuals from the Kish excavation whom we examined for the present study, most were represented by just a handful of skeletal elements. Even in those cases where a large number of bones were available for study, their condition was frequently poor. The remaining skeletal elements were often very fragmentary, eroded, and chalky; as such, a great deal of meaningful skeletal information was lost. The poor representation and condition of the bones is the result of at least three factors: the highly saline and periodically moist burial environment,<sup>63</sup> the poor quality of the excavation, and the poor practices of curation following excavation. The incompleteness of the remains makes the task of comparing individuals very difficult, since one cannot compare, for example, the foot bones of one person with the mo-

<sup>61</sup> Rathbun 1975.

<sup>62</sup> E.g., Gibson 1972; Moorey 1978; Pestle et al. 2006.

<sup>63</sup> Cronyn 1990, p. 277; Penniman 1934, p. 67.

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lar of another. Finally, as discussed above, the racial focus of many earlier works on the topic and the lack of recent comparative work on skeletal remains from Mesopotamia in general provides us with little ground from which to begin our study and little comparative material against which to judge it.

## THE SKELETAL SAMPLE FROM KISH

All told, we analyzed the remains of some 757 individuals from Kish for the present study (as calculated using Minimum Number of Individuals/MNI).<sup>64</sup> The Department of Anthropology at the Field Museum curates the remains of 692 individuals, and the remaining 65 individuals are held by the Department of Paleontology at the Natural History Museum in London. At both institutions, it is relatively common for the remains of multiple individuals to be subsumed under one museum catalog number such that a list of cataloged skeletons significantly underestimates the actual number of individuals present. Why the remains of multiple individuals should have come to be combined into one catalog lot is unclear and likely the result of a number of processes ranging from the bona fide recovery of multiple individuals from a single interment (though noted in only one of 154 graves in the A Cemetery, for instance) to the accidental combination of individuals in a museum box or drawer. During the course of our analysis, the presence of duplicate skeletal elements (for example, two right humeri), differences in the size of remains (adult vs. juvenile), or differences in burial number attribution (judged by actual numbers written on the skeletal remains) were sufficient grounds for separating a given catalog lot into multiple individuals for analytical purposes. When multiple individuals were discovered within a catalog lot by any of these means, they were treated as representing bona fide multiple individuals from a given interment, as there was no way of separating such occurrences from instances in which individuals from different burials may have been combined accidentally at a later date.

The degree of representation (how many bones of an individual are present) and the quality of preservation of the remains varies greatly between and among the 757 identified individuals. Although a

small percentage of the retained skeletons is nearly complete, the great majority of the remains are represented by just a few skeletal elements. Figure 9.1 (FM 192550) illustrates a more or less “typical” degree of representation for an individual from Kish, with fragments of roughly twenty bones being all that remain from the original complement of 206. Of the remains that are present, there is also wide variation in the quality of their preservation. Such variation is not surprising given the differing ages of the material in question (between roughly 1,000 and 4,000 years old) and the differences in burial conditions found around the site. At their best, the preserved remains were robust and unweathered, with some possessing the pale yellow coloration and slightly greasy feel of modern bone; at their worst, elements were chalky and crumbly, suggesting an almost total loss of organic components (collagen). At present, a small project is underway to assess the degree of taphonomic and diagenetic alteration to the respective organic and inorganic fractions of the remains.

It is worth noting that although the Field Museum possesses far more remains, the remains held by the Natural History Museum in London are, in general, in better condition. We attribute this systematic difference in quality to the rather liberal understanding of the terms of the division of Kish artifacts that the Oxford-based director of the project, Stephen Langdon, chose to exercise.<sup>65</sup> As a consequence, the “representative” collection of skeletal materials now in London is not truly representative of the state of the Kish skeletal materials in general. Furthermore, the quality of the documentation of the graves varies greatly between institutions (all of those in London possess at least minimal contextual data), as well as between excavation contexts and field seasons. For example, the graves of the A Cemetery, which were excavated and published in the early years of the project by the more capable Ernest Mackay, are well documented (especially as reconstructed by Roger Moorey), as are the graves from the earlier seasons of excavation on Ingharra, unlike the later seasons’ findings at Ingharra, which are almost a total loss. Similarly, the numerous graves from Mound W are almost entirely undocumented.

<sup>64</sup> Lyman 1994.

<sup>65</sup> Moorey 1978, p. 16.



Figure 9.1. Typical state of completeness and preservation of the skeletal material from Kish (FM 192550).

## EFFORTS AT CONTEXTUALIZATION

Bioarchaeological analyses are based on the study of trends expressed at the population level; as a consequence, the lack of contextual data for many graves and the resulting inability to assign many individuals to particular periods or parts of the site can have a decidedly negative analytical effect. To maximize the effectiveness of our analyses, one of our principal tasks has been the reconstruction of contextual data for as many graves as possible. Our concerted efforts in this vein have substantially increased the number of individuals for whom we possess informative contextual data, and in consequence, the sample size available for our analysis has been markedly increased.

Of the 757 individuals examined during the course of the present study, 578 can now be positively associated with a burial number (although in some cases, the assigned burial number is uninformative). The burial numbers assigned to the skeletons were determined by a number of methods. In the best-case scenario, burial numbers were found written on the bones. This occurred in 407 of the 757 skeletons. If no number was found on the bones, archival records from the Field Museum, the Natural History Museum, and the Ashmolean

Museum, as well as original documentation and correspondence from the time of excavation and later published reports,<sup>66</sup> were all examined and, when appropriate, used to assign burial numbers to remains. While our work has greatly expanded the number of burials that now possess contextual data, our reassessment of the earlier attributions of burial numbers determined by Ted Rathbun<sup>67</sup> and Guillermo Algaze<sup>68</sup> is in almost complete agreement. Our determinations of burial numbers concurred with Rathbun's determinations 90 percent of the time and with Algaze's determinations in 95 percent of cases.

Of the 757 individuals included in the present study, 388 now can be attributed positively to a given chronostratigraphic period. This compares with a sample size of only 140 individuals for whom chronological periods could be determined by Rathbun.<sup>69</sup> In general, we assigned individuals to specific chronological periods on the basis of their stratigraphic position, the artifacts found in their grave, or both. This was a relatively easy task in the case of Mound A (where 149 of the 154 excavated graves

<sup>66</sup> E.g., Algaze 1983–84; Rathbun 1975.

<sup>67</sup> Rathbun 1975.

<sup>68</sup> Algaze 1983–84.

<sup>69</sup> Rathbun 1975.



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were roughly contemporary and datable to Early Dynastic III/Akkadian) and Mound W (where all the graves were Achaemenid). The graves of Ingharra (the last major spatial grouping) presented a more daunting task.

The difficult stratigraphy of Ingharra is discussed briefly above and has been amply documented by other authors.<sup>70</sup> Given the poor quality of excavation and documentation of the graves in this part of the site, the reconstruction of period attributions for these graves is even more difficult. Nevertheless, we have now succeeded in making period attributions for 296 individuals from Ingharra. This task was accomplished by several means: First, a large number of these graves could be assigned to a given period on the basis of previous attributions by Algaze, Rathbun, and Moorey.<sup>71</sup> Second, Karen Wilson, project coordinator of the Kish Project at the Field Museum, was able to assign an additional group of burials to specific periods on the basis of artifacts from those burials now held in the Field Museum's collections. Third, documentation of the Ingharra excavations, in particular the correspondence of Penniman and Henry Field's unpublished catalog of Ingharra materials,<sup>72</sup> provided evidence with which further attributions were made.

Finally, the depths of the graves as noted in archival sources, in combination with the stratigraphic charts of Gibson<sup>73</sup> (see fig. 5.21, this volume) and Lloyd,<sup>74</sup> were used to assign a further number of the graves to particular periods. In broad strokes (table 9.1) and barring any conflicting artifactual data, attributions were made as follows: graves found at 4 m or more below plain level were assigned to Early Dynastic I (a determination that is in

agreement with the findings of Algaze<sup>75</sup>), graves between 4 m below plain level and the plain level (the red stratum) could only be assigned to Early Dynastic I/Early Dynastic III (see note below on Early Dynastic II graves), graves between the red stratum and 1 m above the plain were assigned to a "pure" Early Dynastic III, graves between 1 and 2.5 m above plain level were attributed to the Akkadian period, graves between 3 and 5.5 m above the plain were attributed to the Ur III/Old Babylonian period, and graves found more than 5.5 m above the plain were assigned to the Neo-Babylonian period. While we fully understand the somewhat speculative nature of this final exercise, and we respect the opinion of Moorey<sup>76</sup> on this matter, we nonetheless feel confident that these period attributions serve, if nothing else, as good *termini post quem* for the various burials.

The final complicating factor in determining period attributions for the Ingharra graves was the need to reassign period attributions, even those that had been previously determined, for any Early Dynastic II burials, given that Early Dynastic II has been proven to be a more or less fictitious time period in the Mesopotamian chronology.<sup>77</sup> The result of this reshuffling of the Early Dynastic II graves accounts for the portion of the graves assigned to the amalgam Early Dynastic I/Early Dynastic III period.

Finally, in addition to assigning individuals to time periods, we also were able to assign numerous individuals to specific mounds, trenches, and depths; 486 individuals can now be positively attributed to a particular mound, and 396 individuals can be further identified to a specific trench (most of these in Ingharra). Spatially, the two largest clusters of individuals are from Mound A (n = 63) and Ingharra (n = 399).

Table 9.1. Chronostratigraphic attributions of Ingharra mound graves.

| Level   | Period                |
|---|-----------------------|
| 5.5+ m above the plain                        | Neo-Babylonian        |
| 3–5.5 m above the plain                       | Ur III/Old Babylonian |
| 1–2.5 m above the plain                       | Akkadian              |
| Red stratum (plain level)–1 m above the plain | Early Dynastic III    |
| 4 m below the plain–red stratum (plain level) | Early Dynastic I/III  |
| 4+ m below the plain                          | Early Dynastic I      |

<sup>70</sup> Algaze 1983–84; Gibson 1972; Lloyd 1969; Moorey 1978.

<sup>71</sup> Algaze 1983–84, p. 147; Rathbun 1975, pp. 256–71; Moorey 1978, pp. 110–14, fiche #2 C11–E09.

<sup>72</sup> Field 1946.

<sup>73</sup> Gibson 1972, p. 308, fig. 61.

<sup>74</sup> Lloyd 1969, pl. VII.

<sup>75</sup> Algaze 1983–84, p. 154.

<sup>76</sup> Moorey 1978, p. 103.

<sup>77</sup> Evans 2007.

## ANALYTICAL METHODS

Bioarchaeological analyses demand the use of a uniform, preestablished data collection protocol. The use of such a protocol facilitates the statistical comparison of individuals as grouped by period, area, sex, age, and so on. Moreover, it allows for comparisons across disparate data sets such that a more regional perspective may be attained. In the present study, as in most recent bioarchaeological studies in the United States, each individual set of skeletal remains was assessed for numerous morphological, pathological/traumatic, metric, and discrete epigenetic features following guidelines and standards established in *Standards for Data Collection from Human Remains* with additional data collection criteria derived from Buzon and colleagues.<sup>78</sup> All data were compiled in spreadsheets designed expressly for the present project, and as many as 235 data points could be collected for each individual. In the following pages, we detail the methods used for the collection and analysis of data pertaining to the demography, health, and relatedness of the individuals constituting the Kish collection of human skeletal remains.

### DEMOGRAPHY

Ascertaining the demographic distribution for any given sample begins with the collection of data on sex and age for each individual. The poor preservation of the Kish remains meant that demographic information for many individuals could not be determined with any degree of certainty. In the present case, each adult individual was examined for known sexually dimorphic cranial and pelvic traits; in cases where both cranial and pelvic bones could be assessed, pelvic traits were considered more reliable indicators. Only adult remains were assessed for sex, as the determination of sex from subadult remains is not generally thought to be possible using macroscopic osteological indices alone.<sup>79</sup> The cranial traits used in adult sex assessment were the prominence of the mental eminence, glabella, nuchal lines, and mastoid processes, as well as the shape and thickness of the supraorbital margins. The pelvic traits used were the shape of the subpubic concavity, subpubic angle, ischiopubic ramus ridge, greater sciatic notch, preauricular sulcus, and ventral arc.

For subadults (individuals under 18 years of age at the time of their death), chronological age was estimated by observing the state of dental eruption and the degree of epiphyseal fusion, as well as through the measurement of long-bone diaphyses. For adults, age was determined through evaluation of the condition of the pubic symphysis, the degree of cranial suture closure, and the state of molar wear.<sup>80</sup> Individuals who could be aged by any of these means were grouped into the following large categories for analysis: neonate (NE, conception to 6 months), infant 1 (I1, 6 months to 6 years), infant 2 (I2, 6 to 12 years), juvenile (JU, 12 to 18 years), young adult (YA, 20 to 35 years), middle adult (MA, 35 to 50 years), old adult (OA, over 50 years). When the specific age of adult individuals could not be clearly determined, they were placed into a generic adult category (A, over 18 years).

### HEALTH

To assess the health and well-being of the Kish population, we observed six broad indicators of health and stress. Each of these indicators can result from a variety of underlying etiologies and their interpretation is thus somewhat fraught, but together they have proven to be sensitive indicators of general levels of population health. The observed indices fall into two broad categories. The first group, which includes linear enamel hypoplasia (LEH), cribra orbitalia (CO) and porotic hyperostosis (PH), molar dimensions, and stature, reflects generalized childhood health. The second group, comprising dental caries, arthropathies, and skeletal trauma, are the bodily manifestations of adult behaviors—diet, activity patterns, and violence or accidental injury, respectively. Each of these indices is discussed below.

By uniting multiple indicators, we hope to be able to assess overall patterns of community health. Despite our best attempts at standardization and thoroughness, any reconstruction of past health and activities must consider a number of potential biases and limitations inherent in skeletal and mortuary data.<sup>81</sup> Bioarchaeologists have argued that the most successful means of approaching these problems is through enriching the osteological record by considering all possible contextual information.<sup>82</sup> The use of data from an array of health indicators in

<sup>78</sup> Buikstra and Ubelaker 1994; Buzon et al. 2005.

<sup>79</sup> But see Schutkowski 1993; Weaver 1980.

<sup>80</sup> Buikstra and Ubelaker 1994.

<sup>81</sup> Wood et al. 1992.

<sup>82</sup> Steckel and Rose 2002, p. 586.

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concert with information about the mortuary and archaeological context from the site will strengthen our investigation of the Kish inhabitants' lived experiences.

As mentioned above, we evaluated several indicators that may reflect differences in childhood health or resource access during periods of development: linear enamel hypoplasia, cribra orbitalia and porotic hyperostosis, molar dimensions, and stature. The first, linear enamel hypoplasia, is commonly employed by bioarchaeologists to help determine an individual's general health status during his or her childhood. Linear enamel hypoplasia presents as a macroscopic disruption in the normal growth and mineralization of tooth enamel. These metabolic disturbances create pits or grooves in the structure of dental enamel and mark a discrete moment of stress that occurred during the childhood years when the tooth crowns were forming. Hypoplasia can result from acute nutritional deficiencies (frequently related to monocrop agricultural diets) or acute childhood disease, including febrile conditions, diarrheal diseases, and crowd diseases such as measles.<sup>83</sup> For our reanalysis of the Kish collection, we examined all available teeth for the presence of linear horizontal grooves and provided a presence/absence score for this condition for all individuals.

Cribra orbitalia and porotic hyperostosis both present as porosity on cranial bones. Cribra orbitalia is usually seen as the bilateral pitting of the superior portion of the orbit of the frontal bone, while porotic hyperostosis is visible as porous lesions on the bones of the cranial vault.<sup>84</sup> This porosity is the result of the expansion of the internal cancellous (spongy) bone and the concomitant thinning of the external cranial table. Both of these conditions are commonly linked to acute bouts of childhood anemias, which in turn are strongly linked to cereal-heavy diets but also can be the result of high levels of parasites.<sup>85</sup> More recently, Walker and colleagues have argued that these skeletal markers are more suggestive of subperiosteal bleeding or megaloblastic anemia in childhood, which in turn can result from dietary inadequacies or poor sanitary conditions.<sup>86</sup> Regardless of the specific disease(s) they result from, both of these indicators continue to serve as useful

markers of generalized childhood health. In our sample, all individuals with orbits were examined for pitting and porous lesions, and specimens with cranial vaults were studied for porosity and thinning of the cranial bone. Each case was noted as presence or absence, and state of healing and location were documented.

Two metric indicators of childhood health, molar dimensions and adult stature, were also considered in our evaluation. In the case of these metric indices, the sexes were considered separately, as males and females of a given population generally differ in stature, and most other metric indices, including molar dimensions, differ by about 15 percent (i.e., males are generally about 15 percent larger than comparable females).

Recent research has shown that the dimensions of teeth are sensitive indicators of an individual's systemic health during his or her childhood (when permanent teeth are actively growing). This is based on the assumption that the environment, and environmental stressors, can decrease the growth potential of an individual and, if widespread enough, a population. In general, and all other things being equal, larger molar diameters reflect a population reaching its genetic growth potential, and smaller molar diameters reflect the converse.<sup>87</sup> The types of stressors that have been shown to produce such an effect include periods of war, famine, and other nutritional deprivations.<sup>88</sup> Measuring the maximum buccolingual crown diameters in permanent first and second molars and comparing these measurements across time periods can thus shed light on how environmental factors affect overall health. In the present study, every available first or second molar (maxillary and mandibular) was measured buccolingually (left to right). Third molars (wisdom teeth) were excluded from these analyses because their growth is frequently irregular even within a given population.

Bioarchaeologists also consider adult stature to be an effective indicator of childhood nutritional status and the standard of living in any given population. Stature reflects childhood health because of the strong relationship between food intake and processes of growth and maturation. Not only do the environmental conditions to which juveniles

<sup>83</sup> Larsen 1997, pp. 44–46.

<sup>84</sup> Larsen 1997, pp. 30–34.

<sup>85</sup> Ortner 2003, p. 373.

<sup>86</sup> Walker et al. 2009.

<sup>87</sup> Harris, Potter, and Lin 2001, p. 312.

<sup>88</sup> Harris, Potter, and Lin 2001.

are subject ultimately affect their adult height,<sup>89</sup> but size variation in adults also tends to reflect chronic childhood health and nutritional conditions. Therefore, stature is useful for exploring differential access to resources. As is standard practice, we assessed stature using long-bone length as a proxy for adult height. All complete adult long bones encountered in the Kish collection were measured with an osteometric board or digital calipers.

As a means of studying adult behaviors—including diet, activity patterns, and violence—we also evaluated three skeletal indicators of health and well-being: dental caries, arthropathies, and skeletal trauma. Dental caries, more commonly known as cavities, are a disease process characterized by a focal demineralization of hard dental tissues by organic acids. These acids are produced by bacterial fermentation of dietary carbohydrates and sugars.<sup>90</sup> Caries can manifest from slight enamel opacities to extensive cavitation or even the complete loss of tooth crowns, roots, or both. Several factors are involved in the formation, frequency, and severity of caries, including the oral environment, oral bacteria, and diet, particularly the intake of carbohydrates. In this study, we identified caries as the cavitation of teeth and scored every individual's teeth for the presence or absence of this condition.

Arthropathies, or degenerative changes to joints, present in skeletal specimens as both the destruction of the articular surfaces of bones (evidenced as pitting or eburnation—a polishing resulting from bone-to-bone contact) and the body's responsive formation of additional bone intended to buttress the weakened joint. These arthropathic changes are a direct corollary of the repeated strenuous use of a joint and the loss of cartilaginous protection of bone; as such, they can provide strong presumptive evidence of both generalized hard labor and even of specific habitual activities.<sup>91</sup> We examined all available joint surfaces for evidence of arthropathic changes, and data including location, form, and severity were recorded for all observed instances.

Finally, skeletal remains were examined for the presence of cranial and postcranial fractures. Trauma can occur from either violent events or accidents; fortunately, the two sometimes can be putatively differentiated. Violent injuries frequently

manifest as facial fractures and cranial depressions, resulting from blows to the head.<sup>92</sup> Other forms of violent engagement can cause fractures to long bones. These include defensive injuries, such as ulnar fractures (so-called *parry fractures*), or injuries that clearly result from weaponry. Accidental injuries, which can result from special circumstances or simply from living in difficult terrain, tend to be less severe fractures to smaller bones, such as carpals or rib bones, and also differentially affect the long bones.<sup>93</sup> For the Kish sample, traumatic injury was recorded throughout the skeleton by noting the affected bone, location, state of healing, and shape of the injury.

Following data collection, all health indicator data were analyzed and cross-referenced in order to explore relationships between health, sex, area, socioeconomic status, site size, and period, as well as any correlations among the health indicators themselves.

## RELATEDNESS

The final major area of the present reanalysis of the Kish remains focused on determining the degree of biological affinity (relatedness) between the inhabitants of the city's different periods and between the individuals interred in the site's different mounds. Analysis of this type begins with the scoring of nonmetric traits: discrete morphological features that can be readily observed and scored (on either a presence/absence basis or using a graded scale) during macroscopic analysis of skeletal remains. Such traits include small extra bones within cranial sutures (ossicles); abnormal bony or dental projections; failures in typical ossification patterns that result in small, nondetrimental holes in a bone's surface; and variation in the number or positions of foramina (holes for blood vessels or nerves).<sup>94</sup> Observation and scoring of nonmetric traits is made possible by referring to drawings, to photographs, and, for dental nonmetric traits, to a series of standardized dental casts distributed by Arizona State University.<sup>95</sup> While the expression of these nonmetric traits does not strictly adhere to Mendelian rules of inheritance, they show considerable genetic variation

<sup>89</sup> Neves and Costa 1998, p. 278.

<sup>90</sup> Larsen 1997, p. 65.

<sup>91</sup> Buzon et al. 2005, p. 897.

<sup>92</sup> Walker 1989.

<sup>93</sup> Larsen 1997, p. 109.

<sup>94</sup> Buikstra and Ubelaker 1994, p. 85.

<sup>95</sup> Turner, Nichol, and Scott 1991.

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and a high degree of heritability. They have been employed in biodistance and evolutionary studies in physical anthropology with great efficacy since at least the late 1950s.<sup>96</sup>

For the present study, data on some 110 traits, predominantly in the cranium and dentition, were collected. The present work deals only with the 75 traits found in the cranium and dentition, as postcrania were available only in very small numbers for the periods and areas of most interest. Cranial nonmetric trait definitions and scores were based on studies by Buikstra and Ubelaker<sup>97</sup> and Berry and Berry,<sup>98</sup> while dental nonmetrics followed Turner, Nichol, and Scott.<sup>99</sup> A full list of traits that were evaluated can be found in tables 9.2 and 9.3. Following the guidelines of Buikstra and Ubelaker,<sup>100</sup> positive occurrences of each trait, as well as absences and instances in which observations could not be made, were all recorded. Bilateral traits were scored for their maximum degree of expression, a practice that maximizes sample size,<sup>101</sup> and graded (non-dichotomous) data were made dichotomous about the overall sample mean only after data collection was complete and in advance of statistical analysis.

Following data collection, individuals were grouped by period, period and sex, mound, and mound and sex; biodistances (estimates of biological relatedness) between the resulting groups were calculated using C. A. B. Smith's mean measure of divergence (MMD) following Sjøvold.<sup>102</sup> This statistical technique calculates the degree of similarity or dissimilarity between *a priori* groups (in this case, periods, mounds, periods and sexes, and mounds and sexes) using the relative frequency of expression of the various nonmetric traits observed in each group.<sup>103</sup>

<sup>96</sup> Berry and Berry 1967; Cheverud and Buikstra 1981a, 1981b, 1982; Richtsmeier and McGrath 1986; Saunders 1989; Self and Leamy 1978; Sjøvold 1973.

<sup>97</sup> Buikstra and Ubelaker 1994.

<sup>98</sup> Berry and Berry 1967.

<sup>99</sup> Turner, Nichol, and Scott 1991.

<sup>100</sup> Buikstra and Ubelaker 1994, p. 86.

<sup>101</sup> Sutter and Cortez 2005.

<sup>102</sup> Sjøvold 1977.

<sup>103</sup> The actual analysis of these data were greatly aided by Mark Hubbe of the Instituto de Investigaciones Arqueológicas y Museo, Universidad Católica del Norte, San Pedro de Atacama, Chile, who developed a Visual Basic-programmed Excel spreadsheet that automated the calculation of the MMD values, an otherwise onerous and time-consuming task. In addition, this program automatically corrected for positive occurrence proportions of 0 or 1—using, when  $p = 1$ , corrected  $p = 1 - (1/4n)$

Each biodistance comparison between the groups in question was actually computed twice, once using the full suite of traits observed in the remains and once using only those traits that exhibited statistically significant contingency  $\chi^2$  values ( $p < 0.1$ ). At present, there is some disagreement about the appropriateness of each of these approaches, with some scholars suggesting that all traits (meaning the traits for which at least one instance was observed in each group under study) must be used in such analysis<sup>104</sup> and others arguing that MMD requires that all traits analyzed vary significantly among the samples analyzed. While this latter step undoubtedly has the effect of amplifying existing differences between samples and thus increasing the chances of finding statistically significant differences between them,<sup>105</sup> as this debate remains unresolved, we present both sets of data here. In addition to the raw MMD values, we also calculated standard deviations and standardized MMD distances, and the latter were then used to generate multidimensional scaling plots useful for representing and visualizing the similarities and dissimilarities between the groups under analysis in either two- or three-dimensional space.

## BIOARCHAEOLOGICAL RESULTS

Here, we turn to the results of our bioarchaeological analyses. We begin by discussing the demographic profile of the Kish skeletal population, then move to a brief discussion of the demographic and cultural significance of an intriguing subset of infant burials from the site. We follow this with a treatment of both diachronic health trends in the city and contemporary health variation. Next, we present the results of our study of the population's relatedness by period and area before providing a more detailed examination of the effects of social status on health in the burials of the A Cemetery.

### DEMOGRAPHY

The results of the demographic analysis of the Kish skeletal remains are presented in figures 9.2 and 9.3

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and, when  $p = 0$ , corrected  $p = 1/4n$ , where  $n$  equals the sample size—which can unduly influence the results on such analysis if left uncorrected.

<sup>104</sup> E.g., Shimada and Corruccini 2005.

<sup>105</sup> Sutter and Mertz 2004, p. 135.

## CHAPTER 9. LIFE AND DEATH AT KISH

Table 9.2. Cranial nonmetric traits analyzed in the Kish samples.

| Trait                               | Bone/suture/landmark examined for trait               |
|-------------------------------------|---|
| Metopic suture                      | Frontal   |
| Supraorbital notch                  | Frontal   |
| Supraorbital foramen                | Frontal   |
| Accessory supraorbital foramen      | Frontal   |
| Frontal grooves                     | Frontal   |
| Frontotemporal articulation         | Junction of frontal and temporal                      |
| Maxillary torus                     | Maxilla   |
| Multiple infraorbital foramina      | Maxilla   |
| Accessory lesser palatine foramen   | Palatine  |
| Palatine torus                      | Palatine  |
| Infraorbital suture                 | Zygomatic   |
| Multiple zygomaticofacial foramina  | Zygomatic   |
| Os japonicum                        | Zygomatic   |
| Marginal tubercule                  | Zygomatic   |
| Parietal foramen                    | Parietal  |
| Divided parietal                    | Parietal  |
| Typanic dihisence                   | Temporal  |
| Auditory exostosis                  | Temporal  |
| Suprameatal pit or spine            | Temporal  |
| Flexure of superior sagittal sulcus | Occipital   |
| Highest nuchal line                 | Occipital   |
| Paracondylar process                | Occipital   |
| Bridging of jugular foramen         | Occipital   |
| Pharyngeal tubercule                | Occipital   |
| Inca bone                           | Occipital   |
| Condylar canal                      | Occipital   |
| Double condylar facet               | Occipital   |
| Precondylar tubercle                | Occipital   |
| Divided hypoglossal canal           | Occipital   |
| Foramen ovale incomplete            | Sphenoid  |
| Foramen spinosum incomplete         | Sphenoid  |
| Rocker mandible                     | Mandible  |
| Mental foramen                      | Mandible  |
| Mandibular torus                    | Mandible  |
| Mylohyoid bridge                    | Mandible  |
| Bregmatic bone                      | Bregma  |
| Coronal ossicle                     | Coronal suture  |
| Epipteric bone                      | Junction of frontal, parietal, temporal, and sphenoid |
| Asterionic bone                     | Junction of occipital, parietal, and temporal         |
| Apical bone                         | Lambda  |
| Lambdoid ossicle                    | Lambdoid suture                                       |
| Ossicle in occipitomastoid suture   | Occipitomastoid suture                                |
| Ossicle at parietal notch           | Parietal notch  |
| Sagittal ossicle                    | Sagittal suture                                       |

Table 9.3. Dental nonmetric traits analyzed in the Kish samples.

| Trait                         | Tooth/teeth examined for trait     |
|-------------------------------|------------------------------------|
| Winging                       | Maxillary central incisors         |
| Tuberculum dentale            | Maxillary central incisors         |
| Peg-shaped lateral incisor    | Maxillary lateral incisors         |
| Labial convexity              | Maxillary incisors                 |
| Shoveling                     | Maxillary incisors                 |
| Double shoveling              | Maxillary incisors                 |
| Canine mesial ridge           | Maxillary canines                  |
| Canine distal accessory ridge | Maxillary canines                  |
| Distosagittal ridge           | Maxillary first premolar           |
| Enamel extension              | Maxillary premolars and molars     |
| Upper premolar root number    | Maxillary premolars                |
| Carabelli trait               | Maxillary first molar              |
| Upper molar root number       | Maxillary first molar              |
| Upper molar root number       | Maxillary second molar             |
| Peg-shaped third molar        | Maxillary third molar              |
| Metacone expression           | Maxillary molars                   |
| Hypocone expression           | Maxillary molars                   |
| Cusp 5                        | Maxillary molars                   |
| Parastyle                     | Maxillary molars                   |
| Distoarticular ridge          | Mandibular canines                 |
| Lower canine root number      | Mandibular canines                 |
| Tomes' root                   | Mandibular first premolar          |
| Anterior fovea                | Mandibular first molars            |
| Deflecting wrinkle            | Mandibular first molars            |
| Lower molar root number       | Mandibular first molars            |
| Lower molar root number       | Mandibular second and third molars |
| Protostylid                   | Mandibular molars                  |
| Lower molar groove pattern    | Mandibular molars                  |
| Cusp 5                        | Mandibular molars                  |
| Cusp 6                        | Mandibular molars                  |
| Cusp 7                        | Mandibular molars                  |

and tables 9.4–9.6. Focusing first on the pooled sample (fig. 9.2 and table 9.4), which includes all individuals irrespective of period or mound, we contend that the available demographic data are consistent with a normal ancient population distribution. The pooled age-at-death distribution (fig. 9.2) presents a bimodal attritional mortality distribution like that most often seen in prehistoric populations, with relatively high infant/child mortality and a secondary mortality peak in the middle adult category.<sup>106</sup> If anything, given the poor quality of excavation at Kish, it is likely that additional infant and child remains were overlooked or not retained, and thus the actual infant/child mortality rate in the ancient city was substantially higher than our data indicate.

<sup>106</sup> Acsádi and Neméskeri 1970; Weiss 1973.

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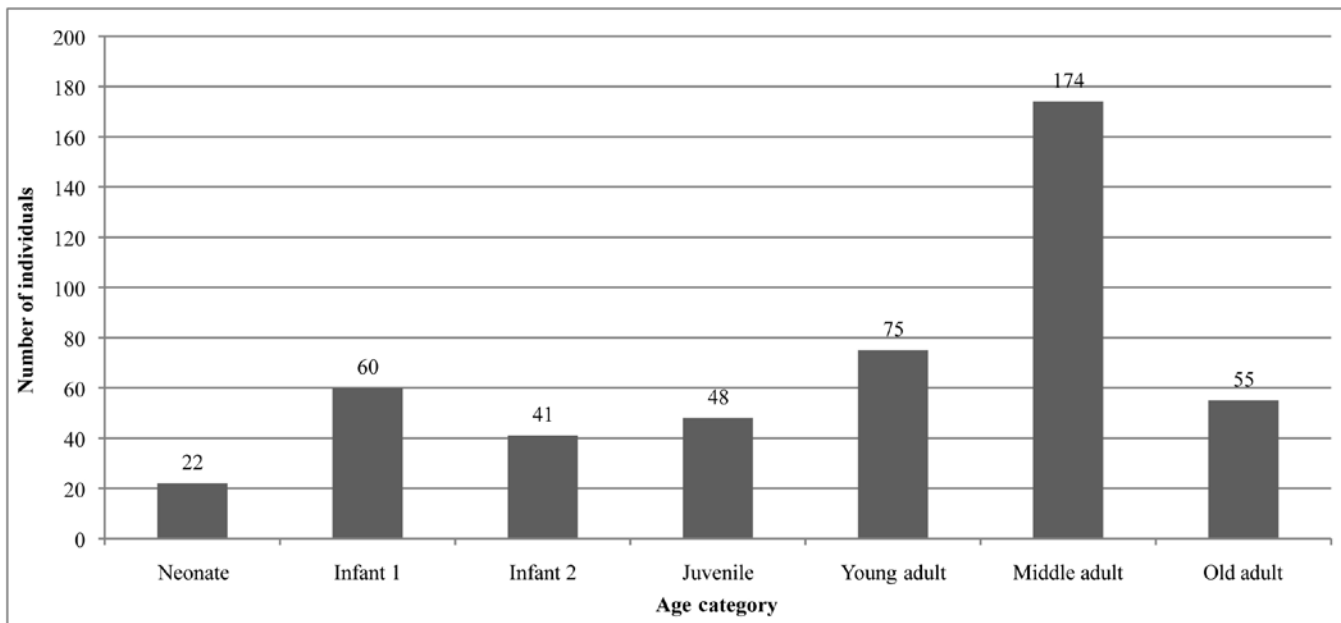


Figure 9.2. Age-at-death distribution of the pooled Kish sample.

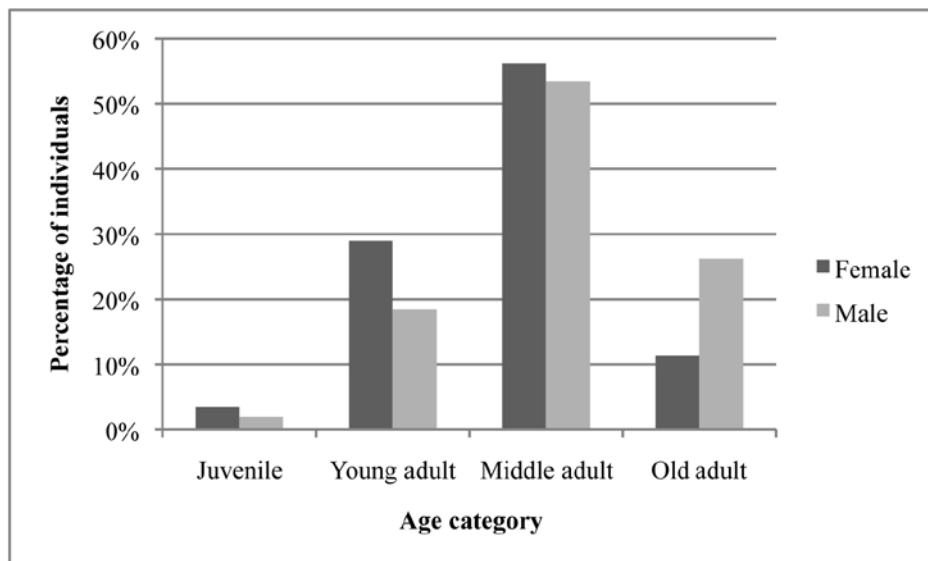


Figure 9.3. Age-at-death distribution for sexed members of the Kish sample.

Furthermore—and as we discuss in greater detail in reference to synchronic variation in health—including sex in the analysis of the pooled mortality distribution reveals two intriguing demographic patterns. First, although females are slightly under-represented in the pooled population (making up 47 percent of the sexed individuals), the difference is not statistically significant. It is likely a consequence of female remains preserving differentially and the fact that identifying female remains in poorly preserved collections is more difficult.<sup>107</sup> That the poorly preserved remains of some number of females may have been overlooked by the excavators

of Kish is not at all surprising and could account for this observed difference. Second, the age-at-death distribution of adults for whom sex could be determined (fig. 9.3) reveals earlier adult mortality for females than males, likely a consequence of sex- or gender-based inequalities in health or resource access. Such inequalities may have been the result of either sociocultural factors (e.g., males having greater access than females to dietary protein or quality sanitation) or the increased health risks incurred by women as a consequence of childbirth. Regardless of the exact cause of the observed difference, it is clear that, on the whole, women born in Kish could expect to live a shorter life than their male counterparts.

<sup>107</sup> Walker, Johnson, and Lambert 1988.

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Table 9.4. Kish sample demography by age and sex.

| Age           | Female | Male | Indet. | Total |
|---------------|--------|------|--------|-------|
| Neonate       | —      | —    | 22     | 22    |
| Infant 1      | —      | —    | 60     | 60    |
| Infant 2      | —      | —    | 41     | 41    |
| Juvenile      | 4      | 2    | 42     | 48    |
| Young adult   | 33     | 19   | 23     | 75    |
| Middle adult  | 64     | 55   | 55     | 174   |
| Old adult     | 13     | 27   | 15     | 55    |
| Adult         | 38     | 69   | 165    | 272   |
| Indeterminate | —      | —    | 10     | 10    |
| Total         | 152    | 172  | 433    | 757   |

Table 9.5. Kish sample demography by period and sex.

| Period                      | Female | Male | Indet. | Total |
|-----------------------------|--------|------|--------|-------|
| Jamdat Nasr                 | —      | —    | 3      | 3     |
| Early Dynastic I            | 11     | 20   | 69     | 100   |
| Early Dynastic I/III        | 9      | 7    | 34     | 50    |
| Early Dynastic III          | 4      | 12   | 19     | 35    |
| Early Dynastic III/Akkadian | 16     | 25   | 25     | 66    |
| Akkadian                    | 6      | 8    | 31     | 45    |
| Ur III/Old Babylonian       | 3      | 5    | 20     | 28    |
| Neo-Babylonian              | 5      | 11   | 25     | 41    |
| Achaemenid                  | 2      | 7    | 7      | 16    |
| Modern                      | 2      | 1    | 1      | 4     |
| Total                       | 58     | 96   | 234    | 388   |

Table 9.6. Kish sample demography by mound/area and sex.

| Sex           | Jamdat  |          |      |         | Unknown Jamdat in |         | Total |
|---------------|---------|----------|------|---------|-------------------|---------|-------|
|               | Mound A | Ingharra | Nasr | Mound K | western Kish      | Mound W |       |
| Female        | 17      | 64       | 0    | 0       | 1                 | 2       | 84    |
| Indeterminate | 22      | 258      | 4    | 1       | 1                 | 7       | 293   |
| Male          | 24      | 77       | 0    | 1       | 0                 | 7       | 109   |
| Total         | 63      | 399      | 4    | 2       | 2                 | 16      | 486   |

Considering the demographic data by period, sample size is reduced to 154 individuals who could be sexed and 747 individuals who had some determination of age (including the catch-all “adult” category,  $n = 272$ ). The largest samples of sexed individuals are to be found in the Early Dynastic I ( $n = 31$ ) and Early Dynastic III/Akkadian ( $n = 41$ ) periods. The general demographic patterns mentioned above (underrepresentation of females and a younger average age at death for females) are also evident among the sexed individuals as grouped by period (table 9.5). The former phenomenon is particularly evident with a clear excess of males being present in the sample (96 vs. 58).

When the sample is grouped by mound/area (table 9.6), Ingharra ( $n = 399$ ) and Mound A ( $n = 63$ ) are found to have the largest number of individuals, although the sample sizes for both mounds are greatly reduced when only sexed individuals are counted (Ingharra:  $n = 141$ ; Mound A:  $n = 41$ ). Females are seemingly underrepresented in both mounds, although again only slightly (Ingharra: 77 males vs. 64 females; Mound A: 24 males vs. 17 females).

#### INFANT BURIALS AT KISH

Besides providing age and sex profiles for this sample and revealing possible gender-based differences



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in health and longevity, our demographic analysis also opened one additional interesting and unexpected avenue of inquiry.<sup>108</sup> In the course of this work we discovered twenty-seven well-preserved and nearly intact fetal and neonate skeletons among the largely incomplete and poorly preserved skeletons from Kish. While we acknowledge that these burials are from different times and that five of the infants cannot be assigned to a period with any degree of certainty, several noteworthy cultural phenomena may be gleaned from subsets of these infant remains.

By measuring all available skeletal elements from the twenty-seven infants and comparing the resulting data with metric indices derived from known age samples,<sup>109</sup> we were able to determine age at death with a high degree of precision (table 9.7). Most intriguingly, this age-at-death analysis determined that sixteen of the infants were of a perinatal age at the time of their death (between 38 and 42 weeks postconception).

Judging from the archival records, all but one of the identified neonate and infant individuals are from the Ingharra complex (the exception being from Mound W). The majority were solitary burials, likely interred in domestic settings beneath house floors in keeping with broad Mesopotamian norms.<sup>110</sup> Twenty of the twenty-seven burials, again in keeping with Near Eastern practices, lacked burial goods;<sup>111</sup> however, in two cases from the Early Dynastic period, expensive nonlocal objects, as well as the remains of adult individuals, accompanied the infant burials (or vice versa). The incorporation of at least some infants into a mortuary space that is shared in common with adults may be taken to suggest the full social integration of infants at Kish. Such full social integration stands in marked distinction to the practice of other ancient societies, in which the burials of infants were spatially segregated from adults as a consequence of the lesser social status accorded them.

Perhaps most intriguing is that as many as five of the Neo-Babylonian-period individuals who died at or around the time of birth were buried together in a tight cluster located immediately adjacent to, and at the foundation level of, the Ingharra

complex's large Neo-Babylonian temple of Ninlil/Ishtar. Elsewhere we argue that the existence and context of these burials does not provide evidence for a practice of selective infanticide<sup>112</sup>—or child sacrifice<sup>113</sup>—but rather for a form of burial treatment particular to perinates who died naturally and were then buried in association with the temple for sanctification or protection, a practice for which there is historical evidence.<sup>114</sup> This age-restricted mortuary treatment for perinates suggests the existence of an emic age grade reserved for newly born children in Neo-Babylonian Kish and a belief among the city's Neo-Babylonian inhabitants that such children, with their liminal status, required divine protection or supervision. While we have only briefly presented this topic here, such insights reveal the types of social and cultural processes that a contextualized bioarchaeological approach can begin to lay bare.

## HEALTH OVER TIME

Next we consider temporal trends seen in our two groups of health indicators, dealing first with diachronic patterns in childhood health and then moving on to adult behavior as seen through evidence of diet and activity patterns. Since the city of Kish was, at various times, a seat of regional hegemony and a vassal of foreign powers, we were particularly interested to see whether changes in any of the observed population health indices were possibly correlated with diachronic changes in the city's political situation. Similarly, since we know from surface survey data that the city grew and contracted during various periods in its history,<sup>115</sup> we were also interested to see if any relationships existed between population health and the size of the city and its populace. Taken together, these lines of inquiry should afford a view into how both rising urbanization and political centralization may have affected the health of Kish's population. In the following sections we present our results for childhood health, adult behavior, and city size correlations, and conclude with a discussion of the general patterns revealed by these data sets.

### Results for Childhood Health Indicators

Data on the three childhood health indicators that are scored as present or absent (*cribra orbitalia*,

<sup>108</sup> Torres-Rouff and Pestle 2012.

<sup>109</sup> Fazekas and Kósa 1978; Jeanty 1983; Scheuer, Musgrave, and Evans 1980.

<sup>110</sup> Harris 2000, p. 15.

<sup>111</sup> Alekshin 1983.

<sup>112</sup> Torres-Rouff and Pestle 2012.

<sup>113</sup> Field 1930.

<sup>114</sup> Jacobsen 1987, p. 475 n. 1; Stol and Wiggermann 2000, p. 29.

<sup>115</sup> Gibson 1972.

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Table 9.7. Osteological and contextual data for Kish fetal and neonate skeletons.

| FM no.   | Burial | Age        | Mound    | Trench      | Period      | Goods                                | Vessel burial? |
|----------|--------|------------|----------|-------------|-------------|--------------------------------------|----------------|
| 192351-B | Z303   | Perinatal  | Ingharra | Z-3         | ED III      | —                                    | No             |
| 192433-A | Y362   | 6-12 mos.  | Ingharra | Y           | ED I/ED III | Pots, stone vessels, lamps, shells   | No             |
| 192452   | —      | Perinatal  | —        | —           | —           | Fish vertebrae                       | —              |
| 192464   | —      | Perinatal  | Ingharra | Y           | —           | —                                    | —              |
| 192513   | B398   | Perinatal  | Ingharra | B-3         | Ur III/OB   | —                                    | Yes            |
| 192516   | B401   | Perinatal  | Ingharra | B-3         | NB          | —                                    | Yes            |
| 192521   | B402   | Perinatal  | Ingharra | B-3         | NB          | Fish bones                           | Yes            |
| 192567   | RR214  | Perinatal  | Ingharra | N-S railway | Ur III/OB   | —                                    | No             |
| 192572   | Z219   | Fetal      | Ingharra | Z-a         | Akk         | —                                    | No             |
| 192585-B | Z258   | 6-12 mos.  | Ingharra | Z-a         | Ur III/OB   | —                                    | —              |
| 192591   | Z271   | Perinatal  | Ingharra | Z-2         | ED III      | —                                    | No             |
| 192593   | Z270   | 6-12 mos.  | Ingharra | Z-2         | ED III      | —                                    | —              |
| 192594   | Z275   | 6-12 mos.  | Ingharra | Z-2         | ED III      | —                                    | —              |
| 192612-A | Z317   | ca. 3 mos. | Ingharra | Z-2         | ED III/Akk  | Rich objects such as ivory and beads | No             |
| 192615-B | Z334   | 6-12 mos.  | Ingharra | Z-1         | Ur III/OB   | —                                    | —              |
| 192632   | B403   | Perinatal  | Ingharra | B-3         | NB          | —                                    | Yes            |
| 192633   | B404   | Perinatal  | Ingharra | B-3         | NB          | —                                    | Yes            |
| 192639   | C504   | Perinatal  | Ingharra | C-4         | —           | —                                    | No             |
| 192650   | 619    | 3-9 mos.   | —        | —           | —           | —                                    | —              |
| 192713   | —      | Perinatal  | Ingharra | Y           | —           | —                                    | —              |
| 192726-A | Y636   | 3-6 mos.   | Ingharra | Y           | —           | Stone bead                           | —              |
| 192726-B | Y636   | 3-6 mos.   | Ingharra | Y           | —           | Stone bead                           | —              |
| 192727-B | —      | Perinatal  | Ingharra | Y           | —           | —                                    | —              |
| 192789-B | —      | 6-12 mos.  | W        | —           | Achaemenid  | —                                    | —              |
| 231793   | —      | Perinatal  | —        | —           | —           | —                                    | Yes            |
| 236460   | —      | Perinatal  | —        | —           | NB          | Faunal tooth                         | Yes            |
| FB1      | —      | Perinatal  | —        | —           | —           | —                                    | —              |

porotic hyperostosis, and linear enamel hypoplasia) are presented in table 9.8 and figure 9.4.

At first glance, two aspects of these data merit further discussion. First, independent of any other line of evidence, the extremely low prevalence of porotic hyperostosis observed at the site, the rate of which peaks at only 4 percent in the Early Dynastic III/Akkadian period, would seem to suggest a consistently low overall level of anemia or parasitism in the Kish population. In contrast, the slightly higher observed prevalence of cribra orbitalia, the frequency of which fluctuates markedly over the periods examined and which reaches as high as 18.2 percent in the Akkadian period, would suggest a somewhat higher level of these conditions and hint at changes in dietary or sanitary conditions over time. While these two lines of evidence would thus appear to be somewhat contradictory, it merits noting that the discrepancy between the two indicators is in keeping with recent research that suggests that

they have different etiologies.<sup>116</sup> Even with this inconsistency, the overall low prevalence of both indicators would seem to suggest that anemia resulting from an iron-deficient diet or heavy parasite loads was not a major impediment to health in any period of Kish's occupation.

In contrast, the observed rates of linear enamel hypoplasia are quite high for almost all of the periods in question and show marked fluctuations (increases and decreases greater than 40 percent) from one period to the next. The rates of linear enamel hypoplasia seen in the Early Dynastic periods are particularly high (43.5–60.0 percent) and likely speak to widespread growth interruptions (malnutrition, high fevers, diarrheal episodes) among the children of that era. Rates of linear enamel hypoplasia drop precipitously in the Early Dynastic III/Akkadian through Ur III/Old Babylonian periods, only to spike again in the Neo-Babylonian period

<sup>116</sup> Walker et al. 2009.

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Table 9.8. Frequency of childhood health indicators by period.

| Period                      | Cribral orbitalia | Porotic hyperostosis | Linear enamel hypoplasia |
|-----------------------------|-------------------|----------------------|--------------------------|
| Jamdat Nasr                 | 0/0 (0.0%)        | 0/1 (0.0%)           | 0/1 (0.0%)               |
| Early Dynastic I            | 1/20 (5.0%)       | 0/37 (0.0%)          | 20/46 (43.5%)            |
| Early Dynastic I/III        | 2/14 (14.3%)      | 0/22 (0.0%)          | 7/16 (43.7%)             |
| Early Dynastic III          | 1/12 (8.3%)       | 0/19 (0.0%)          | 6/10 (60.0%)             |
| Early Dynastic III/Akkadian | 6/35 (17.1%)      | 2/50 (4.0%)          | 7/38 (18.4%)             |
| Akkadian                    | 2/11 (18.2%)      | 0/19 (0.0%)          | 1/8 (12.5%)              |
| Ur III/Old Babylonian       | 0/9 (0.0%)        | 0/12 (0.0%)          | 2/9 (22.2%)              |
| Neo-Babylonian              | 2/18 (11.1%)      | 0/26 (0.0%)          | 7/15 (46.6%)             |
| Achaemenid                  | 0/9 (0.0%)        | 0/11 (0.0%)          | 1/8 (12.5%)              |
| Modern                      | 0/3 (0.0%)        | 0/3 (0.0%)           | 2/3 (66.7%)              |
| Total                       | 14/131            | 2/200                | 53/154                   |

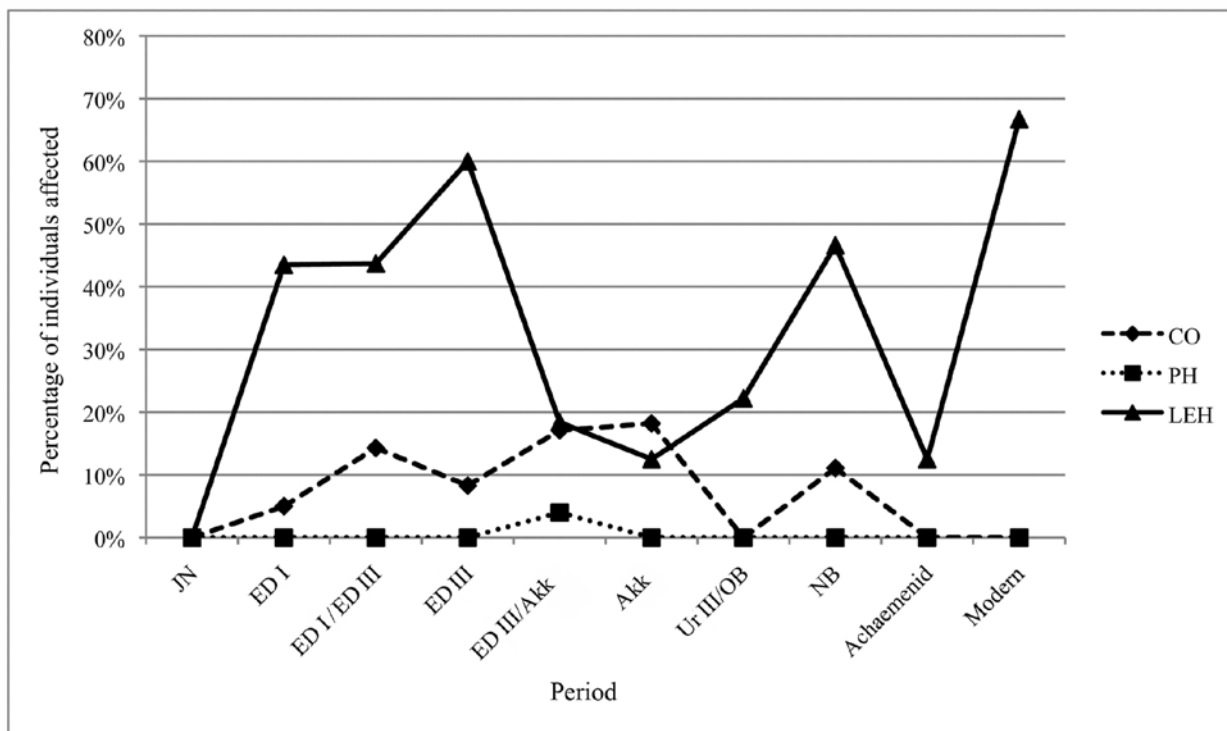


Figure 9.4. Childhood health indicators over time.

Table 9.9. Frequency of childhood health indicators by period and sex.

| Period                      | Cribral orbitalia |       | Porotic hyperostosis |       | Linear enamel hypoplasia |       |
|-----------------------------|-------------------|-------|----------------------|-------|--------------------------|-------|
|                             | Females           | Males | Females              | Males | Females                  | Males |
| Jamdat Nasr                 | 0/0               | 0/0   | 0/0                  | 0/0   | 0/0                      | 0/0   |
| Early Dynastic I            | 1/4               | 0/4   | 0/4                  | 0/10  | 3/6                      | 5/10  |
| Early Dynastic I/III        | 0/5               | 1/3   | 0/6                  | 0/5   | 1/2                      | 1/3   |
| Early Dynastic III          | 1/3               | 0/4   | 0/4                  | 0/7   | 1/1                      | 4/5   |
| Early Dynastic III/Akkadian | 2/10              | 2/15  | 0/13                 | 1/22  | 4/10                     | 1/19  |
| Akkadian                    | 0/3               | 1/3   | 0/4                  | 0/4   | 0/0                      | 0/1   |
| Ur III/Old Babylonian       | 0/1               | 0/1   | 0/1                  | 0/3   | 0/2                      | 1/1   |
| Neo-Babylonian              | 1/2               | 0/7   | 0/3                  | 0/9   | 1/3                      | 3/6   |
| Achaemenid                  | 0/2               | 0/4   | 0/2                  | 0/6   | 1/2                      | 0/4   |
| Modern                      | 0/2               | 0/1   | 0/2                  | 0/1   | 2/2                      | 0/1   |
| Total                       | 5/32              | 4/42  | 0/39                 | 1/67  | 13/28                    | 15/50 |

and beyond. The types of health stresses that can cause linear enamel hypoplasia would thus appear to be most commonplace in periods during which the city's political fortunes were at their highest (Early Dynastic I to Early Dynastic III) and at lower levels when the city had become little more than a vassal of other greater powers (Early Dynastic III/Akkadian to Ur III/Old Babylonian). Possible interpretations of these trends are provided below.

Examining these period-to-period changes statistically using Fisher's exact tests, we find no statistically significant differences over time in the prevalence of cribra orbitalia or porotic hyperostosis, both of which, as noted above, occur relatively infrequently in the sample. However, this analysis did reveal one statistically significant change in the prevalence of linear enamel hypoplasia, in that the precipitous drop in linear enamel hypoplasia frequency from the Early Dynastic III period (6/10, 60.0 percent) to the Early Dynastic III/Akkadian period (7/38, 18.4 percent)—a decrease of more than 40 percent (fig. 9.4)—is statistically significant at  $p = 0.016$ . Why the factors contributing to this aspect of childhood health should improve so drastically at this time remains unknown.

When these indicators of childhood health are considered in relation to sex (table 9.9), some further detail on these patterns emerges. Comparing prevalence rates among contemporary males and females, the only statistically significant difference observed is in the frequency of linear enamel hypoplasia during the Early Dynastic III/Akkadian period ( $p = 0.036$ ), during which time the females presented a far higher rate of childhood growth disruptions (40.0 percent) than did their male contemporaries (5.2 percent). While the magnitude of this difference is thus beyond question, the cause remains difficult to pinpoint, although gender-based differences in access to food or sanitation are again possible culprits. Looking at each sex individually, females show no significant differences between the periods for any of the indicators. Similarly, males show no significant differences between the periods in either cribra orbitalia or porotic hyperostosis. In the case of linear enamel hypoplasia, however, there is again a statistically significant ( $p < 0.026$ ) difference in male prevalence rates from the Early Dynastic III period (4/5, 80 percent) to the Early Dynastic III/Akkadian period (1/19, 5.3 percent). Given this result, the statistically significant change seen in linear enamel hypoplasia between periods when

the sexes are pooled can largely be attributed to the dramatically lower prevalence of linear enamel hypoplasia among males in the Early Dynastic III/Akkadian period. This finding is of particular interest given that these patterns likely reflect differential access to resources in this period, with males having greater access to protein as well as less exposure to parasites or other potential sources of growth disruption.

Two metric indicators of childhood health conditions, adult stature and molar diameters, were also analyzed for temporal trends. Beginning with adult stature, our examination revealed that very few of the sets of skeletal remains of individuals who could be sexed (a necessity for this analysis) included complete long bones (humerus, ulna, radius, femur, tibia, fibula), the lengths of which form the basis for the reconstruction of stature (table 9.10). As such, meaningful data on adult stature becomes difficult or impossible to reconstruct for many of the periods under consideration. For example, we could not even begin to compute an average value for male stature by period because no time period had more than one example of any given long bone. While a few more bones were available from females, after calculating mean period values only one statistically significant difference was observed between the stature of females of successive periods—namely, females in the Achaemenid period had radius lengths that were significantly longer than those of females in the Neo-Babylonian period ( $t = -25.981$ ,  $df = 1$ ,  $p = 0.024$ ). Using Trotter and Glesser's formulae for the reconstruction of stature from long-bone lengths<sup>117</sup> and combining the results of all available long-bone lengths for these periods, we observed an increase in average female stature from 159.2 to 166.0 cm from the Neo-Babylonian to the Achaemenid period. Absent any corroborating data, however, these data alone do not make a case for a substantive increase in health conditions for females of the Achaemenid period as compared with their Neo-Babylonian predecessors.

Moving to molar diameters, we used t-tests to determine the significance of differences in average molar size between same-sexed individuals of consecutive time periods. Following Harris and colleagues,<sup>118</sup> we focused our analysis on changes in buccolingual diameters of maxillary and mandibular

<sup>117</sup> Bass 2005.

<sup>118</sup> Harris, Potter, and Lin 2001.

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Table 9.10. Mean adult long-bone lengths by period and sex (in millimeters).

| Period—sex                         | Humerus       | Radius        | Ulna        | Femur       | Tibia       | Fibula      |
|------------------------------------|---------------|---------------|-------------|-------------|-------------|-------------|
| Early Dynastic I—female            | 320.5 (n = 2) | 241 (n = 1)   | —           | 403 (n = 1) | 342 (n = 2) | —           |
| Early Dynastic I—male              | —             | —             | 285 (n = 1) | 475 (n = 1) | 402 (n = 1) | —           |
| Early Dynastic I/III—female        | —             | —             | 237 (n = 1) | 409 (n = 1) | —           | —           |
| Early Dynastic I/III—male          | —             | —             | —           | 438 (n = 1) | 359 (n = 1) | —           |
| Early Dynastic III—female          | —             | 213 (n = 1)   | —           | —           | —           | —           |
| Early Dynastic III—male            | 355 (n = 1)   | 274.5 (n = 1) | —           | —           | —           | —           |
| Early Dynastic III/Akkadian—female | 320 (n = 1)   | —             | —           | —           | 362 (n = 1) | —           |
| Early Dynastic III/Akkadian—male   | 309 (n = 1)   | —             | 270 (n = 1) | —           | 374 (n = 1) | —           |
| Akkadian—male                      | —             | 260 (n = 1)   | —           | 475 (n = 1) | —           | —           |
| Ur III/Old Babylonian—male         | —             | 273 (n = 1)   | 298 (n = 1) | —           | —           | —           |
| Neo-Babylonian—female              | —             | 215.5 (n = 2) | 242 (n = 1) | —           | —           | —           |
| Achaemenid—female                  | 308 (n = 1)   | 238 (n = 1)   | 264 (n = 1) | —           | 354 (n = 1) | —           |
| Modern—female                      | 299 (n = 1)   | —             | 250 (n = 1) | —           | —           | 332 (n = 1) |
| Modern—male                        | —             | 249 (n = 1)   | 270 (n = 1) | 441 (n = 1) | 378 (n = 1) | 366 (n = 1) |

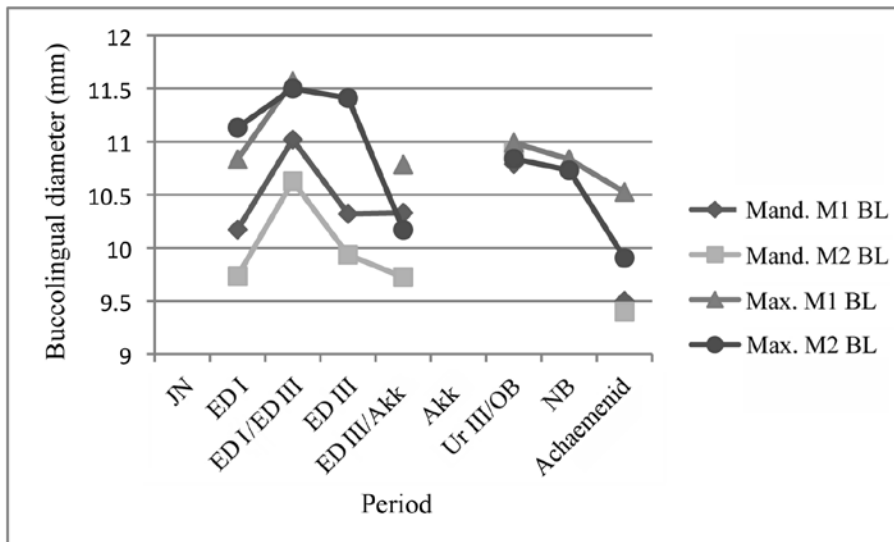


Figure 9.5. Female molar buccolingual diameters over time.

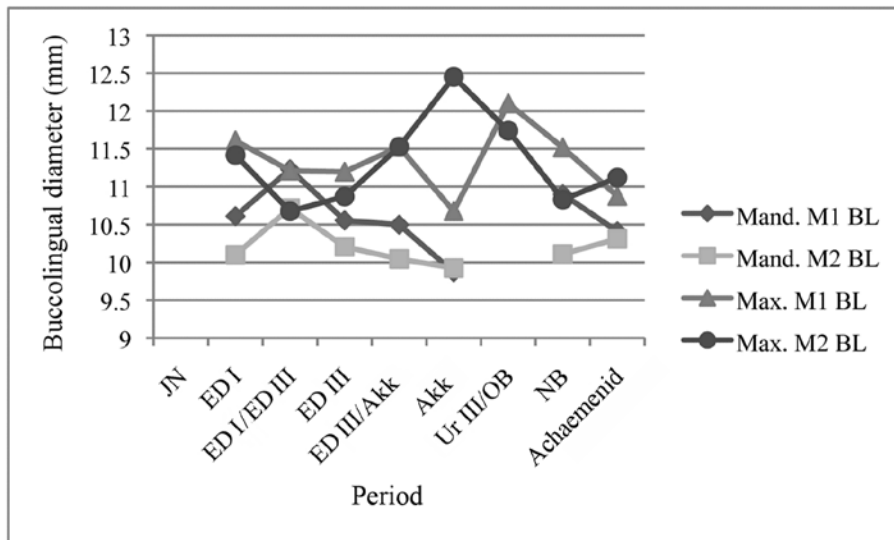


Figure 9.6. Male molar buccolingual diameters over time.

first and second molars. In figures 9.5 and 9.6, we present the mean buccolingual diameters of these four teeth by period for females and males, respectively.

Focusing first on the females (fig. 9.5), the dimensions of all four teeth increase substantially from Early Dynastic I to Early Dynastic I/III, with the increase in the mandibular first molars being statistically significant (0.85 mm,  $p = 0.04$ ). Following this apparent peak in health and growth, the dimensions of all four teeth trend downward through the Early Dynastic III and Early Dynastic III/Akkadian periods, with a subsequent rebound in the Ur III/Old Babylonian period (there is no data for the “pure” Akkadian period), followed finally by a general decline in the site’s final two periods of occupation. What these data appear to suggest is that the best periods of female health, at least as judged by attainment of growth potential, are in the middle of the Early Dynastic and later in the Ur III/Old Babylonian periods. Unfortunately, the lack of data for female molar dimensions in the Akkadian period introduces an unwelcome lacuna into our data.

The available molar data for males (fig. 9.6) are, unfortunately, rather more confusing and may reflect bias resulting from the preservation and completeness issues discussed earlier. Moving forward from the Early Dynastic I period, the dimensions of two teeth decrease while those of two others increase. The latter include the mandibular first molars, which increase in size by a statistically significant margin (0.62 mm,  $p = 0.038$ ). The two teeth that peak in the Early Dynastic I/III period decrease steadily thereafter all the way into the Akkadian period, whereas the two that decreased moving into Early Dynastic I/III increase thereafter. As a consequence, by the Akkadian period, three teeth are at their smallest and one (the maxillary second molar) is at its largest. Thereafter, the two teeth for which we possess data decrease in size steadily through the Neo-Babylonian period, after which there is another divergence in the data, with two teeth increasing in size and two decreasing in size moving into the Achaemenid period.

### Results for Indicators of Adult Behavior

We now shift focus to a consideration of temporal trends in those health indicators that reflect adult behavior. For an approximation of diet, we compared the rate of dental caries; examined trends in violence through the presence of traumatic injury; and

studied habitual activity through the observation of arthropathies, including osteoarthritis.

The frequency of carious dental lesions by period is presented in table 9.11. These data are useful as a means of examining differential access to certain dietary resources and of judging, at least in rough terms, the relative consumption of carbohydrates/sugars. When data for both sexes are pooled, no significant differences in caries frequency are observed, although the final three periods of the site’s occupation (Neo-Babylonian, Achaemenid, and modern) do exhibit the three highest frequencies of dental caries. Similarly, when sex is factored into the analysis, no significant differences in caries frequency are observed either within sexes and between periods or between sexes within a given period. Even purely descriptive trends are difficult to tease out of these data; for example, males exhibit higher caries rates in four of the eight periods for which we have data and, conversely, lower rates in the other four periods. What can be said with some certainty is that the frequency of caries observed in the Kish sample is consistently low, as judged by almost any ancient or modern standard. The highest observed rate, 27.8 percent for females in the Neo-Babylonian period, equates to just under nine carious teeth per individual—a number that is somewhat elevated, and definitely undesirable, but within the range of rates seen among other ancient agricultural peoples.<sup>119</sup> The low overall frequency of caries and the temporal stability thereof would appear, somewhat curiously, to attest to a diet in which refined sugars were largely absent and even carbohydrate consumption was moderate. Alternatively, practices of dental hygiene or other unknown factors may have served to mitigate the risk of caries resulting from consumption of dietary sugars.

Not surprisingly, the analyses of arthropathy and trauma data were complicated by the poor preservation of the Kish remains. Because of the small sample sizes, no statistical analyses were possible; we instead limit ourselves to a descriptive discussion of the observed patterns. Observations of arthropathy allow insight into body use and could, for example, provide evidence for a division of labor by sex. In examining the skeletal remains for evidence of arthropathy, we observed thirty individuals with porosity, lipping, or eburnation of the bone resulting from repetitive musculoskeletal activities

<sup>119</sup> Littleton and Frohlich 1993; Turner 1979.

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Table 9.11. Frequency of carious lesions per individual by period.

| Period                      | Pooled (%) | Male (%) | Female (%) |
|-----------------------------|------------|----------|------------|
| Jamdat Nasr                 | 1.85       | —        | —          |
| Early Dynastic I            | 1.80       | 2.60     | 0.00       |
| Early Dynastic I/III        | 1.60       | 0.00     | 2.80       |
| Early Dynastic III          | 0.40       | 0.00     | 2.50       |
| Early Dynastic III/Akkadian | 3.40       | 2.00     | 7.10       |
| Akkadian                    | 0.90       | 3.70     | 0.00       |
| Ur III/Old Babylonian       | 0.00       | 0.00     | 0.00       |
| Neo-Babylonian              | 5.6        | 3.50     | 27.80      |
| Achaemenid                  | 8.20       | 16.30    | 0.00       |
| Modern                      | 5.00       | 5.90     | 4.50       |

or osteoarthritis. The affected sample included all joints except those of the wrist and hand.<sup>120</sup> The most commonly affected joints are the bones of the shoulder (eight cases) and the bones of the foot and ankle (six cases). These are followed closely by the lumbar spine and neck (each with five cases). Two of the thirty individuals were affected by these arthritic conditions in more than one joint (FM 192547: shoulder and elbow; FM 192592: shoulder and hip). Of the thirty individuals with arthropathies, six individuals are female, nine are male, and fifteen are indeterminate. Although males show a somewhat higher frequency of arthropathy than females, there is no noticeable distinction between the sexes in terms of the joint affected. Similarly, no patterns are discernible in the distribution of arthropathy by period.

Traumatic injury is frequently studied to assess interpersonal violence in a given society (from face-to-face confrontations to warfare) as well as to explore the rate of accidental injury (from labor and life in rough terrain). Our analysis revealed evidence of eight traumatic injuries (table 9.12), representing only 1 percent of the 757 individuals in the sample and suggesting that the incompleteness of the skeletal remains is strongly affecting these data. Given this small and likely unrepresentative sample, statistical analysis of any type is impossible; instead, to get a sense of the distribution of trauma at Kish, we explore here these individuals and their respective traumatic injuries descriptively.

Intriguingly, the injuries of all eight individuals had evidence of healing, and there is a complete

lack of any visible perimortem trauma. While this does not rule out the possibility of violent injurious death for any of the individuals in question, no concrete evidence of such was found in the bony remains. It is interesting that all eight individuals with evidence of traumatic injury were adults and that, of the six individuals who could be sexed, all were assessed as males. While the small sample size makes conclusive statements impossible, it is nonetheless noteworthy that all of the injuries we observed were in adult males, a group that is typically depicted as more prone to both accidents and violence. Discerning evidence of violence from that of an accident is difficult given the conditions noted above, but we do note that five of the eight incidences of trauma are consistent with the pattern of wounds that would classically be considered to have resulted from interpersonal violence (cranial injuries and defensive/parry wounds). The only other pattern of note is that all trauma assignable to a period comes from the Early Dynastic, a period that many have described as being characterized by frequently warring city-states. Perhaps, then, the trauma seen in the Kish sample is an embodiment of these fractious and violent times.

### Results for City Size Correlations

Our final temporal consideration is focused on site size. As discussed above, temporal trends in observed health indices were compared to changes in the size of the city in order to gauge the possible role that city size and population density may have had in determining population health. To accomplish this, prevalence rates or average values of the various health indices detailed above (with the exception of stature, arthropathy, and trauma, for which there are not enough data) were compared—using correlation analysis—with estimates of site size derived

<sup>120</sup> Joints considered here are the neck, shoulder, elbow, lumbar spine, hip, knee, ankle, and foot. The carpal (wrist) bones were not analyzed, and no evidence of arthropathy was found in the distal ulna and radius.

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Table 9.12. Traumatic injuries in the Kish sample.

| Individual  | Sex    | Age          | Period      | Mound    | Trauma         |
|-------------|--------|--------------|-------------|----------|----------------|
| FM 192498   | Male   | Old adult    | —           | —        | Right parietal |
| FM 192550   | Male   | Adult        | ED III      | Ingharra | Two ribs       |
| FM 192620A  | Male   | Young adult  | ED I/ED III | Ingharra | Humerus        |
| FM 192637-A | Male   | Old adult    | —           | Ingharra | Right parietal |
| FM 192664-B | Male   | Adult        | —           | —        | Distal ulna    |
| FM 192763   | Male   | Young adult  | ED III/Akk  | A        | Humerus        |
| FM 192765   | Indet. | Young adult  | ED III/Akk  | A        | Ulna           |
| As. 13-23/4 | Indet. | Middle adult | ED III/Akk  | A        | At lambda      |

from survey maps provided by Gibson.<sup>121</sup> When Gibson provides no map for a given period, we employed an average of the city's size in the preceding and succeeding periods. Table 9.13 shows the city's size in hectares, and table 9.14 presents the results of the correlation analysis of city area and the various health indices.

Of the twenty health measures tested against changes in city area, only two—pooled linear enamel hypoplasia and male caries frequency—show statistically significant correlations at  $p < 0.05$  (table 9.14). Increases in city/population size would appear to be significantly related, with increases in the linear enamel hypoplasia rates for all individuals when pooled (0.794). They also show positive, although not significant, correlations when the sexes are considered independently (males: 0.561; females: 0.539). As enamel hypoplasia can result from numerous conditions related to urbanization, increased crowding, and poor sanitary conditions (including febrile conditions, diarrheal diseases, and “crowd” diseases such as measles), it is not at all surprising to find a strong statistical relationship between increases in city size and the frequency of linear enamel hypoplasia.<sup>122</sup> This suggests that Kish's flourishing urbanism and growth may have led to an increased exposure to childhood diseases via one or more pathways.

The highly significant relationship between city size and male caries rate is somewhat more perplexing, as periods of increased city size are correlated with a decreased frequency of dental caries among males. Conversely, the females in the present study have a caries rate that, although not statistically significant, shows a weak but positive correlation

with city size. The rate of cribra orbitalia among the females in our sample also has a much stronger correlation with city size than does that of their male counterparts (0.530 vs. 0.248), although neither was judged to be statistically significant. Whatever the specific etiology of these conditions, the very different relationship between city size and the caries and cribra orbitalia rates of males and females speaks to some degree of buffering of male well-being against deleterious conditions to which females of the city were being exposed.

#### Discussion of Health over Time

A broad look at temporal changes in health over the period of Kish's occupation demonstrates several instances in which a number of health indicators coincide with archaeological and historical data to suggest that changes in social milieu affected the health of Kish's population. If, for instance, we consider the Early Dynastic period as a whole, the very high rates of linear enamel hypoplasia can be interpreted as evidence of the pervasiveness and frequency of acute childhood growth stress. Admittedly, how these data can be reconciled with the generally large molar diameters seen in the period remains unclear. Moving into the Early Dynastic III/Akkadian and “pure” Akkadian periods, the rates of cribra orbitalia and porotic hyperostosis worsen (increase) slightly, while the rate of enamel hypoplasia improves. This presumptive improvement in health is unevenly distributed, as 40.0 percent of women still evidence linear enamel hypoplasia, while the prevalence among males drops to 5.2 percent, and males similarly experience a significant drop in caries.

While our data support the idea that the transition toward the Akkadian period was tumultuous, health improved in the Akkadian and Ur III/Old Babylonian periods as evidenced by the low frequency of linear enamel hypoplasia and even or declining

<sup>121</sup> Gibson 1972. Maps of the bounds of the settlement in each period were digitized, and Image J (a free, open-source image analysis software) was then used to calculate occupied area for each period.

<sup>122</sup> Hillson 1992; Sarnat and Schour 1941–42.



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Table 9.13. City area by period.

| Period                       | Area (ha) |
|------------------------------|-----------|
| Jamdat Nasr                  | 3.81      |
| Early Dynastic I             | 31.64     |
| Early Dynastic I/III*        | 42.06     |
| Early Dynastic III           | 52.48     |
| Early Dynastic III/Akkadian* | 41.41     |
| Akkadian                     | 30.34     |
| Ur III/Old Babylonian*       | 33.37     |
| Neo-Babylonian               | 38.01     |
| Achaemenid                   | 10.27     |

\* Estimated using mean of city's area in preceding and succeeding periods.

Table 9.14. Correlations of city size and health.

| Health index    | Pearson correlation | r <sup>2</sup> | Significance |
|-----------------|---------------------|----------------|--------------|
| Pooled CO       | 0.599               | 0.358          | 0.089        |
| Pooled PH       | 0.241               | 0.058          | 0.533        |
| Pooled LEH      | 0.794               | 0.630          | 0.011        |
| Pooled caries   | -0.397              | 0.158          | 0.290        |
| Male CO         | 0.248               | 0.062          | 0.519        |
| Male PH         | 0.241               | 0.058          | 0.533        |
| Male LEH        | 0.561               | 0.315          | 0.116        |
| Male max. M1    | 0.280               | 0.078          | 0.502        |
| Male max. M2    | -0.266              | 0.071          | 0.525        |
| Male mand. M1   | 0.362               | 0.131          | 0.425        |
| Male mand. M2   | 0.083               | 0.007          | 0.859        |
| Male caries     | -0.873              | 0.762          | 0.005        |
| Female CO       | 0.530               | 0.280          | 0.143        |
| Female PH       | —                   | —              | —            |
| Female LEH      | 0.539               | 0.291          | 0.134        |
| Female max. M1  | 0.650               | 0.422          | 0.163        |
| Female max. M2  | 0.682               | 0.465          | 0.092        |
| Female mand. M1 | 0.661               | 0.437          | 0.153        |
| Female mand. M2 | 0.460               | 0.212          | 0.359        |
| Female caries   | 0.238               | 0.056          | 0.571        |

amounts of cribra orbitalia. Later, the shift from the Ur III/Old Babylonian to the Neo-Babylonian period would appear to have been marked by a number of problems that ultimately were detrimental to the population's health. The Neo-Babylonian and Achaemenid periods show some of the lowest mean buccolingual molar diameters and highest caries rate for females, together with an overall increase in cribra orbitalia and porotic hyperostosis. Moreover, we have an additional piece of evidence for lower health status in the decreased female stature during this time.

## HEALTH ACROSS THE CITY

Comparisons of health indicators between various areas of the site (mounds) also yielded a suite of intriguing results. Focusing on the three areas of the site from which we possessed reasonable sample sizes (Mound A, the Ingharra complex, and Mound W), we observed the same childhood health indices (cribra orbitalia, porotic hyperostosis, linear enamel hypoplasia, adult stature, and molar dimensions) and adult behavior indices (dental caries, arthropathy, and traumatic injury) as used above. The results of the first iteration of this analysis, which grouped individuals by mound alone, are represented in figure 9.7.

We focus first on the three presence/absence-scored childhood health indicators: cribra orbitalia, porotic hyperostosis, and linear enamel hypoplasia

(fig. 9.7). The individuals from Mound A exhibited a much higher prevalence of cribra orbitalia (14.7 percent) and porotic hyperostosis (4.1 percent) than the individuals from Ingharra (9.5 and 1.1 percent) or Mound W (0 and 0 percent). However, none of the observed differences in cribra orbitalia or porotic hyperostosis were statistically significant at  $p = 0.05$ . In contrast, a statistically significant difference ( $p = 0.0297$ ) in the frequency of linear enamel hypoplasia was found between the individuals from Ingharra (35.3 percent) and those from Mound A (16.2 percent). While the individuals from Ingharra also displayed a much higher prevalence of linear enamel hypoplasia than those from Mound W (12.5 percent), that difference was not found to be statistically significant, likely because of the small sample size ( $n = 8$ ) from Mound W.

The two metric indices of childhood health employed in the present analysis—namely, adult stature and molar buccolingual diameter—were not computed for this analytical iteration because combining males and females for such an analysis negates their utility. Comparisons made within a sex and between mounds (i.e., Mound A females vs. Ingharra females) can, however, be of some substantial use. Data on these metrics are provided below in the discussion of mound and sex groupings.

We next turn to areal differences in our adult health and behavior indicators—namely, caries frequency, arthropathy, and trauma—data on which

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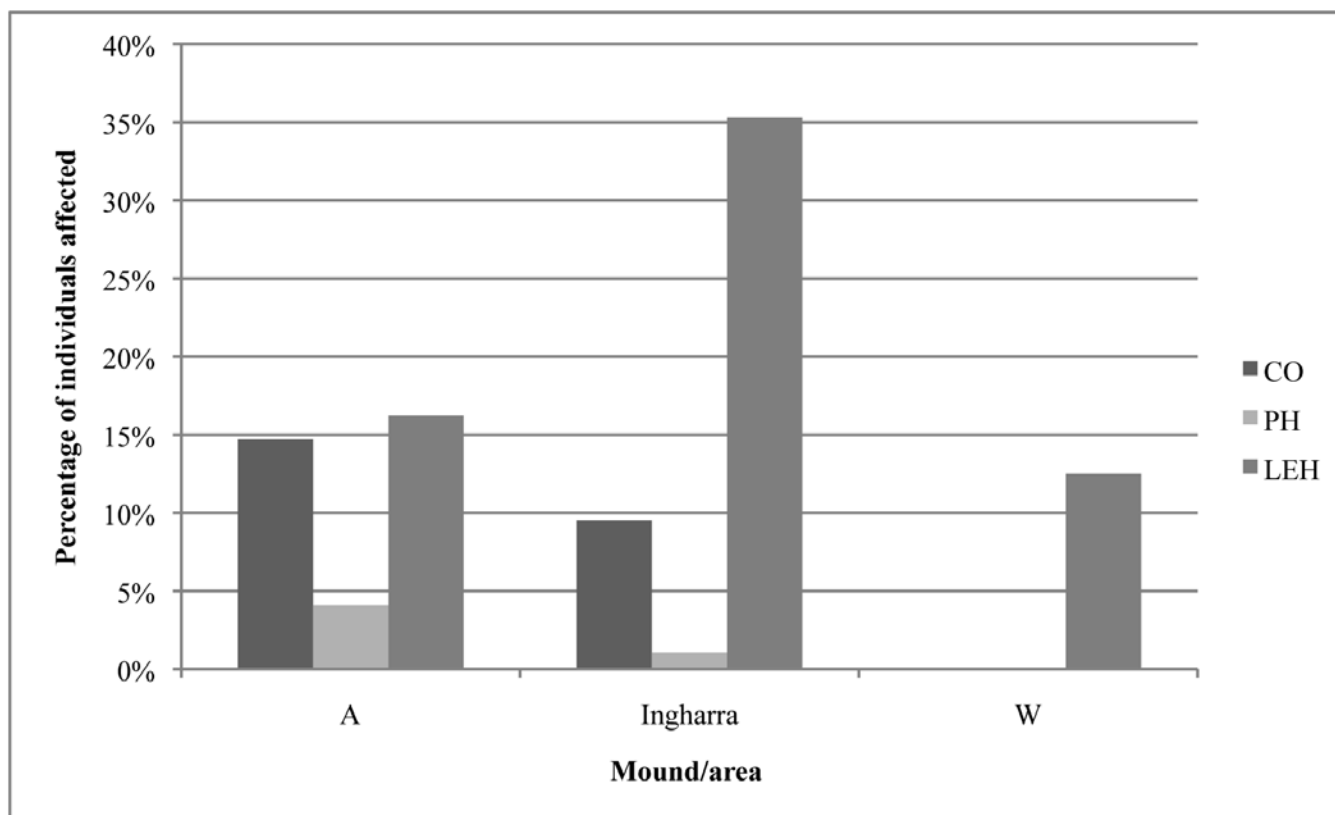


Figure 9.7. Childhood health indicators by mound/area.

is provided in figure 9.8 and table 9.12. Beginning with dental caries (fig. 9.8), no statistically significant differences were found between the individuals from the three mounds, despite the fact that the caries frequency of the individuals from Mound W (8.2 percent) was more than double that observed in Mound A (3.1 percent) or on Ingharra (2.0 percent). As above, this lack of significance is likely the result of the small sample size available from Mound W ( $n = 8$ ).

Evidence of arthropathic changes was observed in only one individual from Mound A, eighteen from Ingharra, and two from Mound W. The minute sample sizes prevent any statistical analysis and make interpretation difficult. Perhaps some differences in the degree of hard physical labor could explain the observed patterns, but little more than that can be said.

No evidence of skeletal trauma was observed among the remains from Mound W, while evidence of healed trauma was found in three individuals each from Mound A and Ingharra (see table 9.12). While the raw number of individuals with evidence for trauma from Mound A and Ingharra is equal, given that there are far fewer individuals from Mound A (63 vs. 399), the rate of trauma among

the individuals from Mound A would appear to be far higher than on Ingharra. While there are serious problems in the interpretation of these trauma rates, as discussed above, it is nonetheless noteworthy that two of the individuals from Mound A present evidence for traumatic injury presumably related to interpersonal violence (a defensive wound on the ulna of FM 192765 and a cranial fracture on As.13-23/4) versus only one individual from Ingharra (FM 192637-A, a healed cranial fracture). There is, therefore, minimal evidence suggesting a greater propensity toward interpersonal violence among the individuals buried in Mound A.

When information on sex was combined with data on mound attribution, additional interesting patterns arose. The results of this analysis are presented in figures 9.9 and 9.10. Due to small sample size, individuals from Mound W were excluded from this round of analysis.

We begin again with data on cribra orbitalia, porotic hyperostosis, and linear enamel hypoplasia as presented in figure 9.9. For cribra orbitalia, females from Mound A exhibited the highest prevalence rate of all four groups (20.0 percent), although their male counterparts from Mound A and the females from Ingharra also had comparatively elevated rates of

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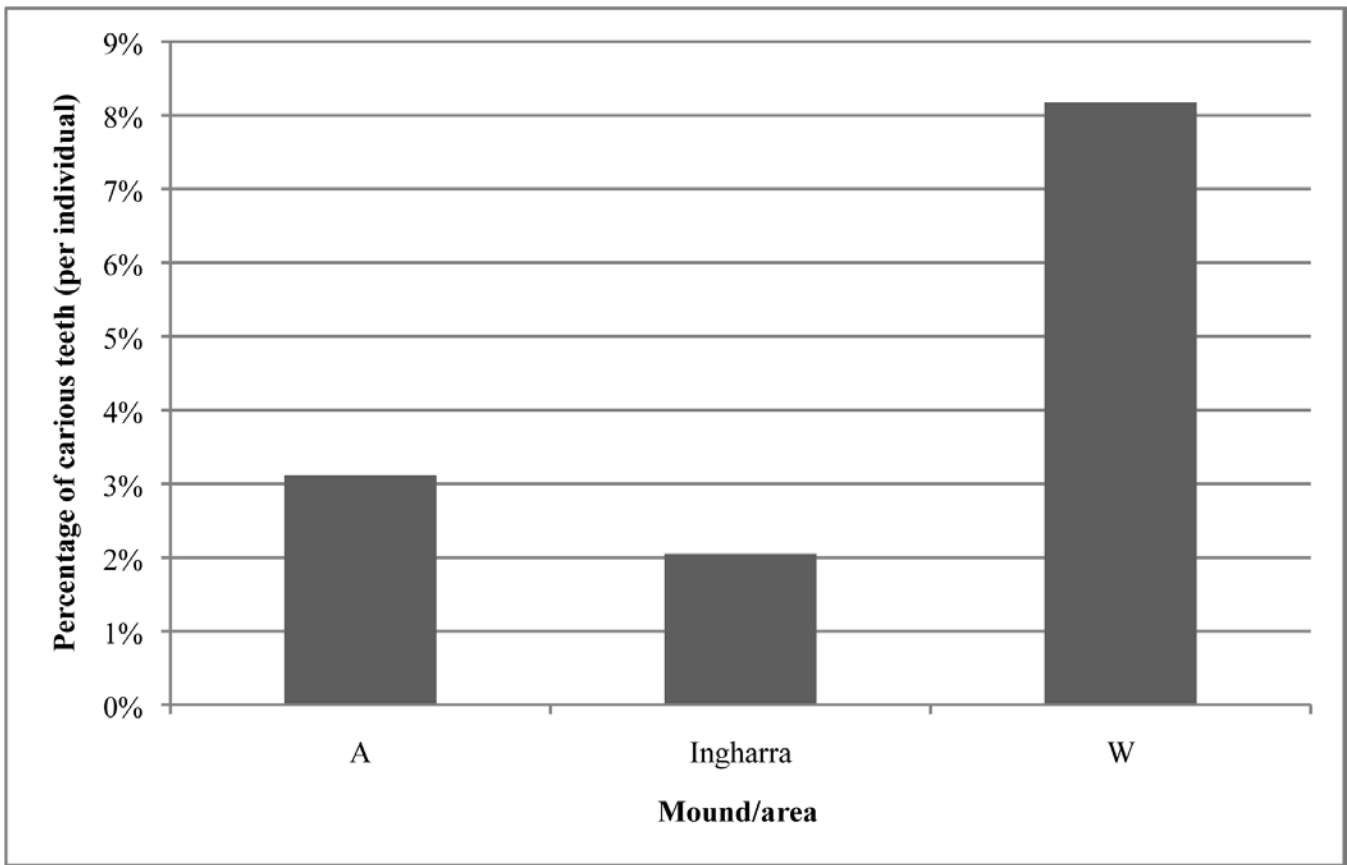


Figure 9.8. Caries frequency (percentage of carious teeth per individual) by mound/area.

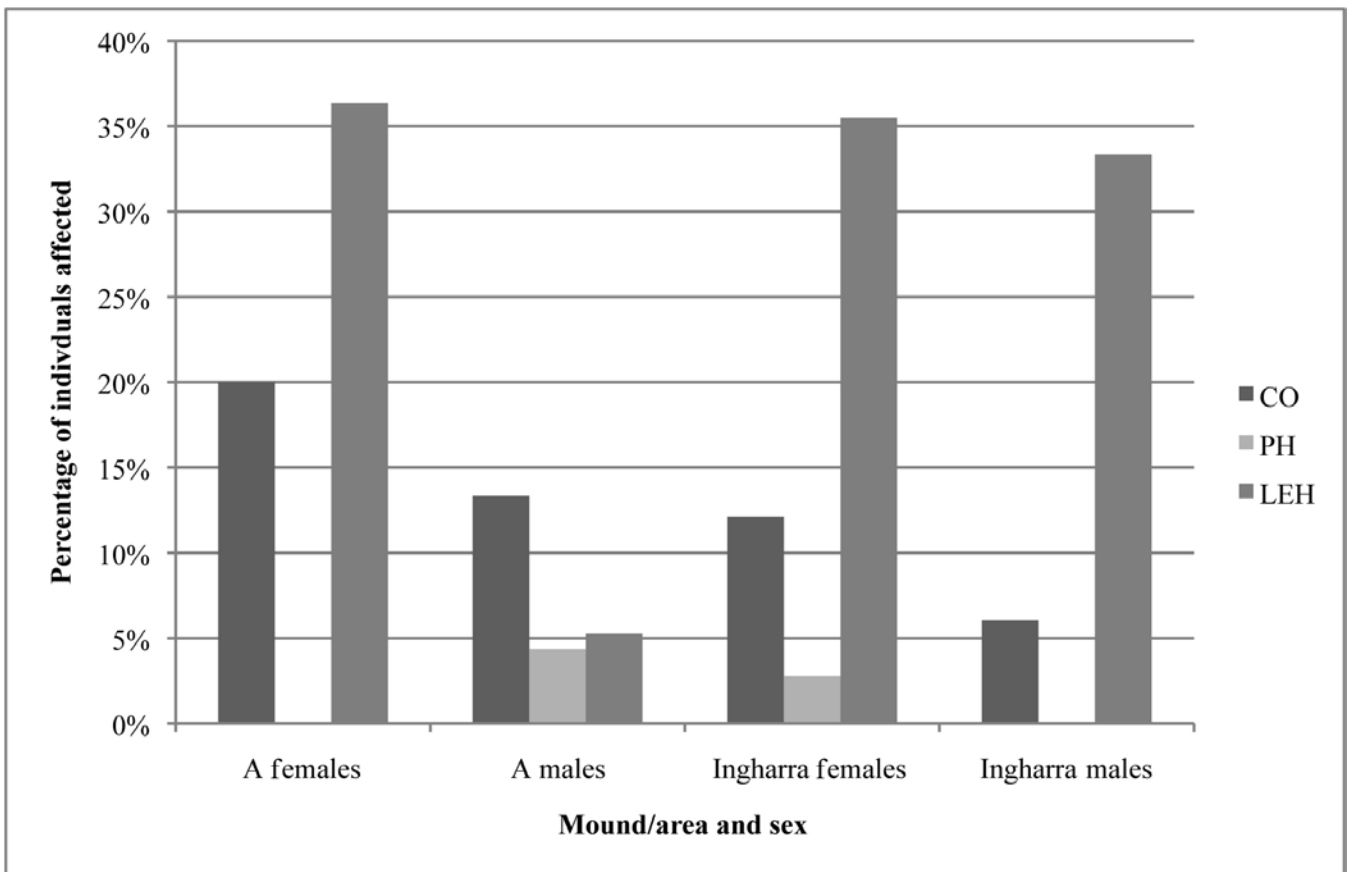


Figure 9.9. Childhood health indicators by mound/area and sex.

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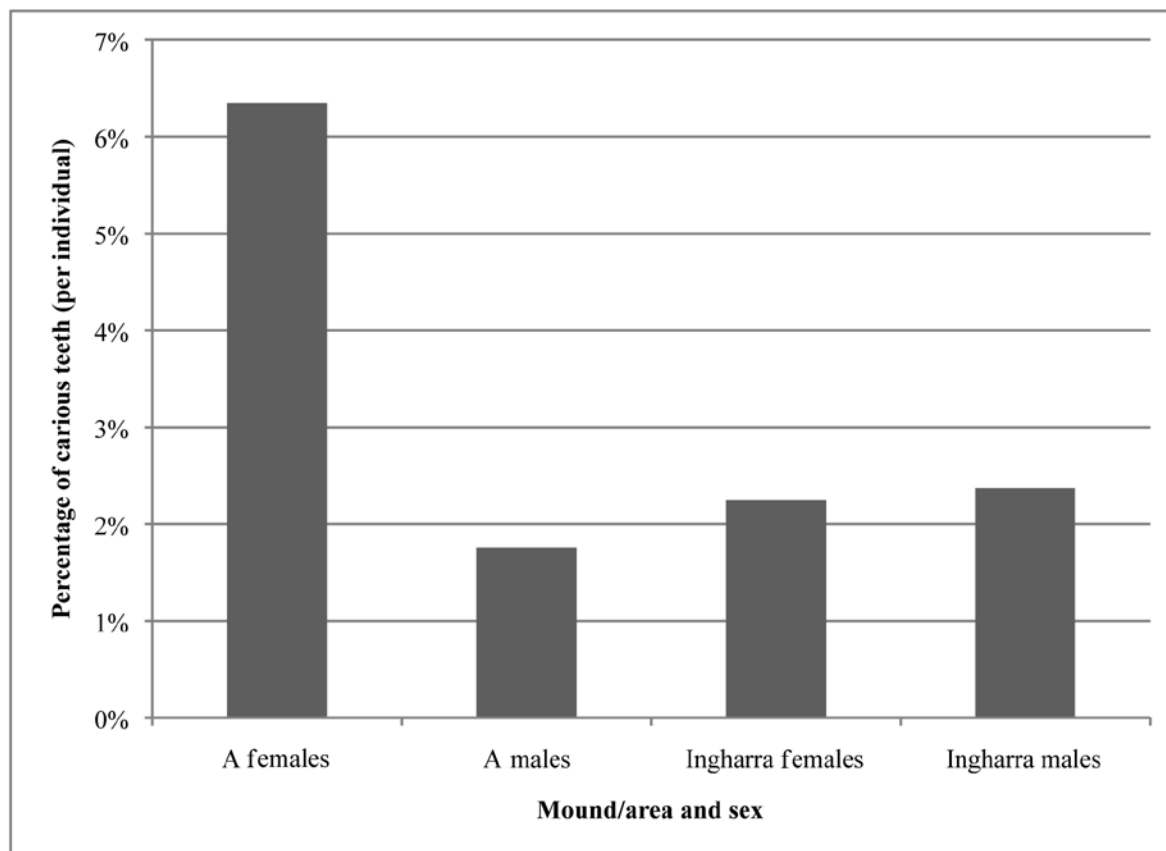


Figure 9.10. Caries frequency by mound/area and sex.

cribra orbitalia (13.3 and 12.1 percent, respectively), especially as judged against the males from Ingharra, among whom the prevalence of the condition was only 6.0 percent. Porotic hyperostosis was observed only in the Mound A males and Ingharra females, among whom the prevalence rates were 4.3 and 2.8 percent, respectively. None of the observed differences in cribra orbitalia or porotic hyperostosis was found to be statistically significant. Conversely, statistically significant differences were observed in the distribution of linear enamel hypoplasias, with the low 5.3 percent prevalence among the Mound A males being significantly lower than the observed 36.4 percent for the Mound A females ( $p = 0.0472$ ), 35.4 percent for the Ingharra females ( $p = 0.0182$ ), and 33.3 percent for the Ingharra males ( $p = 0.0228$ ). None of the other differences among the three remaining groups was judged to be statistically significant. Clearly, childhood health conditions (sanitary, febrile, or otherwise) for the Mound A males were significantly better than those for the other individuals included in the present study—perhaps, as we suggest below, as a consequence of the Mound A males having originated from somewhere other than the potentially crowded and unsanitary city of Kish.

Data on adult stature, as judged by long-bone lengths, are provided in table 9.15. Since the largest sample for any mound/sex grouping for a given long bone is only four individuals, no statistical analysis of differences in adult stature between mounds was possible. We present these data here in the hopes that they might be of some use to future researchers desirous of comparative data on long-bone lengths from the region.

Data on buccolingual molar dimensions (in millimeters) grouped by mound and sex are presented in table 9.16. Only one of the observed differences between males of Mound A and Ingharra (maxillary M2) even approaches statistical significance ( $p = 0.09$ ), with the males from Ingharra possessing a buccolingual diameter more than 0.5 mm smaller, on average, than that for males from Mound A. Comparing females from the two mounds, the diameters of all of the females' teeth from Mound A are smaller than those from Ingharra, and the difference in maxillary M2s is statistically significant ( $p = 0.023$ ), with the Mound A females measuring more than 0.8 mm smaller, on average, than their female counterparts from Ingharra. Although the data here are sparse, we interpret the generally poorer childhood health

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Table 9.15. Mean adult long-bone lengths by mound and sex (in millimeters).

|                  | Humerus     | Radius         | Ulna          | Femur          | Tibia         |
|------------------|-------------|----------------|---------------|----------------|---------------|
| Mound A females  | 320 (n = 1) | 215 (n = 1)    | —             | —              | 362 (n = 1)   |
| Mound A males    | 309 (n = 1) | —              | 270 (n = 1)   | —              | 374 (n = 1)   |
| Ingharra females | 315 (n = 4) | 223.33 (n = 3) | 239.5 (n = 2) | 417.25 (n = 4) | 353 (n = 3)   |
| Ingharra males   | 355 (n = 1) | 269.16 (n = 3) | 291.5 (n = 2) | 463.75 (n = 4) | 380.5 (n = 2) |
| Mound W females  | 308 (n = 1) | 238 (n = 1)    | 264 (n = 1)   | —              | 354 (n = 1)   |

Table 9.16. Mean buccolingual molar diameters by mound and sex (in millimeters).

|                  | Maxillary M1 | Maxillary M2 | Mandibular M1 | Mandibular M2 |
|------------------|--------------|--------------|---------------|---------------|
| Mound A females  | 10.8         | 10.2         | 10.3          | 9.7           |
| Mound A males    | 11.7         | 11.6         | 10.5          | 10.2          |
| Ingharra females | 11.1         | 11.0         | 10.4          | 9.9           |
| Ingharra males   | 11.3         | 11.0         | 10.6          | 10.1          |

of the Mound A females (as judged by, in particular, linear enamel hypoplasia and cribra orbitalia) to be in keeping with their smaller molar diameters. Due to the higher prevalence of the various conditions, dietary and environmental, to which the Mound A females were exposed as children, they simply did not grow as large as the females from Ingharra.

Finally, we consider indicators of adult health and behavior for the four mound/sex groupings. We begin with caries frequency, as presented in figure 9.10. While the females from Mound A exhibited the highest caries frequency (6.3 percent) of any of the four groups by far, none of the observed differences was judged to be statistically significant at  $p = 0.05$ . Thus, while the Mound A females likely consumed more cereals than any of the other three groups, the difference was not statistically significant. These data are interesting, especially if the carbohydrates being consumed are in the form of beer. Pollock's analyses suggest that while ancient Mesopotamian females partook of beer, they did so less frequently than their male counterparts.<sup>123</sup>

Mound A females had the only instance of arthropathy among the Mound A individuals (1/17, 5.9 percent), while one instance was also observed in the sixty-four females from Ingharra (1.6 percent). In contrast, six of the seventy-seven males from Ingharra (7.8 percent) presented evidence of arthropathy. While one might be inclined to suggest greater degrees of physical activity among Ingharra males and Mound A females as compared to Ingharra females, none of the observed differences was judged

to be statistically significant. Finally, and as was noted earlier, all of those individuals with trauma for whom sex could be determined were found to be male, with three Ingharra males (of 77 total males, or 3.9 percent) and one Mound A male (of 24 males, or 4.2 percent) exhibiting evidence for traumatic injury (table 9.12).

From these myriad areal differences in childhood health and adult activity, several crosscutting patterns emerge. The dramatic differences we observed in the frequency of cribra orbitalia, porotic hyperostosis, and linear enamel hypoplasia between Mound A and Ingharra would appear to speak to a substantial divergence in the nature of the health risks to which the individuals buried in the two areas were exposed as children. While dietary or other anemias would appear to have been a more pressing threat to childhood health in Mound A, greater exposure to unsanitary living conditions and the attendant diseases thereof appear to have been a greater problem for Ingharra individuals. Whether these differences are a consequence of temporal, cultural, or sociopolitical distinctions between the groups remains unclear. Individuals from Mound W, perhaps because of changes in diet and living conditions in the later period in which they lived, show far higher rates of caries and substantially greater rates of arthropathies than their largely earlier compatriots from Mound A and Ingharra. Whether this difference can be tied to changes in the status and political standing of the city of Kish in the later periods of its occupation is discussed below.

The differences observed once sex is factored into the analysis are some of the most intriguing

<sup>123</sup> Pollock 2003, p. 24.

we have found. The childhood health of Ingharra males and females appears to have been more or less equal. By contrast, males and females from Mound A bear the indicators of radically differing degrees of exposure to factors that were ultimately detrimental to their health. For almost every index we considered (linear enamel hypoplasia, cribra orbitalia, caries frequency, and molar size), the females from Mound A were far worse off than their male counterparts, the equivalent females from Ingharra, or both. Poor dietary quality and frequent disease seem to have been commonplace for the females of Mound A, to the point where their full growth potential was unattained, while that of the males buried alongside them showed far fewer such issues. Whether these differences are a consequence of unequal access to resources or a testament to the nonlocal origin of the Mound A males is discussed further in the following section.

#### RELATEDNESS OF THE KISH POPULATION

In addition to providing data on the health of individuals living at Kish, the analysis of the Kish skeletal sample provided intriguing data on the relatedness (or lack thereof) of the various groups of people who called the city home. Biodistance analysis of this type can provide useful insights into cultural practices such as exogamy versus endogamy, post-marital movement and residency, and evidence of larger population migrations. Our analysis of biodistance examined changes both over time and between the site's various mounds.

The first iteration of biodistance analysis grouped the available individuals by period alone, with 381 individuals representing seven chronostratigraphically distinct periods of occupation. When all traits (56 combined dental and cranial) were used for analysis, no statistically significant differences in the biological makeup of individuals from the different periods were detected (table 9.17).<sup>124</sup> When MMD analysis was carried out using only traits that showed statistically significant variation between the *a priori* temporal groupings, statistically significant MMD values (in-

dicated in bold in table 9.18) did result, indicating that Akkadian-period individuals were significantly biodistant from the site's Early Dynastic I and Early Dynastic III populations and that the Achaemenid-period individuals were also biologically distant from the Early Dynastic III- and Early Dynastic III/Akkadian-period individuals.

The different results obtained from these two analyses are indicative of the broader issues surrounding the methodological divide in biodistance studies, as the analysis of all traits found no difference between groups whereas the analysis of the same groups using only the five traits (of fifty-six) that differed significantly between groups did find some significant differences. As such, the interpretation of these results is somewhat contingent. Nonetheless, what can be distilled is a general pattern of diachronic biological homogeneity, especially as judged by the all-trait analysis, with some possible instances of discontinuity in the Akkadian and Achaemenid periods. What exactly the observed differences result from is debatable, but, as is discussed below, such differences can be the result of the introduction of new, biologically distinct individuals into a relatively homogeneous population via processes of immigration or invasion.

An interpretation of overall homogeneity is buttressed by the results of the next analytical iteration, which groups individuals by both period and sex (table 9.19). For this iteration, 151 individuals were included, although only eight traits could be observed in members of all groups, thereby substantially reducing the inferential power of this round of analysis. Nonetheless, this analysis found no evidence for significant biological variation between periods, supporting the idea of an overall strong degree of biological homogeneity through time. There are, however, tantalizing hints of biological variation that can be seen in, for example, the positive standardized MMD values between the Early Dynastic III/Akkadian-period males and several of the other Early Dynastic groupings, a theme to which we will return in our areal analysis discussed below. Unfortunately, as only one trait was found to vary significantly between the groups in question, it was not possible to further analyze these period and sex groupings using statistically significant traits alone.

The next round of MMD analysis grouped individuals on the basis of the mound in which they were found. The results of this iteration, which included 476 individuals and sixty-six traits, are

<sup>124</sup> It should be noted that the negative standardized MMD values seen in table 9.17 and the other tables in this section are not inferentially meaningful and can be read as the equivalent of a zero value, suggesting no meaningful biological difference between the groups.

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Table 9.17. Standardized MMD values and significances, all traits, by period.

| Period                          | Early<br>Dynastic I | Early<br>Dynastic<br>I/III | Early<br>Dynastic III | Early<br>Dynastic III/<br>Akkadian | Akkadian | Ur III/Old<br>Babylonian | Neo-<br>Babylonian | Achaemenid |
|---------------------------------|---------------------|----------------------------|-----------------------|------------------------------------|----------|--------------------------|--------------------|------------|
| Early Dynastic I                | —                   | -0.89                      | -2.41                 | -1.33                              | -1.82    | -3.29                    | -2.64              | -1.62      |
| Early Dynastic I/III            | Not sig             | —                          | -2.08                 | 0.38                               | -0.83    | -2.69                    | -1.28              | -0.38      |
| Early Dynastic III              | Not sig             | Not sig                    | —                     | -2.01                              | -1.04    | -3.07                    | -2.39              | -2.06      |
| Early Dynastic III/<br>Akkadian | Not sig             | Not sig                    | Not sig               | —                                  | -1.01    | -2.64                    | -2.10              | -0.96      |
| Akkadian                        | Not sig             | Not sig                    | Not sig               | Not sig                            | —        | -2.96                    | -1.64              | -0.88      |
| Ur III/Old Babylonian           | Not sig             | Not sig                    | Not sig               | Not sig                            | Not sig  | —                        | -2.88              | -2.74      |
| Neo-Babylonian                  | Not sig             | Not sig                    | Not sig               | Not sig                            | Not sig  | Not sig                  | —                  | -1.64      |
| Achaemenid                      | Not sig             | Not sig                    | Not sig               | Not sig                            | Not sig  | Not sig                  | Not sig            | —          |

Table 9.18. Standardized MMD values and significances, significantly varying traits only, by period.

| Period                          | Early<br>Dynastic I | Early<br>Dynastic<br>I/III | Early<br>Dynastic III | Early<br>Dynastic III/<br>Akkadian | Akkadian    | Ur III/Old<br>Babylonian | Neo-<br>Babylonian | Achaemenid  |
|---------------------------------|---------------------|----------------------------|-----------------------|------------------------------------|-------------|--------------------------|--------------------|-------------|
| Early Dynastic I                | —                   | 0.16                       | -0.82                 | 0.07                               | <b>2.06</b> | -0.22                    | -0.62              | 1.07        |
| Early Dynastic I/III            | Not sig             | —                          | -0.10                 | 0.87                               | 1.45        | -1.18                    | 0.23               | 1.90        |
| Early Dynastic III              | Not sig             | Not sig                    | —                     | -0.04                              | <b>3.00</b> | -0.18                    | -0.44              | 1.24        |
| Early Dynastic III/<br>Akkadian | Not sig             | Not sig                    | Not sig               | —                                  | 1.59        | 0.32                     | -1.43              | <b>2.19</b> |
| Akkadian                        | <b>Sig</b>          | Not sig                    | <b>Sig</b>            | Not sig                            | —           | 0.39                     | 0.79               | <b>2.97</b> |
| Ur III/Old Babylonian           | Not sig             | Not sig                    | Not sig               | Not sig                            | Not sig     | —                        | 0.01               | 0.77        |
| Neo-Babylonian                  | Not sig             | Not sig                    | Not sig               | Not sig                            | Not sig     | Not sig                  | —                  | 1.57        |
| Achaemenid                      | Not sig             | Not sig                    | Not sig               | <b>Sig</b>                         | <b>Sig</b>  | Not sig                  | Not sig            | —           |

Traits: tympanic dihisence, marginal tubercule, mental foramen number, lower canine root number, and Carabelli's trait

presented in table 9.20. While no significant differences were found between the individuals from the three mounds for which we have adequate skeletal samples (A, W, and Ingharra) when all traits were taken into account, the positive standardized MMD value comparing Ingharra and Mound A suggests that some biological differences between their two populations may have existed.

This possible evidence for differences is greatly buttressed when the same analysis is performed using only those traits (in this case, twelve of sixty-six) that vary significantly between the groups in question. The results of this analysis, presented in table 9.21, show a statistically significant degree of biological variation between each of the three mounds in question. These results, and in particular the extremely high degree of difference between Mounds A and Ingharra, can be considered to be rather robust given that these results were pre-figured by the all-trait analysis above, that they have

extremely high standardized MMD values (anything over 2 is statistically significant at  $p = 0.05$ ; a value of nearly 7 is astronomical), and that a relatively large number of traits (twelve) were still being analyzed even in this second, reduced iteration. The meaning of these differences is again contestable, as they could, contrary to what we suggest above, indicate a degree of temporal difference (drift) in the city's biological makeup, given that Ingharra is predominantly early, Mound A is temporally in the middle, and Mound W is late.

When sex is taken into account, as is done below, another possible cause for the observed differences becomes evident. Grouping individuals by mound and sex attributions provided a pool of some 181 individuals for whom fifty-eight traits could be observed. As was the case with the spatial analysis of health, Mound W individuals were excluded from this round given the small sample size. The results of the all-trait analysis are presented in table 9.22.

## CHAPTER 9. LIFE AND DEATH AT KISH

Table 9.19. Standardized MMD values and significances, all traits, by period and sex.

|                    | Early Dynastic I |         | Early Dynastic I/III |         | Early Dynastic III |         | Early Dynastic III/Akkadian |         | Akkadian |         | Old Babylonian |         | Neo-Babylonian |         | Achaemenid |       |
|--------------------|------------------|---------|----------------------|---------|--------------------|---------|-----------------------------|---------|----------|---------|----------------|---------|----------------|---------|------------|-------|
|                    | Female           | Male    | Female               | Male    | Female             | Male    | Female                      | Male    | Female   | Male    | Female         | Male    | Female         | Male    | Female     | Male  |
| ED I female        | —                | 0.62    | -0.65                | -0.09   | -0.83              | -0.36   | 0.60                        | 1.63    | -0.45    | -0.93   | -0.80          | -1.14   | 0.42           | 0.43    | -0.85      | -0.39 |
| ED I male          | Not sig          | —       | 0.00                 | -0.72   | 0.08               | -0.89   | -1.36                       | 0.90    | -0.84    | -0.30   | -0.36          | -1.32   | 0.24           | -0.19   | 0.04       | -0.87 |
| ED I/ED III female | Not sig          | Not sig | —                    | -1.09   | -0.72              | -1.13   | -0.42                       | -0.12   | -0.89    | -1.47   | -0.36          | -1.47   | -0.25          | -0.99   | -0.79      | -0.27 |
| ED I/ED III male   | Not sig          | Not sig | Not sig              | —       | -0.60              | -1.53   | -1.35                       | -0.71   | -1.48    | -0.90   | -0.88          | -1.74   | -0.69          | -1.35   | -0.41      | -0.93 |
| ED III female      | Not sig          | Not sig | Not sig              | Not sig | —                  | -1.04   | -0.07                       | -0.61   | -0.50    | -1.18   | -1.11          | -1.17   | -0.92          | -0.78   | -1.55      | -0.90 |
| ED III male        | Not sig          | Not sig | Not sig              | Not sig | Not sig            | —       | -1.38                       | -1.49   | -1.42    | -1.10   | -1.06          | -1.80   | -0.85          | -1.87   | -0.78      | -1.26 |
| ED III/Akk female  | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | —                           | 0.89    | -1.05    | -0.46   | -0.34          | -1.56   | -0.36          | -0.82   | 0.12       | -0.86 |
| ED III/Akk male    | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | —       | -1.09    | -0.37   | -0.86          | -1.49   | -0.68          | -1.02   | -0.40      | -0.43 |
| Akk female         | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | —        | -0.69   | -1.53          | -1.79   | -0.66          | -1.28   | -0.57      | -1.31 |
| Akk male           | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | —       | -0.56          | -1.43   | -0.62          | -0.95   | -1.49      | -0.62 |
| Ur III/OB female   | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | Not sig | —              | -1.51   | -0.65          | -0.77   | -1.15      | -1.41 |
| Ur III/OB male     | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | Not sig | Not sig        | —       | -1.17          | -1.74   | -1.30      | -1.65 |
| NB female          | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | Not sig | Not sig        | Not sig | —              | -0.88   | -0.79      | -1.09 |
| NB male            | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | Not sig | Not sig        | Not sig | Not sig        | —       | -0.51      | -0.98 |
| Achaemenid female  | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | Not sig | Not sig        | Not sig | Not sig        | Not sig | —          | -0.90 |
| Achaemenid male    | Not sig          | Not sig | Not sig              | Not sig | Not sig            | Not sig | Not sig                     | Not sig | Not sig  | Not sig | Not sig        | Not sig | Not sig        | Not sig | Not sig    | —     |



## WHERE KINGSHIP DESCENDED FROM HEAVEN

When all traits were considered, no statistically significant differences between the four remaining groups were discovered. That being said, the positive standardized MMD value found between the Mound A males and the Ingharra females hints at some degree of biological difference (albeit in this case insignificant) between sexed individuals from these two mounds.

When this same analysis is performed using only the traits that exhibited statistically significant variation among the four groups under analysis (nine of the fifty-eight traits), the trends hinted at above become very apparent. The results of this round are presented in table 9.23. While no statistically significant biological differences were found between the females from Mound A or members of either sex from Ingharra, the males from Mound A were found to be dramatically biodistant from each of the other three groups. In other words, while the males and females from Ingharra and the females from Mound A were all drawn from the same breeding population, it would appear that the males from Mound A were outsiders at least in biological terms.

When these results are shown graphically using multidimensional scaling, which represents the similarities and dissimilarities between the groups under analysis in two-dimensional space, the degree to which the Mound A males differ from all of the other individuals under analysis is immediately evident (fig. 9.11). While the Ingharra males and females are closely related, and there is some (nonsignificant) difference between them and the Mound A females (possibly the result of temporal differences; see above), the Mound A males are wholly biologically distinct from all other individuals buried at the site.

If Kish had been a small village, results of this sort would be consistent with, for example, a pattern of male exogamy and matrilocality, in which men were marrying local women and moving to (and eventually dying and being buried in) their wives' village. However, the Mound A burials were dug down from houses of the Early Dynastic III/Akkadian period that sit directly atop the ruins of an Early Dynastic III palace. Since this palace had been destroyed, perhaps as recently as fifty years

Table 9.20. Standardized MMD values and significances, all traits, by mound/area.

|          | Mound A | Ingharra | Mound W |
|----------|---------|----------|---------|
| Mound A  | —       | 1.13     | -1.60   |
| Ingharra | Not sig | —        | -1.57   |
| Mound W  | Not sig | Not sig  | —       |

Table 9.21. Standardized MMD values and significances, significantly varying traits only, by mound/area.

|          | Mound A | Ingharra | Mound W |
|----------|---------|----------|---------|
| Mound A  | —       | 6.80     | 2.28    |
| Ingharra | Sig     | —        | 3.40    |
| Mound W  | Sig     | Sig      | —       |

Traits: supraorbital foramen, accessory supraorbital foramen, tympanic dihasenence, multiple infraorbital foramen, highest nuchal line, frontotemporal articulation, supermeatal pit or spine, condylar canal, cusp 5 (M1-M3), lower canine root number, hypocone expression (M1-M3), and Carabelli's trait (M1-M3)

Table 9.22. Standardized MMD values and significances, all traits, by mound/area and sex.

|                  | Mound A females | Mound A males | Ingharra females | Ingharra males |
|------------------|-----------------|---------------|------------------|----------------|
| Mound A females  | —               | -0.53         | -1.33            | -1.65          |
| Mound A males    | Not sig         | —             | 1.01             | -0.15          |
| Ingharra females | Not sig         | Not sig       | —                | -0.32          |
| Ingharra males   | Not sig         | Not sig       | Not sig          | —              |

Table 9.23. Standardized MMD values and significances, significantly varying traits only, by mound/area and sex.

|                  | Mound A females | Mound A males | Ingharra females | Ingharra males |
|------------------|-----------------|---------------|------------------|----------------|
| Mound A females  | —               | 2.43          | 0.97             | 1.29           |
| Mound A males    | Sig             | —             | 4.66             | 2.94           |
| Ingharra females | Not sig         | Sig           | —                | 0.11           |
| Ingharra males   | Not sig         | Sig           | Not sig          | —              |

Traits: accessory supraorbital foramen, infraorbital suture, rocker mandible, supermeatal pit or spine, condylar canal, labial convexity, deflecting wrinkle, hypocone expression, and upper molar root number (M2)

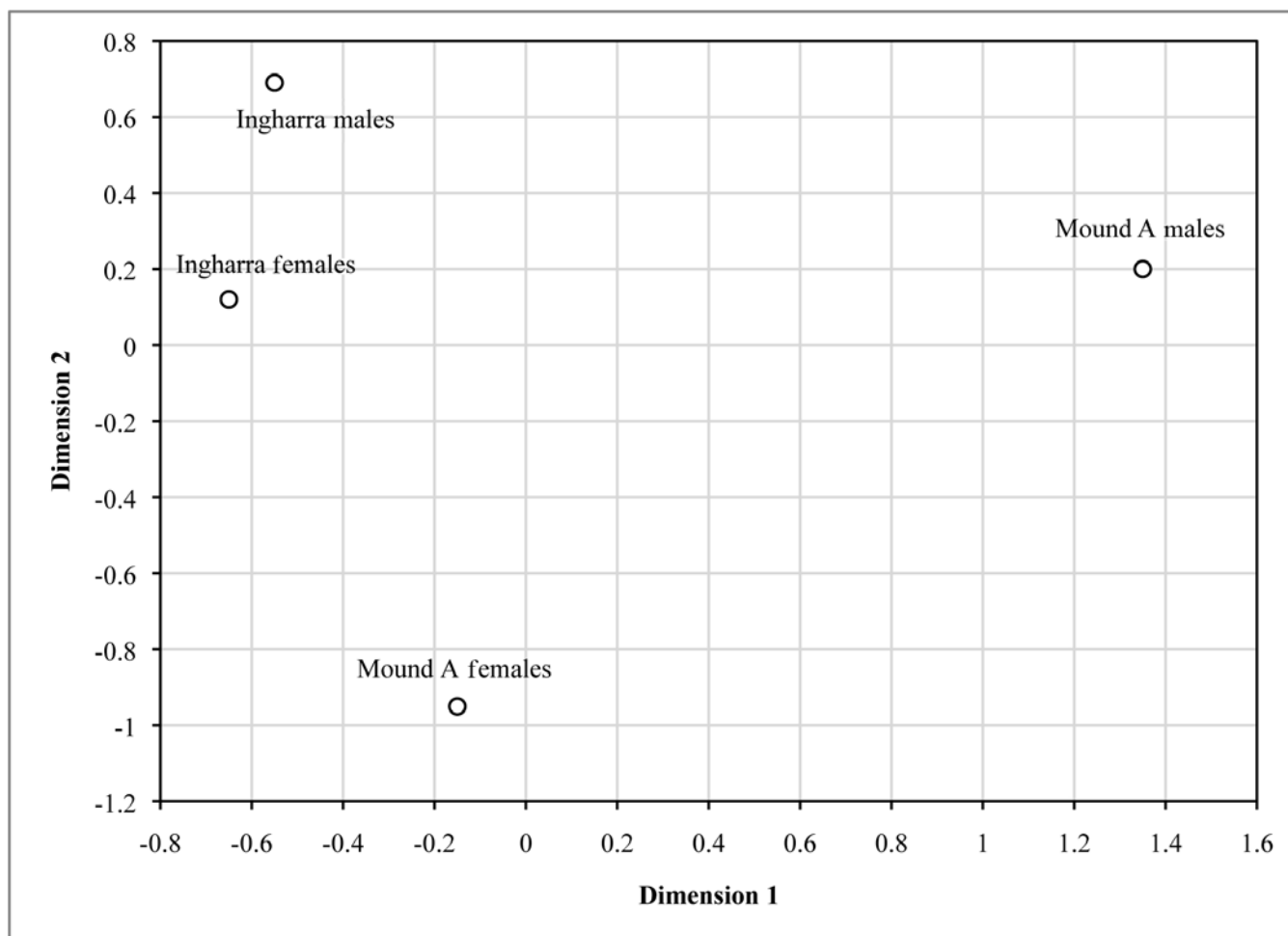


Figure 9.11. Multidimensional scaling of pooled cranial and dental MMD biodistances.

before burials began to be dug into the ruins,<sup>125</sup> we may be able to draw a different conclusion. Perhaps the pattern of biodistance observed with the Ingharra and Mound A individuals is best explained if the Mound A males were the remnants of an invading or conquering force, one made up of decidedly nonlocal men. In such a scenario, these men would have entered Kish during the destruction of the palace on Mound A and built their homes atop its ruins—homes in which they would have resided with local females, alongside whom they would have been buried when they died. The traumatic patterns from Mound A, discussed above, at least partially support this contention, as do the dramatically different health patterns of the Mound A males and females. Although such an interpretation is speculative, it matches well with all our available biological data.

## HEALTH AND STATUS IN THE A CEMETERY: A CASE STUDY

In this final section, we consider the remains from the A Cemetery in more detail. The human remains from this mound are particularly interesting because they provide us with a view into a brief period at the end of Early Dynastic III and the early Akkadian era. Moreover, they represent a sample of individuals who, during their lifetime, likely experienced a dramatic shift in the power of their city as Kish fell under Akkadian control. As a result of its relatively short use life of “no more than a century or so”<sup>126</sup> and its comparatively high quality of excavation and recording,<sup>127</sup> Mound A is well suited to a bioarchaeological analysis, focusing on the relationship between health and various sociocultural variables.

<sup>125</sup> Moorey 1978, pp. 63–64.

<sup>126</sup> Moorey 1970, p. 104.

<sup>127</sup> Mackay 1925, 1929.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

SYNCHRONIC VARIATION IN  
THE A CEMETERY

In the preceding section on biodistance, we highlighted sex-based differences in health between the A Cemetery's males and females (recall that Mound A females had substantially higher rates of cribra orbitalia, a greater caries frequency, and significantly higher rates of linear enamel hypoplasia than did their male counterparts). Here, we focus on the relationship between health and socioeconomic status/class among the individuals buried on Mound A.

Information on grave contents was known for fifty-two of the sixty-three Mound A individuals analyzed in the present study, and with the assistance of Karen Wilson (Kish project coordinator), these graves were divided into two broad groups thought to reflect socioeconomic status or class (table 9.24). The less embellished graves (Group 2) contained fewer (<10) total objects, and one or fewer objects of nonlocal origin, whereas the graves of the higher-status Group 1 contained both far more objects (>20) and numerous exotic/prestige objects (e.g., stone vessels, ostrich eggshell drinking cups).

Focusing first on the three presence/absence-scored childhood health indicators, the lower-status individuals exhibited higher rates of porotic hyperostosis (3.57 percent) and linear enamel hypoplasias (18.18 percent) than did the higher-status individuals, none of whom showed any indication of either condition (fig. 9.12). While there are thus clear differences in child health evidenced in the remains, these differences were not statistically significant because of small sample size. In contrast, the high-status individuals had a slightly higher frequency of cribra orbitalia than their lower-status contemporaries (16.67 percent vs. 14.29 percent), although, as above, the difference was not significant. What these data suggest is a greater likelihood of childhood growth interruptions for lower-status individuals (as a consequence of disease, sanitation, or malnutrition) and, perhaps, a slightly greater reliance on cereal grains among higher-status individuals. A possible explanation for the latter is offered below.

While there were insufficient data to analyze differences in stature between the same-sex members of the two status groups, a minimal amount of buccolingual molar diameter data were available and are presented in table 9.25. These molar data are, however, inconsistent and difficult to interpret, especially given that none of the observed differences rises to the level of statistical significance. While,

on the one hand, these data suggest that high-status females possessed larger molar diameters than their low-status counterparts, it must be noted that only one high-status female had teeth that could be measured. In contrast, while sample sizes are somewhat larger for males, the results are inconsistent; whereas the low-status males have larger maxillary M1s, maxillary M2s, and mandibular M2s than the high-status males, the converse is true in the case of mandibular M1s. Again, none of the observed differences was statistically significant.

Turning to adult behavioral indicators, high-status individuals had a marginally higher caries rate than low-status individuals (3.13 vs. 2.48 percent), evidence that, in combination with their higher rate of cribra orbitalia, may speak to a

Table 9.24. A Cemetery grave groups.

| Group 1 |                | Group 2 |                  |
|---------|----------------|---------|------------------|
| A16     | FM 192783      | A1      | FM 192370        |
| A21     | As. 13-23/11   | A2      | FM 192700        |
| A23     | Ashm. 13-23/13 | A3      | FM 192383        |
| A56     | FM 192759      | A3      | FM 192660-B      |
| A56B    | FM 192803      | A9      | FM 192782        |
| A77     | Ashm. 13-23/1  | A9      | Ashm. 13-23/8    |
| A80     | FM 192765      | A28     | Ashm. 13-23/16   |
| A87     | FM 192750      | A28     | Ashm. 13-23/15   |
| A104    | Ashm. 13-23/5  | A39     | FM 192756        |
| A135    | FM 192768-A    | A43     | FM 192763        |
| A135    | FM 192768-B    | A45     | FM 192389        |
| A136    | FM 192960      | A54     | FM 192770-A      |
| A136    | FM 192479-A    | A55     | Ashm. 13-23/2    |
| A136    | FM 192479-B    | A55     | Ashm. 13-23/2(a) |
| A136    | FM 192749-A    | A55     | Ashm. 13-23/2(b) |
|         |                | A65     | FM 192771        |
|         |                | A66     | FM 192762        |
|         |                | A68     | FM 192764        |
|         |                | A68     | FM 192707-A      |
|         |                | A71     | FM 192753        |
|         |                | A74     | FM 192754-A      |
|         |                | A75     | FM 192745        |
|         |                | A81     | FM 192760        |
|         |                | A82     | FM 192754-B      |
|         |                | A82     | FM 192746        |
|         |                | A88     | FM 192752        |
|         |                | A101    | FM 192501        |
|         |                | A103    | FM 192349        |
|         |                | A116    | FM 192766        |
|         |                | A122    | FM 192744        |
|         |                | A124    | FM 192758        |
|         |                | A126    | FM 192781        |
|         |                | A134    | FM 192815        |
|         |                | A143    | FM 192755        |
|         |                | A144    | Ashm. 13-23/3    |
|         |                | A145    | FM 192751        |
|         |                | A146    | FM 192345        |

## CHAPTER 9. LIFE AND DEATH AT KISH

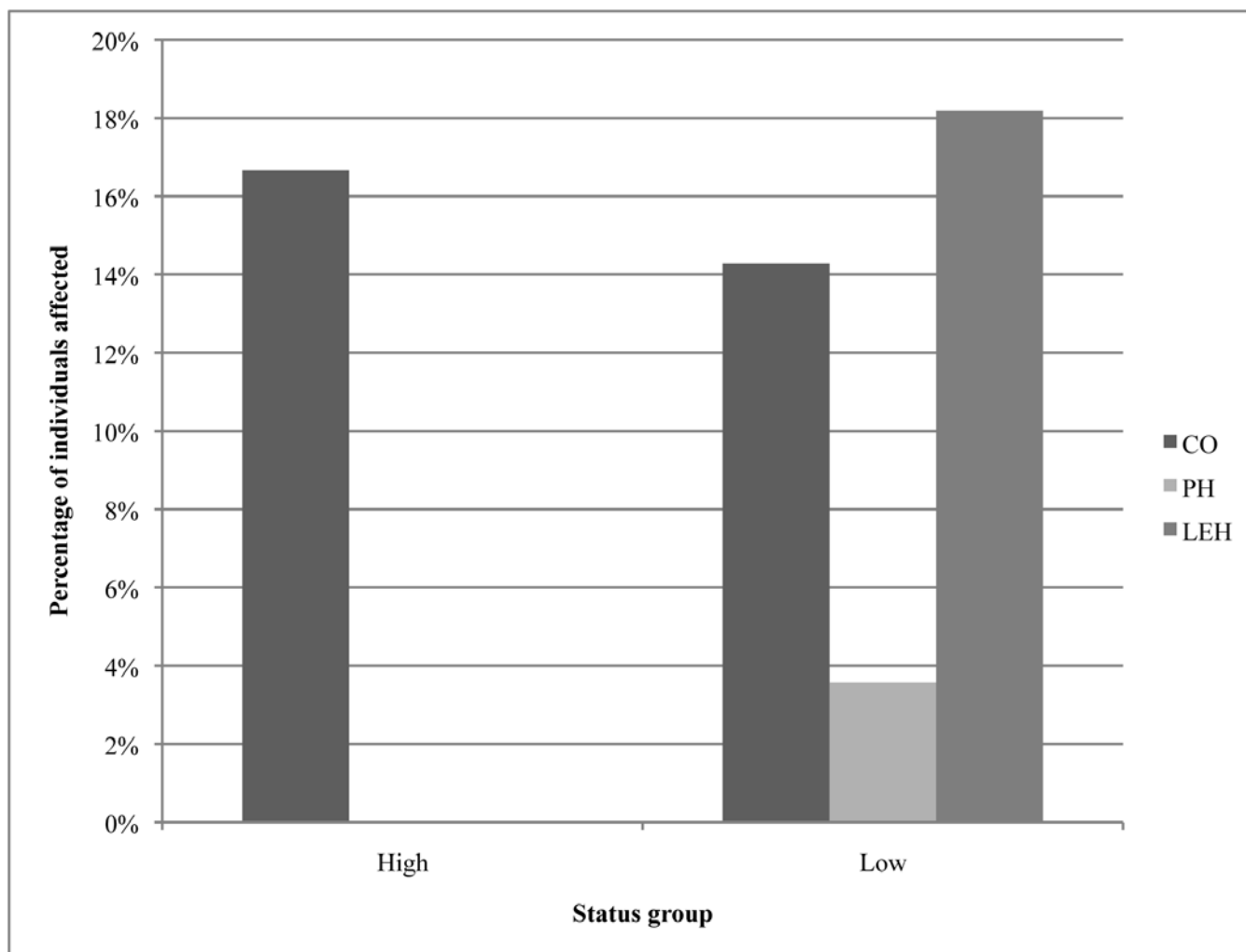


Figure 9.12. Childhood health indicators, by Mound A status grouping.

greater consumption of cereal grains, perhaps in the form of beer, among the more elite individuals interred in Mound A. Elite feasts wherein consumption of barley or wheat beer is a central activity is a frequently repeated motif on relief plaques from elite structures, musical instruments, and cylinder seals.<sup>128</sup> Differences in arthropathy rates cannot be discussed with any seriousness, since although one of three low-status individuals examined for any arthropathic changes presented evidence of such changes in her shoulder, no data were available for high-status individuals. Finally, trauma was equally divided between the two groups, with one individual in each group showing signs of previous traumatic incident. While the smaller number of individuals in the high-status groups means that their frequency of injuries is thus higher than that found among the low-status individuals (6.67 vs. 2.7 percent), it is difficult to conclude much from such a small amount of

data. That being said, the only fractures that might be considered evidence of violence as opposed to injury is the defensive fracture of the ulna (a parry fracture) seen in FM 192765, a high-status individual of indeterminate sex.

In summary, then, the clearest evidence for status-based differences in health among the Mound A population is to be found in the much higher rate of linear enamel hypoplasia among individuals of lower status (18.2 percent) than among those of high status (0 percent), which speaks to very different exposure to a suite of risk factors affecting childhood growth, and the combined evidence of caries frequency and cribra orbitalia prevalence, which are highly suggestive of a diet with more carbohydrates (and perhaps beer) among peoples of higher status buried in Mound A. As such, this more detailed look at the A Cemetery provides insight into not only the aforementioned distinction between the origins of the sexes buried in this mound but also the distinctions between the classes.

<sup>128</sup> Pollock 2003, p. 25.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

Table 9.25. A Cemetery mean buccolingual molar diameters by status group and sex.

|                     | Maxillary M1 | Mandibular M1 | Maxillary M2 | Mandibular M2 |
|---------------------|--------------|---------------|--------------|---------------|
| High-status females | 11.83        | —             | —            | 10.07         |
| Low-status females  | 10.82        | 10.62         | 9.97         | 9.76          |
| High-status males   | 11.52        | 10.49         | 11.48        | 9.74          |
| Low-status males    | 12.11        | 10.39         | 11.97        | 10.24         |

## CONCLUSIONS

In this chapter, we have presented the results of our reanalysis of the Kish skeletal remains. This analysis has revealed an exceptionally sizable, but largely incomplete, assemblage. While likely representative of the Kish population in a demographic sense, due to its incompleteness the collection fails to fully evidence many aspects of life in ancient Kish. In terms of sheer numbers, the Kish collection is likely unparalleled, and our efforts at recontextualization have yielded a far greater sample that can be scrutinized for temporal or areal trends. But at the end of the day, the poor preservation, excavation, curation, and documentation of the collection leaves many more questions tantalizingly unanswered than can be satisfactorily filed away. Nevertheless, the study of this large and important skeletal series has allowed us to accomplish a series of goals using a contextualized bioarchaeological approach—investigation of changes in the health and relatedness of the population over time and space, and a detailed exploration of the A Cemetery. Here, we have chosen to highlight three revealing aspects of our findings: the different experiences of the sexes at Kish, the impact of urbanization on the city's people, and the costs of the rise and fall of Kish's political power on the well-being of its residents. We conclude by detailing the benefits that a contextualized approach has brought to this reanalysis.

Considering the data we have presented concerning health over time raises an overarching point: changes in the social environment affected the sexes at Kish differentially. Going beyond the issue of life expectancy, we see that, for example, the Neo-Babylonian period witnesses generally poor health, yet female health is worse by all indicators, dramatically so in the case of caries. The same holds true for the Early Dynastic III/Akkadian period. Moreover, increasing urbanization seems to have affected the dietary quality of females more negatively. If we accept that the dental caries seen in our sample are likely the result of the consumption

of greater amounts of dietary carbohydrates (i.e., cereal grains), then increases in city/population size seem to have resulted in the greater consumption of such grains by females and far less by males.<sup>129</sup> This argument is buttressed somewhat by the divergent relationship between the male and female rates of cribra orbitalia, which can also reflect carbohydrate-heavy, iron-deficient diets.<sup>130</sup> Therefore, our data concerning cranial porosities as well as caries generally indicate a diet for males that had fewer carbohydrates and more proteins than that available to most of their female contemporaries. All of these results are consistent with the possibility that these periods saw an increasing hierarchization of the Kish population and likely concomitant changes in division of labor and access to resources based on sex. That these stark differences between the sexes manifest in childhood health indicators suggests that gender roles may have been constructed early in these individuals' lives. It is interesting that this element of their social personae may have been manifest in childhood and that these social constructions had repercussions throughout their lives. As such, the experience of being a woman at Kish is, unfortunately, quite distinct from that of being a man there.

The precocious urbanism of Mesopotamia in the fourth and third millennia BC is one of the socio-cultural phenomena for which the region is best known; yet, woefully little work has been done to gauge the impacts of this concentration of population on the health and well-being of the earliest city dwellers. Given this sizable lacuna in our knowledge of the region, our finding that Kish's increased population resulted in conditions that contributed to the ill health and disrupted growth of the city's children is, if not unexpected, a useful confirmation of what one might expect of life in a burgeoning ancient urban center. Poor sanitation, decreased dietary quality, and disease outbreaks brought about or exacerbated by crowded living were all hallmarks of the

<sup>129</sup> Larsen 1997, p. 65.

<sup>130</sup> Ortner 2003, p. 273.

growth of the city of Kish. The model for urbanism provided by the ancient Mesopotamians had negative consequences almost from its very outset. One might rightfully ask what, if any, greater utility was afforded by such a manner of living that might justify the obvious hardships and unease that it brought to its people. That the costs of urbanism were more heavily borne by the female inhabitants of these early cities (if the gender-based health discrepancies we observed are judged to be emblematic of other cities in the region) might provide at least part of the answer to this question. More “justification” is no doubt to be found in the political and economic benefits that city dwelling afforded the elites of these nascent urban centers.

This, then, raises the question of whether increases in the regional power and standing of the city of Kish were a net positive or negative for its people. Did the city’s power confer upon its inhabitants any benefits in the form of health, sustenance, and peace? And conversely, did its fall from power spell hard times for its citizens? From our data, we can say first that increases in Kish’s political fortunes failed to produce blanket improvements in the health of the city’s people. While certain metrics (e.g., some molar dimensions) appear to suggest that the Early Dynastic was a period of general good health, other indicators (led by the highest rates of linear enamel hypoplasia we observed) strongly suggest otherwise. Improved health thus would not appear to have been a correlate of political standing. Similarly, it is in the Early Dynastic and moving into the Akkadian period that we observe all of the instances of traumatic injury in our dated sample, suggesting that these periods of power were far from tranquil. It is intriguing that, following several periods (Akkadian and Ur III/Old Babylonian) during which most of our observations point to generally improved health, the health of the population as a whole dramatically deteriorates in the waning periods (Neo-Babylonian and Achaemenid) of the city’s occupation. While the earlier rising tide of the city’s political fortune failed to lift all of its ships, a receding tide in these later periods may have laid them all low. Being in power guaranteed good health to only a few, and the loss of power by the city appears to have brought about only further insults to the well-being of its inhabitants.

In closing, we believe that our reanalysis of the human skeletal remains from Kish elucidates a number of details previously unattainable from this

fragmented collection thanks to the methodological perspective afforded by a contemporary bioarchaeological approach. The efforts made by members of the Kish Project to provide information about the burial context of these individuals stands as an invaluable source for added nuance in our interpretations. For example, a more detailed demographic analysis alluded to dietary differences between the sexes. It provided us with unique insight into infant burial practices. Uniting analyses of the infants, archival notes concerning their mortuary context, burial location, and ancient written texts allowed us to posit the possibility of special burial practices for liminal infants. Similarly, the ability to take information about the site’s history and weave it together with data about the relatedness of a population yielded new insights into the conquest of Kish by the Akkadians.

This reanalysis, however, is not the final work on the skeletal material from Kish. New technologies will allow scholars to look more closely at these individuals. For example, radiocarbon dating of the remains will help clarify the periods of occupation at the site. Isotopic analyses may refine or alter our interpretations concerning diet and relatedness, while more detailed investigations of the A Cemetery collections may reveal associations between the sexes and particular mortuary styles. Nevertheless, we hope that our work here does more than describe the skeletal elements available in this collection through its integration of archaeological and biological data, and provides insight into the lives and experiences of the ancient peoples of Kish.

## ACKNOWLEDGMENTS

This work would not have been possible without the generous support of the Field Museum, Colorado College, and the Associated Colleges of the Midwest. This research builds on the legions who worked to excavate and analyze the material from Kish over the decades. We owe them our sincerest gratitude. In particular, we acknowledge with gratitude the significant contribution made by Ted Rathbun in his pioneering work with the skeletal collection from this site and his enthusiastic support of our efforts. Finally, we acknowledge Stephen Nash, Sarah Coleman, Karen Wilson, and the Kish “Army,” without whom none of this work would ever have happened.



## CHAPTER 10

# CHIPPED- AND GROUND-STONE ASSEMBLAGES FROM KISH

JAMES L. PHILLIPS AND MICHELLE E. EKWALL

The chipped- and ground-stone assemblages from Kish, mainly from the Y trench and representing the Early Dynastic period in Mesopotamia, were collected during the several seasons between 1923 and 1933. This study refers to nearly 11,000 chipped-stone and more than 400 ground-stone objects.

It is clear that the chipped-stone assemblage is a selected one, as fine-sieving was not practiced at the time of the excavations at Kish; from an area as large as the Y trench, for example, one would have

expected many more chips and small objects, which were the by-products of production. As this is not the case, we can only assume we are missing a large portion of the chipped-stone assemblage. With this in mind, let us now turn to what has been preserved in the collection, which comprises thousands of objects. Table 10.1 indicates the categories of objects, and table 10.2 illustrates their measurements. The vast majority of the objects were removed from the Y trench.

Table 10.1. Total stone object assemblage.

| Type                       | Total  | Percentage |
|----------------------------|--------|------------|
| All objects                | 11,434 | 100.0      |
| Chipped-stone total        | 11,013 | 96.3       |
| Cores                      | 934    | 8.5        |
| Débitage: blades/bladelets | 1,477  | 13.4       |
| Débitage: flakes           | 1,590  | 14.4       |
| Chips and chunks           | 2,122  | 19.3       |
| Points                     | 36     | 0.3        |
| Sickles                    | 589    | 5.4        |
| Perforators                | 3,718  | 33.8       |
| Tools: blades/bladelets    | 346    | 3.1        |
| Tools: flakes              | 201    | 1.8        |
| Ground-stone total         | 421    | 3.7        |

We must first address the nature of the assemblage in terms of the origin of the raw material, as well as the process by which the object blanks were produced and used. Flint is not indigenous to the

Tigris/Euphrates valley, and therefore all of it had to be imported. It is clear that at least three different flint sources were used. One, a light-gray/brown with inclusions, is used for the larger blade cores



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Table 10.2. Means and ranges (in millimeters).

|       |            | Bullet cores         |       |           |       |            | Bifacial points                       |            |           |          |
|-------|------------|----------------------|-------|-----------|-------|------------|---------------------------------------|------------|-----------|----------|
|       |            | Length               | Width | Thickness |       |            | Length                                | Width      | Thickness |          |
|       |            | All, n = 333         |       |           |       |            | All, n = 19                           |            |           |          |
| Mean  | —          | 21.4                 |       | 16.1      | Mean  | —          | 13.3                                  |            | 3.9       |          |
| Range | —          | 56.6/6.9             |       | 38.4/2.9  | Range | —          | 58.7/19.6                             |            | 4.7/3.3   |          |
|       |            | Unbroken, n = 293    |       |           |       |            | Unbroken, n = 12                      |            |           |          |
| Mean  | 49.8       | 22.2                 |       | 16.0      | Mean  | 44.4       | 16.9/11.6                             |            | 4.5/3.5   |          |
| Range | 103.4/16.5 | 54.9/6.9             |       | 38.4/2.9  | Range | 58.7/25.1  | —                                     |            | —         |          |
|       |            | Broken, n = 40       |       |           |       |            | Broken, n = 7                         |            |           |          |
| Mean  | —          | 23.1                 |       | 16.4      | Mean  | —          | 13.1                                  |            | 4.1       |          |
| Range | —          | 56.6/9.2             |       | 31.8/7.3  | Range | —          | 14.2/10.7                             |            | 4.7/3.3   |          |
|       |            | Blade/bladelet cores |       |           |       |            | Bilaterally retouched blades          |            |           |          |
|       |            | Length               | Width | Thickness |       |            | Length                                | Width      | Thickness |          |
|       |            | All, n = 117         |       |           |       |            | All, n = 47                           |            |           |          |
| Mean  | —          | 34.9                 |       | 23.7      | Mean  | 27.5       | 20.5                                  |            | 6.7       |          |
| Range | —          | 85.5/11.9            |       | 61.5/8.8  | Range | 109.6/20.7 | 40/7.7                                |            | 19/2.6    |          |
|       |            | Unbroken, n = 87     |       |           |       |            | Unbroken, n = 14                      |            |           |          |
| Mean  | 60.2       | 35.1                 |       | 24.5      | Mean  | 153.7      | 24.5                                  |            | 8.6       |          |
| Range | 116.7/18.5 | 85.5/11.9            |       | 61.5/8.8  | Range | 109.6/40.7 | 38.5/12.1                             |            | 19/3.1    |          |
|       |            | Broken, n = 30       |       |           |       |            | Backed blades                         |            |           |          |
| Mean  | —          | 34.2                 |       | 21.5      |       |            | Length                                | Width      | Thickness |          |
| Range | —          | 50.9/12.1            |       | 34.9/9.1  |       |            | All, n = 25                           |            |           |          |
|       |            | Flake cores          |       |           |       |            | Mean                                  | 27.8       | 15.7      | 5.5      |
|       |            | Length               | Width | Thickness |       |            | Range                                 | 72.1/8.9   | 34.3/6.8  | 9.7/2.3  |
|       |            | All, n = 63          |       |           |       |            | Unbroken, n = 3                       |            |           |          |
| Mean  | —          | 30.9                 |       | 17.8      | Mean  | 51.0       | 25.8                                  |            | 8.2       |          |
| Range | —          | 88.3/15.4            |       | 55.8/7.4  | Range | 72.1/12.2  | 32.8/6.8                              |            | 9.7/2.4   |          |
|       |            | Unbroken, n = 48     |       |           |       |            | Blades, both notched and denticulated |            |           |          |
| Mean  | 30.7       | 30.0                 |       | 17.7      |       |            | Length                                | Width      | Thickness |          |
| Range | 85.9/12.8  | 88.3/15.4            |       | 55.8/7.4  |       |            | All, n = 32                           |            |           |          |
|       |            | Broken, n = 15       |       |           |       |            | Mean                                  | 63.6       | 24.2      | 7.6      |
| Mean  | —          | 33.7                 |       | 18.3      | Range | 109.6/27.8 | 37.4/11.8                             |            | 14.1/3.3  |          |
| Range | —          | 70.2/15.6            |       | 33/10.2   |       |            | Unbroken, n = 16                      |            |           |          |
|       |            | Perforators          |       |           |       |            | Mean                                  | 144.6      | 47.2      | 13.8     |
|       |            | Length               | Width | Thickness |       |            | Range                                 | 109.6/36.2 | 37.3/11.8 | 13.9/3.3 |
|       |            | All, n = 3,718       |       |           |       |            |                                       |            |           |          |
| Mean  | 19.6       | 16.0                 |       | 7.6       |       |            |                                       |            |           |          |
| Range | 84.9/8.6   | 41.2/3.6             |       | 27.2/1.4  |       |            |                                       |            |           |          |

and blades. Another, yellowish brown, is mostly used for sickle blades, and a third, gray/brown, appears to have been selected for the perforators/drills. A fourth source—used for the bullet cores, which produced narrow, straight, pressure-flaked bladelets—is a light gray. All of these raw materials were imported into Kish, more than likely from central and southeastern Anatolia, northwestern Syria, or both. Central and eastern Anatolia is also the source for much of the obsidian (see Golitko, in this volume), though other sources supplied Kish to the northeast, near Lake Van as well as the Caucasus and Armenia. This movement of raw material is indicative of a large-scale trade and exchange network throughout the

Near East, in place by at least the Early Bronze Age (Early Dynastic period, ca. 3000–2500 BC), bringing lapis lazuli and agate from Afghanistan, carnelian from the Indus Valley, and steatite from eastern Iran to a variety of Early Dynastic urban centers in Mesopotamia.

The Kish lithic assemblage consists of prepared blade and bladelet cores; nonregular flake cores; blade, bladelet, and flake débitage; and tools (see table 10.1). The majority of the objects are tools rather than débitage (a reversal of a normal chipped-stone assemblage)—a reflection of the system of non-sieving and of *baksheesh* for objects, a normal procedure in early twentieth-century Mesopotamian

archaeology. Nevertheless, it is a peculiar selection of lithics. In the first place, the vast majority of the assemblage consists of perforators/drills, which make up more than 30 percent of the total chipped-stone assemblage. We believe that this actually represents a special activity at Kish: engraving cylinder seals (see Loebel, in this volume), beadmaking, and other lapidary activities. Jonathan M. Kenoyer has suggested that the carnelian beads found at Ur were manufactured at Mohanjo Daro, then shipped to Ur;<sup>1</sup> on the other hand, there seem to be instances of both local production and craft specialists from the Indus Valley working at some of the urban centers in Early Dynastic Mesopotamia. The preliminary evidence at Kish suggests that beadworking was a local activity and must have been sanctioned by the local authorities.

We now turn to a description of the chipped-stone assemblage.

## DÉBITAGE AND DEBRIS

The débitage recovered from Kish consists of cores and core-trimming elements, flakes not retouched, blades, and bladelets. Table 10.1 indicates the frequency of this category, which implies that production of blanks was present at Kish. But the low frequency of chips and flakes indicates that the blade/bladelet cores, as well as the pressure-flaked bullet cores, most likely were imported “prefabricated.” Of the cores, 517 (87.2 percent) are for blades/bladelets and microblades, whereas only 12.2 percent are flake cores (see table 10.2; see also figs. 10.1–10.2, 10.12a–b). There appear to have been at least three methods for reducing the blocks: (1) indirect percussion for producing long blades, some reaching almost 150 mm in length, with a mean of 76.6 mm; (2) pressure flaking, used to produce very narrow, straight bladelets from what might be called bullet cores, themselves quite narrow and short; and (3) flake cores with direct percussion, producing a majority of the perforators. In addition to the cores, a variety of core-related débitage was recovered. Core trimming, ridge blades, and core tablets are part of the rejuvenation processes for damaged and angle-poor platform reconstruction. It is not often that the long blades were retouched or modified, presumably when they were hafted as knives. Unlike

other objects, no direct evidence of hafting exists on these blanks (see discussion below).

Débitage other than cores makes up approximately 28 percent of the total assemblage (table 10.1). Blades and bladelets have a frequency of 37 percent of the débitage, and, along with other blade tool blanks, make up the majority of the blanks. Flake blanks make up nearly 40 percent of the débitage blanks. Flakes are rarely modified into tools, although a number of them are used for perforators and side scrapers.

## TOOLS

Tools are a large segment of the assemblage, which is not a normal situation in lithic assemblages. We are certain that this is a reflection of the system of payments (*baksheesh*) given to workmen by excavation supervisors for discovering objects that were modified and easily recognizable, such as sickle blades, long blades, figurines, and the like.

At Kish, retouched pieces (tools) account for more than 44 percent of the total assemblage, whereas perforators/drills/engravers and sickles account for more than 88 percent of all tools. These figures indicate a skewed assemblage that has reached us by selection in the field, but it may also reflect some of the major activities in the area of the Y trench at Kish. The perforator group can be divided into three unequal functional categories: (1) objects that act as drills, with an inverse/obverse bit orientation (see fig. 10.3); (2) those that act as awls or punches; and (3) those that act as engravers (see Loebel, in this volume). The vast majority of this category were to be used as drills, specifically for boring holes in stone (see, e.g., the holes in figs. 10.7–10.8, 10.11); thus, depending on the task, bits of various sizes were produced to work on holes ranging in size from large to very small (see table 10.2 for the measurements). Certain drills (see fig. 10.3e–g) were produced for drilling beads, such as the carnelian and lapis examples found in abundance at the site.<sup>2</sup> Whether these beads actually were made at Kish is open to question; we hope that Kenoyer will work on some of the Kish carnelian beads in the near future to determine whether they were imported from the Indus Valley as actual beads or just as raw material.

<sup>1</sup> Kenoyer 2008.

<sup>2</sup> Kenoyer 2008.

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The sickles are another very interesting group of artifacts, accounting for approximately 12 percent of the tools. The majority of the sickles were found in the Y trench at depths of 4–6 m. A variety of types of sickles occur, but the differences can be attributed to their placement in the sickle sequence rather than to a different function (see figs. 10.4, 10.14a–j). These pieces seem to have had a standard size and mode of production; flat blades were produced by indirect percussion or pressure flaking from blade cores with flat, 90-degree platforms. Many of them were then denticulated and hafted with a matrix of bitumen, which is preserved on a number of the sickles (fig. 10.14a–f). Traces of hafting, when the matrix is gone, also occur (fig. 10.4c–h). At certain points in the sickle sequence, truncations (both double and single) are used to end the sequence. Most likely, the sickles were hafted into bone or wood (fig. 10.4i–j).

The other tools in the assemblage are mainly retouched flakes and blades/bladelets whose exact function is unknown; however, we do have a number of end and side scrapers, which indicate that hide working and wood planing were part of the local artisans' repertoire of activities. In addition, thirty-six beautiful "points" were recovered, all belonging to a group that is found exclusively during Akkadian times (figs. 10.5, 10.14o–r), at sites such as Tel Brak, Susa, and Ur. It should be obvious that none of these were ever used; they are pristine and manufactured mostly from dark, gray/black cobbles, which do not occur at the site. Débitage from these cobbles is found, however, near the area where the objects were produced. As they were never used, we imagine that they were manufactured for some purpose other than hunting and may have been employed in some ritual of which we are unaware. The context at the other sites where they have been found is also equivocal, so we await new specimens in archaeological contexts from sites that are presently being excavated in Mesopotamia and northern Syria.

## GROUND STONE

The ground-stone assemblage from Kish encompasses many categories, ranging from tokens and weights to celts, adzes, and figurines. Although we have studied 421 of them, there are more in the assemblage that still need to be categorized. This means, of course, that the following discussion is by necessity preliminary. The three largest categories

of ground stone are polished stone, tokens, celts, pestles, and palettes. In addition, a variety of other types occur, such as rubbing stones, figurines, beads, and spindle whorls (see table 10.2 for the total list).

Various raw materials were used for these objects, including limestone, soapstone, granite, serpentine, quartz, and volcanic material such as basalt, obsidian, and tuff. It is certain that most if not all of this raw material was imported into Kish from many locales in the Near East. Weights (figs. 10.8, 10.11) were often drilled, sometimes decorated (fig. 10.11e), and in one case (fig. 10.8c) strung with copper wire. The majority of weights were made of steatite, though serpentine occasionally was used. Some pieces had grooves cut into them indicating the weight. Tokens and rubbing stones (fig. 10.12d–l) are also an important segment of the assemblage. Small river pebbles were selected for their shape and later polished into a round or oval shape to be used in games, for polishing ceramics, and other activities. The celts and adzes were shaped by both abrasion and smoothing, the celts with no further work and the adzes with drilling (fig. 10.10). Their function in woodworking and other tasks is conjectured rather than proven.

## DISCUSSION

The objects recovered from the excavations and now in the Field Museum are only a portion of those excavated. The remainder is at the Iraq Museum in Baghdad, to this day neither cataloged nor counted;<sup>3</sup> thus, we should be cautious in our conclusions as to the nature of the collections and the functions of the various categories. With this caveat in mind, we now look at the assemblage(s) as entire entities and try to explain the variation we have encountered in both the chipped-stone and ground-stone artifacts.

It is obvious that beadworking and stone working were major activities of the Kish craftsmen and that they were very good at these tasks. Producing more than 3,500 tools for working on other tools, such as the perforator drills and engravers, implies a specialized set of tasks and a specific area where these tasks took place. What we envision is a situation similar to *suqs* in Egypt, Syria, and Turkey where streets are dedicated to specific crafts, such as bead manufacture, tool manufacture, and gold working.

<sup>3</sup> Donny George (personal communication, October 2010).

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There might be twenty or thirty shops adjacent to one another, where the work goes on with selling as a side activity. If this were the case at Kish, and it is certainly conjecture rather than proof, then the question arises as to who controlled production—the individual craftsmen or the local authorities? And, of course, to whom were the beads sold or with whom were they exchanged? It is an axiom of the archaeological endeavor that in early state societies such as at Kish, objects of adornment were worn by individuals of high status, whether in the temple or in the secular realm. One of the reasons for this belief is, of course, that beads and other small personal objects are often found in graves, as they are at Kish. Of the more than 700 graves excavated at Kish,<sup>4</sup> many had grave goods that included beads made from carnelian, lapis lazuli, agate, tourmaline, and other semiprecious gemstones, all of which were imported into Kish. We have yet to formulate definitive answers as to whether these beads and other personal adornments were unequally distributed among these burials and whether gender, age, or status determined the presence or absence of this type of object.

Other ground-stone objects—such as grinding stones and palettes for cosmetics or grinding

minerals—have functions that occur in everyday life and were produced with a minimum of fuss and decoration. Spindle whorls (fig. 10.7), on the other hand, which were to be used in the weaving process, were manufactured with attention to shape and the size of the opening.

The stone sickles, of course, were manufactured to be used in the agricultural process, as were the clay sickles found in the assemblage. Sickle blades clearly conformed to a specific size and shape in order to be hafted, using bitumen as mastic, onto a semicircular piece of bone or wood that served as a handle (see fig. 10.4i–j). Agriculture was a major element in the day-to-day life of the population of Kish, and the stone assemblage reflects this in a number of ways. Celts and hoes were used for digging or chopping, and the sickles were used for harvesting. Other implements, such as grinding stones and querns, were used to process the grains harvested with the sickles.

Although the stone assemblage is incomplete, we have been able to indicate a number of tasks that occurred at Kish. In the future, we look forward to working on the Kish collection at the Iraq Museum to complete the analysis and description of this very important category of objects.

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<sup>4</sup> See Pestle, Torres-Rouff, and Daverman (in this volume).

WHERE KINGSHIP DESCENDED FROM HEAVEN

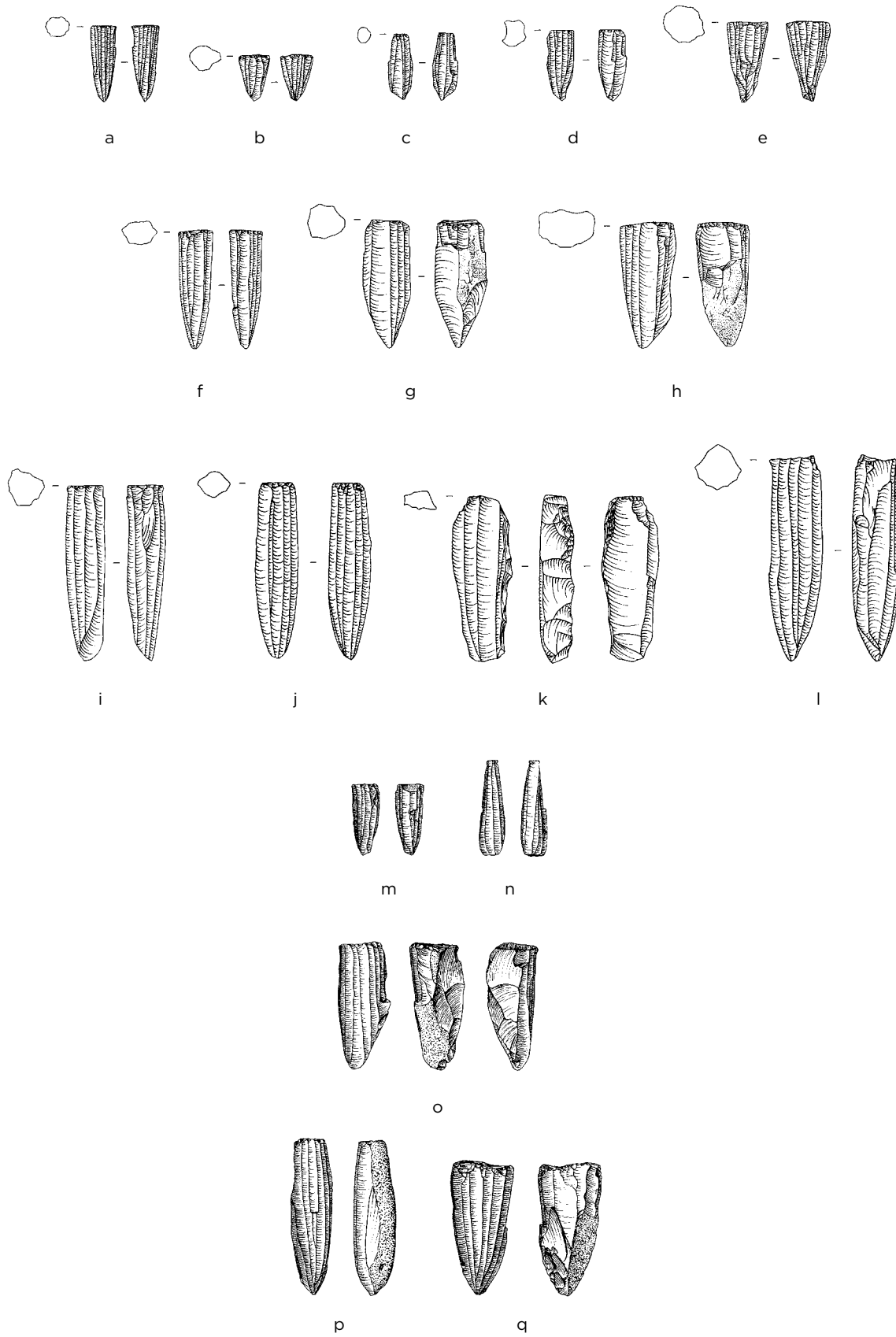


Figure 10.1. Bullet cores (drawings by Jill Seagard).

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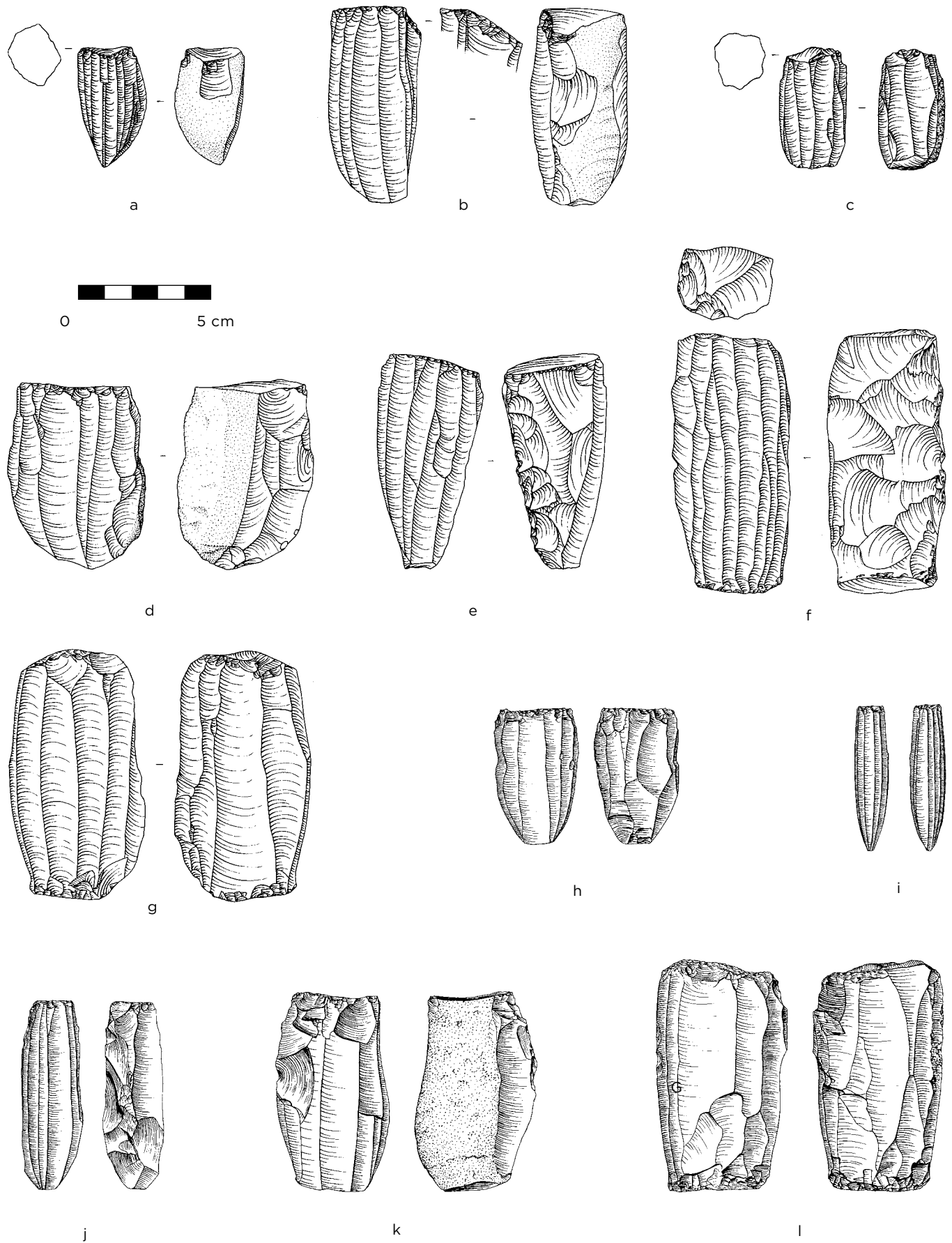


Figure 10.2. Blade cores (drawings by Jill Seagard).

WHERE KINGSHIP DESCENDED FROM HEAVEN

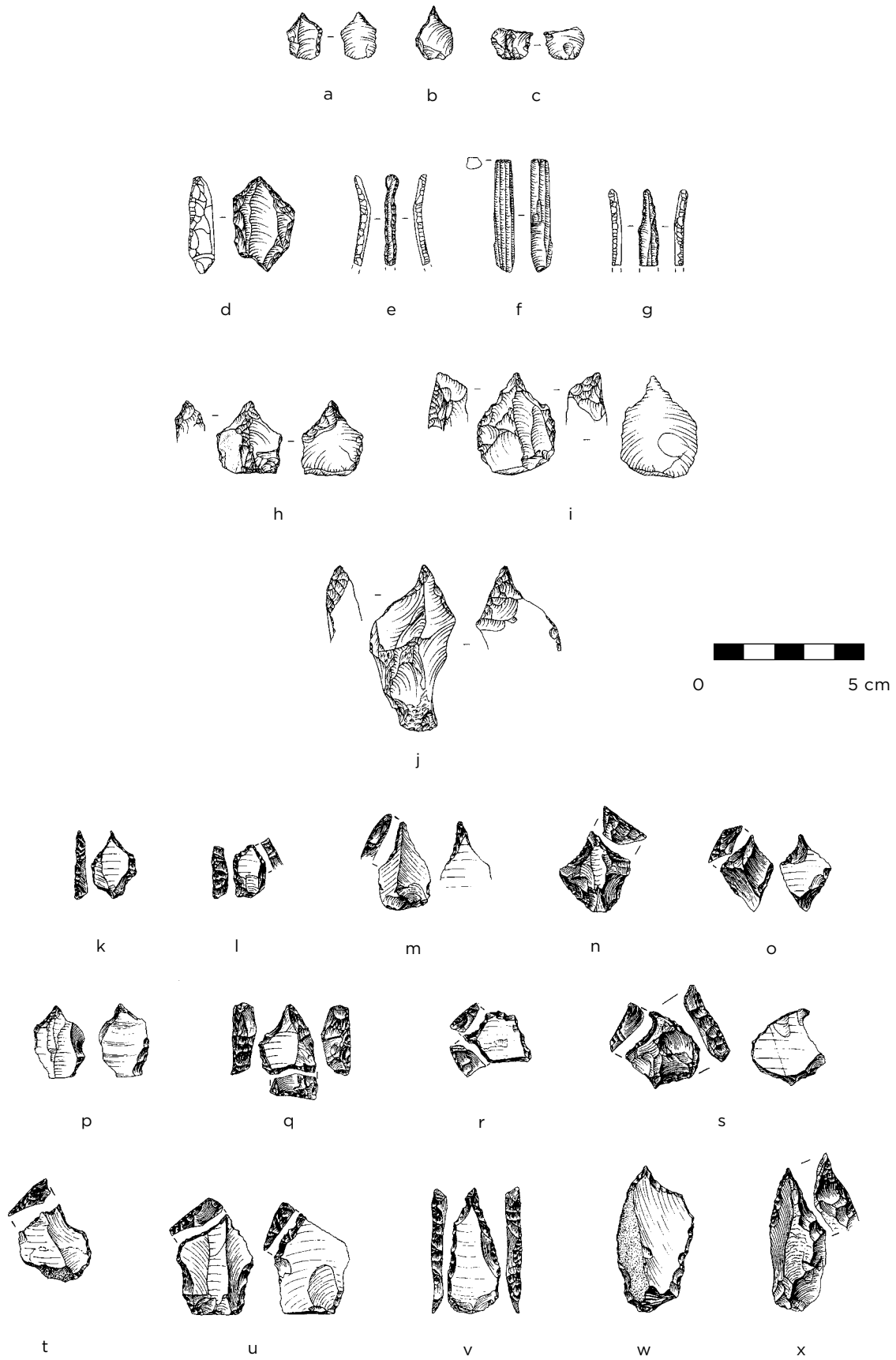


Figure 10.3. Microperforators (drawings by Jill Seagard).

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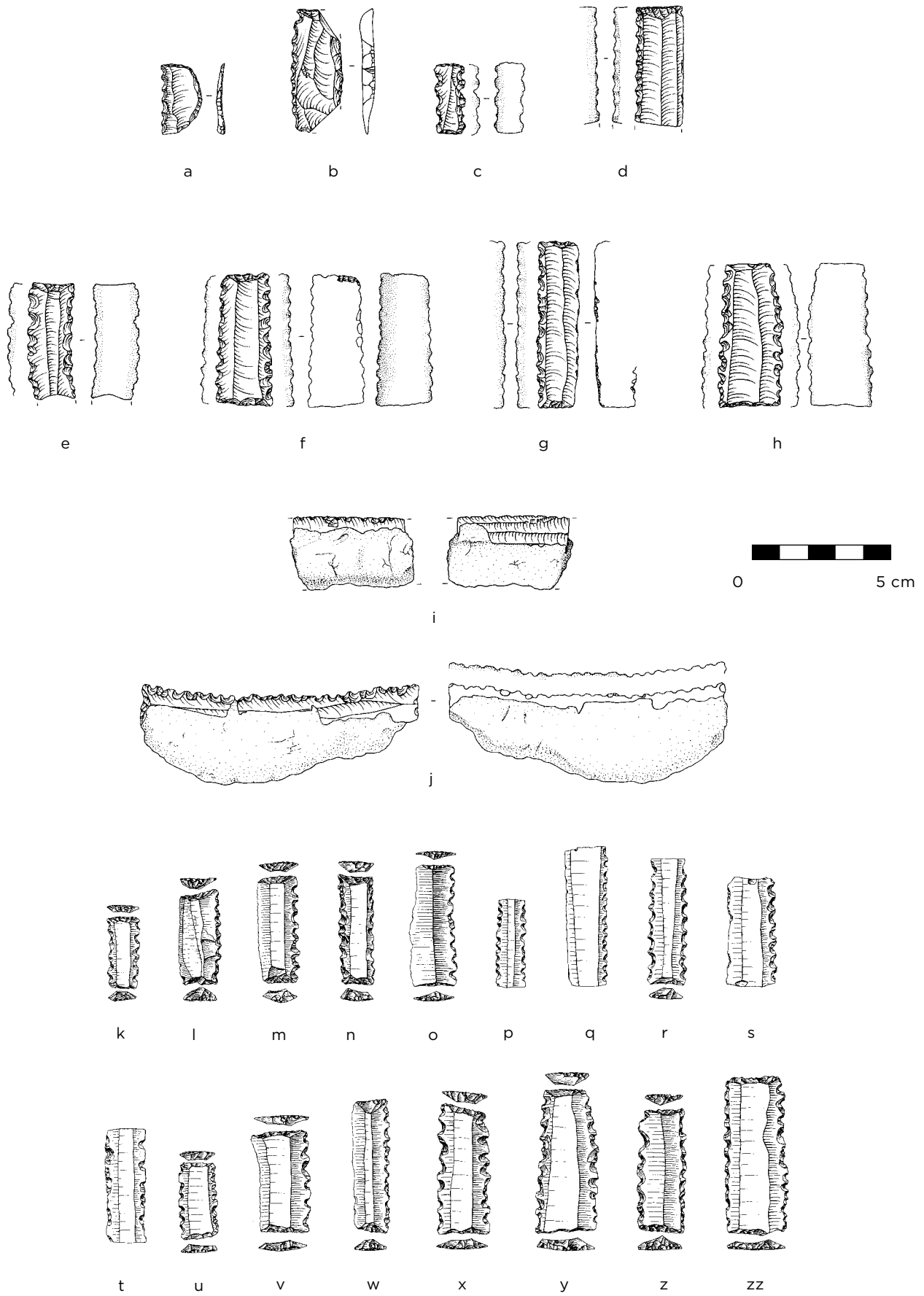


Figure 10.4. Sickles (drawings by Jill Seagard).



WHERE KINGSHIP DESCENDED FROM HEAVEN

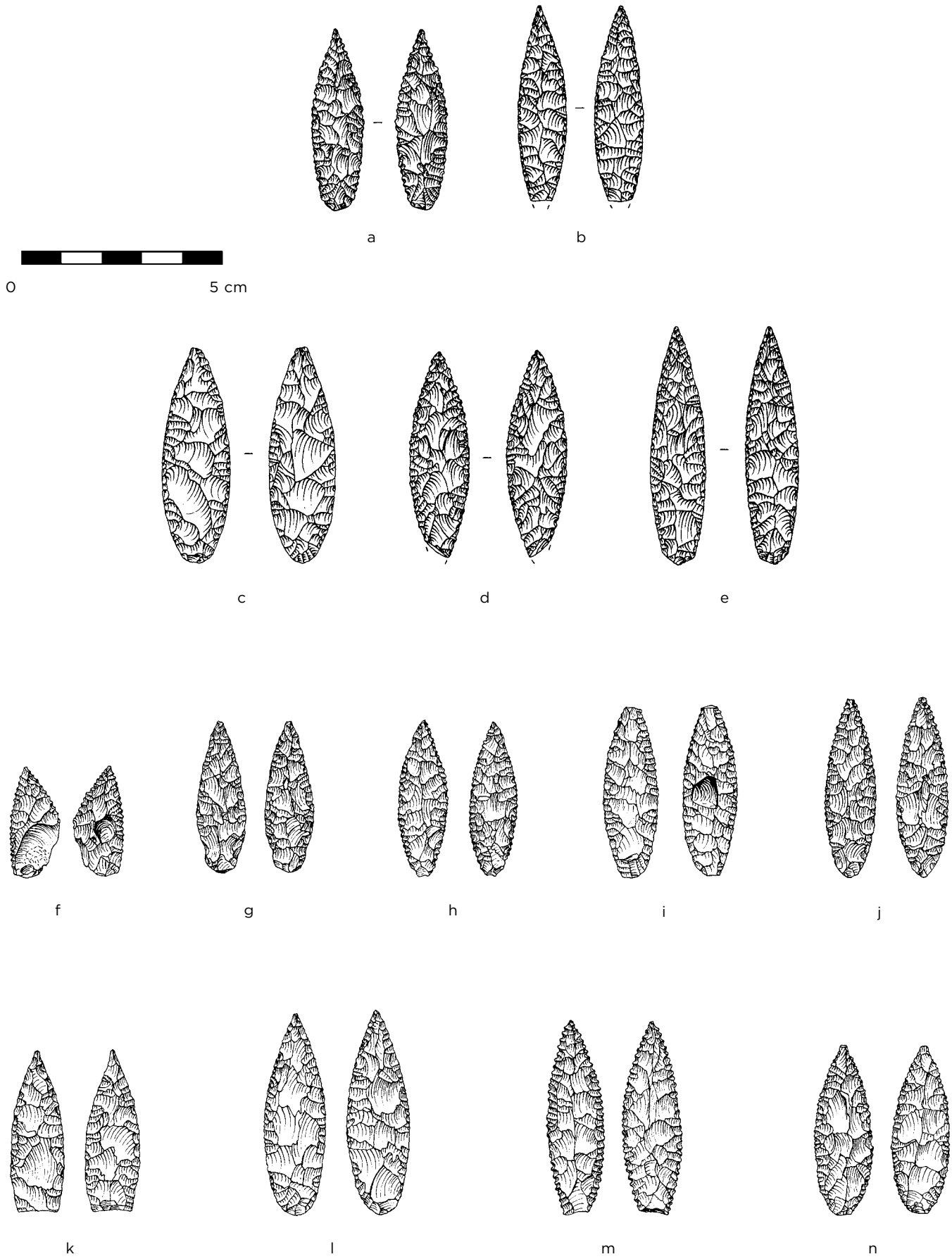


Figure 10.5. Points (drawings by Jill Seagard).

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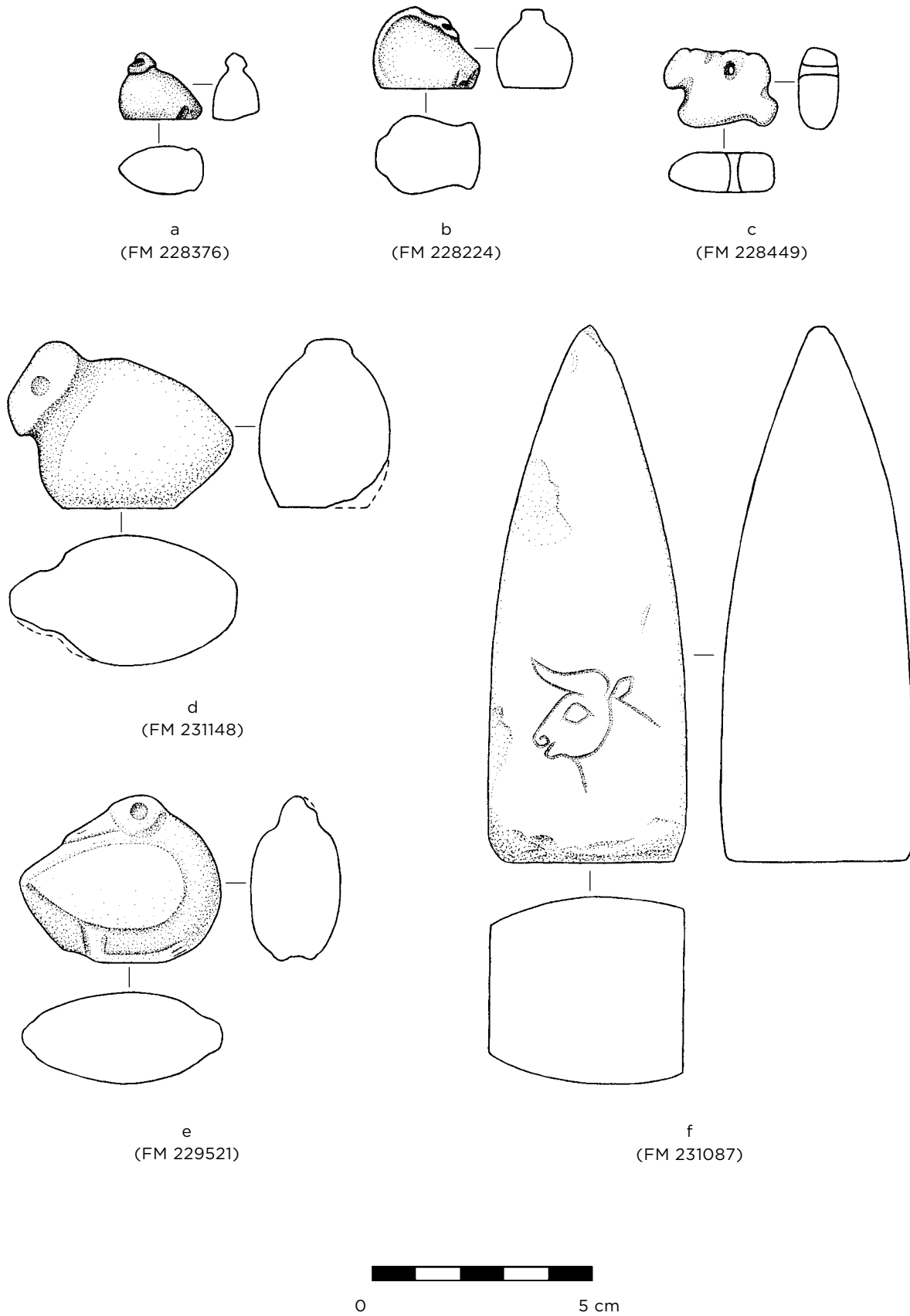


Figure 10.6. Figurines (drawings by Jill Seagard).

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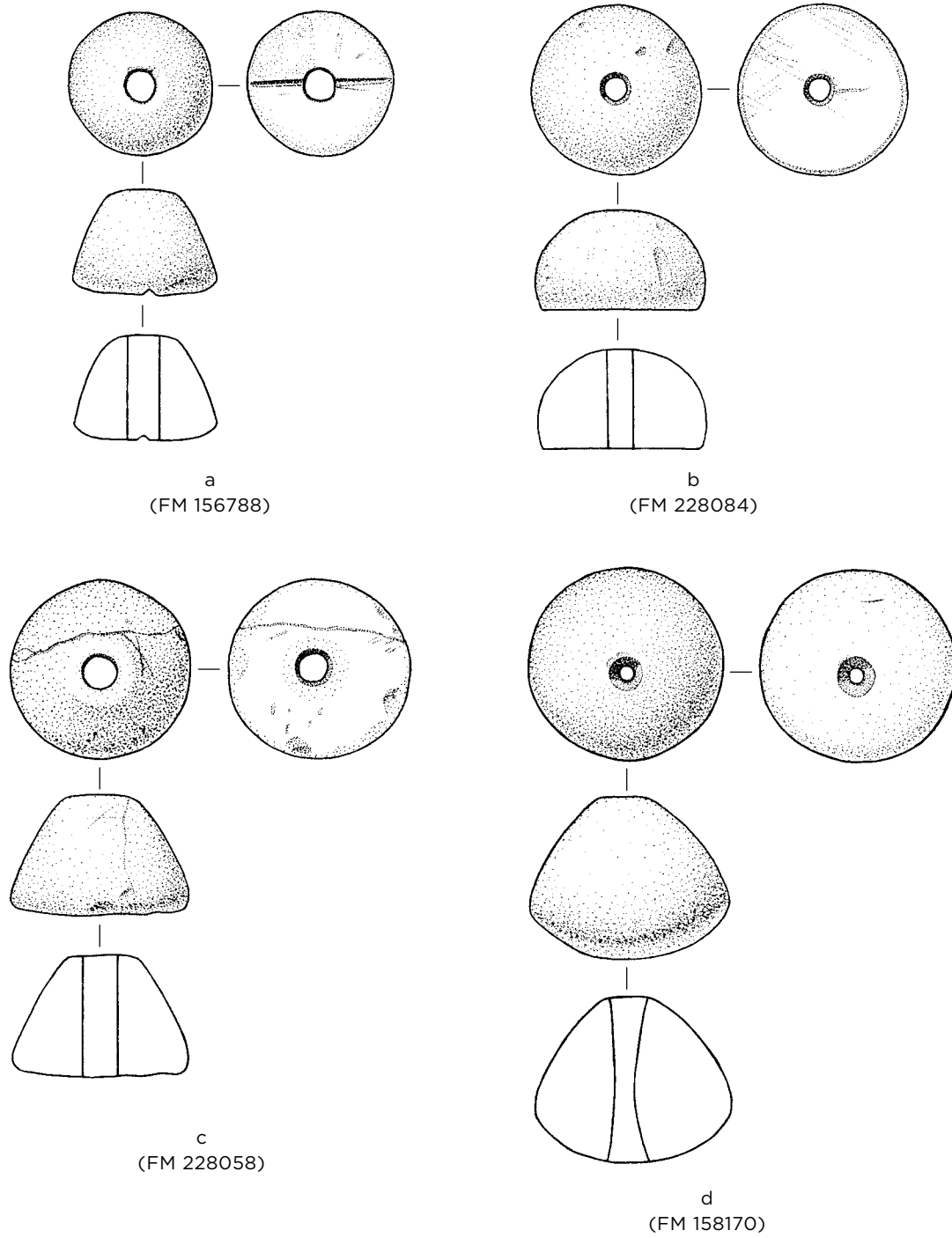


Figure 10.7. Spindle whorls (drawings by Jill Seagard).

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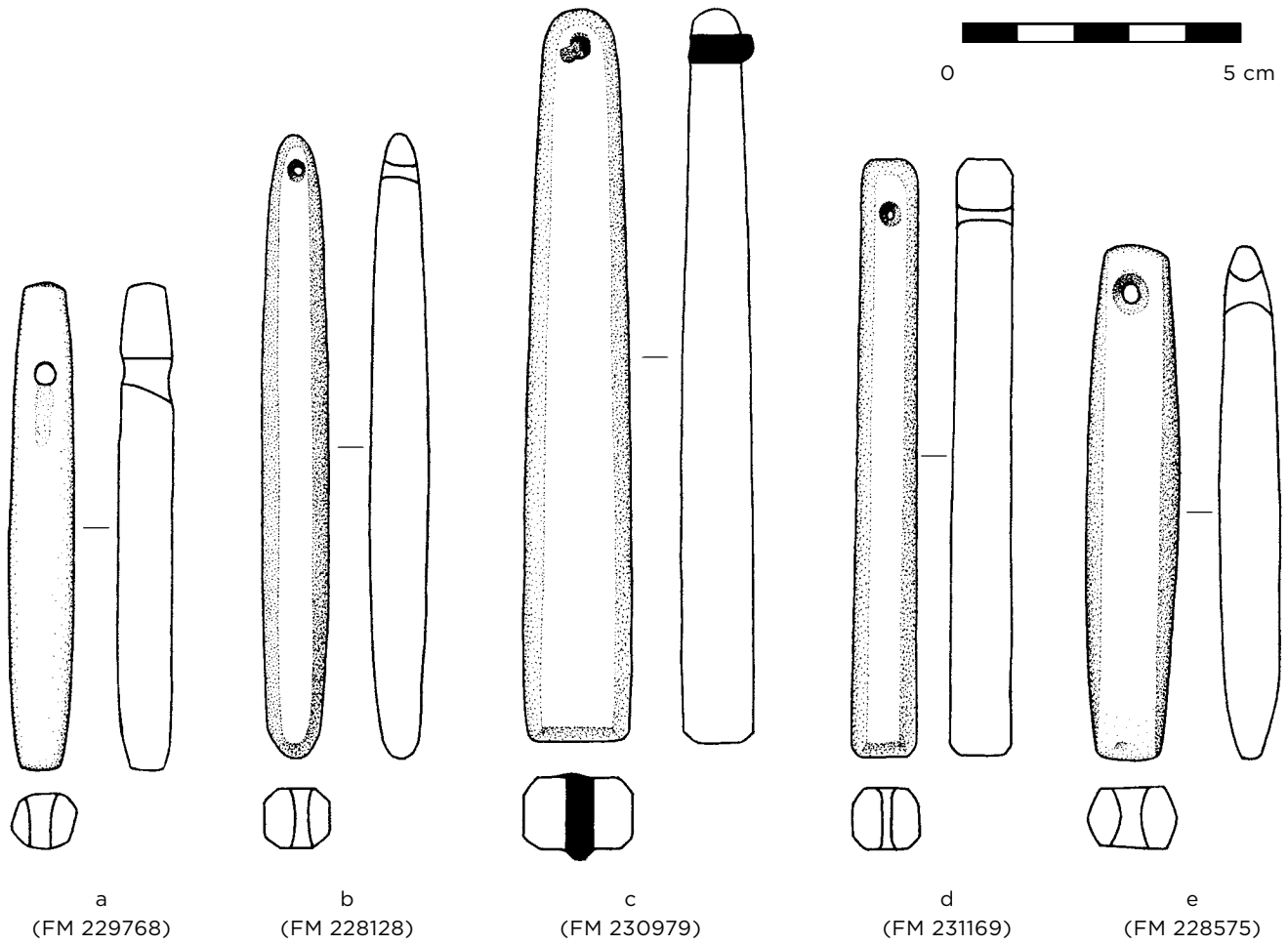


Figure 10.8. Weights (drawings by Jill Seagard).

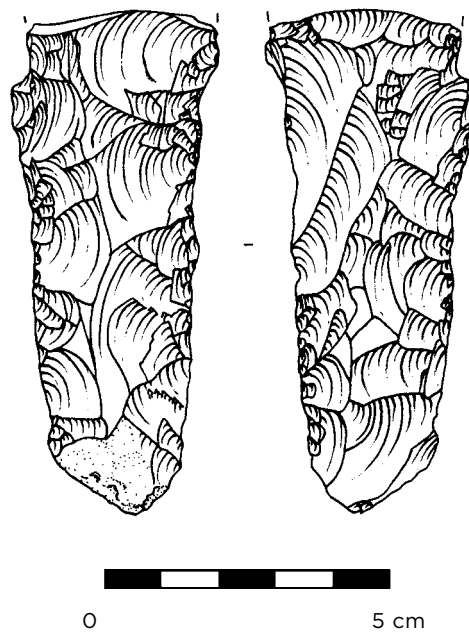


Figure 10.9. Axe (drawing by Jill Seagard).

WHERE KINGSHIP DESCENDED FROM HEAVEN



Figure 10.10. Adzes.

CHAPTER 10. CHIPPED- AND GROUND-STONE ASSEMBLAGES FROM KISH

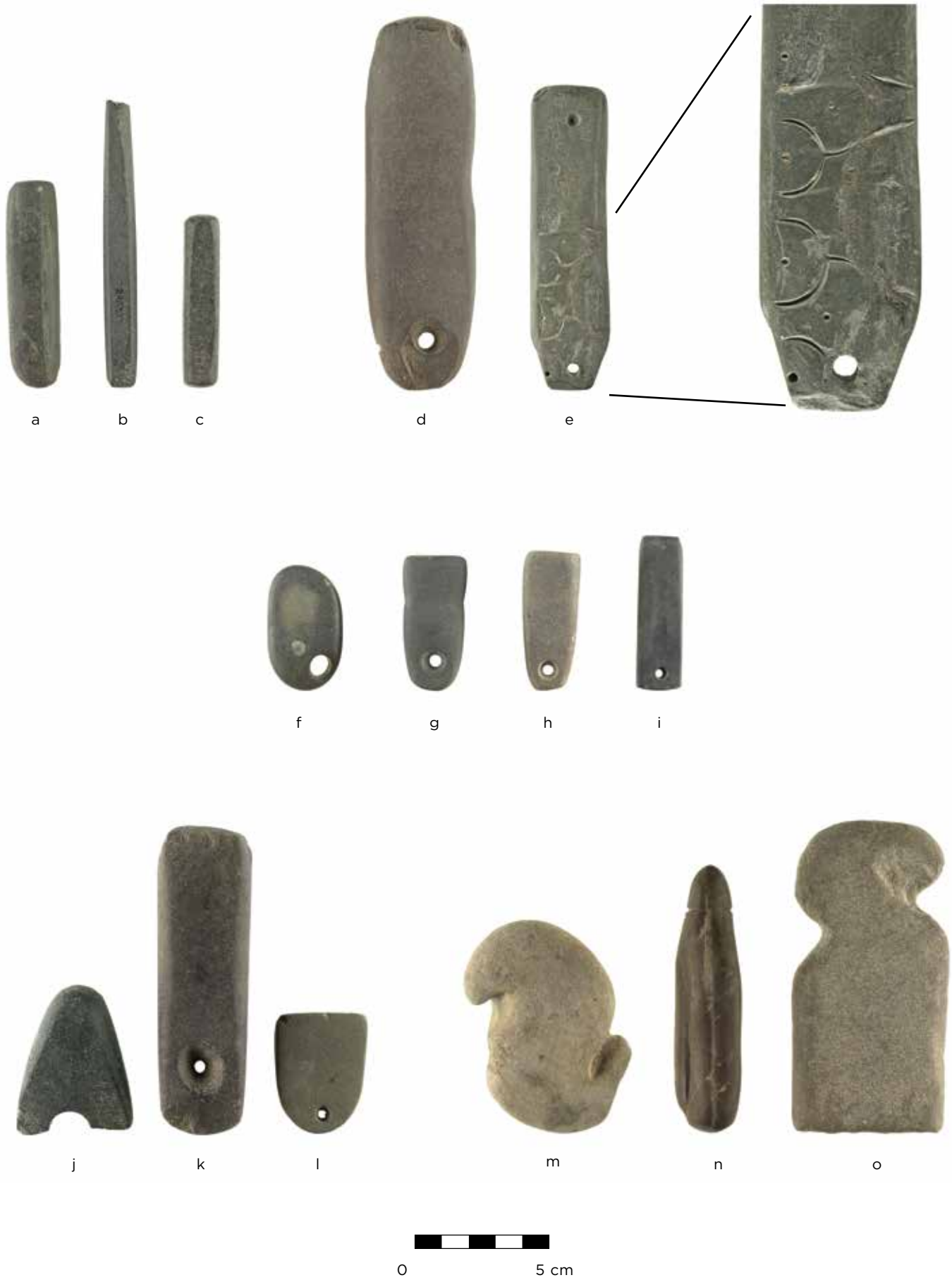


Figure 10.11. Weights.

WHERE KINGSHIP DESCENDED FROM HEAVEN



a



b



c



d



e



f



g



h



i



j



k



l



m



0

5 cm

Figure 10.12. (a-b) Blade cores, (c) mace-head, (d-l) rubbing stones, (m) hammer.

CHAPTER 10. CHIPPED- AND GROUND-STONE ASSEMBLAGES FROM KISH



a



b



c

d

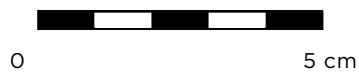


Figure 10.13. (a) Maul, (b) cone, (c-d) ear spools.



WHERE KINGSHIP DESCENDED FROM HEAVEN

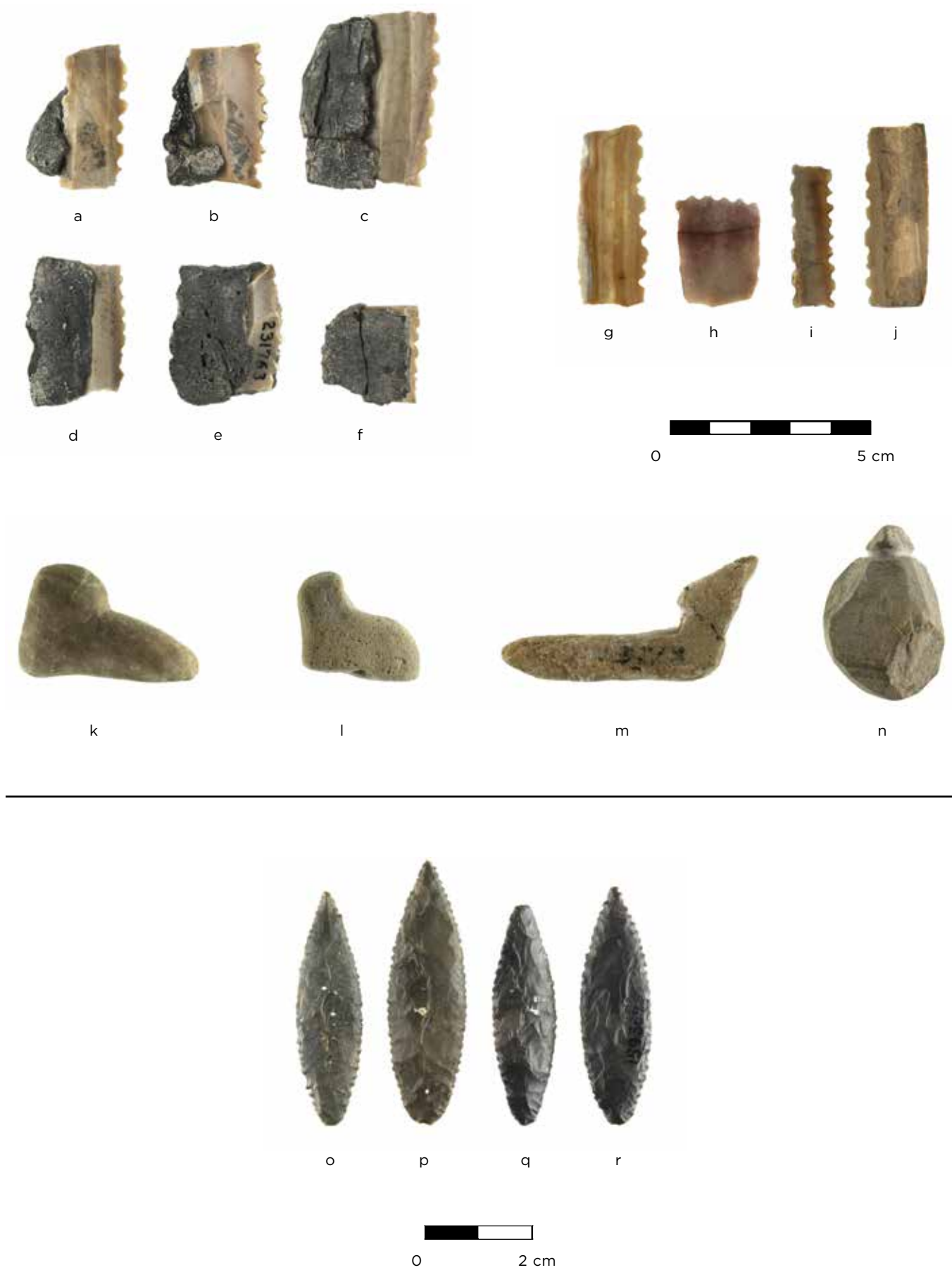


Figure 10.14. Hafted (a-f) and unhafted (g-j) sickle fragments, (k-n) figurines/weights, (o-r) points.

## CHAPTER 11

# CATALOG OF ANCIENT NEAR EASTERN SEALS IN THE COLLECTION OF THE FIELD MUSEUM

MCGUIRE GIBSON WITH MARGARET BRANDT AND LESLIE SCHRAMER

When visiting New York in the mid-1960s, I mentioned to Edith Porada that I was working on Kish for my doctoral dissertation. She immediately said that, some years before, she had made rollings of the Kish and Jamdat Nasr seals in the Field Museum, as part of her project to document all Near Eastern seals in the United States. She did not think she would finish that project, and she offered me the publication rights and photographs of the rollings she had done. Those photos are the basis for the present publication. I had already begun to make a 3" × 5" card for each of the seals in the Field Museum, and Porada's photos saved a great deal of time and expense duplicating the work. I did make subsidiary rollings of the items that she did not roll, including dozens of cylinder and stamp seals that were in the same drawers but were not necessarily from Kish or Jamdat Nasr. Many of these seals were either gifts from patrons who had collected them or had come into the collection from other sources. In the catalog, the Kish and Jamdat Nasr cylinder and stamp seals (figs. 11.1–11.24d, 11.27–11.30a) are given with as much findspot information as I could discover. At the end of each section, separated from the excavated seals, are the acquired seals (figs. 11.24e–11.26, 11.30b–11.34), including some that we judge to be fakes. Although such items should not, strictly, be included in a site report, we show them here because they are not likely to be published otherwise.

Having taken on the excavation of Nippur in 1972, and having less time to work on Kish, I was able to find students to continue analyzing the seals and entering the information on the cards. Chief among these students was Margaret Brandt, who wrote in much of the information. Later, Leslie Schramer entered the information in digital form, and that database has been used for this publication.

The comparanda in the catalog were added some years ago, and if we could devote more time to do so now, further search for parallels would yield good new information. It should be noted, however, that Briggs Buchanan had already published his catalog of the seals in the Ashmolean Museum,<sup>1</sup> so we could link our seals to his. In a review I did of Buchanan's book,<sup>2</sup> I was able to supply findspot information for many of the seals in Buchanan's catalog.

Probably the most important set of seals here, and the most numerous, are the Jamdat Nasr and Early Dynastic ones, whether found at Jamdat Nasr itself or at Kish. Some of the best-preserved Early Dynastic examples came from the A Cemetery and have already been published.<sup>3</sup> The fact that many of the Early Dynastic seals appear to be damaged is a result of their being made from the cores of conch shells, which tend to deteriorate in situ. And there are several good examples of Akkadian glyptic, covering a range of possible motifs (e.g., god combats, animal-hero combats, presentations before a deity). Excavated seals from later periods tend to be in the Old Babylonian range. There are also some excavated sealed clay tablets and tags or container sealings. The distribution of excavated items reflects the fact that most of the excavated seals in the Field Museum collection are from the later seasons of the Kish excavations, when the Y trench was being excavated, or from Jamdat Nasr.

On an issue of style, I may be mistaken but it appears that the Kish seals of the Early Dynastic III and Akkadian periods tend to have animals that are well

<sup>1</sup> Buchanan 1966.

<sup>2</sup> Gibson 1970.

<sup>3</sup> Mackay 1925.

## WHERE KINGSHIP DESCENDED FROM HEAVEN

modeled but stretched a bit more than normal. This aspect may be merely the result of a tendency to drag the seal a bit when making the rolling, but in cases where I could measure the animal bodies on the actual seals and compare them to seals from the Diyala and other published collections, they did seem to be a bit longer, thus indicating a distinctive style feature for Kish. Unfortunately, the sample that the Field Museum received from Langdon included only a few of the best-quality seals, so detailed measurements could be made on only a few items.

The nonexcavated seals in the collection include the usual kinds of items that were available in antiquities shops in Baghdad in the 1920s and 1930s. The cylinder seals are from a mix of periods, including Old

Babylonian and Achaemenid. The stamp seals include Neo-Assyrian/Neo-Babylonian prisms, usually with the scene of a priest at an altar, and a variety of Sasanian stamps (floral, animal designs). The Sasanian stamps could be fakes, since many of them have always been on the market and I saw some being made in a small factory in Tehran in 1969. But clearly, some of the cylinder seals are also fakes and are listed as such in the catalog. Some of the excavated items that have very crude people and animals often rendered in thin lines might also be thought fake, but they indicate a particular style choice (fig. 11.3k) or merely ancient seals made by less-than-competent seal cutters (figs. 11.2i, 11.5c). Such seals occur in ancient contexts at Nippur and other sites.

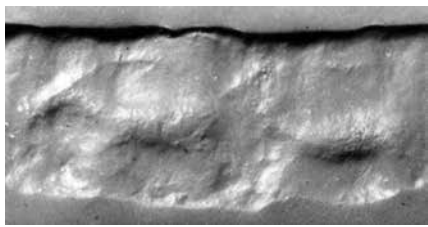
## CYLINDER SEALS: JAMDAT NASR PERIOD

## Animal Files

| Figure 11.1 | FM registration no. (field no.) <sup>1</sup> | Period                   | Provenience                                  | Material, size (mm), description (left to right), remarks, publications  | Comparanda   |
|-------------|--|--------------------------|--|--|--|
| a           | 156744                                       | JN                       | Kish   | Shell, 15 × 11, very worn, broken at bottom. Two antelopes facing left.  | Buchanan 1966, nos. 30ff. (for general style)  |
| b           | 156643 (1483)                                | JN                       | Kish, Ingharra A, burial 32, at neck of body | Shell, 19 × 11, worn. Two antelopes facing left. Mackay 1925, p. 62.   | Frankfort 1955, no. 266; Buchanan 1966, no. 32   |
| c           | 156637 (1606?)                               | JN                       | Kish, Ingharra A, just below surface.        | Shell, 14 × 7. Two antelopes facing left.  | Buchanan 1966, nos. 31 (body), 32  |
| d           | 228706                                       | JN                       | Kish   | Shell, 24 × 13, very worn, broken lengthwise. Two horned quadrupeds facing left.   | Buchanan 1966, nos. 30ff. (for general style)  |
| e           | MG 17  | JN                       | Kish?  | Shell, 13 × 6, fragment, broken at top. Two recumbent antelopes.   | Buchanan 1966, no. 39 (has only general similarity in antelopes); Frankfort 1955, no. 25 (for general style) |
| f           | 156755                                       | JN                       | Kish   | Calcite, 12 × 10, very worn. Unfinished? One recumbent horned quadruped.   | Buchanan 1966, nos. 30ff. (for general style); Frankfort 1955, no. 224 (similar but less angular)            |
| g           | MG 19  | JN                       | Kish?  | Gray stone, 23 × 17, fragmentary, broken lengthwise on two sides. Two antelopes.   | Buchanan 1966, no. 32 (legs)   |
| h           | 228687                                       | JN                       | Kish?  | Marble, 20 × 10, fragment, broken lengthwise, very worn. Two antelopes(?) below lattice pattern.   | Frankfort 1955, nos. 43, 433   |
| i           | 228750                                       | JN                       | Kish   | Shell, 27 × 13, worn, unfinished? Spouted jar beside bird(?); in the field, six "crescents" and a group of seven dots in a rough rosette beside another spouted jar.   | Frankfort 1955, no. 201  |
| j           | MG 8   | JN, late and peripheral? | Kish?  | Black stone, 24 × 14. Linear style. Addorsed antelope and goat(?) longitudinally arranged with legs toward a central motif, possibly animals leaping at a tree or hero. Between antelope and goat, a standing human figure, two dots, and a crescent with dot. | Buchanan 1981, no. 191 (brocade style); Frankfort 1955, no. 295  |

<sup>1</sup> See Gibson 1972, pp. 179–81, for a detailed explanation of the numbering system used by the Ashmolean–Field Museum expedition. Throughout this catalog, seals for which no Field Museum number could be determined were given MG numbers for the purposes of this publication.

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



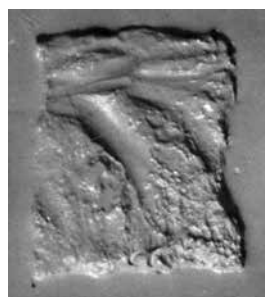
a



b



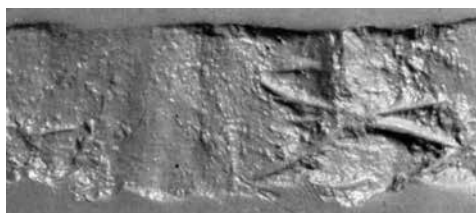
c



d



e



f



g



h



i



j

Figure 11.1. Cylinder seals: Jamdat Nasr period  
Animal files

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: JAMDAT NASR PERIOD

## Geometric

| Figure 11.2 | FM registration no. (field no.) | Period   | Provenience                                  | Material, size (mm), description (left to right), remarks, publications  | Comparanda  |
|-------------|---------------------------------|----------|--|--|---|
| a           | 156620<br>(2595)                | JN       | Kish, Ingharra A,<br>1 m                     | Gypsum, 20 × 11. Two rows of irregular diagonal hatches between irregular linear borders.  | Buchanan 1966, nos. 62, 67;<br>Frankfort 1955, nos. 52, 328,<br>357, 862  |
| b           | 156700<br>(X.418)               | JN       | Kish, Ingharra,<br>Trench A-4                | Limestone, 35 × 13. Upper row of two interlocking lozenges; lower row of herringbone design. Rows separated by two horizontal lines.                   | Frankfort 1955, nos. 149, 179, 357  |
| c           | 156727<br>(K.1703)              | JN       | Kish, Ingharra,<br>Sasanian<br>Palace V, 1 m | Shell, 17 × 7. Two parallel rows of herringbone designs.   | Frankfort 1955, nos. 164, 329   |
| d           | 231372                          | JN       | Kish   | Shell, 23 × 7. Two rows of lozenges with two short horizontal strokes between them, separated by horizontal line and bordered by two horizontal lines. | Frankfort 1955, no. 7   |
| e           | MG 9                            | JN       | Kish?  | Paste? (composition?), 16 × 12. Spool-shaped with three roughly parallel lines of horizontal strokes.  | Frankfort 1955, nos. 180, 329   |
| f           | MG 10                           | JN       | Kish?  | White stone, 13 × 7. Two interconnected lozenges with two broken lines above.  | Frankfort 1955, nos. 47, 319,<br>409-10   |
| g           | MG 57                           | JN       | Kish?  | Shell, 28 × 6, fragment, broken lengthwise. Alternating concentric triangles with border of three lines.   | Frankfort 1955, nos. 167, 228   |
| h           | 156646                          | JN? Akk? | Kish,<br>Ingharra W                          | Limestone, 38 × 12. Geometric pattern.   | Frankfort 1955, nos. 349-50   |
| i           | 156658<br>(K.1218b)             | Late JN  | Kish (various)                               | Baked clay, 21 × 14, worn in places. Broken-up design: drilling and gouges, both single and connected.   | Buchanan 1981, no. 198 (note to<br>Frankfort 1955, nos. 150-58);<br>Delaporte 1920, nos. S.373-83;<br>Frankfort 1955, no. 702 |
| j           | 228727                          | Late JN  | Kish   | Alabaster, 14 × 16, fragment, broken lengthwise and at top. Scorpion and chair(?).   | Delaporte 1920, nos. S.373-81   |

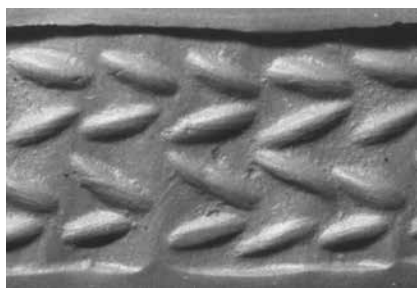
CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



b



c



d



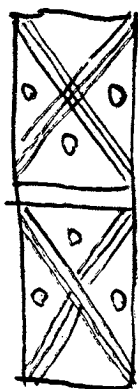
e



f



g



h



i



j

Figure 11.2. Cylinder seals: Jamdat Nasr period  
Geometric

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: LATE JAMDAT NASR / EARLY DYNASTIC PERIOD

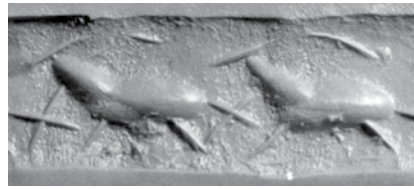
## Animal Files

| Figure 11.3 | FM registration no. (field no.) | Period      | Provenience                     | Material, size (mm), description (left to right), remarks, publications  | Comparanda  |
|-------------|---------------------------------|-------------|---------------------------------|--|---|
| a           | 156735                          | JN / ED I   | Kish                            | Shaley sandstone, 15 × 8. Fragment, top. Unfinished? Antelope facing left with crescent and dot behind head.   | Frankfort 1955, no. 293   |
| b           | 156602 (894)                    | JN / ED I?  | Kish, near PCB, surface         | Calcite, 14 × 11. Two antelopes facing left, single starlike design between. Cf. FM 156609 (fig. 11.24c). Mackay 1925, pl. VI:4.   | Buchanan 1966, no. 110 (legs); Frankfort 1955, nos. 261, 266  |
| c           | 156626 (2509A)                  | JN / ED I   | Kish, Ingharra A, burial 117    | Lapis lazuli, 15 × 9. Two antelopes with very long horns facing left, one with star(?) over chest.   | Buchanan 1966, no. 32; Frankfort 1955, no. 361  |
| d           | 156617 (2483)                   | JN / ED I   | Kish, Ingharra A, burial 113    | Shell, 14 × 8, fragment, broken at top. Two antelopes facing left.   | Buchanan 1966, nos. 32, 109   |
| e           | 228716                          | JN / ED I?  | Kish                            | Shell, 18 × 9, fragment, broken lengthwise. Two antelopes facing left.   | Frankfort 1955, no. 266; Buchanan 1966, no. 32  |
| f           | 156674 (X.417)                  | JN / ED I   | Kish, Ingharra, Trench B, 1 m   | Green jasper, 23 × 9. Two antelopes facing left with a half circle below each one.   | Buchanan 1981, nos. 178, 179 (flat bodies, JN); Porada 1948, no. 47 (flat bodies); Frankfort 1955, nos. 293, 313                      |
| g           | 156689 (X.426)                  | JN / ED I   | Kish, Ingharra, Trench A        | Sandy limestone, 25 × 11, broken at top and bottom. Two antelopes facing left.   | Buchanan 1966, no. 83; Frankfort 1955, no. 313  |
| h           | 156624 (1484)                   | JN / ED I   | Kish, Ingharra A, burial 32     | Shell, 18 × 10, worn. Two antelopes facing left.   | Buchanan 1966, no. 109; Buchanan 1981, no. 237  |
| i           | MG 22                           | JN / ED I   | Kish?                           | Shell, 16 × 9, very worn. Quadrupeds.  | Buchanan 1966, nos. 32ff. (general similarity)  |
| j           | 156726 (1179)                   | JN / ED I   | Kish, Ingharra A, burial 15     | Basalt, 47 × 9. Two undivided registers. Upper: two lozenges, one with central dash. Lower: fish, plant frond, and gouge before antelope. Brocade style.   | Buchanan 1966, nos. 81ff.; Buchanan 1981, nos. 190-91; Frankfort 1955, no. 221 (similar components of design, not style), nos. 235-36 |
| k           | 156644 (2453*)                  | JN / ED I   | Kish, Ingharra SW, near surface | Serpentine, 80 × 16. Three undivided registers. Upper: boat with figure seated on cushion at prow holding spouted jar, facing in; a standing figure holding spouted jar with spouted jar beside him, facing a seated figure on a cushion with a canopy(?) above; behind him a seated steersman with rudder. Middle: large bird with spread wings and animal or insect-like design. Lower: two facing recumbent asses(?) with two dots between. | Buchanan 1981, nos. 190-91; Buchanan 1966, no. 92; Frankfort 1955, no. 879 (style flat, but similar scene)                            |
| l           | 156754                          | JN / ED II? | Kish                            | Calcite, 13 × 11, fragment, broken lengthwise. Recumbent antelope below floral device followed by extant head, foot, and horn(?) of a quadruped.   | Buchanan 1966, no. 117; Frankfort 1955, nos. 831, 837, 839; Buchanan 1981, no. 176 (JN floral device)                                 |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



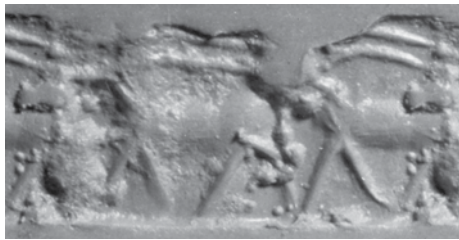
a



b



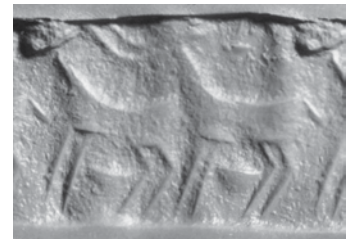
c



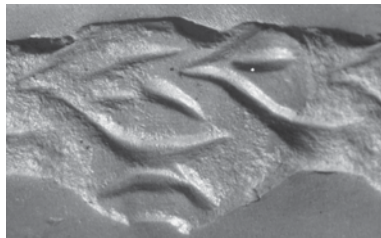
d



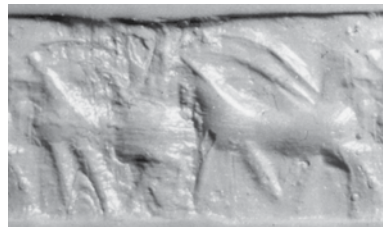
e



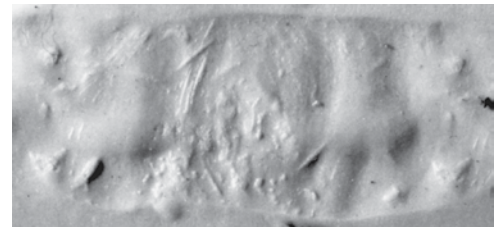
f



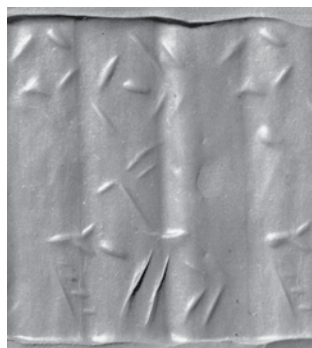
g



h



i



j



k



l

Figure 11.3. Cylinder seals: late Jamdat Nasr / Early Dynastic period  
Animal files



## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: EARLY DYNASTIC I-II PERIOD

## Geometric and Miscellaneous

| Figure 11.4 | FM registration no. (field no.) | Period   | Provenience                                     | Material, size (mm), description (left to right), remarks, publications  | Comparanda   |
|-------------|---------------------------------|----------|---|--|--|
| a           | 156757<br>(1046)                | ED?      | Kish, Ingharra A, low down ("unrecorded grave") | Limestone, 19 × 14, not perforated. Three diagonal gouges, tree design. Mackay 1925, p. 63.  | Delaporte 1920, nos. S.373ff.(?); Frankfort 1955, nos. 217, 301                                      |
| b           | 156504                          | ED I     | Kish  | Sealing, two rollings. Clay, 41 × 40 × 15, worn. Impression on a large jar sealing with cord marks on back. One antelope and zigzag design. Brocade style. String added by museum. | Buchanan 1966, no. 84; Frankfort 1955, nos. 291, 811   |
| c           | 156618<br>(2312b)               | ED I?    | Kish, Ingharra A, burial 93                     | Shell, 14 × 8. Spread-winged eagle holding an antelope on one side and a quadruped on the other.   | Buchanan 1966, no. 120; Frankfort 1955, nos. 79 (antelope body), 293 (some similarities in antelope) |
| d           | 156688<br>(X.603)               | ED I?    | Kish, Ingharra                                  | Shell, 21 × 12, fragment, broken at bottom, worn. Two antelopes, or antelope and lion(?).  | Buchanan 1966, no. 106; Buchanan 1981, no. 236 (antelope and lion); Frankfort 1955, no. 361          |
| e           | MG 24                           | ED I-II? | Kish?   | Shell, 20 × 9, worn. Lions and lioness(?) file to right, bird with wings spread above lion, various gouges above lioness.  | Frankfort 1955, nos. 567 (style only), 597 (style only)  |
| f           | MG 11                           | ED II?   | Kish?   | Shell, 13 × 7, worn. Lion and goat, file to right.   | Frankfort 1955, nos. 567 (style only), 597 (style only)  |
| g           | MG 23                           | ED II?   | Kish?   | Shell, 13 × 8, worn. Crossed lions attacking antelope on left and unknown animal on right.   | Frankfort 1955, nos. 567 (style only), 597 (style only)  |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS

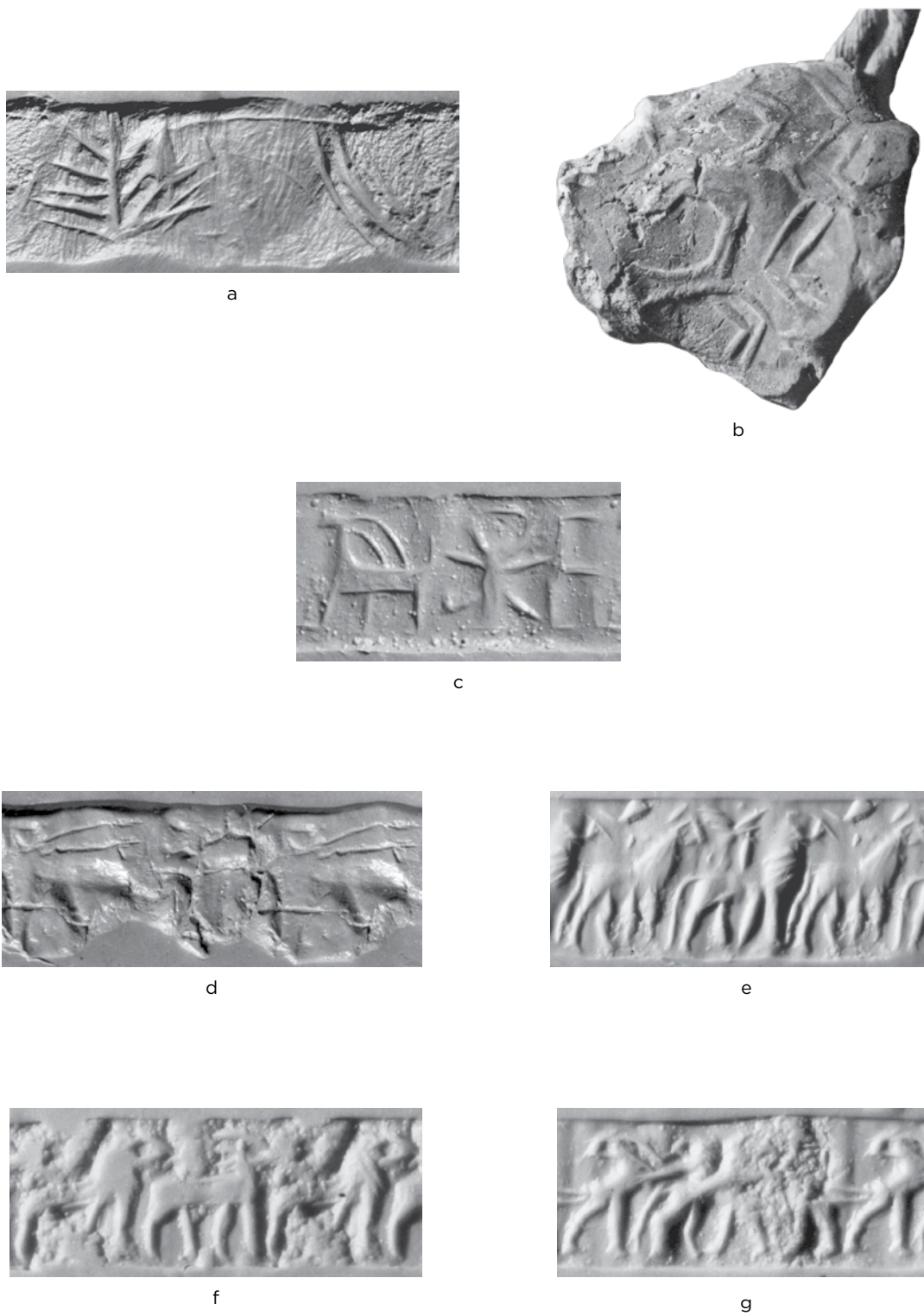


Figure 11.4. Cylinder seals: Early Dynastic I-II period  
Geometric and miscellaneous

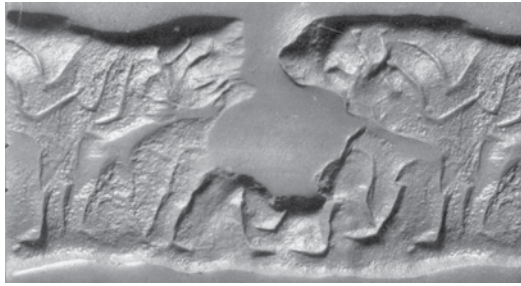
## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: EARLY DYNASTIC II-III PERIOD

## Contest Scenes

| Figure 11.5 | FM registration no. (field no.) | Period                     | Provenience   | Material, size (mm), description (left to right), remarks, publications   | Comparanda   |
|-------------|---------------------------------|----------------------------|---|---|--|
| a           | 156738                          | ED II?                     | Kish  | Shell, 29 × 15, broken lengthwise. Two crossed lions attacking from each side an antelope with its head turned back.  | Frankfort 1955, no. 280; Buchanan 1981, no. 255 (similar cutting/style)  |
| b           | 156758                          | ED II?                     | Kish, PCB   | Limestone, 22 × 19, broken lengthwise. Three sets of crossed rampant lions along the horizontal axis of the seal(?), only one complete. Understanding the orientation of the lions is problematic.  | Frankfort 1955, no. 458 (D 17:8, in altar, Square Temple I, ED II); Buchanan 1981, no. 253 (similar style, esp. manes)   |
| c           | 156657 (K.1218a)                | ED II?                     | Kish, no provenience  | Shell, 13 × 11, broken at top, very worn. Hero with rampant antelope on either side and rampant lion to left. [Sgraggly, ED II?—MG]   | —  |
| d           | 156610 (772)                    | ED III, early? (or ED II?) | Kish, PCB; picked up on surface of desert west(?) of building | Shell, 39 × 11. Two registers divided by two horizontal lines. Upper: upended goat attacked by rampant lion on either side; lion on left is attacked by a hero wearing a sheepskin(?) skirt and holding a dagger. Lower: antelopes held by the tail on either side of a spread-winged eagle.                                      | Porada 1948, nos. 54, 97-102; Buchanan 1981, nos. 138, 236, 265-66, 280; Buchanan 1966, nos. 130-33 (style close), 234; cf. FM 156603 (fig. 11.9f), and FM 156711 (fig. 11.9e) |
| e           | 156622                          | ED IIIa?                   | Kish  | Shell, 19 × 10, broken at top and worn. Two crossed lions attacking antelope with head lifted back on left and gazelle with head turned back on right. Scene is divided by a pattern of three intersecting lines (dagger?).   | Buchanan 1966, nos. 174-76   |
| f           | 156703 (2162)                   | ED IIIa                    | Kish, Ingharra A, burial 77                                   | Shell, 25 × 14, very worn. Two crossed lions attacking antelope with head lifted back on left and gazelle with head turned back on right.   | Porada 1948, no. 71  |
| g           | 156696 (2312A)                  | ED IIIa?                   | Kish, Ingharra A, burial 93                                   | Lapis lazuli, 20 × 14. Two crossed animals, one a lion, the other having a body covered with dots, both beneath a crescent(?) and dot; the animals attack an antelope with head lifted back on left and a gazelle(?) with head turned back on right. Scene is divided by a small antelope and four dots. Mackay 1929, pl. XLI:16. | Porada 1948, no. 75 (intentional dots on body?)  |
| h           | 228704                          | ED IIIa                    | Kish  | Calcite, 15 × 11, broken at top and lengthwise. Antelope with head turned back menaced by lion on right. [Flat rendering, therefore ED III?—MG]   | Buchanan 1966, nos. 174-76   |
| i           | 156699 (2567[b?])               | ED IIIa                    | Kish, Ingharra A, near summit, 2 m below surface              | Shell, 39 × 20, very worn. Lioness on left menaces antelope that is crossed by lion attacking a second antelope; possible hero missing on left, attacking lioness. Flat rendering.  | Porada 1948, nos. 71-74; Buchanan 1966, nos. 174, 176  |
| j           | 156628 (1189b)                  | ED IIIa                    | Kish, Ingharra A, burial 16                                   | Shell, 27 × 14, worn. Two crossed lions attacking two antelopes, one on left with head lifted back and one on right with head turned back, hero in short skirt on left with one arm raised holding a dagger(?). Mackay 1925, p. 62.   | Buchanan 1966, nos. 177ff.   |
| k           | 156648 (2567a)                  | ED III (early)             | Kish, Ingharra A, near summit, 2 m below surface              | Shell, 29 × 15. Two crossed lions attacking two antelopes, one on left with head lifted back and one on right with head turned back; naked hero on right with one arm raised holding a dagger. Scene is divided by two horizontal lines and a plant(?).   | Porada 1948, no. 76; Buchanan 1966, nos. 174-75; Buchanan 1981, nos. 269, 276  |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



b



c



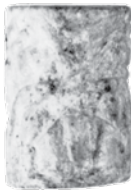
d



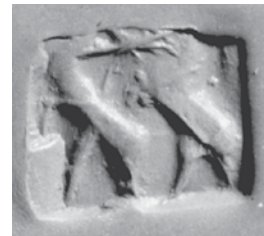
e



f



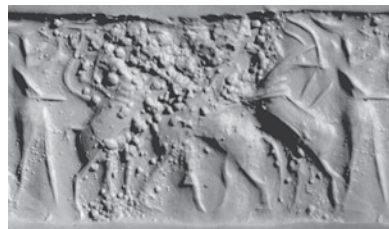
g



h



i



j



k

Figure 11.5. Cylinder seals: Early Dynastic II-III period  
Contest scenes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: EARLY DYNASTIC II-III PERIOD

Contest Scenes (*continued*)

| Figure 11.6 | FM registration no. (field no.) | Period            | Provenience  | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|-------------|---------------------------------|-------------------|--|---|---|
| a           | 156702<br>(2286)                | ED III,<br>early  | Kish, Ingharra A,<br>burial 92                                 | Lapis lazuli, 19 × 11. Hero between gazelle and unhorned quadruped, which are attacked by lions on either side; second figure on right raises one arm and carries a club(?) in the other. Scene is divided by two horizontal lines.                               | Buchanan 1966, nos. 174-78; Buchanan 1981, no. 311; Porada 1948, no. 67           |
| b           | 156706<br>(2615)                | ED III,<br>early? | Kish, Ingharra A,<br>burial 127, at wrist of skeleton          | Shell, 39 × 21. Bearded(?) full-face bull-man holding two upended dotted animals (leopards) next to small skirted hero attacking two crossed lions with dagger; two chevrons in field.  | Porada 1948, no. 75   |
| c           | 156710<br>(2190)                | ED IIIa           | Kish, Ingharra A,<br>burial 80                                 | Shell, 22 × 12. Two crossed lions attacking bull with head turned back on left and antelope with head lifted back on right; hero in short skirt on left with left arm raised and dagger in right hand; scorpion behind hero. Mackay 1929, pl. XLI:13.             | Buchanan 1966, nos. 159-64; Porada 1948, no. 69                                   |
| d           | 156707<br>(2515)                | ED                | Kish, Ingharra A   | Limestone, 33 × 19. Lions and hero in combat.   | —   |
| e           | 156623<br>(1576)                | ED IIIa           | Kish, Ingharra A,<br>burial 40                                 | Shell, 20 × 11, worn. Upended goat between two attacking lions; two heroes in sheepskin(?) skirts facing in on left.  | Buchanan 1966, nos. 174-78  |
| f           | 156615<br>(1277)                | ED III            | Kish Ingharra A,<br>burial 8; south slope, 1.1 m below surface | Shell, 31 × 16, worn. Antelopes with heads turned back on either side of spread-winged eagle, filler(?) of two dots and several hatches; all above row of antelopes, the first facing right with its head down, the other two facing left. Mackay 1925, pl. VI:7. | Porada 1948, no. 97ff.; Buchanan 1966, no. 219; Buchanan 1981, no. 334 (antelope) |
| g           | 156612<br>(UG 1969)             | ED III            | Kish, Ingharra A,<br>burial 57                                 | Shell, 21 × 11, worn. Antelopes with heads turned back on either side of spread-winged eagle.   | Buchanan 1966, nos. 215-17  |
| h           | 228770                          | ED III            | Kish   | Sealing, three rollings. Clay, 55 × 54 × 33, back destroyed. Rolling 1: bull-man and skirted hero back-to-back fighting rampant lion on right (bull-man) and upended(?) lion on left (hero). Two distinct seals?  | —   |
| i           | 156614<br>(1962)                | ED IIIb?          | Kish, Ingharra A,<br>burial 56                                 | Shell, 25 × 13, worn. Two crossed lions attacking, on left, antelope with its head lifted back and, on right, gazelle with its head turned back. Note same pattern on other seals of one head back and one turned.  | Porada 1948, no. 77; Buchanan 1966, no. 164; Buchanan 1981, nos. 312-13           |
| j           | 156642<br>(934)                 | ED IIIb?          | Kish, Ingharra B,<br>south slope, 2 m below surface            | Copper, 24 × 11, worn and broken at top. Two crossed lions attacking antelope with its head turned back.  | Frankfort 1955, no. 272   |
| k           | 156694<br>(X.423)               | ED IIIb           | Kish, Ingharra,<br>Trench A-2                                  | Shell, 20 × 11, worn. Unfinished? Upended goat between two attacking lions(?), hero(?) on right. Scene is divided by horizontal lines and two dots. Very well modeled, space for insert filler under. Most likely ED III, very late.                              | Buchanan 1966, no. 186  |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS

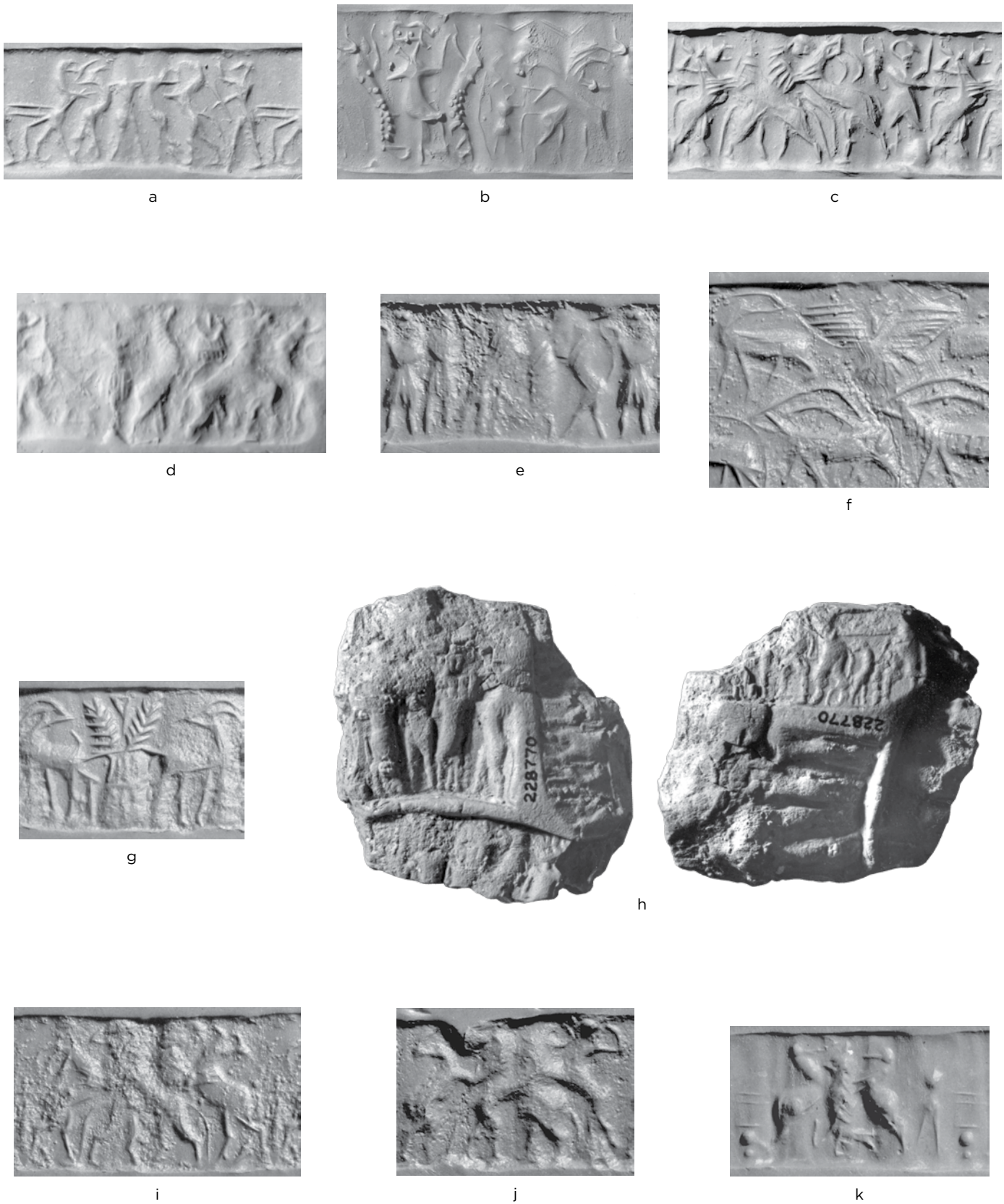


Figure 11.6. Cylinder seals: Early Dynastic II-III period  
Contest scenes (*continued*)

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: EARLY DYNASTIC II-III PERIOD

Contest Scenes (*continued*)

| Figure 11.7 | FM registration no. (field no.) | Period                   | Provenience   | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|-------------|---------------------------------|--------------------------|---|---|---|
| a           | 156616<br>(2493*)               | ED IIIb                  | Kish, Ingharra SW,<br>1.25 m below<br>surface                         | Alabaster, 26 × 14, worn. Combat scene. Full-faced lions attack bull. Bull-man grasps tail of lion on left, hero attacks lion on right. Scene bordered by empty or erased cartouche set above horizontal line and small antelope facing right.  | Porada 1948, no. 73; Frankfort 1955, no. 428; Buchanan 1966, no. 196, etc.; Buchanan 1981, nos. 295 (lions), 309; Boehmer 1965, 3, 8                        |
| b           | 156712<br>(2400A)               | ED IIIb or<br>early Akk? | Kish, Ingharra A,<br>burial 107                                       | Shell, 21 × 12, very good condition. Two crossed lions attacking from both sides of antelope with its head turned back; third lion attacks antelope on left. Scene is divided by scorpion above dagger. Mackay 1929, pl. XLI:2.   | Porada 1948, no. 81   |
| c           | 156632<br>(2408*)               | ED IIIb?                 | Kish, Ingharra W  | Shell, 19 × 11, unfinished. Hero between two quadrupeds, rampant lion on either side; on right, second hero presumably grasps an animal. May be late ED III because of the number of animals.   | Buchanan 1966, nos. 187, 198  |
| d           | 156641<br>(1004)                | ED IIIb                  | Kish, Ingharra,<br>NB temple,<br>chamber 21, 2 m<br>below top of wall | Shell, 43 × 30, slightly corroded. On left, nude hero seizes leg of gazelle, which is crossed by full-face lion attacking antelope, which is also attacked by second full-face lion that crosses full-face double-bearded bull-man. This bull-man is attacked by another bull-man, which crosses a bull. Scene bordered by erased inscription over small lion attacking small antelope. | Porada 1948, nos. 73, 74, 85; Boehmer 1965, nos. 3, 8; Buchanan 1966, nos. 191, 195; Buchanan 1981, no. 305 (heads); FM 156616 (fig. 11.7a) from same shop? |
| e           | 156698                          | ED IIIb                  | Kish  | Shell, 24 × 14, broken at top. Hero in pleated skirt seizes tail of lion, which attacks horned animal. To right, below damage, legs of more animals and probably a bull-man. Well modeled.  | Buchanan 1966, nos. 203-4<br>(dress and holding lion's tail)  |
| f           | 156631<br>(1959)                | ED IIIb                  | Kish, Ingharra A,<br>burial 56  | Shell, 19 × 10, badly corroded. Probable hero and animal combat.  | Frankfort 1955, no. 682   |
| g           | MG 12                           | ED III                   | Kish?   | Shell, 33 × 22, badly corroded/<br>deteriorated. Traces of contest scene,<br>lions, quadrupeds, and hero.   | —   |
| h           | 156719<br>(K.1218)              | ED III?                  | Kish, no<br>provenience   | Shell, 13 × 10, broken at top and badly<br>corroded. Hero and animal combat.  | —   |
| i           | 228717                          | ED III?                  | Kish  | Shell, 34 × 19, badly corroded, broken<br>lengthwise. Uncertain motif.  | —   |
| j           | 156705<br>(2162)                | ED III, late?            | Kish, Ingharra A,<br>burial 77  | Shell, 31 × 18, slightly corroded. Hero<br>with belt beside hero with pleated<br>skirt, each grasping horned animal<br>that is being attacked by lion. Well<br>modeled.   | Buchanan 1966, nos. 179, 185<br>(modeled bodies)  |
| k           | 156654                          | ED?                      | Kish  | Shell, 31 × 18, badly corroded.<br>Remnants of context scene.   | —   |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



b



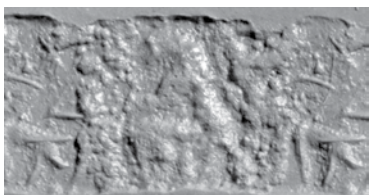
c



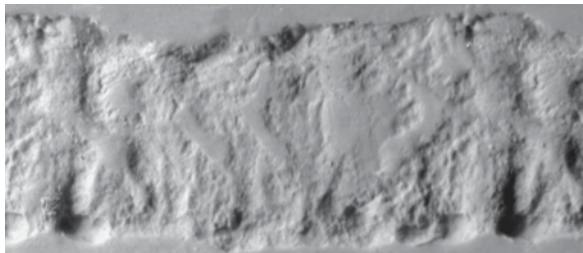
d



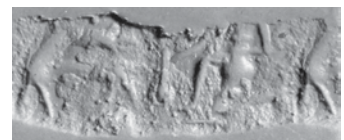
e



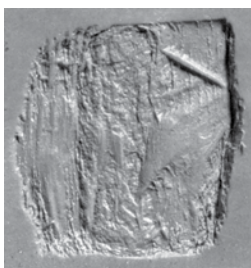
f



g



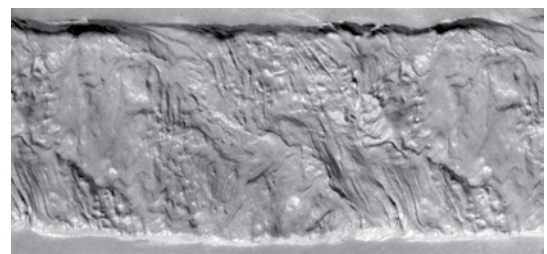
h



i



j



k

Figure 11.7. Cylinder seals: Early Dynastic II-III period  
Contest scenes (*continued*)



## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: EARLY DYNASTIC II-III PERIOD

## Human Scenes

| Figure 11.8 | FM registration no. (field no.) | Period          | Provenience                                     | Material, size (mm), description (left to right), remarks, publications   | Comparanda   |
|-------------|---------------------------------|-----------------|---|---|--|
| a           | 228705                          | ED II           | Kish  | Shell, 13 × 19, broken at bottom, very worn. Bull-man with raised arm.  | Buchanan 1966, nos. 129, 153, 155  |
| b           | 156716 (X.427)                  | ED II?          | Kish, Ingharra, Trench C                        | Alabaster? 18 × 17, broken at bottom. Bull before seated figure with hand raised on chest(?).   | Frankfort 1955, nos. 278, 831, 837, 839 (long, flat bodies of animals; man with empty head); Buchanan 1981, nos. 241, 365  |
| c           | 156760 (X.435)                  | ED II-III       | Kish, Ingharra W                                | Calcite, 33 × 19, worn. Bull-man with arms raised follows possible hero with arms raised, all below horizontal line and unworked space.   | Buchanan 1966, no. 233   |
| d           | 156708 (2674)                   | ED II / ED IIIa | Kish, Ingharra A, burial 131                    | Shell, 23 × 11, very worn. Possibly heroes and animals in two registers.  | Porada 1948, no. 54 (ED II); Frankfort 1955, no. 315 (L 42:2, Houses 3, ED III; ED IIIa style); Buchanan 1966, no. 234 (ED IIIa); Meek 1943, no. 9 (seals of same style); cf. FM 156718 (fig. 11.9d) for style |
| e           | 156709 (2665)                   | ED III?         | Kish, Ingharra A, 1 m                           | Shell, 16 × 13, very worn. Reception scene with seated man, facing right, attended by man in pleated skirt, jar on ground between them. Oversized antelope to right is remnant of earlier motif on this recut seal.                                       | —  |
| f           | 156640 (1189a)                  | ED III          | Kish, Ingharra A, burial 16                     | Shell, 28 × 15, unfinished. Slaughter scene in two registers. Upper: well-cut sheep walking to left and unidentifiable smaller elements. Lower: two men with pleated skirts at either end of bull lying on three-line platform. Unclear figures at right. | Buchanan 1966, no. 234, etc. (slaughter scenes); Buchanan 1981, no. 342 (style, composition)   |
| g           | 156613 (2779)                   | ED III          | Kish, Ingharra A, 1.5 m                         | Shell, 22 × 13, worn. Two seated men facing each other with attendant standing between them. Scene bordered by building with animal inside.   | Porada 1948, no. 113, etc.; Buchanan 1966, nos. 230, 232; Buchanan 1981, nos. 323-24   |
| h           | 156638 (788)                    | ED III          | Kish, near PCB, on surface of desert            | Shell, 25 × 15, corroded and broken at top and bottom. Two seated men facing each other. Multiarmed object between. Scene bordered by thin tree.  | Frankfort 1955, no. 485; Buchanan 1981, no. 334  |
| i           | 156656                          | ED III          | Kish?   | Shell, 22 × 14, worn. Seated figures holding tubes(?) projecting from vessel on table between them.   | Porada 1948, nos. 105-8  |
| j           | 156611 (1077)                   | ED III          | Kish, PCB, outside building, just below surface | Shell, 29 × 18, worn, chipped at top and bottom. Lion pulls serpent-like boat with human prow and high, curved stern; in boat are seated figures holding tubes projecting from vessel between them. Mackay 1925, p. 63.                                   | Porada 1948, no. 126; Buchanan 1966, no. 257 (for boat?)   |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS

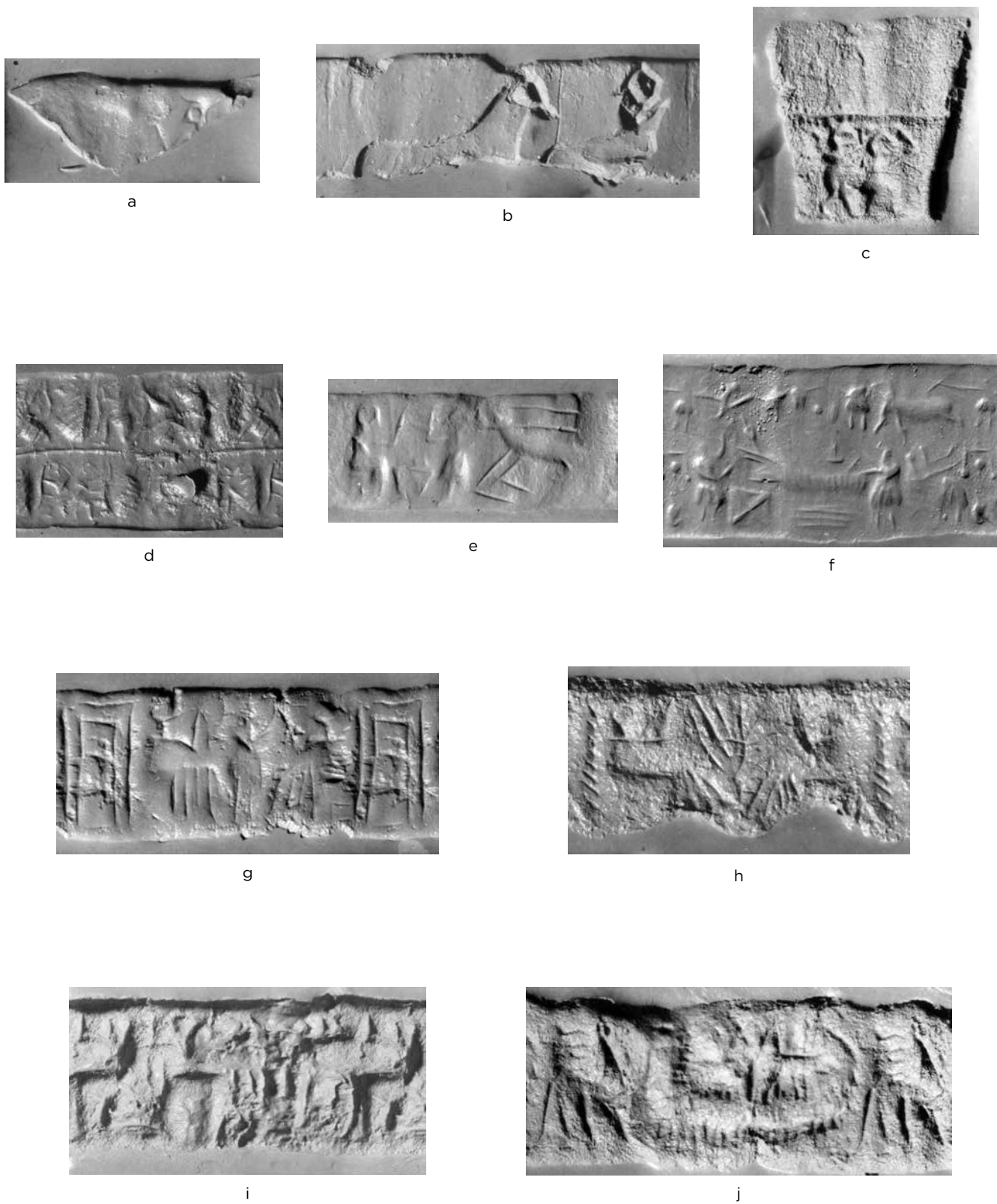


Figure 11.8. Cylinder seals: Early Dynastic II-III period  
Human scenes

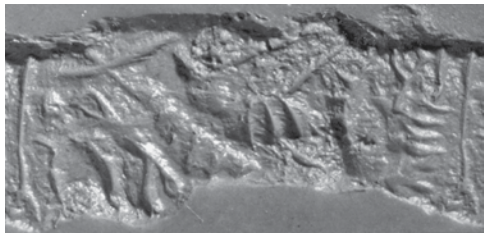
## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: EARLY DYNASTIC II-III PERIOD

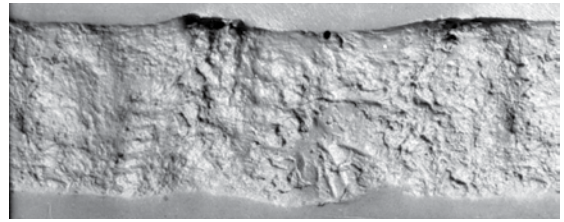
Human Scenes (*continued*)

| Figure 11.9 | FM registration no. (field no.) | Period         | Provenience   | Material, size (mm), description (left to right), remarks, publications  | Comparanda   |
|-------------|---------------------------------|----------------|---|--|--|
| a           | 156645<br>(714)                 | ED III         | Kish, Ingharra A, burial 4, 40 cm below surface                       | Shell, 22 × 13, corroded, broken at top and bottom. Serpent-like boat heading to right, human as prow holding forked oar, seated deity in boat facing right. Uncertain elements behind boat.   | Buchanan 1966, nos. 257-58; Porada 1948, nos. 126ff.   |
| b           | 156737                          | ED III         | Kish  | Shell, 17 × 14, badly corroded. Standing and seated figures.   | Frankfort 1955, no. 485; cf. FM 156638 (fig. 11.8h) from same group  |
| c           | 156759<br>(X.416)               | ED             | Kish, Ingharra, Trench A-4  | Shell, 26 × 14 × 14. Unfinished and burned. Not completely perforated. Uncertain motif, sprig tree and two staffs with balls.  | Delaporte 1920, S.375ff. (pl. 28:8ff.), esp. S.383 (pl. 29:4)  |
| d           | 156718<br>(X.429)               | ED III         | Kish, Ingharra A, burial 113  | Calcite, 18 × 11, broken at bottom. Originally in two registers separated by double horizontal line. Upper: two seated figures on either side of table with provisions. Table(?) with four objects(?) on it between seated figures, each with one arm raised toward table.   | Buchanan 1966, nos. 233ff.; Porada 1948, nos. 109ff. (same gestures). [I think this seal and others like it are connected with those such as FM 156708 (fig. 11.8d).—MG] |
| e           | 156711<br>(2038)                | ED III         | Kish, Ingharra A, burial 67   | Shell, 30 × 16. Two registers with no separating line. Upper: three seated figures with raised hands facing right toward table, one figure facing left on other side. Lower: slaughter scene, with two men in pleated skirts at either end of upside-down animal on bench; to left, two other men in pleated skirts lift an animal. Mackay 1929, pl. XLI:6.  | Buchanan 1966, nos. 234ff.; cf. FM 156603 (fig. 11.9f) and FM 156610 (fig. 11.5d) for style  |
| f           | 156603<br>(1420)                | ED III, later? | Kish, Ingharra A, 2 m below surface. Found close to or above wall 802 | Shell, 27 × 13. Two registers divided by a line. Upper: animal walking to left in front of serpent-like boat with god-prow holding forked oar, double line rudder, and seated deity in boat. Lower: two men in pleated skirts build a ziggurat; at left, two men approach with objects on heads; to right, seated man and attendant. Mackay 1925, pl. VI:17. | Frankfort 1955, nos. 551, 895 (same scenes in same order); Porada 1948, no. 128; cf. FM 156610 (fig. 11.5d) and FM 156711 (fig. 11.9e) for style                         |
| g           | 228714                          | ED?            | Kish  | Sealing. Clay, 26 × 25, sliced in back. Seated figure with arms raised, one holding object; pole held by standing figure.  | —  |

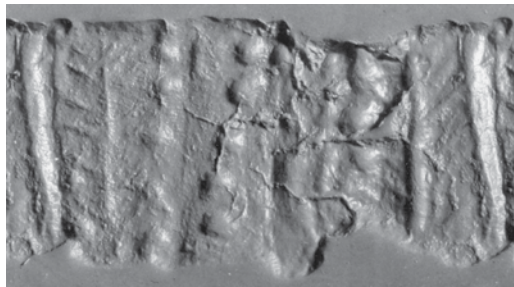
CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



b



c



d



e



f



g

Figure 11.9. Cylinder seals: Early Dynastic II-III period  
Human scenes (*continued*)

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: LATE EARLY DYNASTIC PERIOD / AKKADIAN

## Geometric, Animal Files, and Contest Scenes

| Figure 11.10 | FM registration no. (field no.) | Period         | Provenience   | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|--------------|---------------------------------|----------------|---|---|---|
| a            | 228538                          | ED III / Akk   | Kish?   | Gray stone, 14 × 7, fragment, top. Interlocking lozenges with central dot, short horizontal strokes as filling between lozenges, linear border. Probably a bead.  | Buchanan 1981, no. 339 (as part of pattern in ED III design); Frankfort 1955, nos. 326–27, 406  |
| b            | 156720 (2850B)                  | ED III / Akk?  | Kish, Ingharra A, burial 144                                  | Lapis lazuli, 23 × 6. Two rows of irregular double zigzags and dots with irregular linear border. Probably a bead. Mackay 1929, pl. XLI:12.   | Frankfort 1955, nos. 326–27, 349–50; cf. FM 156646 (fig. 11.2h)   |
| c            | 156605 (1288)                   | ED IIIa / Akk? | Kish, Ingharra A, burial 23                                   | Shell, 16 × 9. Antelope and lion walking to right, with small seated animal (perhaps a monkey) between them, crescent and scorpion in field. Mackay 1925, pp. 58–61, pl. VI:5.                                  | Buchanan 1966, nos. 185 (eyes), 261; Woolley 1934, pl. 192:12 (same style?); Frankfort 1939, pl. XIII:e; Buchanan 1981, no. 448                             |
| d            | 156621 (3321)                   | ED IIIa        | Kish, rubbish between Shulgi (Dungi) and Sargon walls, 2.25 m | Calcite, 21 × 12. Spread-winged eagle grasping rears of unusual quadrupeds with long, slender necks and small heads. Flying bird in field. Mackay 1925, pl. VI:12 (= Kish 1348, A Cemetery).                    | Delaporte 1923, pls. 64:11, 65:5, 70:1 (A.118, part of banquet); Porada 1948, nos. 102 (treatment of eagle body), 294; Buchanan 1966, nos. 216 (wings), 407 |
| e            | 156664                          | ED III         | Kish  | Serpentine, 13 × 7, broken at top. Spread-winged eagle grasps rears of kneeling antelopes.  | Porada 1948, no. 97 (animals)   |
| f            | 156704 (2162)                   | ED III         | Kish, Ingharra A, burial 77                                   | Shell, 20 × 11. Spread-winged eagle grasps rears of antelopes with heads turned back.   | Porada 1948, no. 99 (eagle body); Buchanan 1981, nos. 280, 284  |
| g            | 156652                          | ED III         | Kish  | Shell, 25 × 13, unfinished? Spread-winged eagle grasps front legs of rearing antelopes with heads turned back; uncertain element at right is perhaps a hero.  | Buchanan 1966, no. 217?   |
| h            | 156714 (2327)                   | ED III         | Kish, Ingharra A, Pillared Hall, ca. 1 m                      | Shell, 27 × 14. Spread-winged eagle grasps rears of two antelopes with heads turned back; at right, man in pleated skirt holds horn and neck of antelope. Mackay 1929, pl. XLI:7 (incorrectly labeled as 2321). | Buchanan 1966, nos. 215–16 (empty heads, wings); Buchanan 1981, nos. 284–85; Porada 1948, nos. 97ff., esp. 100  |

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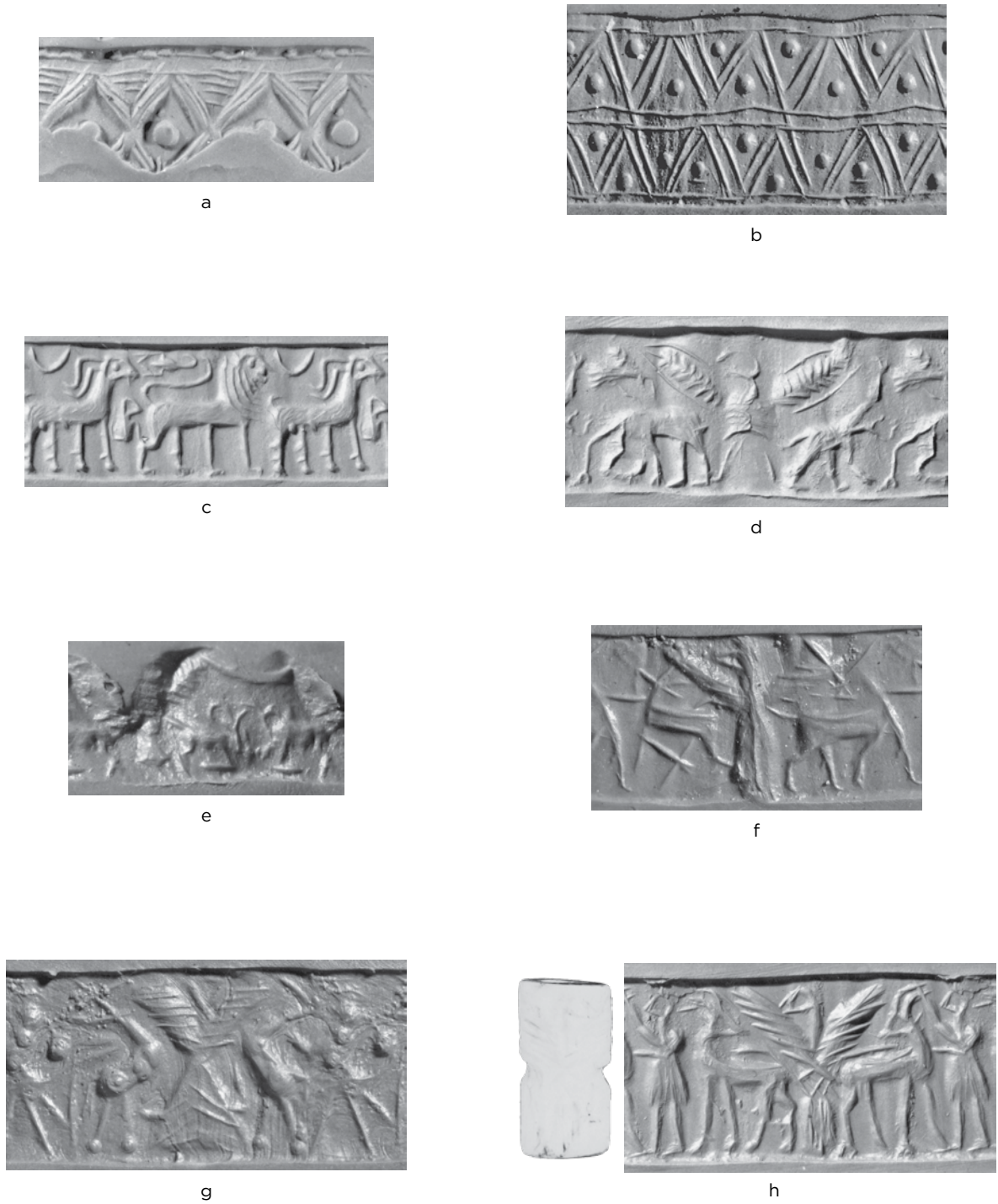


Figure 11.10. Cylinder seals: late Early Dynastic period / Akkadian  
Geometric, animal files, and contest scenes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: LATE EARLY DYNASTIC PERIOD / AKKADIAN

Geometric, Animal Files, and Contest Scenes (*continued*)

| Figure 11.11 | FM registration no. (field no.) | Period               | Provenience  | Material, size (mm), description (left to right), remarks, publications   | Comparanda   |
|--------------|---------------------------------|----------------------|--|---|--|
| a            | 156756                          | ED III               | Kish   | Steatite, 21 × 8, broken lengthwise. Spread-winged eagle holds upended animal on both sides.  | Frankfort 1955, nos. 371, 400, 420   |
| b            | 156683 (X.410)                  | ED III               | Kish, Ingharra, surface                                  | Shell, 23 × 13, cracked(?) lengthwise. Multilinear wavy band with spread-winged eagle above and below.  | Buchanan 1966, nos. 223-27, esp. 225; Buchanan 1981, no. 286   |
| c            | 156650 (1279)                   | ED III, later?       | Kish, Ingharra A, east slope, 1.3 m below surface        | Shell, 32 × 18, corroded. Naked hero between two quadrupeds attacked by rampant lion on both sides; scene bordered by space for inscription over two horizontal lines and small spread-winged eagle. Mackay 1925, p. 63.                                    | Buchanan 1966, nos. 179, 185 (modeled bodies); Buchanan 1981, no. 254 (ED II); Frankfort 1955, no. 550 (Houses Vc?, ED III); Porada 1948, nos. 71-73 (men's heads) |
| d            | 156606 (1664)                   | ED IIIa / early Akk? | Kish, Ingharra W, near canal close to W, on surface      | Serpentine, 14 × 7. Two crossed lions attacking antelope with head turned back on right and bull-man with head turned back on left. Scene is divided by two horizontal lines.   | Porada 1948, no. 95; Buchanan 1966, nos. 172 (ED III), 264-66 (Akk); Buchanan 1981, nos. 276 (ED III), 387 (early Akk)   |
| e            | 156697 (2195)                   | ED III / Akk?        | Kish, Ingharra A, near furnace at outside of mound, 1 m? | Lapis lazuli, 13 × 8. Main motif oriented to horizontal axis of seal. Bearded, full-face hero upends long-horned animal with each hand. Below his feet, animal with lion's body and bird tail (griffin) oriented vertically. Mackay 1925, pl. XLI:9.        | Frankfort 1955, nos. 353 (very similar faces), 535 (same orientation)  |
| f            | 156651 (2531*)                  | ED III / Akk         | Kish, Ingharra SW, 1.80 m                                | Shell, 20 × 11. Two quadrupeds with heads turned back on either side of dot with line below it, both attacked by full-face crossed lions.   | Frankfort 1955, nos. 514, 558, 567, 596, 597, 629, 748   |
| g            | 156633 (2465a*)                 | ED III / Akk         | Kish, Ingharra SW, 40 cm                                 | Shell, 27 × 14, worn. Two heroes with long skirts alternate with spread-winged eagle and leaping antelope. Possibly a seal being recut.   | Buchanan 1966, nos. 215-17 (contest with Zu); Porada 1948, no. 86; Buchanan 1981, nos. 378-79, 386   |
| h            | 156659 (K.1218c)                | ED III / Akk         | Kish, no provenience                                     | Shell, 39 × 24. Two crossed full-face bull-men between attacking lions; to left, skirted hero holds curvilinear object in one hand and tail of lion in raised other hand.   | Buchanan 1981, no. 397   |
| i            | 156635 (1117)                   | ED II-IIIa / Akk?    | Kish, near PCB, surface                                  | Shell, 23 × 12, corroded. On either side of hero raising a dagger is an antelope with head turned back; antelope on right is menaced by a lion; to right, a curved vertical line (snake?). Mackay 1925, pp. 60, 62 (with incorrect reference to pl. VI:16). | Buchanan 1966, no. 129; Buchanan 1981, nos. 386-87, 391-92, esp. 394   |
| j            | 156713                          | ED / Akk?            | Kish   | Shell, 23 × 13, corroded. Leaping antelope with head turned back on either side of tree.  | Buchanan 1966, no. 277 (style); Buchanan 1981, nos. 391, 411   |

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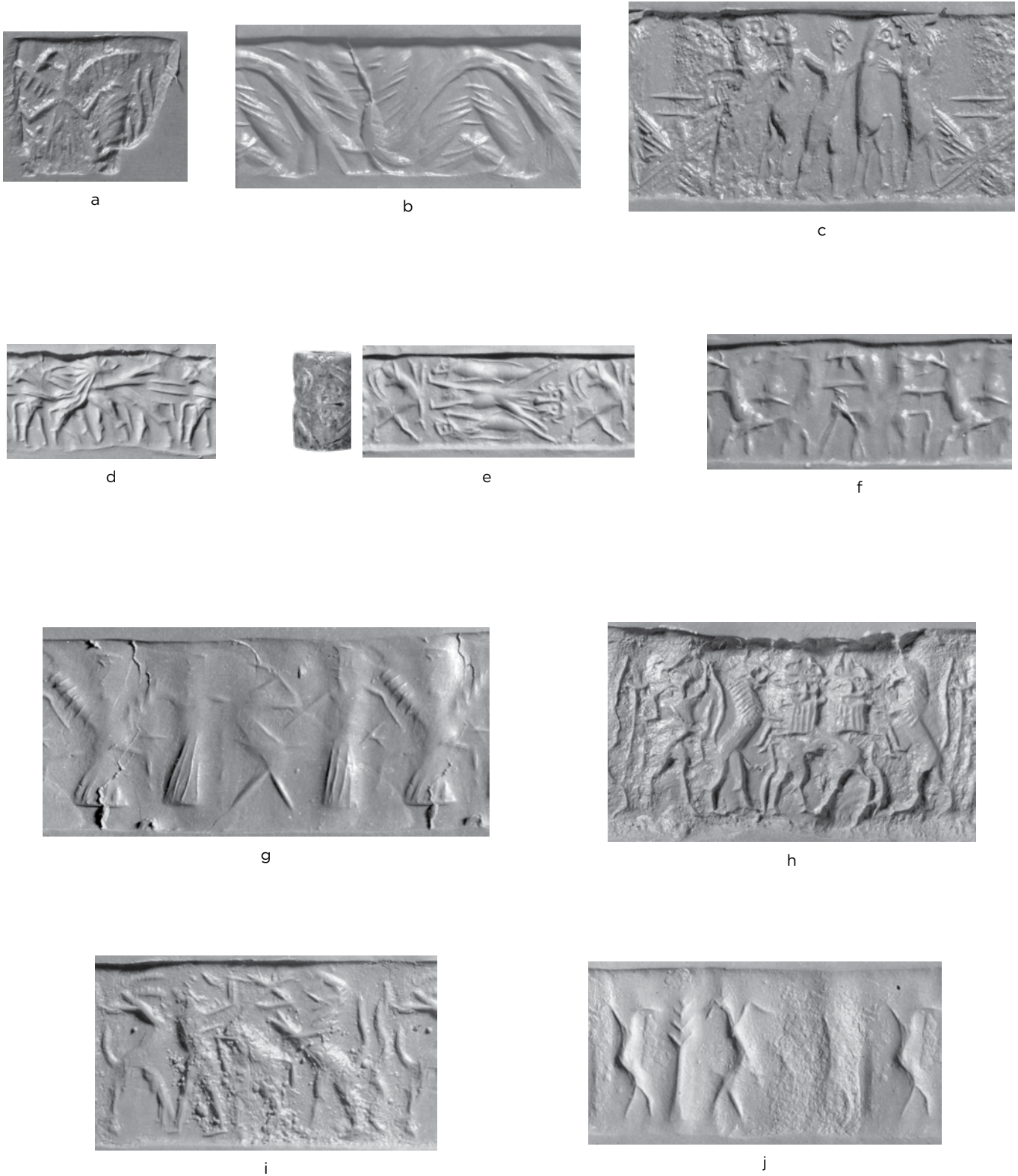


Figure 11.11. Cylinder seals: late Early Dynastic period / early Akkadian  
Geometric, animal files, and contest scenes



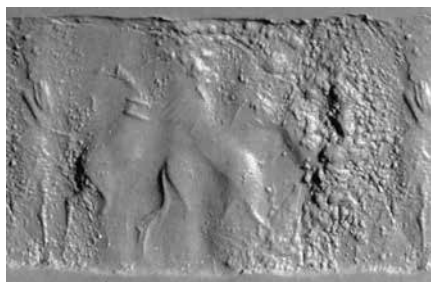
## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: AKKADIAN

## Contest Scenes

| Figure 11.12 | FM registration no. (rield no.) | Period        | Provenience                     | Material, size (mm), description (left to right), remarks, publications  | Comparanda  |
|--------------|---------------------------------|---------------|---------------------------------|--|---|
| a            | 156634<br>(1189c)               | Early<br>Akk? | Kish, Ingharra A,<br>burial 16  | Shell, 28 × 14, worn and badly corroded. Two crossed lions attacking quadrupeds with heads turned back; hero facing in on left. Mackay 1925, pp. 58, 62.   | Boehmer 1965, nos. 37, 40;<br>Buchanan 1966, nos. 299, 318ff.           |
| b            | 156673<br>(X.401)               | Early Akk     | Kish, Ingharra,<br>temple fill  | Shell, 25 × 12, very worn. Two antelopes with heads turned back attacked by lions on both sides.   | Buchanan 1966, nos. 261-70  |
| c            | 156732<br>(K.1217)              | Early Akk     | Kish, Ingharra A,<br>burial 56  | Calcite, 20 × 13, chipped at top and bottom, worn. At left, hero in skirt grabs tail of lion that is menacing horned quadruped; naked hero approaches bull(?) with head turned back, attacked by lion. | Buchanan 1966, no. 299  |
| d            | 156717<br>(X.404)               | Akk           | Kish, Ingharra Z,<br>near level | Shell, 24 × 14, broken at bottom. On left, crossed lions attacking antelope with head lifted back; on right, bull with head turned back menaced by lion; tree in field.                                | Boehmer 1965, nos. 15-16, 721   |
| e            | 156701<br>(X.424)               | Akk           | Kish, Ingharra,<br>surface      | Shell, 24 × 12, badly corroded. Animal contest.  | Buchanan 1966, nos. 186ff.<br>(modelling), 320 (leaping animal)         |
| f            | 156731<br>(K.1217)              | Akk           | Kish                            | Shell, 32 × 17, corroded, broken at top and bottom. Animal contest with hero.  | —   |
| g            | 156733<br>(K.1217)              | Akk           | Kish                            | Shell, 25 × 12, very worn. Uncertain motif.  | Frankfort 1955, no. 925;<br>Buchanan 1966, nos. 294-96                  |
| h            | 228703                          | High Akk      | Kish                            | Green stone (limestone?), 11 × 14, fragment, broken lengthwise and at top. Remnant of very fine seal. Leg of lion with bull legs facing it; leg of another bull facing right.                          | Boehmer 1965, nos. 24, etc.,<br>166ff.; Buchanan 1966, nos. 304,<br>308 |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



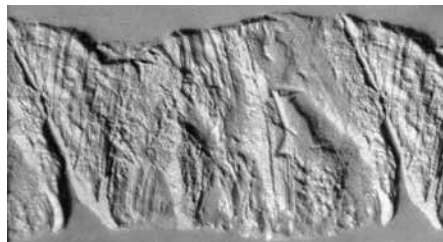
b



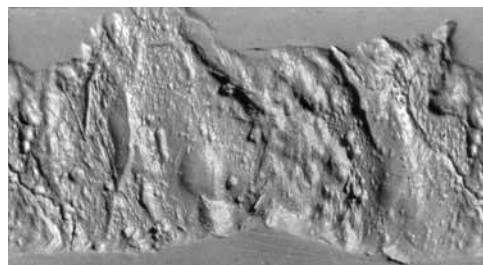
c



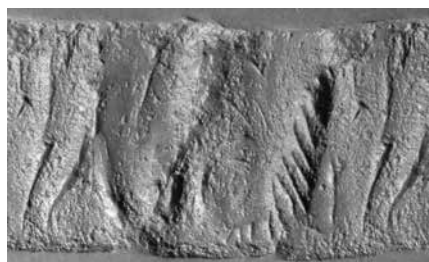
d



e



f



g



h

Figure 11.12. Cylinder seals: Akkadian Contest scenes

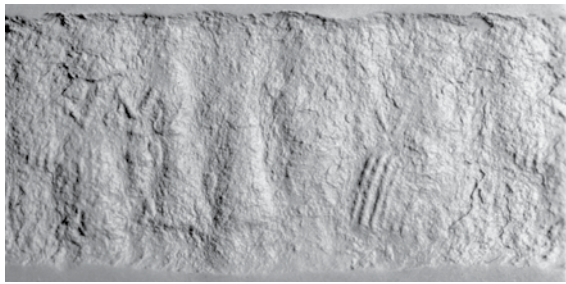
## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: AKKADIAN

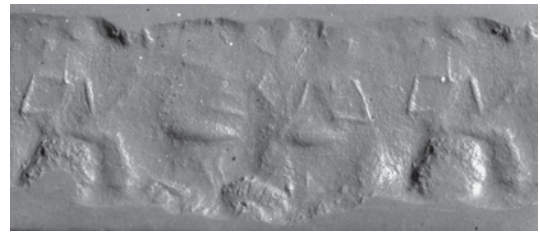
## Human and Divine Scenes

| Figure 11.13         | FM registration no. (field no.) | Period     | Provenience                     | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|----------------------|---------------------------------|------------|---------------------------------|---|---|
| <b>HUMAN SCENES</b>  |                                 |            |                                 |   |   |
| a                    | 156715<br>(X.391)               | Akk        | Kish, Ingharra, Trench A-3, 5 m | Limestone, 32 × 19, very worn. Unusual double presentation scene. Seated figure facing right with one attendant facing him. Two figures facing right before seated figure facing left. In composition, two seated figures would appear back-to-back.    | Buchanan 1966, 355-56; Buchanan 1981, no. 463 upper register  |
| b                    | 156729<br>(K.1217)              | Akk        | Kish, no provenience            | Ferruginous sandstone, 23 × 15, worn. Drinking scene. Two seated figures face each other and grasp straws from pot between them. Seats are mountains.   | Boehmer 1965, nos. 677-82   |
| c                    | 156669<br>(X.393)               | Akk        | Kish, Ingharra B, 2 m           | Alabaster, 34 × 17, very worn. Two registers separated by horizontal hatched bar. Upper: uncertain, but probably drinking scene. Lower: spread-winged eagle grasping quadruped on either side, standing human figure.                                   | Buchanan 1966, nos. 288-89; Buchanan 1981, no. 458; Boehmer 1965, nos. 467-72, 527, 600-601, 664-66, 690-91 |
| d                    | 156503<br>(X.236)               | Akk        | Kish, Ingharra, Trench A-4, 2 m | Clay, baked, 40 × 37 × 12, back broken. Sealing, one rolling of cylinder seal. Presentation scene. Standing deity with hand raised and human man with animal offering, both facing seated deity facing left with hand raised.                           | Buchanan 1966, no. 382  |
| e                    | 156675<br>(X.403)               | Akk        | Kish, Ingharra, Trench B        | Shell, 31 × 14, very worn. Seated figure?   | —   |
| f                    | 228774                          | Akk        | Kish                            | Clay, unbaked, 35 × 32 × 12. Sealing, back lost. Contest scene, heroes and animals.   | —   |
| g                    | 156690<br>(X.402)               | ED III     | Kish, Ingharra B, north         | Shell, 28 × 15, badly corroded. Contest scene, including full-faced bull-man.   | Buchanan 1966, nos. 293ff.; Frankfort 1955, no. 925?  |
| <b>DIVINE SCENES</b> |                                 |            |                                 |   |   |
| h                    | 156619<br>(2978)                | Early Akk? | Kish, Ingharra A, SW            | Shell, 26 × 15. Contest of gods; nude bearded gods with horned crowns grasp from either side a similar full-face god beside a mace; to right, god places his foot on bent knee of kneeling god; two scenes separated by larger mace; part of Anzu myth? | Boehmer 1965, nos. 303, 311; Buchanan 1981, nos. 418, 422, 432-33   |
| i                    | 156672<br>(X.386)               | Early Akk? | Kish, Ingharra A, Trench 3      | Marble, 27 × 16. Judgment scene. Seated god with mace facing left with standing god before him. Hero with flat cap and god strike kneeling god with mace. Part of Anzu myth?  | Boehmer 1965, no. 301; Buchanan 1966, nos. 398ff.   |
| j                    | 156686<br>(X.409?)              | Akk        | Kish, Ingharra B, 1 m           | Shell, 31 × 15, worn, unfinished? Two figures(?) approach(?) goddess with child on lap.   | Boehmer 1965, nos. 555-56   |
| k                    | 156679<br>(X.399)               | Akk?       | Kish, Ingharra, Trench A, 1 m   | Alabaster, 29 × 17, very worn. Figures, possible god with horned crown.   | —   |

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a



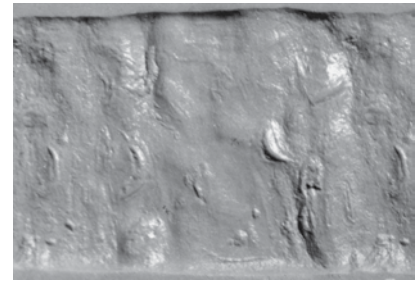
b



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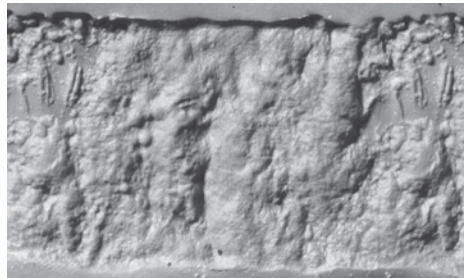
d



e



f



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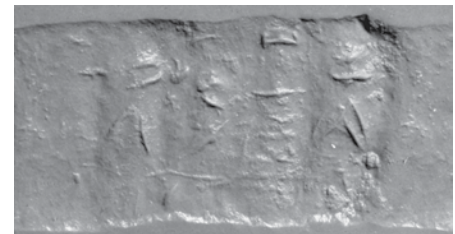
h



i



j



k

Figure 11.13. Cylinder seals: Akkadian Human and divine scenes

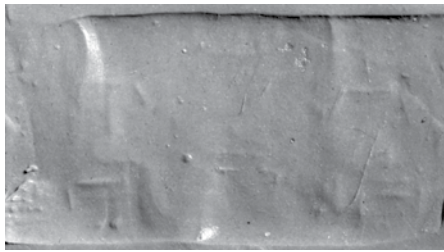
## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: LATE AKKADIAN

## Human and Divine Scenes

| Figure 11.14 | FM registration no. (field no.) | Period    | Provenience                              | Material, size (mm), description (left to right), remarks, publications   | Comparanda   |
|--------------|---------------------------------|-----------|--|---|--|
| a            | 228753                          | Late Akk  | Kish                                     | Shell, 29 × 17, very worn or erased or recutting. Seated figure facing right, rest unclear.   | Boehmer 1965, nos. 670ff.; Porada 1948, no. 10   |
| b            | 156691 (X.405)                  | Late Akk  | Kish, Ingharra, near NB temple           | Shell, 21 × 13, worn. Presentation scene. Three figures facing right approach seated figure. Pot and tree in field.   | Boehmer 1965, nos. 673, 676, 680 (Akk III pot); Frankfort 1955, nos. 520, 620                    |
| c            | 156678 (X.395)                  | Late Akk  | Kish, Ingharra Z, 2 m                    | Limestone, 28 × 16, worn, broken at top. Shamash with rays at shoulders between two peaks, on one of which he steps while raising saw(?); on either side, attendant god looking away holds gate post.   | Boehmer 1965, no. 422; Buchanan 1966, nos. 345ff.  |
| d            | 228752                          | Late Akk  | Kish                                     | Shell, 29 × 15, very worn. Seated god faces recumbent bull with winged gate on its back, naked hero at right touches gate.  | Delaporte 1923, A.148 (with standing figure); Frankfort 1955, no. 583; Boehmer 1965, nos. 603-12 |
| e            | 156739                          | Late Akk  | Kish                                     | Basalt, 12 × 19, top half lost, reworked as bead. Seated figure on either side of vessel, standing figure facing them on right.   | Boehmer 1965, nos. 549, 673ff.; Porada 1948, nos. 250ff.   |
| f            | 156668 (X.387)                  | Late Akk  | Kish, Ingharra, Trench A-4, 50 cm, grave | Basalt, 35 × 22, sides slightly concave. Presentation scene. Human man has arm grasped by god holding staff, another god greets seated snake god, who faces right. Star/spear standard in field.  | Boehmer 1965, nos. 575-88<br>Buchanan 1966, nos. 342-44  |
| g            | 156723 (X.575)                  | Late Akk? | Kish, Ingharra Z, 1 m, grave             | Shell, 19 × 11, corroded. Seated god faces recumbent bull with winged gate on its back.   | Boehmer 1965, nos. 590-612   |
| h            | 156670 (X.385)                  | Late Akk  | Kish, Ingharra A-1, 4 m                  | Shell, 34 × 20, broken at bottom. Presentation scene. Shamash, seated and facing left, greets god who grasps arm of human man wearing helmet. Another man with helmet carries horned animal. Mace and axe with multiple-tongue-shaft decoration in field. Details connote seal belonging to military man. | Boehmer 1965, nos. 259a, 260, 420, 451ff., 715, 723; Buchanan 1966, no. 383                      |
| i            | 156671 (X.397)                  | Late Akk  | Kish, Ingharra, Trench A                 | Shell, 32 × 17, unfinished and corroded. Horns of seated deity and feet of standing figures not completed. Presentation scene. Seated god or goddess facing left toward approaching figures; standing god grasps arm of human being, another god behind him.  | Boehmer 1965, nos. 654ff., esp. 658; Buchanan 1966, nos. 375-76, 386                             |

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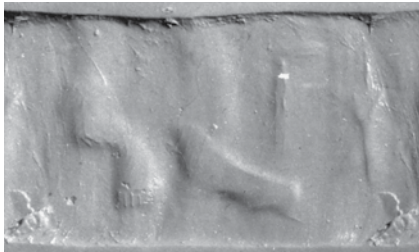
a



b



c



d



e



f



g



h



i

Figure 11.14. Cylinder seals: late Akkadian  
Human and divine scenes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: POST-AKKADIAN / UR III

## Contest Scenes, Human and Divine Scenes

| Figure 11.15 | FM registration no. (field no.) | Period       | Provenience                       | Material, size (mm), description (left to right), remarks, publications  | Comparanda  |
|--------------|---------------------------------|--------------|-----------------------------------|--|---|
| a            | 156685<br>(X.616)               | Post-Akk?    | Kish, Ingharra Z,<br>3 m          | Shell, 33 × 18, broken at top, worn. Hero between bull(-man) and antelope that is being attacked by lion. Tree in field.   | Delaporte 1920, S.515   |
| b            | 156676<br>(X.398)               | Post-Akk     | Kish, Ingharra A,<br>Trench 1     | Calcite, 30 × 19, worn. Seated deities facing each other across plant, their hands presented as crescents. At right, facing left, standing figure perhaps holding bow.   | Boehmer 1965, no. 491;<br>Delaporte 1920, S.500, S.477,<br>S.481; Frankfort 1955, no. 693;<br>cf. FM 156685 (fig. 11.15a) |
| c            | 156680<br>(X.419)               | I-L          | Kish, Ingharra,<br>near NB temple | Serpentine, 21 × 12, worn. Two seated figures with standing figure between them. Thin, elongated figures are typical of Isin-Larsa.  | Buchanan 1966, nos. 392-94,<br>422, 430; Delaporte 1923, A.179  |
| d            | 156745<br>(X.425)               | Ur III / OB? | Kish, Ingharra,<br>surface        | Serpentine, 19 × 12, very worn or erased for recutting, broken at top and bottom. Presentation scene, seated deity facing left, one or two standing figures in front, crescent in field.   | —   |
| e            | 156761<br>(X.33)                | I-L          | Kish, Ingharra,<br>surface(?)     | Quartzite, 23 × 13, broken in half and repaired. Unfinished, space left for inscription. Presentation scene. Female worshipper is led by wrist by goddess with raised arm toward seated goddess with raised arm.   | Porada 1948, nos. 421, 424  |
| f            | MG 3                            | OB           | Kish?                             | Black stone, 23 × 12. Presentation scene. Deity leads human man into presence of seated god facing left. Crescent and lion-scimitar in field. Behind seated god is two-line inscription above striding lion, all set on ground line. Inscription examined by Hervé Reculeau:<br>𒀭UTU Shamash<br>𒀭a-a Aya | Buchanan 1981, no. 631  |

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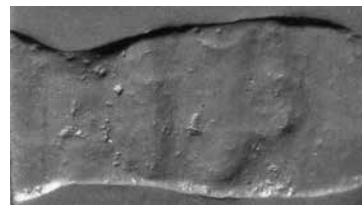
a



b



c



d



e



f

Figure 11.15. Cylinder seals: post-Akkadian / Ur III  
Combat scenes, human and divine scenes



## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: ISIN-LARSA / OLD BABYLONIAN

## Human and Divine Scenes

| Figure 11.16 | FM registration no. (field no.) | Period    | Provenience                                    | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|--------------|---------------------------------|-----------|--|---|---|
| a            | 156681<br>(X.421)               | I-L / OB  | Kish, Ingharra,<br>Trench A                    | Baked clay, 25 × 10. Adoration scene. Man with turban and interceding goddess facing right toward crescent standard, rearing monster, and dagger. Crook in field.   | Buchanan 1981, nos. 702, 707, 738                             |
| b            | 156629<br>(355)                 | I-L / OB  | Kish   | Pink-veined marble, 19 × 12. Presentation scene. Three figures approach seated deity facing left. Four maces in field.  | Buchanan 1981, nos. 701-7                                     |
| c            | 156677<br>(X.396)               | I-L / OB  | Kish, Ingharra,<br>exterior of NB<br>temple    | Black-green serpentine, 29 × 15, worn. Presentation scene. Goddess leads human man toward seated god facing left. Bow-legged dwarf, monkey, and crescent in field. Behind god, nude frontal goddess and crescent standard above quadruped.            | Buchanan 1981, nos. 702, 706                                  |
| d            | 156636<br>(595)                 | OB        | Kish, Uhaimir<br>House ruins,<br>Nov. 21, 1923 | Presentation scene. Two male figures, facing right, approach vertical snake and standing figure; behind him a large lion scimitar, crook, and another unclear symbol.   | Buchanan 1966, no. 482  |
| e            | 228688                          | OB        | Kish   | Hematite, 18 × 14, fragment, broken at bottom and lengthwise. Goat(?) with its head down nursing kid(?) beside standing figure in flounced skirt; head of another horned animal (antelope?) at lower right.   | —   |
| f            | 228702                          | OB        | Kish   | Marble, 10 × 11, fragment, broken at top. Adoration scene? Two bare legs facing right, small vertical element, standing figure in long pleated skirt confronting standing figure in flounced dress, dagger between them. Small bull striding to left. | Buchanan 1966, nos. 521-25                                    |
| g            | 228710                          | OB        | Kish   | Clay, unbaked. 31 × 9 × 8, sealing, one rolling, fragment. Bearded man and part of stool.   | —   |
| h            | MG 6                            | OB, late? | Kish?  | Black stone, 24 × 10, unfinished. Adoration scene. At left, two standing figures face each other with tall standard between. At right, standing figure, facing right, holds curved item before seated god holding staff with seven globes at top.     | Buchanan 1981, no. 344;<br>Buchanan 1966, nos. 543,<br>547-59 |
| i            | MG 2                            | OB        | Kish?  | Green stone, 18 × 11, very worn. One figure leads another figure by the hand toward seated figure beside tree.  | —   |

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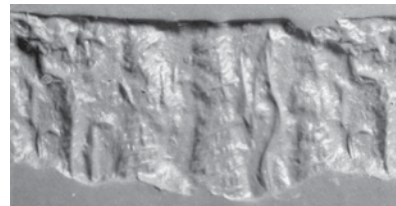
a



b



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d



e



f



g



h



i

Figure 11.16. Cylinder seals: Isin-Larsa / Old Babylonian  
Human and divine scenes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: ISIN-LARSA / OLD BABYLONIAN

Human and Divine Scenes (*continued*)

| Figure | FM registration no. (field no.) | Period | Provenience | Material, size (mm), description (left to right), remarks, publications  | Comparanda |
|--------|---------------------------------|--------|-------------|--|------------|
| a      | 156031                          | I-L    | Kish        | Clay, unbaked, 43 × 36 × 15. Tag, triangular, originally enclosing cord. Memo cut into rolling of inscription part of seal, which belongs to an official of an Isin king, perhaps Ishbi-Irra (see commentary below). Small part of presentation scene showing human man. | —          |

**Obverse: Partial impressions of a single seal**

Top left:

[...] KAL.GA

[LUGAL] MA./[...]NA

Middle right:

[...] [KAL.GA]

Bottom left:

LUGAL KAL.G[A]

LUGAL MA./DA.NA

Bottom middle:

DUMU DUMU(?)-[...]

ARAD<sub>2</sub>-[...]

Bottom right:

[LU]GAL KAL.G[A]

[...] [MA<sup>1</sup>]/[...]**Reverse: Full impression of the inscription of the same seal**

(i)

[...]

[LU]GAL KAL.GA

[LU]GAL MA./DA.NA

(ii)

[...]

[...]

DUMU [...]

ARAD<sub>2</sub>-[...]**Composite:**

(i)

[King's Name]

[King's Name]

LUGAL KAL.GA

Strong King

LUGAL MA./DA.NA

King of His Land

(ii)

[Person's Name]

[Person's Name]

[Person's Title]

[Person's Title]

DUMU DUMU(?)-[...]

Son of DUMU-... (or: Son of Mār-...)

ARAD<sub>2</sub>-[ZU\*]

Your Servant

\*Here and passim: ZU possibly to be read -*sú*, for Akk. *warassu*, "his servant."

**Commentary**

The seal is from the transitional Ur III / early Old Babylonian ("Isin-Larsa") period, almost certainly from the early Isin dynasty (late twenty-first to early twentieth century BC). Unfortunately, the impressions are only partly preserved, the inscribed part of the seal having been impressed multiple times in overlapping impressions, with only a handful of lines and signs repeated several times. The structure of the seal is clear: it is the seal of a royal official, which mentions first the king's name and titles, then the person's name, his position, his father's name, and "your (or: his) servant" (of the aforementioned king). Unfortunately, the most crucial parts of the inscription are missing; the king's name, the official's name, and the official's title are not preserved. Based on the more complete impression on the obverse, and in agreement with parallels, the

first three lines were inscribed in one column, and the last three or four lines in another.

The cartouche for the king's name in the first column appears to have been rather tall, suggesting that his name was inscribed with an indentation, as with the title in line 3. Conversely, there could have been a single line with indentation at the top of the second column, or two lines. If the latter, the official's title was mentioned after the official's name; if the former, the patronym directly followed the official's name, written with an indentation. The official's patronym survives only in the form of its initial sign.

While the structure is common to both the Ur III and early Old Babylonian officials' seals, the former is excluded in view of the fact that all known impressions of Ur III kings use the titles "strong king, king of Ur, (king of the four quarters)" (LUGAL KAL.GA, LUGAL URI<sub>5</sub>/URI<sub>2</sub>.KI(-ma), LUGAL AN.UB.DA LIMMU<sub>2</sub>.BA)—the last line being optional.

Here, the second title line following LUGAL KAL.GA excludes a reading URI<sub>5</sub> or URI<sub>2</sub> and clearly reads LUGAL MA.DA.NA, "king of his country." This title is never used by the Ur III kings but is common among their rivals and successors, the kings of the First Dynasty of Isin. Known examples of officials' seals and seal impressions from the Isin I dynasty with the sequence LUGAL KAL.GA followed by LUGAL MA.DA.(NA) include the following, in chronological order (royal numbers based on position in the Isin I dynasty; middle chronology):

1) Išbi-Erra (2019-1987)

– (i) <sup>d</sup>*iš-bi-ir-ra*, LUGAL KAL.GA, LUGAL MA.DA.NA, KI.ÁG <sup>d</sup>EN.LIL<sub>2</sub>, (ii) <sup>ú</sup> <sup>d</sup>NIN-ISIN<sub>2</sub>(<sup>st</sup>).[NA], <sup>d</sup>EN.[LIL<sub>2</sub>-x]-x-*iš-bi-ir*-[ra], SAGI, ARAD<sub>2</sub>.ZU (RIME4.1.1.2003)

– (i) <sup>d</sup>*iš-bi-ir-ra*, DINGIR KALAM.MA.NA, LUGAL KAL.GA, (ii) LUGAL MA.DA.NA, <sup>d</sup>*iš-bi-ir-ra-ma-lik*, [...] (RIME4.1.1.2007)

– [(i) <sup>d</sup>*iš-bi-ir*]-*ra*, LUGAL KAL.GA, LUGAL MA.DA.NA, (ii) UR-AL.LA, DUMU *ku*-..., ARAD<sub>2</sub>.ZU (RIME4.1.1.2008)

– (i) *iš-bi-ir-ra*, LUGAL KAL.GA, LUGAL MA.DA.NA, (ii) *li*-[*bur-be*]-*lí*, GIN<sub>7</sub>(?)<sup>1</sup>-<sup>1</sup>DU(?)<sup>1</sup>, ARAD<sub>2</sub>.ZU (RIME4.1.1.2011)

– (i) <sup>d</sup>*iš-bi-ir-ra*, LUGAL KAL.GA, LUGAL MA.DA.NA, (ii) *a-bu-ni*, AGRIG, DUMU *nu-úr-i-lí*, ARAD<sub>2</sub>.ZU (RIME4.1.1.2012)

– (i) <sup>d</sup>*iš-bi-ir-ra*, LUGAL KAL.GA, LUGAL MA.DA.NA, (ii) *ku-ru-ub-ir*<sub>11</sub>-*ra*, DUB.SAR, DUMU *zu-zu*, ARAD<sub>2</sub>.ZU (Keel-Leu, Hildi, and Teissier 2004, no. 101; Išbi-Erra 33)

2) Šū-ilišū (1986-1977)

– (i) <sup>d</sup>*šū-i-lí-šū*, LUGAL KAL.GA, LUGAL MA.DA.NA, (ii) <sup>r</sup>*ir*<sub>11</sub>-*ra*<sup>1</sup>-x-x-*ni*, DUB.SAR, DUMU LÚ.BALA.SA<sub>6</sub>.GA (RIME4.1.2.2001)

5) Lipit-Eštar (1936-1926)

– (i) <sup>d</sup>*li-pí*-/*it-iš*<sub>9</sub>-*tár*, LUGAL KAL.GA, LUGAL MA.DA; (ii) <sup>d</sup>*ji-din*-<sup>d</sup>*da*-/*gan-wa-qar*, AB.A.AB.DU, DUMU <sup>d</sup>NANNA-*i*.SA<sub>6</sub>, ARAD<sub>2</sub>.ZU (RIME4.1.5.8)

While the only identifying element of the seal owner—the first sign of the patronym—is poorly preserved on the Kish tag, it does not appear that any of the known examples would fit the traces. This would therefore represent a new seal of one of the servants of the Isin I kings.

Translation and commentary by Hervé Reculeau.

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



Figure 11.17. Cylinder seals: Isin-Larsa / Old Babylonian  
Human and divine scenes (*continued*)

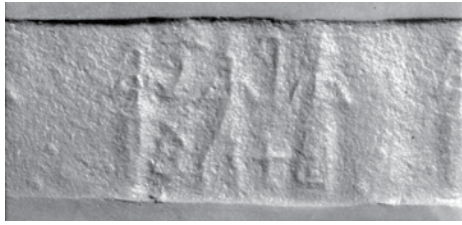
## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: OLD BABYLONIAN

## Divine Scenes

| Figure 11.18 | FM registration no. (field no.) | Period            | Provenience                    | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|--------------|---------------------------------|-------------------|--------------------------------|---|---|
| a            | 156625 (2979)                   | OB                | Kish, Ingharra A, SW           | Limestone, 23 × 12, very worn. Divine confrontation scene. At left, nude frontal female and god with short skirt, carrying a crook, face right toward standing deity. Unidentifiable symbol in field. Space for inscription.  | Buchanan 1981, nos. 732, 884  |
| b            | 156682 (X.414)                  | OB                | Kish, Ingharra, near NB temple | Hematite, 14 × 13, fragment, broken at bottom. Nude frontal goddess with her hands at her chest between god with raised weapon and god with hand at his chest. Space for inscription.   | Buchanan 1966, nos. 476, 486-87 (trapezoidal torso)   |
| c            | MG 5                            | OB                | Kish?                          | Black stone, 24 × 12, worn. Adoration scene. Deity in long pleated skirt behind man greeting ishtar, who faces left with one leg exposed and holds ring. Sun symbol in rosette form in field. Two-line inscription effaced.   | Buchanan 1966, nos. 505-9; Buchanan 1981, nos. 897, 905   |
| d            | MG end of series                | Akk               | Kish?                          | Clay, unbaked. 45 × 35, sealing, angular fragment with string impression on back, two seal rollings. Presentation scene? Nude male figure holding round object in front of him, behind him deity with long pleated skirt and seated figure facing right.  | Buchanan 1966, no. 499 (naked figure); Buchanan 1981, nos. 798 (naked figure), 710 (scene with seated figure) |
| e            | 156655                          | OB, late?         | Kish                           | Hematite, 25 × 15, broken lengthwise. Legs of standing figure facing left on platform; spread-winged bird(?) above small frontal nude female; god with mace standing on mountain behind god holding lightning fork in one hand and raising other hand while standing on back of winged dragon.                                    | Buchanan 1966, no. 521; Buchanan 1981, nos. 578, 756, etc. (but all are rampant)                              |
| f            | 156751 (X.415)                  | OB, late [divine] | Kish, NB temple foundation box | Hematite, 13 × 15, fragment, broken lengthwise and at bottom. Part of two-line inscription in box beside upper body of god facing right and perhaps holding mace in front of him. Inscription (examined by Hervé Reculeau):<br><i>i-//<sup>r</sup>x<sup>1</sup>-[...]</i><br>ARAD <sub>2</sub> <sup>r</sup> x <sup>1</sup> -[...] | Buchanan 1966, nos. 542, 548  |

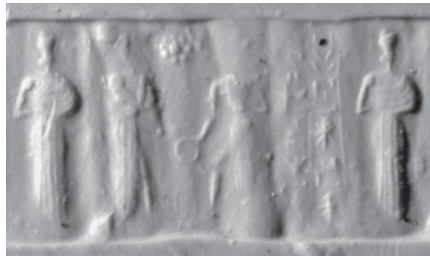
CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



b



c



d



e



f

Figure 11.18. Cylinder seals: Old Babylonian  
Divine scenes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: OLD BABYLONIAN

Divine Scenes (*continued*)

| Figure<br>11.19 | FM registration<br>no. (field no.) | Period | Provenience                                | Material, size (mm),<br>description (left to right),<br>remarks, publications   | Comparanda  |
|-----------------|------------------------------------|--------|--|---|---|
| a               | 156649<br>(2588*)                  | OB     | Kish, town<br>ruins, surface;<br>purchased | Hematite, 27 × 16. Four tall gods and<br>one small god with maces facing right<br>toward standing suppliant goddess.<br>Full-faced head and nude frontal<br>goddess in field. Inscription fitted into<br>negative spaces. | Buchanan 1966, no. 509 (style and<br>figure holding mace); Buchanan<br>1981, nos. 850 (full-face head), 954<br>(inscription placement and full-<br>face head) |

Inscription appears to have been cut secondarily between the figures.

**Front of middle male figure:**

*at-ta-i-ne-er*

**Front of left-hand male figure:**

DUMU *i-lí-a-wi-lim*

**Between goddess and right-hand male figure:**

[AR]AD<sub>2</sub> <sup>d</sup>NĒ.ER<sub>11</sub>.GAL

**Composite:**

*at-ta-i-ne-er*

DUMU *i-lí-a-wi-lim*

[AR]AD<sub>2</sub> <sup>d</sup>NĒ.ER<sub>11</sub>.GAL

Atta-inēr (or Atta-inēr)

Son of Ilī-awīlim

Servant of Nergal

**Commentary:**

The personal name of the seal holder is puzzling and apparently unparalleled. The signs are rather clear and could be read as either Atta-inēr “you, he struck/smote” (preterite) or Atta-inēr “you, he strikes/smites” (durative). The combination of a second masculine singular personal pronoun in the nominative with a verb in the third masculine singular is puzzling, and this combination is to my knowledge not attested elsewhere. While Stamm (1968, pp. 179–80) recognizes the use of *nêrum* only in Assyria, where gods are asked to smite the unnamed enemy, in the Old Babylonian period such implicit reference to the enemy can also refer to the king in whose employ the seal owner would have been, typically in aulic onomastics, as in the personal name *Mukannišum*, “he who subdues”; see Charpin, Stol, and Edzard 2004, pp. 261–62 (with earlier references) and Charpin 2006, pp. 155–56.

Translation and commentary by Hervé Reculeau.

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a

Figure 11.19. Cylinder seals: Old Babylonian  
Divine scenes (*continued*)



## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: NEO-ASSYRIAN / NEO-BABYLONIAN / ACHAEMENID

## Various Themes

| Figure 11.20 | FM registration no. (field no.) | Period     | Provenience   | Material, size (mm), description (left to right), remarks, publications  | Comparanda   |
|--------------|---------------------------------|------------|---|--|--|
| a            | 156639 (1480)                   | NB / NA?   | Kish, Ingharra W                                    | Symbols: spade, unknown element, and crescent standard.  | Porada 1948, no. 718                               |
| b            | 156647 (3114)                   | NA to NB   | Kish, Ingharra, 60 cm below surface above NB temple | Carnelian, 21 × 10. Rampant griffins grasped by winged hero between them; filling decoration of three daggers(?), star, crescent, and "eye"-lozenge.   | Buchanan 1966, nos. 660-61                         |
| c            | MG 1                            | NA         | Kish?   | Black stone, 19 × 10, broken at bottom. Rosette, bull plunging forward, star, branch.  | Buchanan 1966, nos. 587-89                         |
| d            | 156604 (1303)                   | NB         | Kish, Ingharra W, burial 3, in pottery coffin       | Clay, baked, 33 × 14. Two registers without dividing line. Upper: cock facing left, running antelope, and hen facing right. Lower: small man facing right above horse facing left; large griffin facing right. Winged disk in field. | Porada 1948, no. 749, etc.; Buchanan 1966, no. 658 |
| e            | 156695                          | Late NB    | Kish  | Chalcedony, 18 × 11. "Eye"-lozenge between two facing ostriches.   | Buchanan 1966, nos. 621, 645, 655                  |
| f            | 156630 (2354)                   | Achaemenid | Kish, Ingharra W, 2 m                               | Serpentine, 19 × 9. Hero between rampant winged ram and rampant winged lion with bird wings, tail, and feet, which turns back its head.  | Buchanan 1966, nos. 671-76                         |
| g            | MG 16                           | Achaemenid | Purchased?  | Banded agate, 33 × 9. Beneath spread-winged eagle, king facing left upends lion with each hand. All on ground line.  | —  |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS

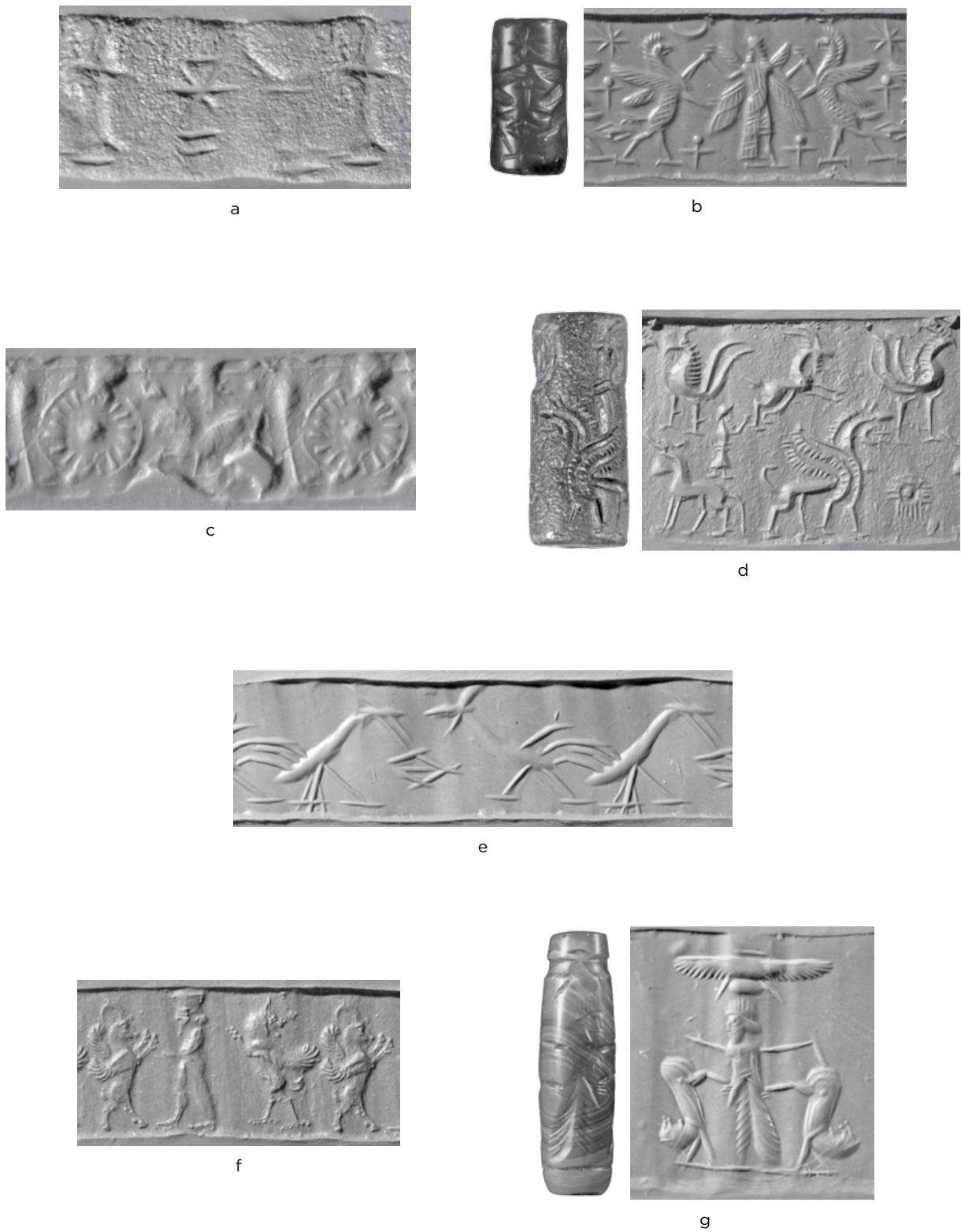


Figure 11.20. Cylinder seals: Neo-Assyrian / Neo-Babylonian / Achaemenid  
Various themes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: GUTIAN / ELAMITE / CAPPADOCIAN

## Various Themes

| Figure 11.21 | FM registration no. (field no.) | Period              | Provenience  | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|--------------|---------------------------------|---------------------|--|---|---|
| a            | 156627<br>(161)                 | Gutian /<br>Elamite | Kish, Uhairir, 3 m<br>below surface of<br>brickwork, close<br>to middle of<br>ziggurat platform,<br>southeast side | Pottery, 26 × 11. Two registers<br>divided by double horizontal line.<br>Upper: two warriors with raised<br>weapons fight each other on a line,<br>at right, plant in pot. Lower: inverted<br>scene with three warriors with raised<br>weapons. | Buchanan 1966, nos. 401-3,<br>470; Buchanan 1981, no. 551;<br>Delaporte 1920, no. S.404,<br>pl. 29:20; Frankfort 1955, nos.<br>689-91   |
| b            | 156693<br>(X.413)               | Gutian /<br>Elamite | Kish, Ingharra,<br>Trench C  | Paste, green glaze, 23 × 13,<br>worn. Hero facing left holds one<br>quadruped by neck and another<br>upended animal by rear leg, second<br>figure perhaps at left, cross in field.  | Delaporte 1920, no. S.388,<br>cf. nos. S.389-99; Frankfort<br>1955, no. 596; cf. FM 156653<br>(fig. 11.21c)   |
| c            | 156653                          | Gutian /<br>Elamite | Kish   | Paste, glaze, 19 × 10, worn. Two<br>quadrupeds with upraised bushy<br>tails, figure with horns.   | Porada 1965, pp. 42-43, esp.<br>n. 7; Frankfort 1955, nos. 514,<br>567 (same scene), 596-97,<br>599, 629, 748; Frankfort 1955,<br>nos. 514, 558, 567, 596-97,<br>599, 629, 689-91, maybe<br>676-77, 748; Delaporte 1920,<br>no. S.388-99; Andrae 1922,<br>figs. 64-65 |
| d            | MG 4                            | Cappadocian         | Purchased?   | Black stone, 20 × 10. Four goddesses<br>with raised hands.  | Buchanan 1966, no. 831 (row<br>of figures); Buchanan 1981,<br>no. 1102 (similar goddess)  |
| e            | MG 7                            | Cappadocian         | Kish?  | Black stone, 16 × 9. Vertical snake<br>beside bull on platform, naked hero<br>holds upended lion(?) by tail and<br>puts one foot on its head.   | Buchanan 1981, no. 1125 (hero<br>with foot on head)   |

CHAPTER 11. CATALOG OF ANCIENT NEAR EASTERN SEALS



a



b



c



d



e

Figure 11.21. Cylinder seals: Gutian / Elamite / Cappadocian  
Various themes

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: UNKNOWN DATE

## Various Themes

| Figure 11.22 | FM registration no. (field no.) | Period    | Provenience               | Material, size (mm), description (left to right), remarks, publications   | Comparanda |
|--------------|---------------------------------|-----------|---------------------------|---|------------|
| a            | 228440                          | Unknown   | Kish?                     | Clay, baked, 16 × 6, broken lengthwise. At least seven circles of dots between horizontal lines.  | —          |
| b            | 156687 (X.430)                  | Ur III?   | Kish, Ingharra, surface   | Alabaster, 15 × 18, erased, broken at bottom. Remnant of presentation scene with inscription. Human figure at left, seated figure at right. | —          |
| c            | 156692 (X.409)                  | Uncertain | Kish, Ingharra, Trench C  | Yellow or green faience, 22 × 12, cracking and deteriorated. Animals?   | —          |
| d            | 156730 (K.1217)                 | Uncertain | Kish, "various findspots" | Shell, 36 × 17, deteriorated. Heroes and lions?   | —          |
| e            | 156734 (K.1217)                 | Uncertain | Kish "various findspots"  | Shell, 15 × 11, fragment, broken at bottom.   | —          |
| f            | 156736                          | Uncertain | Kish                      | Shell, 20 × 8, deteriorated. Animal contest?  | —          |
| g            | 228751                          | Uncertain | Kish                      | Alabaster, 33 × 22, deteriorated, unfinished? Animals.  | —          |
| h            | 228754                          | Uncertain | Kish                      | Shell, 32 × 18, deteriorated. Animal contest.   | —          |
| i            | MG 14                           | Uncertain | Kish?                     | Shell, 26 × 14, corroded. Animal contest.   | —          |
| j            | MG 20                           | Uncertain | Kish?                     | Calcite, 21 × 11, corroded. Animal contest.   | —          |
| k            | MG 21                           | Uncertain | Kish?                     | Shell, 21 × 13, corroded.   | —          |

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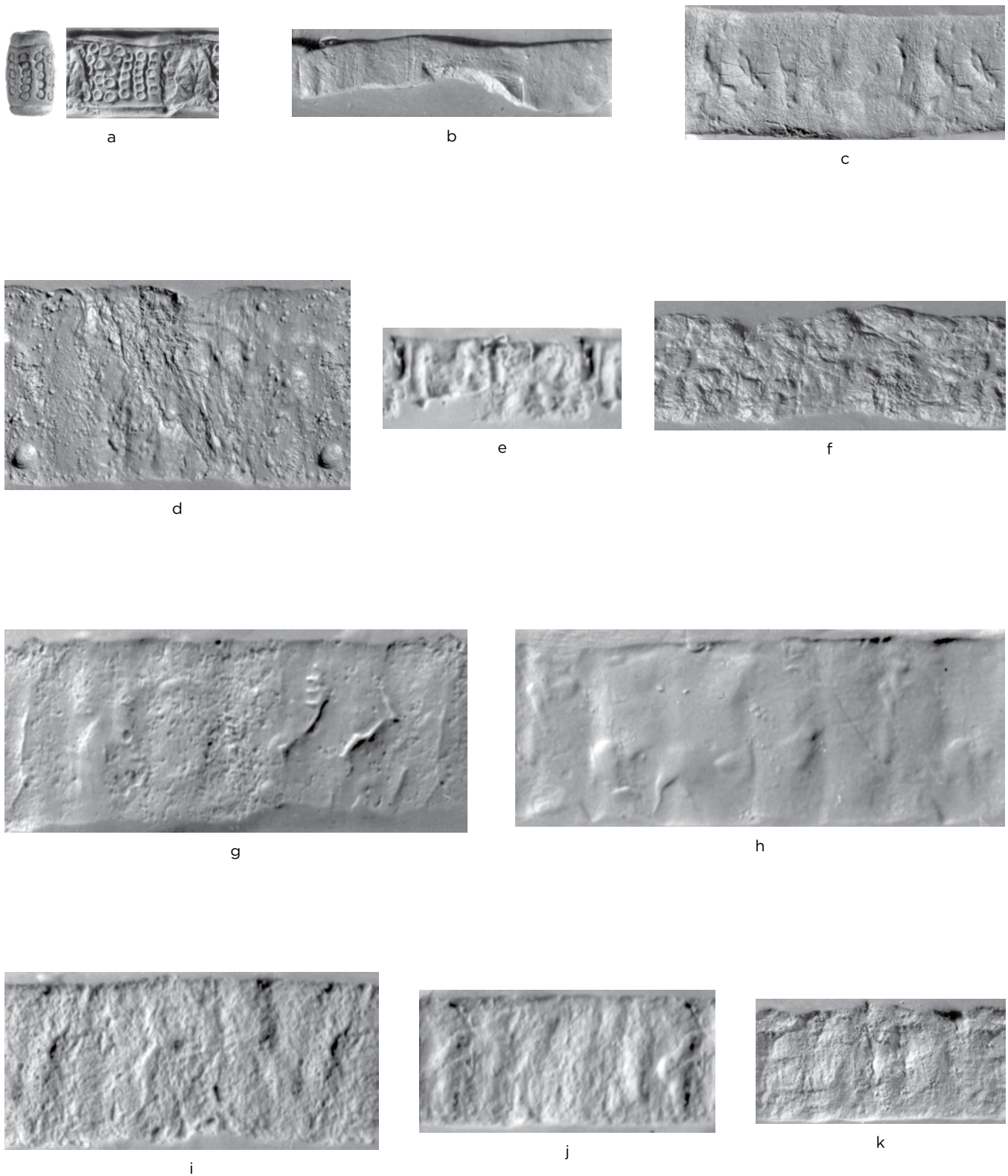


Figure 11.22. Cylinder seals: unknown date  
Various themes



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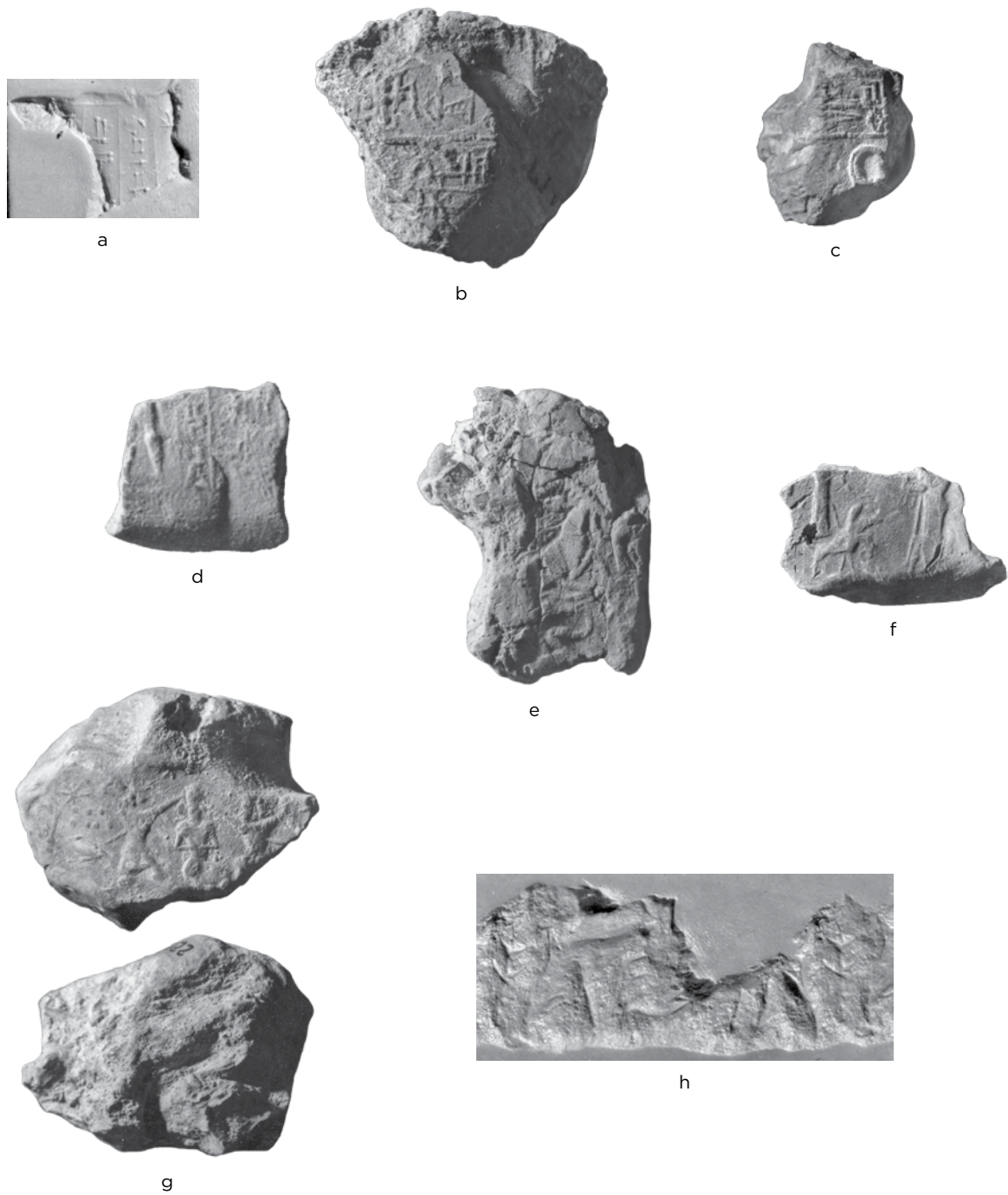


Figure 11.23. Cylinder seals: unknown date  
Various themes (*continued*)



## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: UNKNOWN DATE, FROM KISH

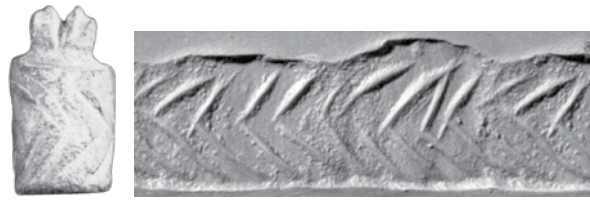
## Too Worn to Identify; Not Illustrated

| — | FM registration no. (field no.) | Period  | Provenience                   | Material, size (mm), description (left to right), remarks, publications                   | Comparanda |
|---|---------------------------------|---------|-------------------------------|---|------------|
| — | 229579                          | Unknown | Kish                          | Shell, 33 × 19, deteriorated.   | —          |
| — | 229580                          | Unknown | Kish                          | Limestone, 33 × ?, deteriorated.  | —          |
| — | 229604                          | Unknown | Kish                          | Shell, 24 × ?, deteriorated.  | —          |
| — | 156660 (K.1218d)                | Unknown | Kish, "various locations"     | Shell, 29 × 15, deteriorated, no design.  | —          |
| — | 156684 (X.392)                  | Unknown | Kish, Ingharra, Trench A, 1 m | Shell, 30 × 18, deteriorated, never worked.   | —          |
| — | 229605                          | Unknown | Kish                          | Shell, 30 × 14, warped, undecorated.  | —          |
| — | 229606 (Y.454)                  | Unknown | Kish                          | Shell, brown patina, 30 × 14, undecorated.  | —          |
| — | 229964                          | Unknown | Kish                          | Shell, 45 × 12, undecorated. Prepared for cutting in two, mark of cut about halfway down. | —          |
| — | 229996                          | Unknown | Kish                          | Alabaster, 47 × 25, roughly cut, fire spalls?   | —          |
| — | MG 13                           | Unknown | Kish?                         | Shell, 23 × 16, deteriorated.   | —          |
| — | MG 15                           | Unknown | Kish?                         | Shell, warped. No design. Not found as of November 11, 1983.                              | —          |
| — | MG 18                           | Unknown | Kish?                         | White stone, 7 × 5, worn. Three rows of horizontal dashes. Cylinder or bead.              | —          |

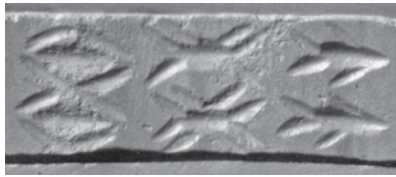
## CYLINDER SEALS: KNOWN PROVIENIENCE, NOT FROM KISH

| Figure 11.24 | FM registration no. (field no.) | Period                  | Provenience                | Material, size (mm), description (left to right), remarks, publications  | Comparanda  |
|--------------|---------------------------------|-------------------------|----------------------------|--|---|
| a            | 156607 (2583, of 1926)          | JN                      | Jamdat Nasr                | Limestone, 21 × 11. Irregular herringbone design; perforated, grooved knob for suspension. Mackay 1929, pl. LXXIII:30.   | Buchanan 1966, no. 68; Frankfort 1955, nos. 164, 172, 286, 838  |
| b            | 156608 (2575*, of 1926)         | JN                      | Jamdat Nasr                | Shell, 15 × 13. Two registers, with "eye"-lozenge, spider, and fish in each. Mackay 1929, pl. LXXIII:6.  | Buchanan 1966, nos. 49, 59; Buchanan 1981, no. 156; Frankfort 1955, no. 11  |
| c            | 156609 (3036, of 1926)          | JN/ED I                 | Jamdat Nasr                | Serpentine, 15 × 14. Three long-horned antelopes in file, running left. Mackay 1929, pl. LXXIII:19.  | Buchanan 1966, no. 110 (legs); Frankfort 1955, nos. 261, 266; cf. FM 156602 (fig. 11.3b)                                    |
| d            | 156601 (3341)                   | JN                      | Jamdat Nasr                | Shell, 22 × 19. Unfinished? Preliminary drill holes at joints. Three goats without horns or three antelopes in file, running left. Double bored perforation. Mackay 1929, pl. LXXIII:18. | Buchanan 1966, nos. 22, 28a (similar antelopes); Buchanan 1981, no. 170; Frankfort 1955, no. 858 (with extra dots in field) |
| e            | 248941                          | Prehistoric / geometric | Giyān, Iran; Herzfeld 1935 | Tan stone or frit, 19 × 18. Row of dots connected by three horizontal lines between two bands with lattice designs.  | Frankfort 1955, no. 211   |

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a



b



c



d



e

Figure 11.24. Cylinder seals: known provenience, not from Kish

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: UNKNOWN PROVENIENCE

| Figure 11.25 | FM registration no. (field no.) | Period | Provenience   | Material, size (mm), description (left to right), remarks, publications  | Comparanda                                     |
|--------------|---------------------------------|--------|---------------|--|--|
| a            | 231374                          | JN     | Unknown       | Yellowish stone, 14 × 5. Simple lattice design bisected by horizontal line. Probably bead.   | Frankfort 1955, no. 163                        |
| b            | 228540                          | JN     | Unknown       | Dark "steatite," 40 × 10, worn. Three undivided registers, each with two recumbent antelopes.  | Frankfort 1955, no. 867; Buchanan 1966, no. 93 |
| c            | 156721                          | JN?    | Unknown       | Shell, 22 × 9, worn. Two registers divided by three horizontal lines. Upper: four fish, birds, or scorpions(?). Lower: four encircled dots.  | Buchanan 1981, no. 191                         |
| d            | 228769                          | OB     | Babylon?      | Clay, unbaked, 34 × 30 × 13. Triangular tag with cords inside. Cylinder seal impression on all five sides. Standing goddess in flounced skirt, frontal standing nude female, standing warrior god facing right. Uninscribed?   | —  |
| e            | 228794                          | OB     | Unknown       | Clay, unbaked, 28 × 22. Disk, sealed on all sides. Frontal standing nude female and warrior god facing left, crescent and indistinct element in field.   | —  |
| f            | 229585                          | OB     | Probably Kish | Clay, unbaked, one rolling. 37 × 22 × 9. Tag around (modern) cord, sealed on one surface. God with mace facing right approaches suppliant goddess. Partial inscription (photo examined by Hervé Reculeau):<br>[...]-ba-[...]<br>[DUMU ...]<br>[ARAD <sub>2</sub> <sup>(d)</sup> x-x <sup>1</sup> ] | —  |
| g            | 248934                          | ED III | Probably Kish | Agate, 30 × 7 × 4. Irregular geometric design. Bead.   | —  |
| h            | 231675                          | OB     | Probably Kish | Clay, unbaked, 35 × 25 × 9. Sealing with one rolling. Inscription portion of seal only (photo examined by Hervé Reculeau):<br>[...]- <sup>(d)</sup> EN.Z[U]<br>[...] x x   | —  |
| i            | 231061                          | ED III | Probably Kish | Clay, unbaked, 55 × 49. Sealing fragment with two rollings. Hero and animal combat.  | —  |
| j            | 231062                          | ED III | Probably Kish | Clay, unbaked, 55 × 49. Sealing fragment with one rolling. Hero and animal combat, crescent in field.  | —  |
| k            | 236239                          | ED III | Probably Kish | Shell, 28 × 15. Two registers. Upper: animal file to right. Lower: combat scene, heroes and lions.   | —  |
| l            | No Number 2                     | ED III | Probably Kish | Clay, unbaked, 38 × 32. Sealing fragment with one rolling. Combat scene, heroes and animals.   | —  |

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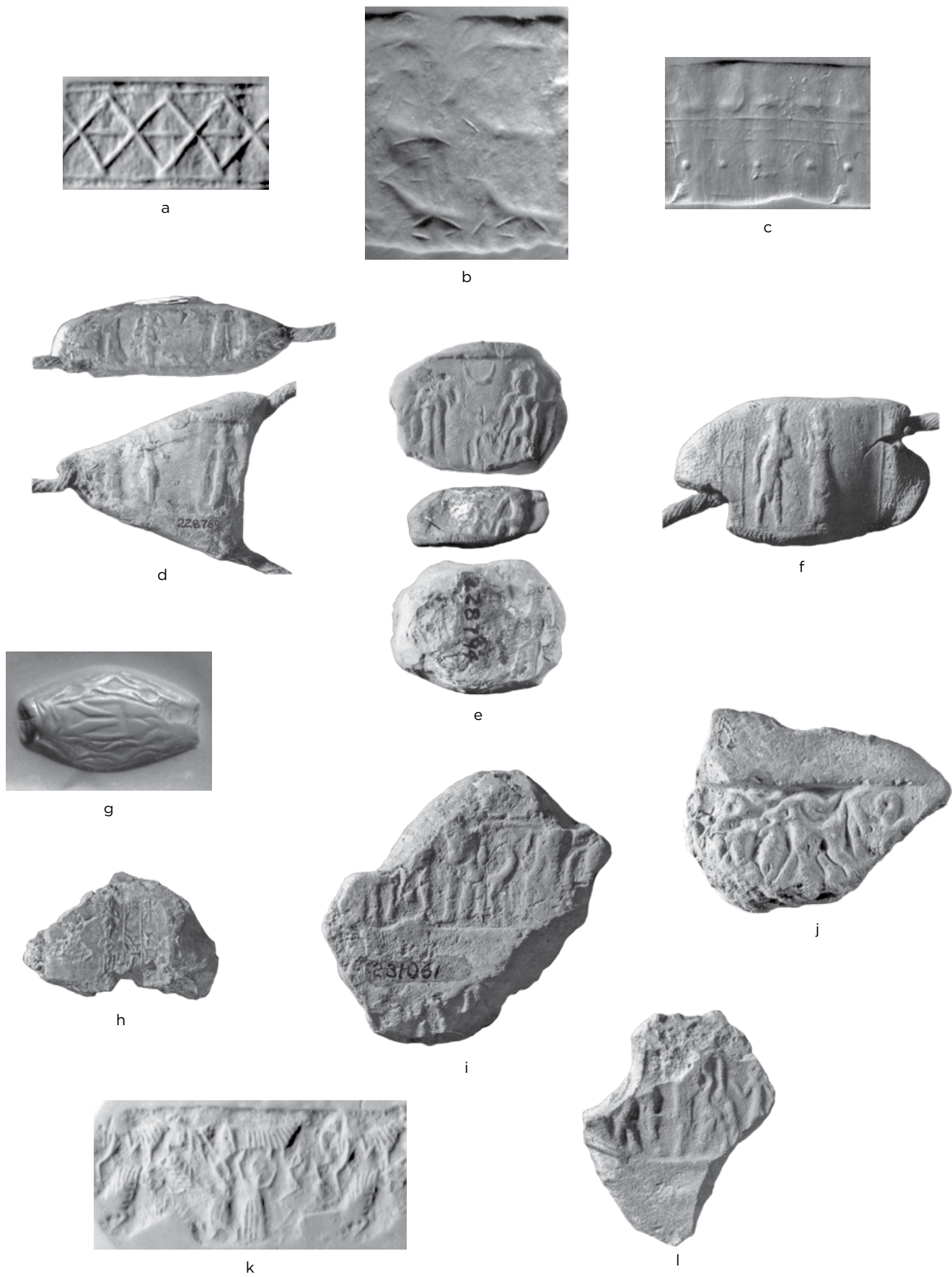


Figure 11.25. Cylinder seals: unknown provenience

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## CYLINDER SEALS: PURCHASED

| Figure 11.26 | FM registration no. (field no.) | Period      | Provenience                         | Material, size (mm), description (left to right), remarks, publications   | Comparanda  |
|--------------|---------------------------------|-------------|-------------------------------------|---|---|
| a            | 158522                          | JN          | Purchased and presented by H. Field | Red stone (marble?), 21 × 18. Four squatting pigtailed women, each on "bench" with arms raised.   | Buchanan 1966, no. 17; Frankfort 1955, nos. 480 (D 17:3 Single-Shrine), 312 (K 42:9 Houses 3, ED III), 264 (L 43:9 Oval II, ED III) |
| b            | 231293                          | JN / ED?    | Purchased                           | White stone (calcite?), 9 × 6. Interlocking "eye"-lozenges, borders of horizontal strokes. Probably bead.   | Frankfort 1955, nos. 147-48, 454  |
| c            | 158500                          | Kassite     | Purchased                           | Chalcedony, 44 x 16. Two bearded figures, one with hand raised, the other with sickle sword at his side, before god with hands raised, figure eight, and "eye"-lozenge, all below panel of birds flying to right toward horned, full-faced animal head, the first bird carrying object in its beak; linear horizontal borders. Five-line inscription (translated by Herve Reculeau):<br><br>( <sup>d</sup> )NIN-É.AN.NA<br><i>tab-ni-i tab-bi-i</i><br><i>uṣ-ri gi-im-li</i><br><i>ù šu-zi-bi</i><br>ARAD <i>pa-lí-iḫ-ki</i><br>Lady-of-the-Eanna!*<br>You made (him), you named (him);<br>protect, favor,<br>and save<br>the servant who fears you.<br><br>*An epithet of Ištar that was also used as a byname of the goddess in the Kassite period. See Cavigneaux and Krebernik, 1998-2001; Bartlemus 2017.<br><br>Edition by Ward 1910, p. 188, no. 53, (drawing of impression) and Price 1908, p. 385, no. 1 (transcription of inscription). | —   |
| d            | 24324                           | NA          | Purchased by E. E. Ayer, 1909       | Gray-green diabase, 33 × 15, worn. Attendant with towel over shoulder holding fan before bearded figure holding cup and bow, vessel in stand between them; crescent standard(?); borders of hatched double lines.   | Buchanan 1966, nos. 596-600   |
| e            | 24325                           | Cappadocian | Purchased by E. E. Ayer, 1909       | Hematite, 15 × 9, unfinished? Bull above dwarf and staff; two goddesses with hands raised, with worshipper between them, approach seated figure holding some dotted object beneath star-disk in crescent; large dot in field.   | Buchanan 1966, nos. 824, 828  |
| f            | 24326                           | Cappadocian | Purchased by E. E. Ayer, 1909       | Jasper, 18 × 6, worn or unfinished. Human between two deities approaching bull on platform; scorpion below bull.  | Buchanan 1966, no. 828  |
| g            | 24323                           | Neo-Elamite | Purchased by E. E. Ayer, 1909       | Black stone, 33 × 10. Archer facing right on one knee confronts large sphinx under crescent. Diagonally hatched borders at top and bottom.  | Buchanan 1966, nos. 575-77; Amiet 1972, no. 2134; cf. Collon 2001, no. 15 (NA)  |

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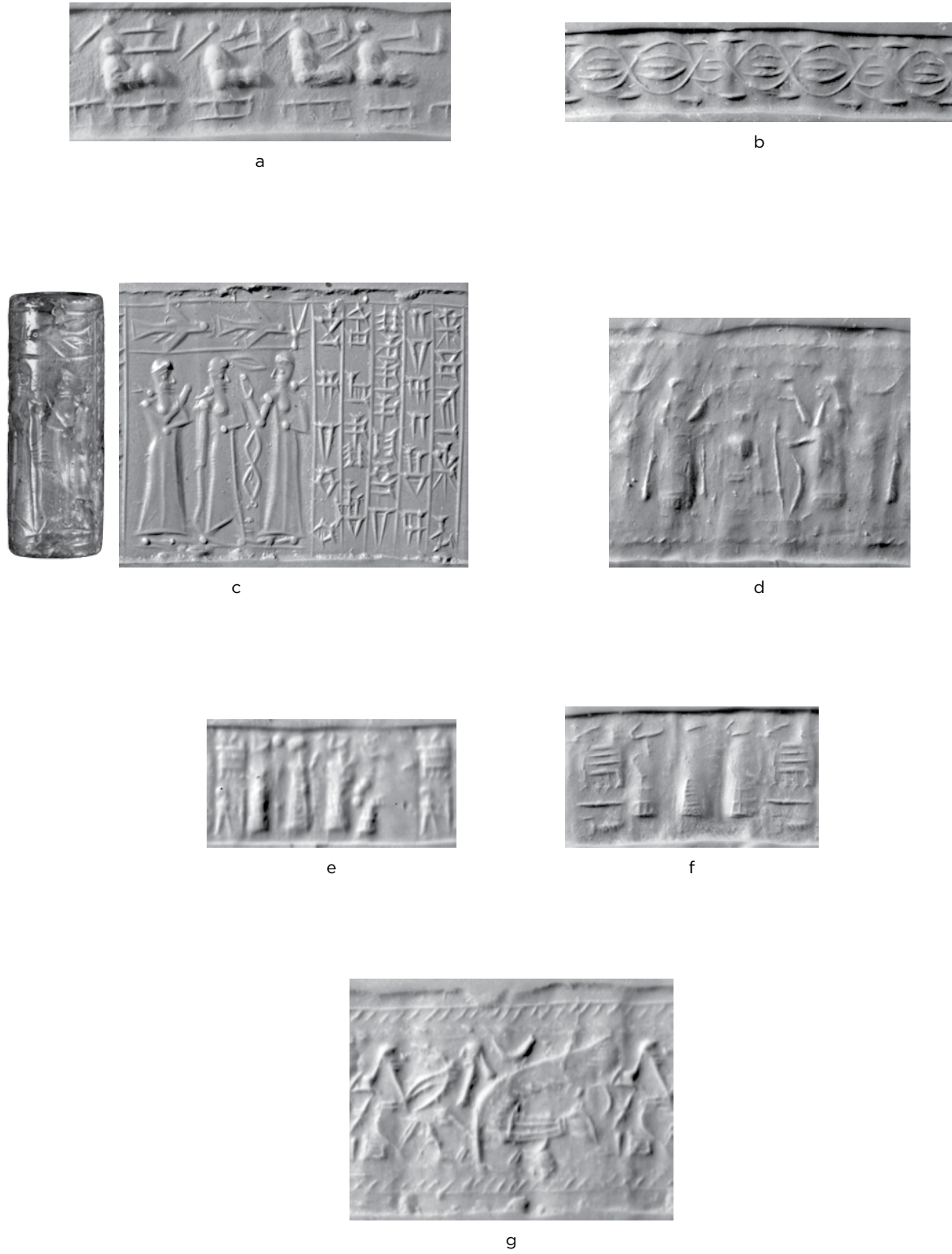


Figure 11.26. Cylinder seals: purchased

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## STAMP SEALS: PREHISTORIC / JAMDAT NASR

| Figure 11.27 | FM registration no. (field no.) | Period      | Provenience                                      | Material, size (mm), description (left to right), remarks, publications  | Comparanda   |
|--------------|---------------------------------|-------------|--|--|--|
| a            | 156663<br>(2145)                | Prehistoric | Kish, Ingharra A, small rooms at center of mound | Limestone, 28 × 23 × H 10. Slightly collared ovoid, drilled longitudinally. Whirligig with curving arms.   | Buchanan 1981, no. 89; Buchanan and Moorey 1984, nos. 25, 198                            |
| b            | 156772<br>(K.1208)              | Prehistoric | Kish, Ingharra, Trench C-8, 4(7)                 | Gray limestone, 20 × 20 × H 8. Looped hemispheroid. Whirligig with curving arms.   | Buchanan 1981, no. 89; Buchanan and Moorey 1984, nos. 25, 198                            |
| c            | 156740<br>(1745)                | Prehistoric | Kish, Ingharra W, 90 cm below surface            | Hematite, 25 × 11 × H 18. Duck-shaped, drilled latitudinally. Tree design?   | Buchanan and Moorey 1984, no. 170; Amiet 1972, no. 81                                    |
| d            | 156749<br>(1759A)               | Prehistoric | Kish, Ingharra W; see burial 38                  | Red jasper, 19 × 17 × H 6. Scaraboid. Design of seven lines radiating from central point.  | Buchanan 1981, no. 28; Buchanan and Moorey 1984, no. 26; Amiet 1972, nos. 83, 87         |
| e            | 156925<br>(X.256)               | Prehistoric | Kish, Ingharra A-1, 3 m                          | Clay, baked, 37 × 29 × H 20, broken at drilled suspension hole. Rectangular, ridge handled. Various dots and gouges (could be animal design) in linear border. | Buchanan 1981, nos. 13-15  |
| f            | MG 54                           | Prehistoric | Kish?  | Clay, baked, 19 × 14 × H 23. Tabloid stalk handle. Grid pattern on oblong base. Tag marked "630" does not fit Kish numbers.                                    | Buchanan 1981, no. 12  |
| g            | 156662<br>(2777)                | Prehistoric | Kish, Ingharra A, 1 m                            | Limestone, 31 × 24 × H 10. Collared ovoid, drilled longitudinally. Punctate design of three crude animals.   | Buchanan 1981, nos. 101-3; Buchanan and Moorey 1984, nos. 269, 308                       |
| h            | 156742<br>(X.433)               | Prehistoric | Kish, Ingharra, southeast of NB temple           | Shell, 33 × 33 × H 14, corroded. Slightly collared hemispheroid, drilled longitudinally. Two quadrupeds?   | Buchanan 1981, no. 104; Buchanan and Moorey 1984, nos. 209-10                            |
| i            | 156797                          | Prehistoric | Kish, Ingharra B-7, 4(6)                         | Limestone, 21 × 21 × H 8. Tabloid. Fat, horned quadruped.  | Buchanan 1981, no. 111; Buchanan and Moorey 1984, nos. 159-60, 233-35                    |
| j            | 228725                          | Prehistoric | Kish   | Pink marble, 28 × 11 × H 8, fragment, broken lengthwise at perforation. Ovoid. Feet of quadruped.  | Buchanan 1981, no. 101; Buchanan and Moorey 1984, nos. 221, 223                          |
| k            | 228797<br>(X.255)               | Prehistoric | Kish, Ingharra, Trench A-1, 3 m                  | Gray stone, 38 × 32 × H 11, worn. Loaf shaped, drilled latitudinally, two recumbent animals.   | Buchanan 1981, no. 102; Buchanan and Moorey 1984, nos. 204, 208; Amiet 1972, nos. 344-49 |
| l            | 228914                          | JN          | Kish   | Limestone, 24 × 22 × H 10, fragment, worn and broken at perforation. Drilled ovoid, plano-convex shape. Animal in punctate design.                             | Buchanan and Moorey 1984, nos. 208-9   |

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Figure 11.27. Stamp seals: prehistoric / Jamdat Nasr



## WHERE KINGSHIP DESCENDED FROM HEAVEN

## STAMP SEALS: NEO-BABYLONIAN / NEO-ASSYRIAN

| Figure 11.28 | FM registration no. (field no.) | Period   | Provenience   | Material, size (mm), description (left to right), remarks, publications   | Comparanda                               |
|--------------|---------------------------------|----------|---|---|--|
| a            | 156725<br>(K.1518)              | NB       | Kish, Ingharra H, near Ingharra Level 1; Sasanian Palace III. Found with beads of Sasanian period | Veined quartz, 21 × 17 × H 28. Octagonal pyramid, drilled at upper end. Male worshipper facing right before altar with symbols.   | Porada 1948, pl. CXXI (NB drilled style) |
| b            | 156741<br>(X.431)               | NB       | Ingharra B, stair   | Calcite, 22 × 17 × H 30. Octogonal pyramid drilled at upper end. Male worshipper facing right before altar with symbols.  | Porada 1948, pl. CXX                     |
| c            | 156743<br>(X.605)               | NB       | Kish, Ingharra  | Serpentine, 14 × 9 × H 15. Pyramid drilled at narrow end. Male worshipper facing left before altar with symbols.  | Porada 1948, pl. CXX                     |
| d            | 156748<br>(1767)                | NB       | Kish, Ingharra W, burial 39   | Clay, baked, 14 × 12 × H 20, worn. Conoid drilled at upper end. Double-winged male on one knee facing left before altar with symbols, crescent in field.                          | Porada 1948, pl. CXXI                    |
| e            | 228686                          | NB       | Kish  | Clay, unbaked, 25 × 20 × H 13. Tag, conoid, stamped on larger end. Male worshipper facing right before altar with symbols.  | Porada 1948, pl. CXX                     |
| f            | 228726                          | NB       | Kish  | Chalcedony, 20 × 13 × H 28. Octagonal pyramid drilled at narrow end. Double-winged male worshipper facing left before altar with symbols.   | Porada 1948, pl. CXXI (NB drilled style) |
| g            | MG 31                           | NB       | Tag says "unnumbered C"   | Clear rock crystal, 27 × 16 × H 32. Octagonal pyramid drilled at narrow end. Male worshipper facing right before an altar with symbols.   | Porada 1948, pl. CXX (NB modeled style)  |
| h            | 228685                          | NA       | Kish  | Bitumen, 36 × 34 × 33. Bottle sealing, oval stamp on upper surface. King fighting rampant lion. Uncertain element above, perhaps winged disk.                                     | —  |
| i            | 229519<br>(2420*)               | NB / NA  | Kish, Ingharra W, child's burial near surface?  | Rock crystal, 20 × 15 × H 9. Double convex disk shape. Standing worshipper facing left has been recut at later date; new motif appears to be horned animal with head turned back. | Porada 1948, pl. CXXI                    |
| j            | 156746<br>(1767)                | NB / NA  | Kish, Ingharra W, burial 39   | Faience, 16 × 10 × H 22. Cone with rounded top, rectangular base. Star and an X or two X's separated by vertical line above fish.   | —  |
| k            | 156750                          | NB / NA? | Kish, Ingharra, NB temple, foundation box   | Clay, baked, 19 × 19 × H 12. Broken off cone, no perforation preserved. Circular bottom. Crude man with outstretched arms seated on horned quadruped.                             | —  |

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Figure 11.28. Stamp seals: Neo-Babylonian / Neo-Assyrian

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## STAMP SEALS: SASANIAN / LATE

| Figure 11.29 | FM registration no. (field no.) | Period                  | Provenience                                    | Material, size (mm), description (left to right), remarks, publications   | Comparanda                           |
|--------------|---------------------------------|-------------------------|--|---|--------------------------------------|
| a            | 156661                          | Sasanian                | Kish   | Pottery, 18 × 19 × H 9. Round, pill-like discoid. Long-horned antelope jumps over barrier, star above.  | Bivar 1969, pl. 18 (but not pottery) |
| b            | 228723                          | Sasanian                | Kish   | Carnelian, 16 × 10 × H 18. Dome. Oval base, walking bird.   | Bivar 1969, pl. 22                   |
| c            | 228724                          | Sasanian                | Kish   | Chalcedony, 18 × 15 × H 22. Triangular pyramid drilled at upper end. Star on standard in triangle.  | —                                    |
| d            | 228730                          | Sasanian?               | Kish   | Clay, unbaked, 15 × 15 × 5. Sealing fragment, polygonal. Oval stamp, one impression. Fly.   | —                                    |
| e            | 228771                          | Sasanian?               | Kish   | Clay, unbaked, 21 × 22 × 15. Sealing, fragment, irregular shape. Rectangular stamp, one impression. Uncertain motif, perhaps scorpion or centipede. | —                                    |
| f            | 156665                          | Islamic                 | Kish   | Dark stone, 15 × 15 × H 11. High dome. Inscription: "Seal of Safi ibn Abdullah."  | —                                    |
| g            | 156747 (1767)                   | —                       | Kish, Ingharra W, burial 39                    | Clay, baked, 24 × 20 × 17. Pyramid with square base, bored horizontally. Crude walking griffin.   | —                                    |
| h            | 156722 (2498)                   | Egyptian Dynasties 6-12 | Kish, Ingharra A, burial 114, found with beads | Faience, green glazed, 11 × 8 × H 4. Scarab.  | —                                    |
| i            | 156724 (2773)                   | —                       | Kish, Ingharra W                               | Faience, glazed, 13 × 11 × H 7. Scarab. Uncertain motif.  | —                                    |
| j            | 156728 (1527)                   | —                       | Kish, Ingharra W, burial 5                     | Faience, brown-yellow, 10 × 7 × H 3. Scarab.  | —                                    |

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Figure 11.29. Stamp seals: Sasanian / late

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## STAMP SEALS: KNOWN PROVENIENCE, NOT FROM KISH

| Figure 11.30 | FM registration no. (field no.) | Period      | Provenience                                   | Material, size (mm), description (left to right), remarks, publications  | Comparanda   |
|--------------|---------------------------------|-------------|---|--|--|
| a            | 158217<br>(3303)                | JN          | Jamdat Nasr                                   | Gray stone, 28 × 27 × H 11. Flat hemispheroid. Four deeply bored animals in circle. Mackay 1931, pl. LXXIII:14.                | Buchanan 1981, no. 102; Buchanan and Moorey 1984, nos. 208-10; Amiet 1972, nos. 363, 365, 373            |
| b            | 248983                          | Prehistoric | Giyan, Iran?                                  | Yellow chalcedony, 33 × 25 × H 25. Couchant bull with head turned back and hollow eye, perforated vertically. Two X designs.   | —  |
| c            | 248984<br>(X.163)               | Prehistoric | Giyan, Iran; Herzfeld 1935                    | White and yellow chalcedony, 38 × 29 × H 20. Couchant ram, head frontal and hollowed eyes, perforated vertically. Two animals. | Buchanan 1966, nos. 125, 116 (shape); Buchanan and Moorey 1984, nos. 218 (seal shape), 221, 223 (design) |
| d            | 166511                          | —           | Balad Sinjar, Iraq<br>"Henry Field gift 1934" | Black stone, 12 × 14 × 10. Discoid. Vague horned animal figure.  | —  |
| e            | 166512                          | Sasanian    | Balad Sinjar, Iraq                            | Nephrite or jasper, 15 × 15 × H 12. Dome. Recumbent stag with flowing ribbon.  | —  |
| f            | 166513                          | Sasanian    | Balad Sinjar, Iraq                            | Quartz, 17 × 21 × 16. Dome (ring?). Scorpion flanked by crescent and star.   | Bivar 1969, pl. 24   |

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Figure 11.30. Stamp seals: known provenience, not from Kish

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## STAMP SEALS: UNKNOWN PROVENIENCE

| Figure 11.31 | FM registration no. (field no.) | Period                  | Provenience | Material, size (mm), description (left to right), remarks, publications   | Comparanda   |
|--------------|---------------------------------|-------------------------|-------------|---|--|
| a            | 228802                          | Prehistoric / geometric | Unknown     | Black "steatite," 52 × 25 × H 38. Foot shaped. Random crossed lines. Weight = 45.4 g.   | Buchanan 1981, no. 6; Buchanan and Moorey 1984, nos. 3, 239-40 (Buchanan compares with Tepe Giayan material) |
| b            | 156752                          | Prehistoric / geometric | Unknown     | Gray limestone, 14 × 12 × H 8. Ovoid. "X" design. Bead?   | Buchanan 1981, nos. 26ff.; Buchanan and Moorey 1984, no. 202   |
| c            | 229614                          | Prehistoric             | Unknown     | Limestone, white and friable. 22 × 14 × H 27. Animal stamp fragment, pierced twice. Dot and few gouges. Adapted into bead? Tag says Parthian. | —  |
| d            | 229339                          | Prehistoric             | Unknown     | Calcite, 20 × 12 × H 14. Fragment of animal stamp, back leg, uncertain gouged motif.  | Buchanan 1981, no. 124 (shape); Buchanan and Moorey 1984, nos. 214-18 (probably had similar design)          |
| e            | 229159                          | NA                      | Kish?       | Clay, unbaked, 32 × 30 × 10. Sealing fragment. One oval stamp, king fighting lion.  | —  |
| f            | MG 30                           | NB                      | Unknown     | Yellow flecked marble, 19 × 14 × H 24. Octagonal pyramid pierced at upper end. Bearded worshipper facing left toward altar with symbols.      | Porada 1948, pl. CXX (NB modeled style)  |
| g            | MG 27                           | NB/NA                   | Unknown     | Black and gray agate, 16 × 12 × H 22. High cone with ovoid base, drilled. Bearded worshipper facing right toward altar with symbols.          | Porada 1948, pl. CXXI (NB drilled style)   |
| h            | MG 28                           | NB/NA                   | Unknown     | Rock crystal, 15 × 12 × H 22. High cone with rounded convex base. Bearded worshipper facing right toward altar with symbols.                  | Porada 1948, pl. CXXI (NB drilled style)   |
| i            | MG 29                           | NB/NA                   | Unknown     | Clear yellow-gray stone, 21 × 12 × H 29. Octagonal pyramid. Bearded worshipper facing right toward altar with symbols.                        | Porada 1948, pl. CXXI (NB drilled style)   |
| j            | MG 38                           | Sasanian                | Unknown     | Clear gray stone (quartz or chalcedony?), 14 × 19 × H 16. Dome. Walking bird.   | Bivar 1969, pls. 21-22   |
| k            | MG 40                           | Sasanian                | Unknown     | Gray stone (chalcedony?), 11 × 8 × H 14. Dome. Flower with flanking leaves on base.   | Bivar 1969, pl. 25   |
| l            | MG 43                           | Sasanian                | Unknown.    | Tan stone (chalcedony?) with gold mount, 12 × 12 × H 18. Dome. Flower with flanking leaves. Tag says "5184/10."                               | Bivar 1969, pl. 25   |
| m            | MG 41                           | Sasanian                | Unknown     | Red chalcedony, 17 × 11 × H 21. Dome. Walking bird of prey. Gold mount under bird. Tag says "22/8."   | Bivar 1969, pl. 22   |

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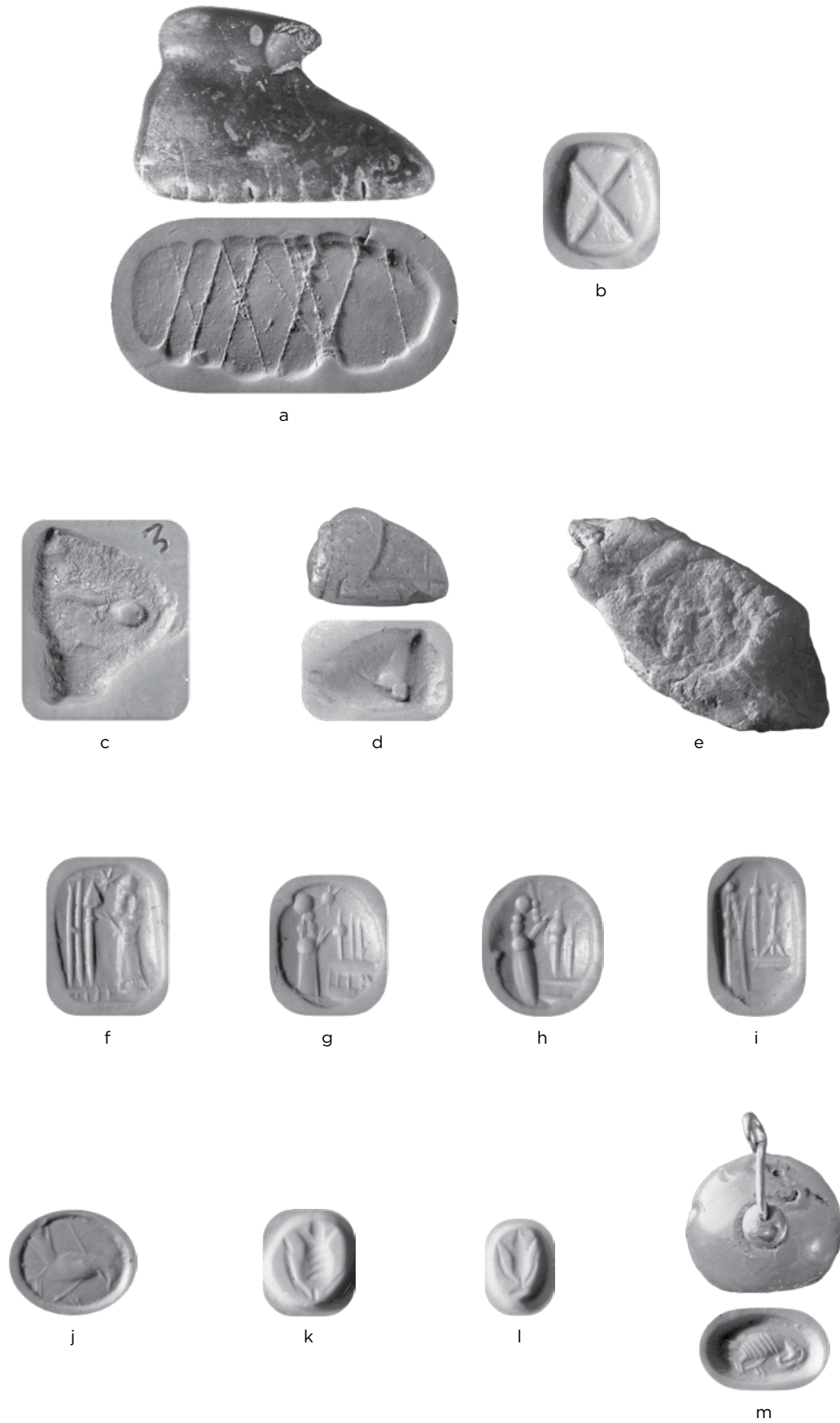


Figure 11.31. Stamp seals: unknown provenience



## WHERE KINGSHIP DESCENDED FROM HEAVEN

STAMP SEALS: UNKNOWN PROVENIENCE (*continued*)

| Figure 11.32 | FM registration no. (field no.) | Period      | Provenience   | Material, size (mm), description (left to right), remarks, publications   | Comparanda   |
|--------------|---------------------------------|-------------|---------------|---|--|
| a            | MG 45                           | Sasanian    | Unknown       | Brown stone (chalcedony?), 16 × 11 × 18. Dome. Walking bird.  | Bivar 1969, pl. 22; cf. figs. 11.31j, 11.31m, 11.32d |
| b            | MG 48                           | Sasanian    | Unknown       | Carnelian, 14 × 10 × H 18. Ellipsoid. Flower with flanking leaves on base.  | Bivar 1969, pl. 25                                   |
| c            | MG 49                           | Sasanian    | Unknown       | Carnelian, 11 × 7 × H 15. Ellipsoid. Fire altar or plant.   | Bivar 1969, pls. 25-26                               |
| d            | MG 50                           | Sasanian    | Unknown       | Carnelian, 11 × 9 × H 14. Dome. Walking bird.   | Bivar 1969, pl. 22; cf. figs. 11.31m, 11.32a         |
| e            | MG 52                           | Sasanian    | Unknown       | Carnelian, 17 × 10 × H 20, broken. Dome. Sheep with fillet.   | Bivar 1969, pl. 22                                   |
| f            | 228699                          | Islamic     | Unknown       | Banded red and white stone, 11 × 11 × H 3. Flat hexagon. Crescent and star.   | —  |
| g            | 236586                          | Islamic     | Unknown       | Chalcedony, 19 × 17 × H 24, recut. Ring seal, oval base. Inscription, three lines of Kufic Arabic: "Bismallah AL-Rahman AL-Rahim / Inna Nahnu Nezzelana AL-Thikre / wa Inna Lehu Lehafithon." | —  |
| h            | MG 34                           | Hellenistic | Unknown       | Gray stone, 16 × 14 × H 31. Octagonal shaft, very convex face, bored short, near top. Standing Hellenistic lady warrior with weapons (goddess Athena?).                                       | —  |
| i            | MG 55                           | Islamic     | Unknown       | Black stone, 15 × 11 × H 16. Stamp, truncated pyramid. Inscription, two lines in rectangular field. Arabic?   | —  |
| j            | MG 56                           | Islamic     | Unknown       | Carnelian, 20 × 13 × H 4. Flat ovoid. Arabic inscription, inlaid white: "Allah / Muhammad / Fatimah / Hassan / Husein."   | —  |
| k            | 223923                          | Unknown     | Unknown       | Male figure facing left.  | —  |
| l            | MG 25                           | Unknown     | Unknown       | Black stone, 19 × 20, fragment, split vertically. High dome, pierced near top. Bulbous-nosed bull with snake-like filler above and monkey in front.   | —  |
| m            | MG 26                           | Unknown     | Unknown       | Clay baked, 18 × 19, hemispherical stamp. Griffin facing left.  | —  |
| n            | MG 32                           | Unknown     | Unknown       | Gray paste, glazed, 21 × 20. Hemisphere, bored at top. Griffin.   | —  |
| o            | MG 32b                          | Unknown     | Unknown       | Black stone, 12 × 6 × H 19. Pyramidal cone, perforated at top.  | —  |
| p            | MG 33                           | NB          | Unknown       | Blue-green glass, 27 × H 31. Cone. Hero, facing right, lifts animals. Standing man before altar with symbol.  | —  |
| q            | MG 35                           | Unknown     | Unknown       | Yellowish glass, 18 × H 22, broken near top and pierced horizontally. Griffin.  | —  |
| r            | MG 53                           | Unknown     | Unknown       | Crystal, 14 × 18 × H 21. Triangular. Walking figure, facing left.   | —  |
| s            | No Number 1                     | Unknown     | Probably Kish | Clay, burned, 30 × 7 × 3. Disk, sealed on one surface, few cuneiform signs.   | —  |

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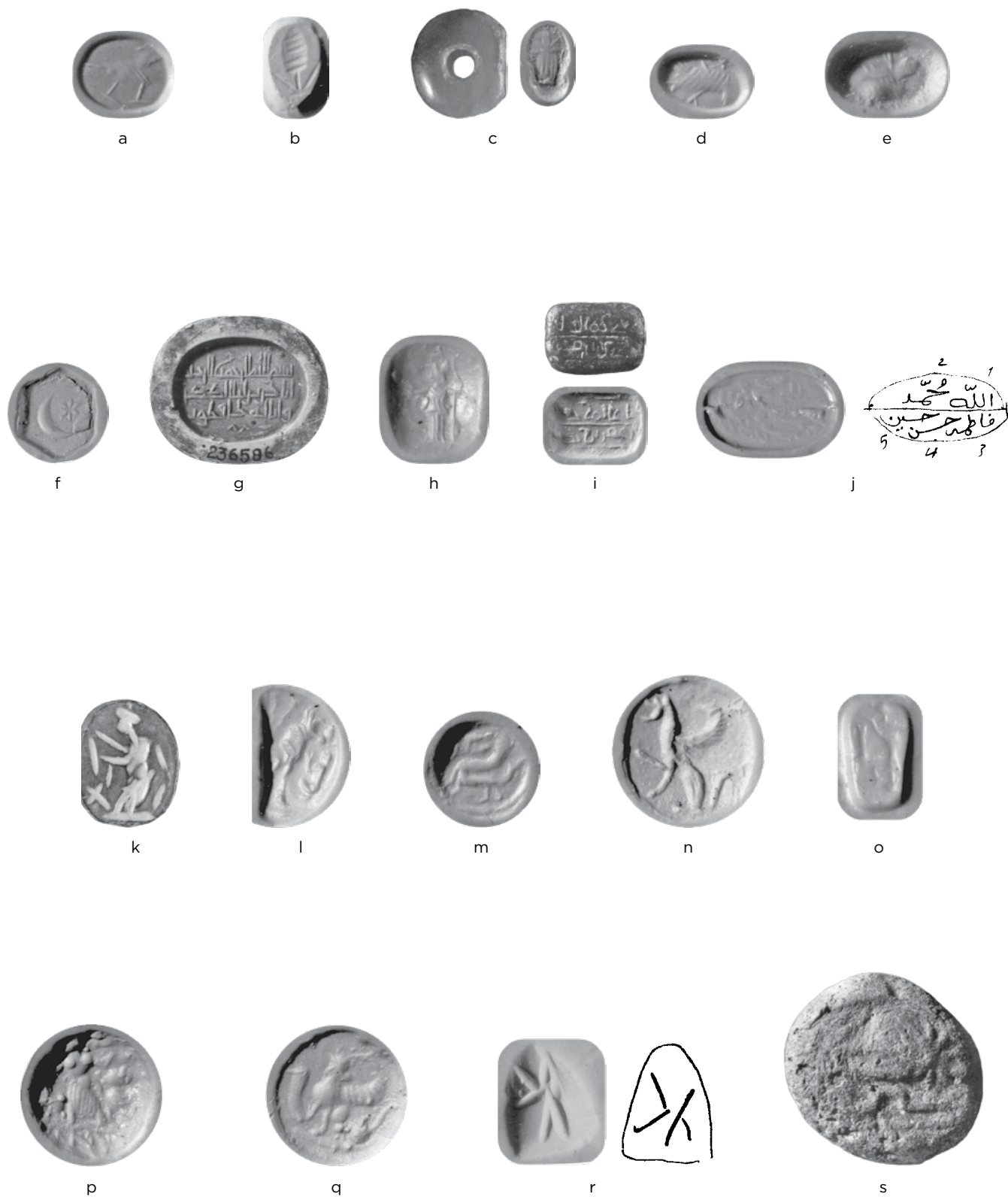


Figure 11.32. Stamp seals: unknown provenience (continued)

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## STAMP SEALS: PURCHASED

| Figure 11.33 | FM registration no. (field no.) | Period      | Provenience                   | Material, size (mm), description (left to right), remarks, publications  | Comparanda  |
|--------------|---------------------------------|-------------|-------------------------------|--|---|
| a            | 24321                           | Prehistoric | Purchased by E. E. Ayer, 1909 | Dark-red stone, 17 × 15 × H 6. Scaraboid. Animal.  | Buchanan 1981, no. 75; Buchanan and Moorey 1984, nos. 46-49 (generally)                         |
| b            | 24316                           | Sasanian    | Purchased by E. E. Ayer       | White chalcedony, 24 × 22 × H 30, chipped. Dome. Two standing figures with arms raised on either side of altar.            | Bivar 1969, pl. 8, CG 12-13   |
| c            | 24317                           | Sasanian    | Purchased by E. E. Ayer       | White chalcedony, 29 × 18 × H 24. Dome. Bust of stag in winged base.   | Noveck 1975, nos. 74-75   |
| d            | 24318                           | Sasanian    | Purchased by E. E. Ayer       | Clear stone (quartzite?), 15 × 8 × H 16. Ellipsoid. Fire altar.  | Bivar 1969, pl. 26, LG 1-2  |
| e            | 24319                           | Sasanian    | Purchased by E. E. Ayer       | White chalcedony, 23 × 14 × H 19. Ellipsoid, decorated with incised pattern. Bust of man.                                  | Bivar 1969, pl. 4, AG; see Bivar 1969, p. 143, for incised decorated patterns in Sasanian seals |
| f            | 24320                           | Sasanian    | Purchased by E. E. Ayer       | Light-red chalcedony, 13 × 12 × H 11. Dome. Kneeling zebu, border of dashes at top.  | Bivar 1969, pl. 15  |
| g            | 156666 (2473*)                  | Sasanian    | Kish, surface; purchased      | Carnelian, 11 × 7 × H 12, chipped. Dome, faceted ring. Heraldic symbol or monogram.  | Bivar 1969, pl. 27  |
| h            | 156667 (U.851)                  | Sasanian    | Kish; purchased               | Hematite, 11 × 11 × H 7. Dome. Bird? Border of dashes at top.  | Noveck 1975, no. 75 (dashes)  |
| i            | MG 36                           | Sasanian    | Probably purchased            | Tan chalcedony, 25 × 18 × H 22. Ellipsoid. Lion attacking zebu on its back, turns its head to face backward.               | Bivar 1969, pl. 17; Noveck 1975, no. 81; Bivar 1969, pl. 11, DI-DJ                              |
| j            | MG 37                           | Sasanian    | Probably purchased            | Banded agate, 21 × 14 × H 18. Dome. Kneeling zebu and bird(?).   | —   |
| k            | MG 39                           | Sasanian    | Probably purchased            | Clear crystal with (modern?) gold mount, 17 × 13 × H 20. Dome. Open hand.  | Bivar 1969, pl. 9   |
| l            | MG 42                           | Sasanian    | Probably purchased            | Yellowish stone with modern gold mount, 19 × 18 × H 21. Dome. Gayomard with arms outstretched, holding staff in each hand. | Bivar 1969, pl. 6, BF-BG  |
| m            | MG 44                           | Sasanian    | Probably purchased            | Carnelian, 12 × 8 × H 16. Dome. Bust of helmeted, bearded man.   | Bivar 1969, pl. 4   |
| n            | MG 46                           | Sasanian    | Probably purchased            | Carnelian, 17 × 13 × H 20, broken at bottom. Dome. Bust of man, full face.   | Bivar 1969, pl. 4   |
| o            | MG 47                           | Sasanian    | Probably purchased            | Tan stone, 16 × 13 × H 20, chipped at bottom. Dome. Bust of man.   | Bivar 1969, pl. 4   |
| p            | MG 51                           | Sasanian    | Probably purchased            | Black stone (hematite?), 13 × 12 × H 14. Dome. Two lines carved around bottom, two animals (ram and bird?).                | Noveck 1975, no. 85? (preying bird)   |

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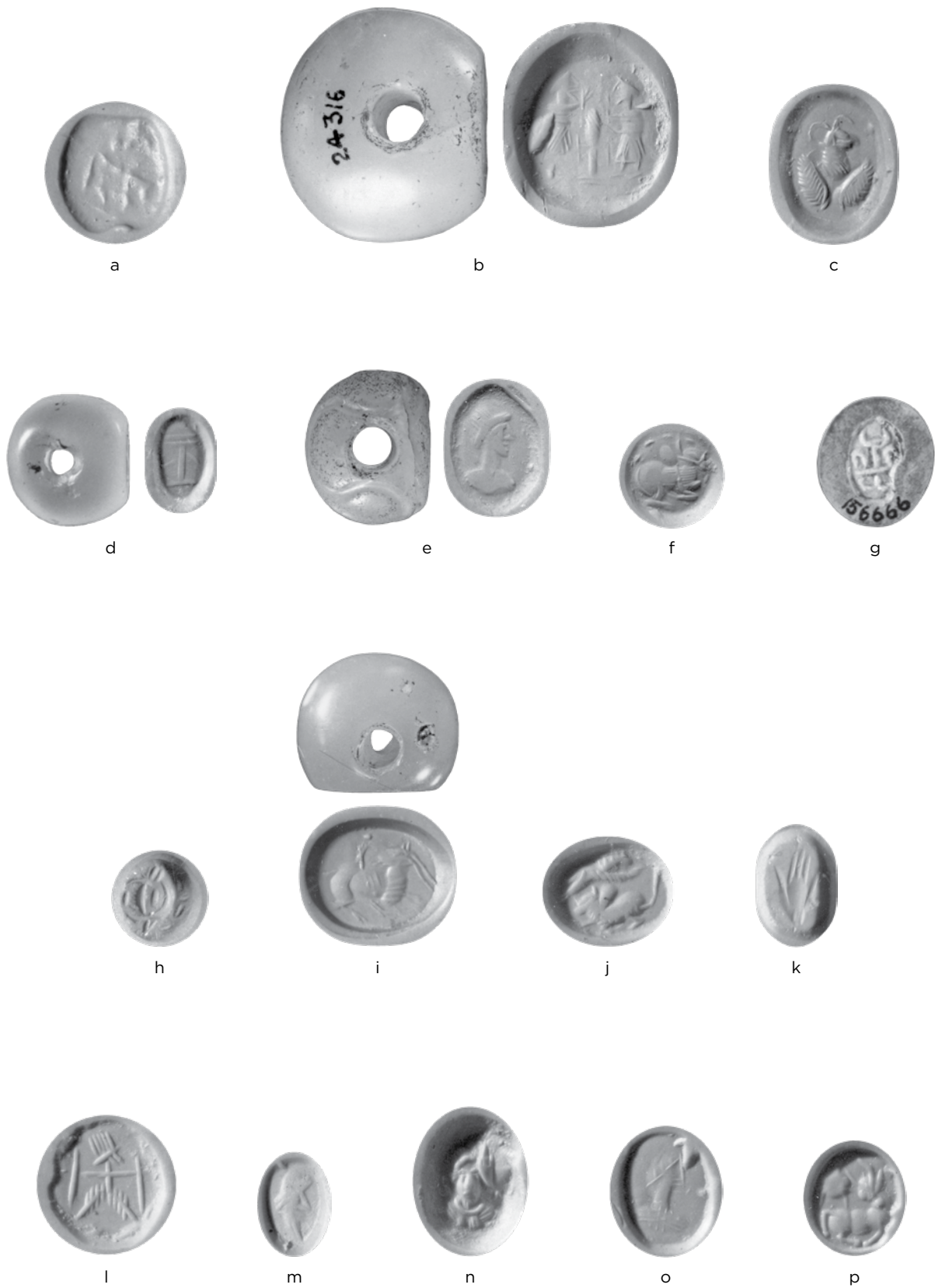


Figure 11.33. Stamp seals: purchased

## WHERE KINGSHIP DESCENDED FROM HEAVEN

## COPPER ALLOY RINGS

| Figure 11.34 | FM registration no. (field no.) | Period     | Provenience | Material, size (mm), description (left to right), remarks, publications                           | Comparanda   |
|--------------|---------------------------------|------------|-------------|---|--|
| a            | 228655                          | Achaemenid | Unknown     | 12 × 11 × H 17. Silver. Two horizontal lines with hachures above and below. Probably a centipede. | Unpublished ring 13N 378, Nippur Area WA, Loc. 30. [A silver ring in a hoard of silver buried behind mud plaster in Achaemenid wall at Area WA at Nippur is a close parallel. —MG] |
| b            | 236554                          | Achaemenid | Ingharra    | 19 × 13 × H 25. Silver. Antelope and plant on line.   | —  |
| c            | 236555                          | Achaemenid | Unknown     | 13 × 11 × H 18. Silver. Bird and branch.  | [A silver ring in a hoard of silver buried behind mud plaster in Achaemenid wall at Area WA at Nippur is a fair parallel.—MG]  |
| d            | 236560                          | Uncertain  | Unknown     | 16 × 15 × H 19. Silver. Antelope on line.   | Not illustrated  |
| e            | 236561                          | —          | Unknown     | 16 × 7 × H 18. Two quadrupeds, one recumbent.   | —  |
| f            | 236553                          | Sasanian   | Mound A     | 21 × 15 × H 22. Face deteriorated.  | —  |
| —            | 236550                          | —          | Unknown     | Deteriorated. Not illustrated.  | —  |
| —            | 236559                          | Uncertain  | Unknown     | Deteriorated. Not illustrated.  | —  |
| —            | 236562                          | Uncertain  | Unknown     | Deteriorated. Not illustrated.  | —  |
| —            | 236576                          | Uncertain  | Unknown     | Deteriorated. Not illustrated.  | —  |

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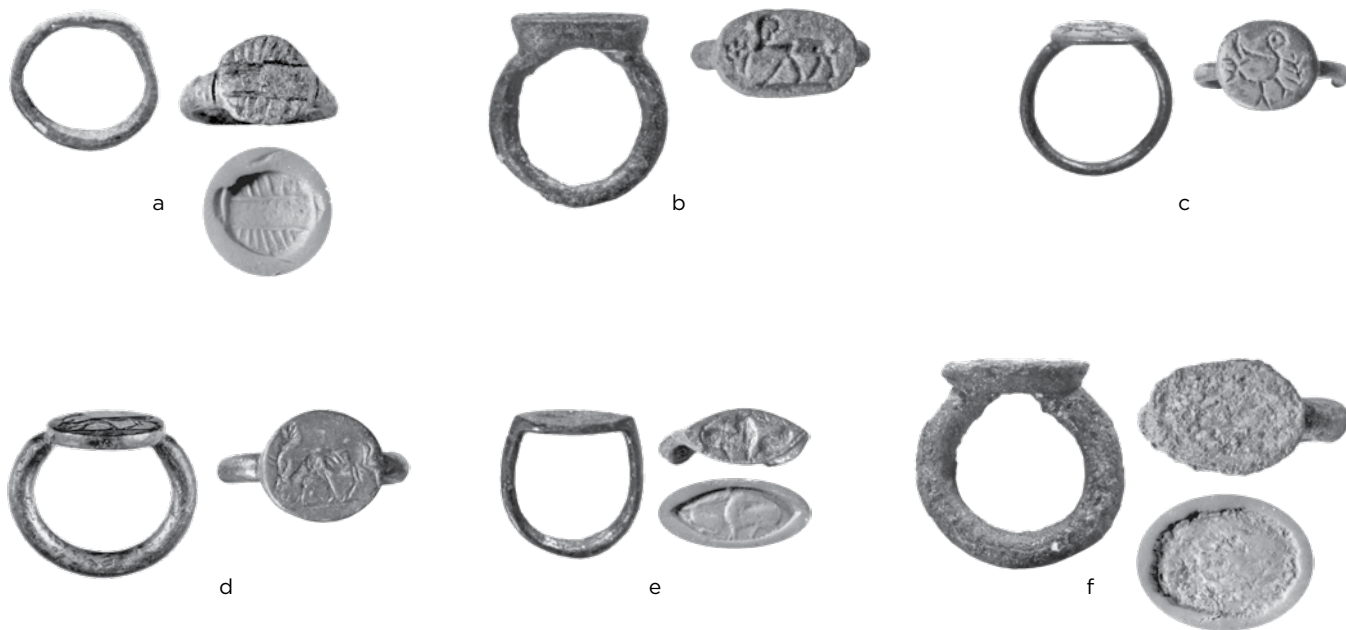


Figure 11.34. Copper alloy rings



From 1923 to 1933, the Chicago Field Museum and the University of Oxford conducted archaeological excavations at the site of Kish, located on the floodplain of the Euphrates River in modern Iraq approximately 80 kilometers south of Baghdad. Over the course of ten years of work, the expedition explored seventeen different mounds both inside and outside the ancient boundaries of Kish. The finds were divided at the end of each season, with the Iraq Museum retaining half of the objects and any one-of-a-kind items and the two excavating institutions splitting the remainder.



Beginning in 2004, the Field Museum undertook a reevaluation of its Kish holdings. To highlight new research and insights into the material culture from Kish and our understanding of the importance of the site to Mesopotamian archaeology, the Field Museum held a symposium in 2008 that brought together an international group of scholars who presented papers on various aspects of the ancient city. This volume, which grew out of that symposium, presents a wide array of studies on the excavated material remains from Kish, including cuneiform texts, animal figurines, human remains, lithics, figural stucco wall decorations, and more.



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