Title
Girikihaciyan: A Halafian Site in Southeastern Turkey

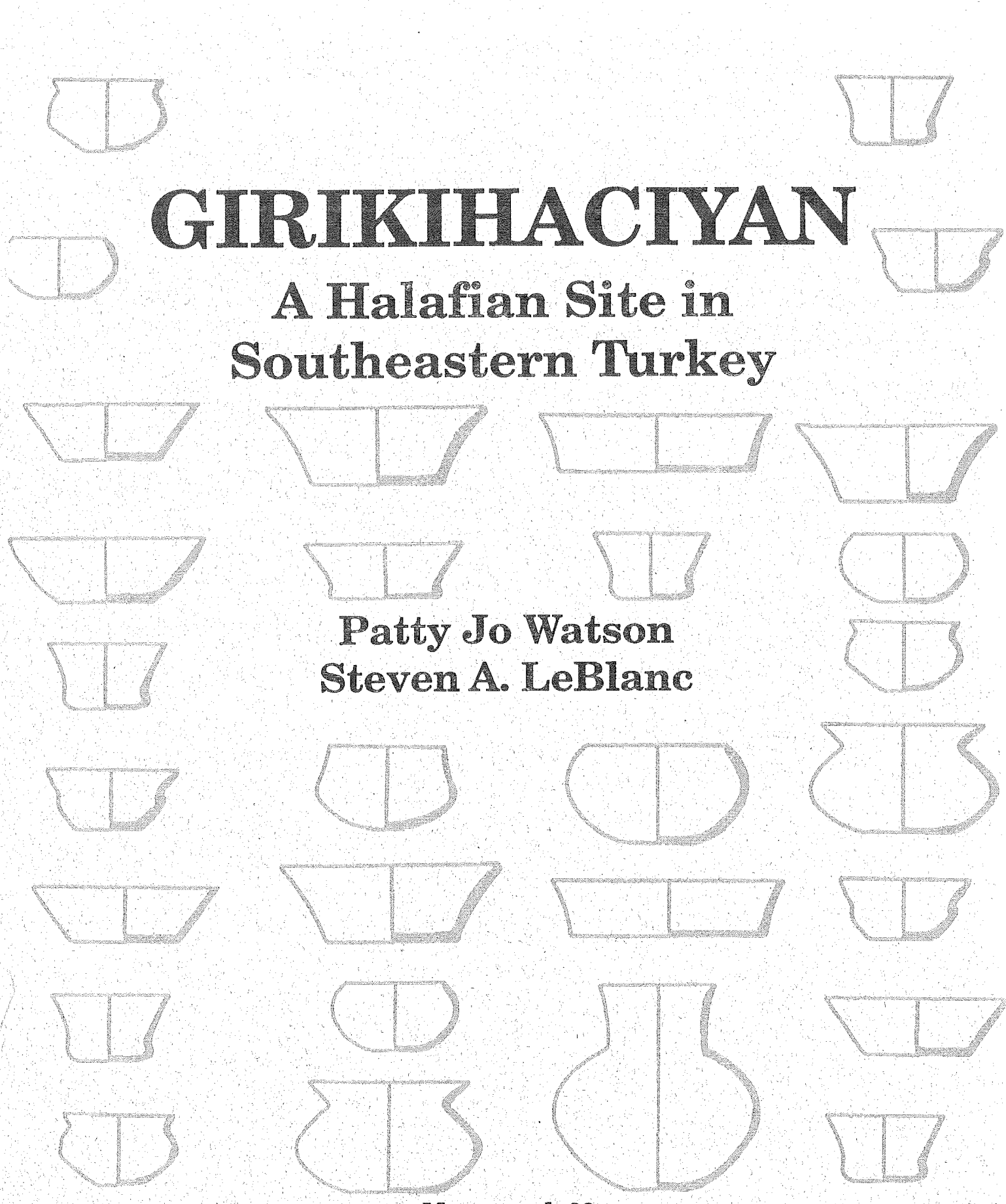
ISBN
978-1-950446-07-0

Authors
Watson, Patty Jo
LeBlanc, Steven A.

Publication Date
1990

Data Availability
The data associated with this publication are within the manuscript.

Peer reviewed



GIRIKIHACIYAN

A Halafian Site in Southeastern Turkey

Patty Jo Watson
Steven A. LeBlanc

Monograph 33
Institute of Archaeology
University of California, Los Angeles

GIRIKIHACIYAN

A HALAFIAN SITE IN SOUTHEASTERN TURKEY

Patty Jo Watson
Steven A. LeBlanc

Monograph 33
Institute of Archaeology
University of California, Los Angeles
1990

Library of Congress Cataloging-in-Publication Data

Watson, Patty Jo, 1932-
Girikihaciyan : a Halafian site in southeastern Turkey / Patty Jo Watson, Steven A. LeBlanc.
p. cm. — (Monograph / Institute of Archaeology, University of California)
Includes bibliographical references.
ISBN: 0-917956-69-9
1. Girikihaciyan Site (Turkey) 2. Halaf culture—Turkey. 3. Excavations (Archaeology)—Turkey. I. LeBlanc, Steven A. II. Title. III. Series: Monograph (University of California. Los Angeles. Institute of Archaeology) ; 33.
GN776.3.H34W38 1990
956.6'7—dc20 90-47928
CIP

Acknowledgments

We are grateful to Robert J. Braidwood and Halet Çambel, directors of the Turkish Prehistoric Project (Istanbul/Chicago) for enabling us to undertake research at Girikihaciyan in 1968 and 1970. Much of the Project's work in those seasons was supported by funds from the Anthropology Program of the National Science Foundation.

We also thank the other Project staff members of the 1968 and 1970 seasons for help, advice, and moral support: Behin Aksoy, Linda Braidwood, Geoffrey Clark, Valerie Clark, Michael Davis, Michael Hoffman, James Knudstad, Ilknur Küçük, Charles Redman, Linda Redman, Anna Watson, Richard Watson, David Webster, Jinx Webster, Carolyn Wright, Gary Wright, Willem van Zeist, and Hüsnü Yildirim.

We owe a debt of gratitude to those inhabitants of Ekinciyan, the village adjacent to the site, who worked with us on the mound and, like the Girikihaciyan supervisors, cheerfully endured mud, cold weather, and the recalcitrant site matrix: Abduri Altintaş, Abdurrahman Altintaş, Kerim Altintaş, Askeri Aslan, Mehmet Aslan, Mehmet Aytaç, Eyup Biçer, Hasan Biçer, Husain Biçer, Eyup Demir, Hasan Demir, Rustem Demir, Ziya Demir, Mahmud Ekin, Resul Ekin, Şemmuz Ekin, Zülfü Ekin, Askeri Güler, Fahri Güler, Ibrahim Güler, Ismail Güler, Nurettin Güler, Tahir Güler, Zülfü Güler, Bedri Ipek, Fahri Ipek, Ilfan Ipek, Ilham Ipek, Mehmet Ipek, Muzafer Ipek, Necate Ipek, Rafat Ipek, Said Ipek, Veysi Ipek, Zilkar Ipek, Zülfü Ipek, Jalal Khan, Eyup Kan, Harun Karakaş, Şerif Kiliq, Hasan Koç, Mukhtar, Hayretin Şimşek, Ahmet Soğan, Hasan Soğan, Askeri Tunç, Daries Tunç, Mustafa Tunç, Tadel Tunç, Mehmet Yaman. During the 1968 season, Charles Redman was the Girikihaciyan field assistant, and we are grateful to him for his continued interest and assistance. During both seasons and after the fieldwork period, James Knudstad devoted many hours of his time and expertise to documenting the architectural remains at Girikihaciyan; we gratefully acknowledge his invaluable aid and incomparable drafting skills. We are thankful to Willem van Zeist for the time and effort he devoted to the botanical remains from Girikihaciyan and for expediting the three radiocarbon determinations. We acknowledge the interest and cooperation of Dr. T. Waterbolk, Director of the Natuurkundig Laboratorium at the Rijks-Universiteit, Gronigen, Netherlands, where the radiocarbon determinations were obtained.

We are especially grateful to the trench supervisors who worked with us at Girikihaciyan: Behin Aksoy, Ilknur Küçük, Michael Hoffman, and Hüsnü Yildirim.

During the period of writing the site report, Ismail Hijara and Thomas Davidson kindly made their dissertations available to us. Peter M. M. G. Akkermans, Robert J. Braidwood, Lorraine Copeland, Elizabeth Henrickson, Sandra Olsen, Helga Seeden, and Mary Voigt drew our attention to references and other important information we would have missed without their guidance.

We are very grateful to the Graduate School at Washington University and to successive deans of the faculty Richard Rossett and Martin Israel for making available to the senior author research grant support for prepublication expenses. We are also much indebted to the following people at Washington University who materially aided the completion of the manuscript: Michael Emrick, Adria LaViolette, Christine Hensley, Jeff Kaufman, Sonia Wolf, and Mary Kennedy for drafting many of the figures; Christine Hensley and Mary Kennedy for word processing the text and tables; Mary Kennedy for overseeing the completion of many of the illustrations and for acting as production-editor for the final revision and coordination of text, tables, and illustrations.

Finally, we thank Ernestine S. Elster, Carol Leyba, and the editorial staff (Andrew Funk, Beverly Godwin, Pat Campbell Healy, Pattie Rechtman and Tim Seymour) of the UCLA Institute of Archaeology for their patience and assistance with the publication of this monograph.

Contents

1.
Introduction

This report presents the results of excavations undertaken at the site of Girikihaciyan in southeastern Turkey (figs. 1.1, 1.2) during 1968 and 1970 by the Joint Prehistoric Project, Istanbul-Chicago under the overall direction of Professor Halet Çambel, University of Istanbul, and Professor Robert J. Braidwood, Oriental Institute, University of Chicago. Work on the site was carried out under Patty Jo Watson's supervision. The primary commitment of the Joint Prehistoric Project's efforts is to the earlier nearby site of Çayönü where research is continuing (Braidwood and Braidwood 1982; Çambel and Braidwood 1980, 1983; Braidwood, Çambel, and Schirmer 1981; Schirmer 1983).

Girikihaciyan is a Halafian village site without significant later components. It was selected for study because of continuing interest in the Halaf period initiated by work at the site of Banahilk in Iraq during the 1950s (Watson 1955, 1956, 1983a, 1983b), again under Watson's direction and as part of an Oriental Institute-University of Chicago research program designed by Robert J. Braidwood.

It was clear from previous surveys, the survey conducted by the Joint Prehistoric Project, and various scattered finds that Halafian settlements extended well into the northern foothills above the Fertile Crescent, yet no Halafian site in this area had been systematically studied. Girikihaciyan was selected for such study in part because of favorable logistic considerations and in particular because it was not overlain by late deposits. Such a selection criterion ensures that limited resources will produce maximum data recovery from the period under investigation. It also means, however, that the settlement was probably not in an optimum location because well-situated settlements tend to be repeatedly occupied.

There were several research goals. Of primary concern was the recovery of adequate representative samples of architecture, artifacts, and ecofacts so that comparisons could be made with Halafian sites in other areas and with earlier and later sites in the same area. In particular, systematic recovery of botanical remains (via flotation) and of faunal remains was emphasized. Because most previous work at Halafian sites had consisted of small *sondages*, little information was available in 1968 about community layout and variability, yet these are important considerations in interpreting settlement size and complexity. Hence, it was hoped that the absence of later deposits at Girikihaciyan would enable the opening of areas large enough to provide some community layout information. Disruptive activities by the Halafian inhabitants, however, including the dismantling of various structures, made our broad-scale excavations less productive than they might have been.

During the course of the Girikihaciyan project, the painted ceramics recov-

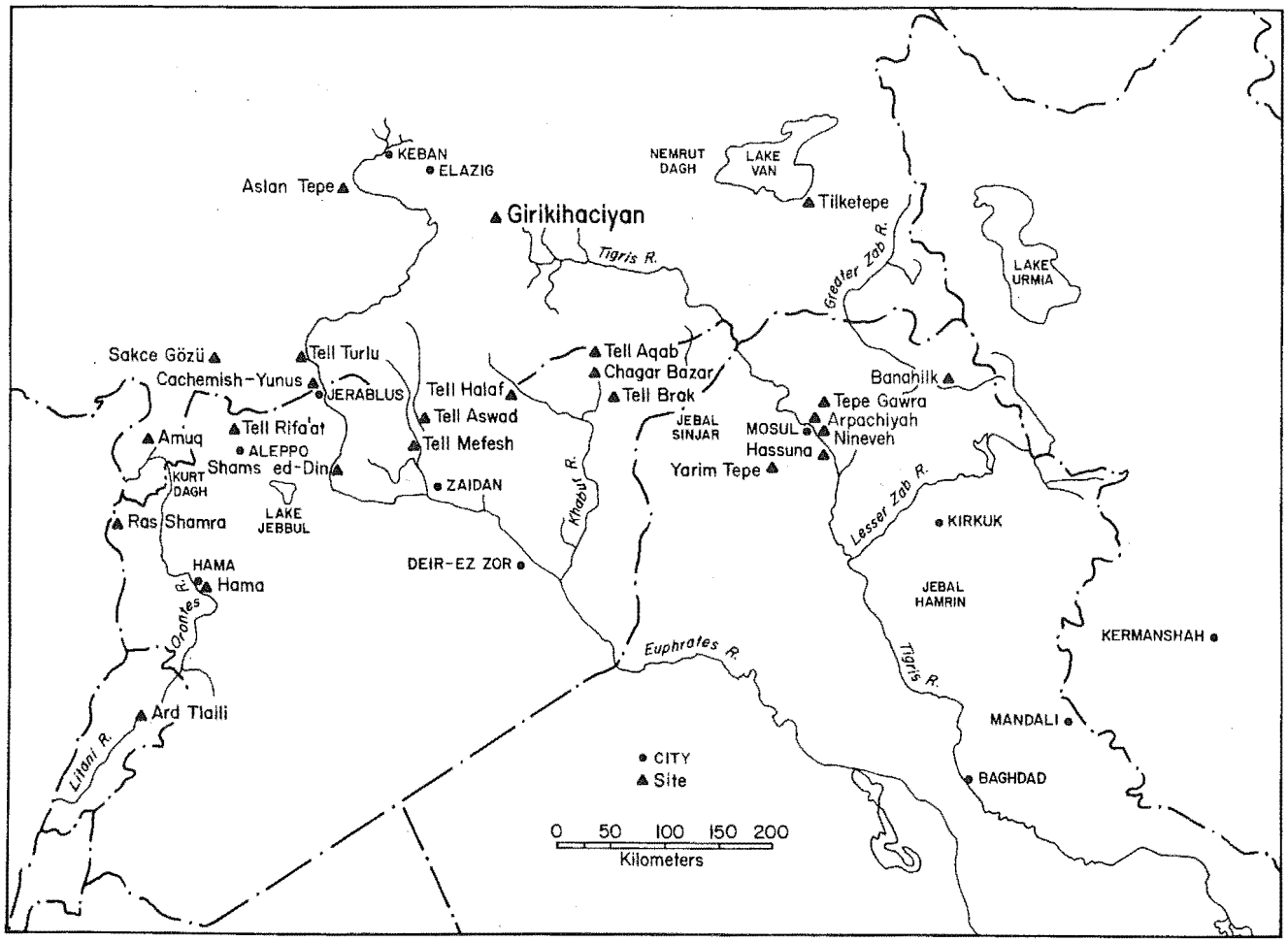


Figure 1.1. Distribution of currently known Halafian sites. (No attempt has been made to include all the sites where Halafian pottery has been reported; the aim is, rather, to show the extent of Halafian pottery distribution.)

ered were compared to collections from the Halafian sites of Arpachiyah, Banahilk, Chagar Bazar, Tell Halaf, Tilkitepe, and Turlu (LeBlanc 1971; LeBlanc and Watson 1973). Charles Redman (then a University of Chicago graduate student), Watson's field assistant, undertook a methodological study of systematic surface collection based on fieldwork at both Çayönü and Girikihaciyan (Redman 1971). The results of that pioneering effort have been published (Redman and Watson 1970) but are also considered here in chapter 2.

BACKGROUND

One of us has summarized the status of research on the Halafian culture (Watson 1983b), and other accounts have been published (Copeland and Hours 1987a, 1987b; von Wickede 1986; Watkins and Campbell 1987) or are in preparation (chapters by Mellink, Porada, and Dunham; Voigt and Dyson; Weiss and Schwartz; and Hanson in the new edition of *Chronologies in Old World Archaeology* [Ehrich, ed., forthcoming]); hence, only a brief discussion is included here (see also Frankel 1979).

Garstang (1908) referred to the distinctive painted ware now known as Halafian in his preliminary report for the 1908 season at Sakce Gözü in southern Turkey, but the first large sample of this ceramic type was recovered by Max von Oppenheim from Tell Halaf during a series of field seasons between 1911 and 1929. Woolley (1934), Dirvana (1944), Mallowan (1933, 1936), and Mallowan and

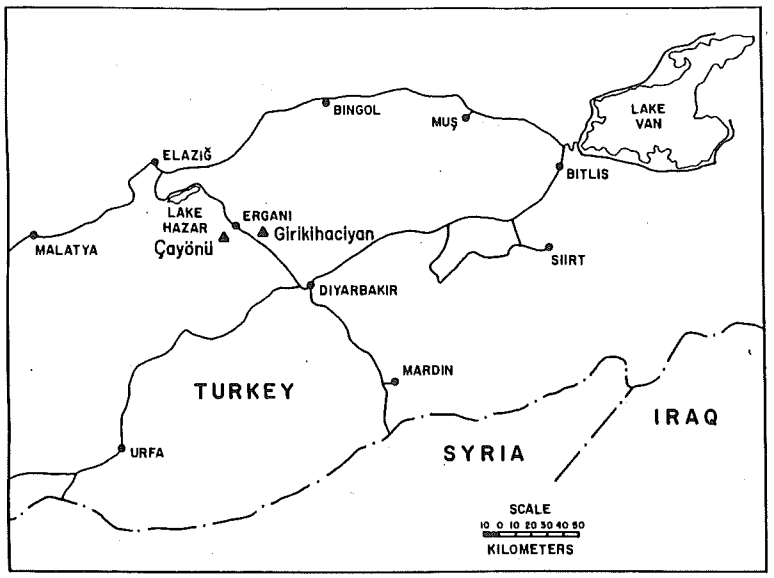


Figure 1.2. Regional map showing location of Girikihaciyan and Çayönü. Base map is taken from "Road Map of Turkey 1967," Turkish Mapping Service, General Directorate of Highways.

Rose (1935) are the other major contributors to early knowledge about Halafian pottery and culture. Mallowan's excavations, together with those of Lloyd and Safar at Hassuna (1945), established the relative position of Halafian materials within Mesopotamian prehistory and outlined the trends within the Halafian fine ware sequence. Excavations at the Urartian site of Tilkitepe on Lake Van in eastern Turkey, together with survey and excavation results from numerous sites in northern Iraq and Syria, documented the geographic extent of the characteristic painted ware (Perkins 1949:16-45; Mellink 1964; Reilly 1940; Watson 1956, 1982, 1983a). In the last 20 years, more evidence has been recovered from the Halafian heartland of northern Iraq, northern Syria, and southern Turkey, and new information has also extended our knowledge of Halafian site distribution (Braidwood, Çambel, Redman, and Watson 1971; Braidwood, Çambel, and Watson 1969; Copeland 1979; Davidson 1977, 1981; Davidson and Watkins 1981; Henrickson 1980, 1985; Hijara 1980; Levine and McDonald 1977; Mellaart 1975; Munchaev and Merpert 1981; Oates 1969, 1972; Postgate and Watson 1979; and Watson 1983b).

The distribution of Halafian and Halafian-related sites is shown in figure 1.1. Those areas usually understood as comprising the heartland or nucleus of this development are (east to west) the Mosul, Sinjar, Khabur headwaters, Balikh Valley, and middle Euphrates Valley regions. There are also several Halafian sites in eastern and southeastern Turkey besides Girikihaciyan (Davidson 1977:240-241; Watson 1983b; Woolley 1934), a series of sites near Aleppo, and a few others in the vicinity of Jebel Hamrin and Mandali (Watson 1983b). Halafian-influenced pottery has recently been reported for the Mahidasht in western Iran (Henrickson 1980, 1985), whereas Halafian-related or -influenced wares have long been known for westernmost Syria and adjacent parts of Turkey (Braidwood and Braidwood 1960).

Excavations have been limited in the northern periphery of the Halafian area. The only excavated northern Halafian sites outside the Keban are Tilkitepe and Girikihaciyan. In the 1930s, excavations by Reilly and by Kirsop and Silva Lake at the Urartian mound of Tilkitepe on the shore of Lake Van in eastern Turkey revealed Halafian pottery in the basal levels (Reilly 1940; Korfmann 1982; Watson 1982, 1983a, 1983b). In the Keban area, Davidson notes that five sites have produced Halaf-like pottery, but that they were not true Halafian settlements.

It is clear from the available evidence that, although the painted ceramic is easily recognizable wherever it is found from westernmost Iran and easternmost Turkey to Carchemish and the Plain of Antioch, there are, nevertheless, distinct regional Halafian variants in painted pottery (Davidson 1977) and architecture (Aurenche 1981) that imply significant variation in other less well-documented categories. There was, apparently, intensive intersite and interregional trade in ceramics (Davidson 1981; Davidson and McKerrell 1976); there are clearly expressed

settlement hierarchies at least in Iraq (Hijara 1980:252), and Halafian population density was relatively great in the Mosul-Sinjar region where there is a Halafian site every 15 to 16 km (Hijara 1980:244).

In sum, Halafian culture flourished from the Mosul region to that of Aleppo between 5000 and 4500 BC (in terms of a radiocarbon chronology based on Libby half-life, uncalibrated dates), and was the product of sophisticated agriculturally- and pastorally-based societies that enjoyed a far flung, yet well-integrated communication system.

THE HALAF PROBLEM

Several questions about the Halafian sequence are of particular concern. This report by no means answers or even addresses all of them directly, but we enumerate them so that our information can be considered in reference to them.

Probably the most obvious aspect of the Halaf culture is the extensive distribution of the characteristic architecture and ceramics. By what mechanism were these traits distributed? Did an original group migrate or expand over the Halafian range, or were Halafian traits adopted by previously culturally distinct groups? A corollary to this question concerns the level of Halafian social and political organization. Was it essentially egalitarian with each village being autonomous, or was there an early form of complex society with some ranking and some elite groups? Our own views on these topics are given in chapter 10.

Another topic of interest concerns Halafian subsistence. Davidson (1977) makes the very interesting argument that Halafian sites are distributed over zones of heavy soils that can be efficiently farmed only by employing draft animals. Thus, ethnicities and origins aside, one could view the Halafian as representing a new adaptation, that of nonirrigation plow agriculture. It appears that the Jarmoan and Hassunan types of societies used digging stick horticulture, and that the Samarran was based on irrigation agriculture in zones that could not support the Halafian type of farming. Hence, some of the distinctions among these archaeological cultures, as well as much subsequent variability in the Mesopotamian sequence, may be a consequence of basic differences in subsistence technology.

Plow farming of heavy soils would have opened up a doubly effective niche. Permanent villages in zones that had previously not supported agriculture would have access to the surrounding range land to support large herds. Thus, an efficient mixed economy of farming and herding could have developed for the first time in many places. Considerable population growth may have occurred in such areas, and non-Halafian groups may have been strongly motivated to adopt the new farming and herding system. Some of these suggestions are considered further in chapter 10.

In summary, although this report is basically descriptive and focuses on a portion of the Halafian cultural area not previously characterized, it presents several general implications. The Halafian may be one of the earliest complex societies in western Asia and almost surely represents one of the earliest developments of draft animal farming.

2.
The 1968 and 1970 Field Seasons

Site Description

The prehistoric mound of Girikihaciyan was located on November 26, 1963, by a survey party of the Joint Prehistoric Project, Istanbul-Chicago. A roughly circular mound about 175 m in diameter (250 m maximum), it rises to a height of 3 m above the surrounding plain (figs. 2.1, 2.2). Its coordinates are 38°14' north by 39°58' east, and it lies about one-quarter of a mile southeast of the village of Ekinciyan in the Diyarbakir Vilayet of southeastern Turkey.

There is no surface water at the site now, although there are seeps, small springs, and an intermittent stream 7 km to the south and east at the edge of the lava flow that forms the plateau upon which the city of Diyarbakir is located. Fifteen km to the east, the Tigris cuts through the lava on its way to Syrian Mesopotamia.

Girikihaciyan lies at the northeast edge of a broad valley that stretches from Ergani and Diyarbakir and then opens out into the north Syrian plain. To the northeast of the site is a range of low hills crowned with a line of oak trees; to the west is a more or less featureless flat with no woody vegetation larger than small to medium size shrubs.

The average rainfall at Diyarbakir is about 50 cm (20 inches) per year (Boulanger 1960) and is confined to late fall, winter, and early spring. There are occasional snowfalls, but the winter season is predominantly chilly, wet, and muddy rather than snowy or icy. Summers are long, dry, and very hot.

At the present time, no Halafian sites are known nearer to Girikihaciyan than site S58/3, which is about 50 km southeast of Girikihaciyan on the road from Diyarbakir to Mardin (table 2.1). However, there is a small mound with well-made plain ware on it near the village of Ekinciyan, and the village itself is built on quite a large mound. It is possible that some occupations at these mounds were prehistoric.

1968 Season

Work at Girikihaciyan began on November 3, 1968, with an intensive surface survey of the mound, conducted under the direction of Charles Redman and Patty Jo Watson (Redman and Watson 1970; Redman 1971). This collection was made on the basis of a stratified, unaligned, systematic sample of 109 5 x 5 m squares (Redman and Watson 1970:281-282; fig. 2.2). North-south and east-west axes were laid out, quartering the roughly circular mound, and all 5 x 5 m test squares were located with respect to these axes. For purposes of the surface collection, we labeled each square with a letter and a number, the letters designating points on the north-south axis and the numbers referring to the east-west axis, with the 00 point being the intersection of the two axes near

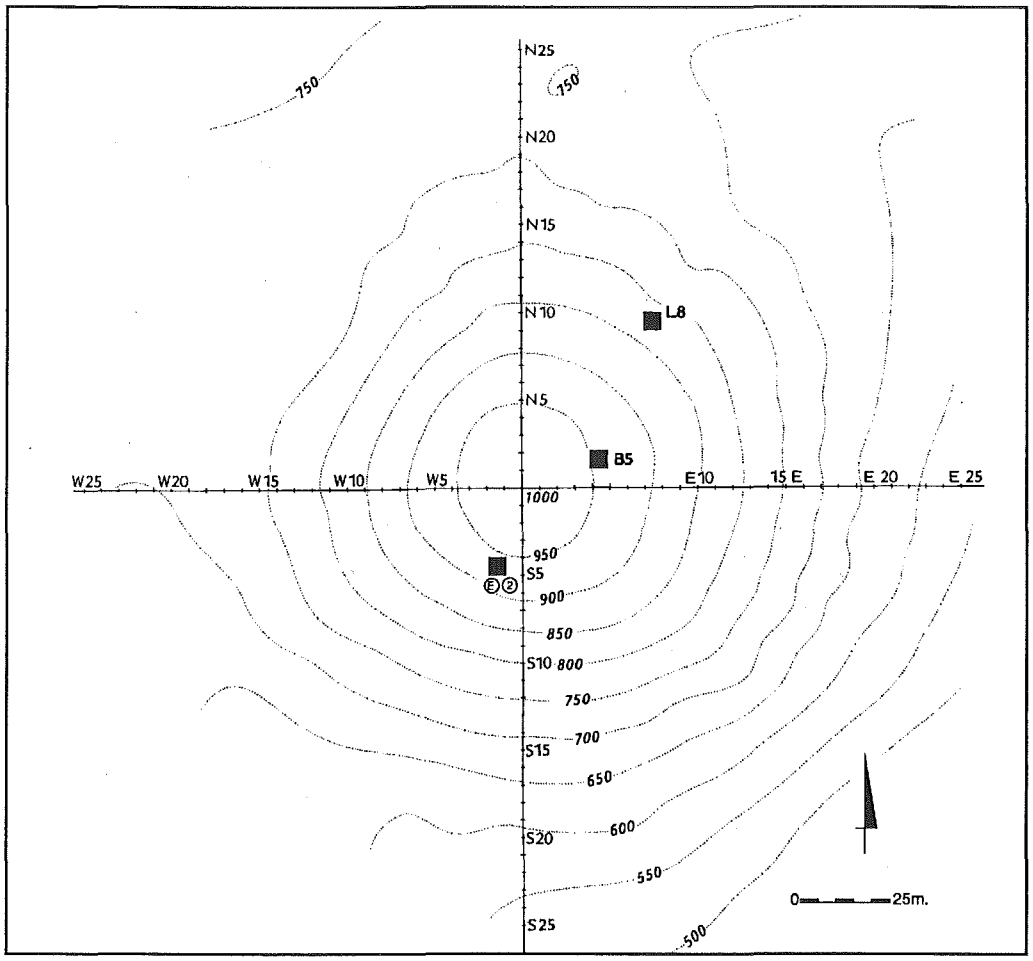


Figure 2.1. Contour map of Girikihaciyan showing the 1968 excavations. Assumed elevation of mound center is 10 m; contours are in cm.

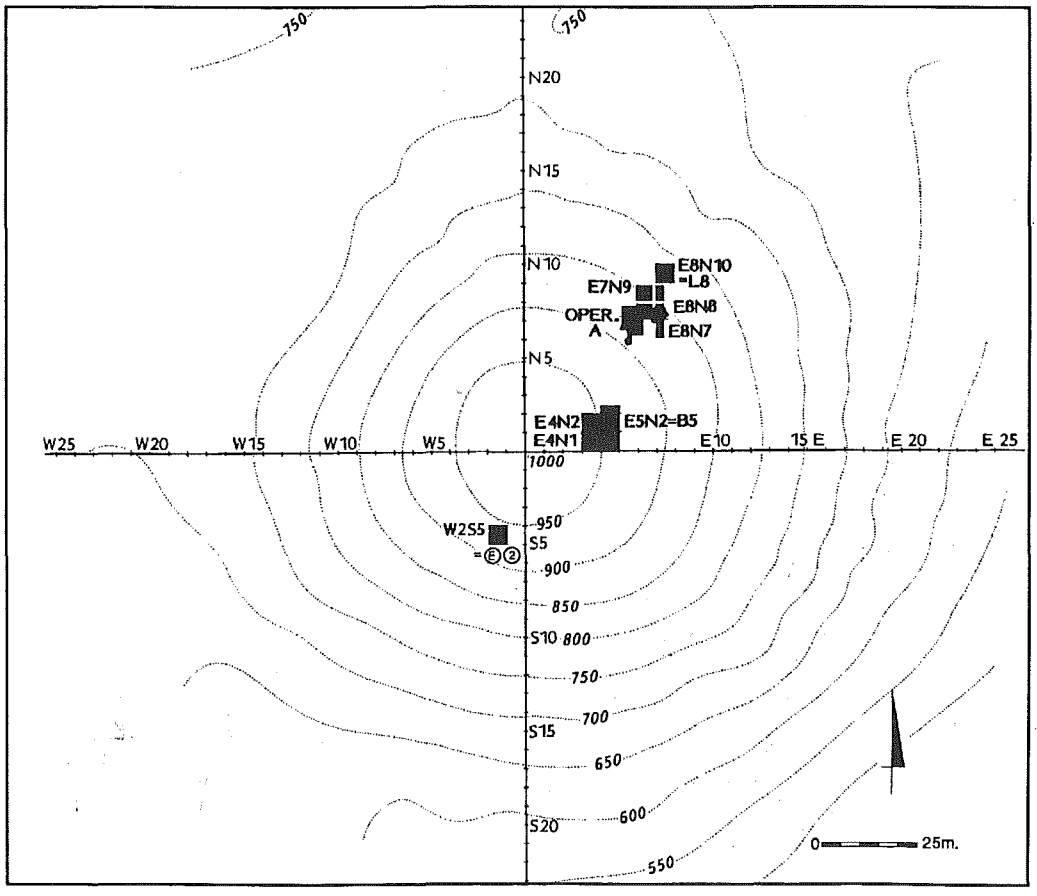


Figure 2.2. Contour map of Girikihaciyan showing the 1970 excavations.

Table 2.1. Halafian Sites Other Than Girikihaciyan Located by 1963 Joint Istanbul-Chicago Universities Prehistoric Project*

Number	Name	Description	Approximate location	Cultural or chronological periods apparently represented
S 58/3	Unknown	Mound about 2.5 m high, axes N-S 50 m, E-W 30 m; lies on a high terrace of the Tigris with a stream nearby (south)	About 20 km southeast of Diyarbakir, between the Mardin road and the Tigris	Halafian
S 58/4	Unknown	Mound 3.5 m high, 60 m in diameter; a bare mound, probably natural	100 m east of S 58/3	Halafian, possibly some unknown but post-Halafian occupation plus Byzantine and Islamic
S 62/6	Unknown	Natural low hill; artifact scatter covers area about 100 m in diameter on north and east slopes	500 m north of village of Melbo; 90 km east of Diyarbakir beside the Batman-Kurtalan road	Halafian, transitional Halaf-Ubaid, Amuq F-G and I-J (i.e., late 4th through the 3rd millennium), Byzantine, Islamic, Recent
S 63/12	Unknown	Bare mound 5 m high, 50 m in diameter	75 m east of village of Aynik (Gorguze); 2.5 km west of Kurtalan beside the Batman-Kurtalan road	Possible pre-Halafian, Halafian, transitional Halaf-Ubaid, Ubaid, late 4th millennium, 2nd millennium, Byzantine, Islamic, Recent
T 54/1	Comak	Low, bare, basalt-strewn mound 5 m high, 75 m in diameter, lower half may be natural; stream along south base, stone wind-break on top	3 km southwest of Siverek	Probably Halafian plus Halafian-Ubaid transitional, Ubaid, and post-Ubaid 4th to 3rd millennium
V 52/3	Unknown	Low mound 3 m high, 60 m in diameter	Just north of Ulubag village; 7.5 km east of Urfa	Probably Halaf and Halaf-Ubaid transitional, Ubaid, Hellenistic, Byzantine, Islamic

* Besides the 6 sites listed in this table, there are 7 more sites probably as early as transitional Halaf-Ubaid. All of these lie to the south of Girikihaciyan and east of Diyarbakir, between Batman and Siirt. The site numbers are S 61/2, S 62/2, S 62/3, S 63/2, S 63/13, S 63/23, S 64/4.

the mound center. Circles or brackets around the number and/or letter was used to mean the west and/or south quadrant (the letter I was omitted to avoid confusion with the number 1, and O was omitted to avoid confusion with zero. G was written in lower case to distinguish the grid letter from the site designation for Girikihaciyan). Thus, B5 means a square lying between 5 and 10 m north and 20 and 25 m east of the midpoint junction of the north-south and east-west axes. {E2} means a square lying between 20 and 25 m south, and 5 and 10 m west of the midpoint junction. Similarly, square {C}3 is in the northwest quadrant, square H{6} is in the southeast quadrant, and so on.

The sampling procedure used at Girikihaciyan has been described elsewhere (Redman and Watson 1970; Redman 1971) and is only briefly summarized here. On the site map, we drew a grid of 5 x 5 m squares. Within each block, a single square was chosen at random (using a random numbers table) to be surface collected. This provided a total of 109 squares, or a 10% sample of the site surface, as we preliminarily defined it by inspection. Further refinement of the surface collecting procedures at this site, or

similar ones, might profitably include expansion of the collected area to and beyond the limits of occupation.

Detailed collection procedures involved two or three people crawling over the surface of each square (defined by four stakes linked with string) and picking up every item of cultural debris observed. The amount of time required per square may vary considerably at any one site, but we found that 12 to 14 squares could be collected by four people in a normal winter-season working day of about 7 hours.

As noted in our earlier publication (Redman and Watson 1970:280), much of Girikihaciyan is under cultivation and probably has been for many years. However, the nature of the plowing (with an iron tipped, ox-drawn wooden ard [a non-moldboard plow]) does not seem to have seriously affected the distribution of prehistoric debris. Surface collecting procedures in the midwestern part of the United States often begin with plowing by a tractor-drawn moldboard plow (e.g., Binford et al. 1966).

All items from each square were put into an appropriately labeled cloth bag and taken to the laboratory at the end of the day where the contents were washed, sorted, and tabulated. To ensure consistency, final decisions as to artifact types and counts were always made by the same person, although all volunteers were gladly accepted to help with the initial sorting.

Information sought from such a surface collection, of course, depends on the individual problem. We wanted to know the range of cultural materials at the site: whether there were obvious clusterings or clumpings within categories, and whether there seemed to be meaningful association between or among two or more categories. Therefore, we did not want to leave large areas of the site surface unsampled, and we wanted counts and preliminary basic descriptions for all categories collected. The outline used in tabulating the squares is shown in table 2.2.

The squares were laid out and surface items collected from November 3 through 15, 1968. Tabulation of the collected material was completed on November 19 (table 2.3 [tabulation is reproduced in Redman 1971: table 2]). Maps were drawn to show distributions of fine ware pottery, plain ware, obsidian, flint or chert, animal bone, and selected ratios such as pottery bowls to jars, chipped stone to pottery, and obsidian to chert (fig. 2.4:1-16).

The most obvious conclusions to be drawn from these maps are:

1. The greatest density of cultural debris is in the southern portion of the mound, and the principal component of that density area is plain ware.

Table 2.2. Outline Used in Tabulating Material Collected from Surface of Girikihaciyan

Category
Pottery
Fine ware (bowl or jar; rim, body, or base)
Plain ware (bowl or jar; rim, body, or base)
Chipped stone
Chert
Unmodified or very slightly modified
Chunks of raw material
Cores and core fragments
Decortication flakes
Unutilized or waste flakes
Utilized flakes
Utilized blades (fragments)
Recognizable tools (scrapers, drills, etc.)
Obsidian
Cores and core fragments
Utilized flakes
Unutilized flakes
Utilized blades (fragments)
Unutilized blades (fragments)
Recognizable tools
Ground stone
Celts or celt fragments
Stone vessels
Fragments of grinding stones
Pendants, seals, beads
Bone
Stone
Miscellaneous

Table 2.3. Tabulation of Material Surface Collected from Girikihaciyan in 1968

Grid Designations* 1968 Season	Redman 1971	Painted bowls	Painted jars	Painted body sherds	Plain bowls	Plain jars	Plain body sherds	Flint cores	Flint blades	Flint obviously utilized flakes	Flint waste flakes	Flint tools	Obsidian cores	Obsidian blades	Obsidian chips and flakes	Obsidian tools	Highly patinated flints	Highly patinated flints reutilized	Ground stone	Grinding stone fragments	Bone splinters	Shell fragments
g 3	1	2	1	13	6	2	88	3	2	4	18	3	0	3	2	0	5	0	0	1	35	0
H {1}	2	1	1	10	6	0	110	3	0	6	35	0	0	5	2	0	8	1	0	0	31	0
g 6	3	0	4	9	0	3	76	3	3	7	19	0	0	3	4	0	14	0	0	2	25	1
H 9	4	3	3	9	0	0	28	3	0	4	21	0	0	5	3	0	9	0	0	3	12	0
L 5	5	5	8	4	0	3	31	5	3	5	27	0	1	5	7	1	14	0	0	0	18	0
K 2	7	2	2	10	5	1	76	1	1	5	23	1	0	3	1	0	10	2	0	1	26	0
N 2	8	0	3	15	1	0	20	5	0	5	34	1	0	1	5	0	14	1	1	1	21	0
L {2}	9	0	3	12	0	1	41	0	4	3	30	0	0	10	5	0	6	0	1	2	23	0
M {5}	10	2	0	12	4	3	49	1	0	6	32	2	0	6	1	0	3	2	0	1	37	0
M {8}	11	1	2	11	0	0	62	2	3	8	23	3	0	4	6	0	6	0	1	2	7	1
P {2}	12	2	1	10	1	0	27	2	4	6	13	2	0	4	2	0	3	0	0	1	10	0
P 5	13	0	2	15	0	0	18	4	2	3	29	0	0	2	2	0	10	2	0	0	12	0
P 8	14	0	0	16	1	0	27	11	0	7	30	0	0	3	2	0	11	0	0	0	11	0
R 2	15	0	1	11	0	0	18	1	2	3	32	1	0	2	6	0	7	2	2	3	8	0
Q {5}	16	0	1	5	2	1	42	2	2	3	36	3	0	3	4	0	10	2	0	0	11	0
Q {8}	17	0	1	6	0	0	21	2	2	4	24	3	0	0	2	0	7	0	0	3	9	0
S 8	18	0	0	12	1	0	19	2	4	6	30	0	0	4	2	0	21	0	0	1	2	0
S 5	19	0	0	7	0	0	21	4	6	7	20	0	0	1	8	0	22	2	0	6	7	0
S {2}	20	1	4	7	1	0	19	9	0	6	20	1	0	7	1	0	18	1	0	4	6	0
{g7}	21	1	1	4	7	2	105	3	2	5	20	0	0	3	3	0	3	0	0	2	9	0
{K7}	22	1	1	7	8	2	112	5	0	10	25	1	0	3	3	0	1	0	0	1	15	1
{K4}	23	2	2	9	8	3	127	2	3	9	26	4	0	3	1	1	3	1	0	0	19	0
{N6}	24	0	0	7	3	3	81	6	0	10	24	0	0	1	0	1	8	0	0	0	15	0
{R4}	25	1	0	10	0	0	81	4	0	10	35	6	0	3	1	0	6	0	0	1	9	2
{R7}	26	0	1	4	5	0	69	2	0	4	21	0	0	3	2	0	5	1	0	1	2	0
{M10}	27	0	0	3	2	0	40	2	1	3	12	2	0	1	0	0	3	0	0	2	6	1
{N9}	28	0	0	8	1	0	78	3	0	5	20	0	0	2	5	0	1	1	0	0	7	1
{J10}	29	2	2	7	5	2	70	5	2	6	13	1	0	0	3	0	3	2	0	0	16	0
{H13}	30	0	0	9	1	2	61	1	0	3	15	4	0	1	0	0	2	0	0	1	9	0
{L13}	31	0	1	6	0	0	18	1	0	0	12	1	0	1	0	0	1	0	0	3	3	0
{H1}	32	3	0	15	12	2	181	4	1	3	48	1	0	7	12	6	5	1	0	1	50	0
{L1}	33	7	5	14	9	0	122	1	0	6	23	0	0	6	5	0	4	1	0	0	35	0
{Q} 1	34	2	10	7	8	2	139	3	3	16	34	4	0	8	15	0	7	2	1	3	37	0
{S1}	35	1	0	5	1	0	96	3	1	11	49	1	0	3	11	0	1	0	0	0	22	0
{P3}	36	4	4	28	9	3	132	4	0	14	52	2	0	6	8	0	7	0	0	0	22	0
{P} 4	37	1	1	11	5	3	112	3	2	10	34	2	0	4	6	0	1	0	0	1	13	0
{M} 3	38	3	2	12	4	1	98	2	2	4	13	4	0	6	5	0	4	2	0	0	33	0
{J} 3	39	2	1	21	7	2	96	4	2	16	26	0	0	4	9	0	1	0	1	2	31	3
{g16}	40	1	3	9	1	0	43	2	3	8	26	0	0	4	4	0	4	0	1	1	12	0
{K16}	41	0	0	3	0	0	13	4	2	4	13	1	0	0	2	0	4	1	0	1	3	0
{P} 7	42	1	6	25	2	1	58	1	0	8	23	1	1	2	4	0	5	2	1	2	35	0
{L} 6	43	3	3	14	0	1	84	3	0	4	32	4	0	5	9	0	6	1	0	1	43	0
{L} 9	44	3	3	18	3	0	67	4	1	3	16	1	0	5	9	0	4	2	0	2	48	0
{H} 9	45	2	4	23	3	3	87	6	1	2	26	0	0	2	5	0	3	0	0	1	14	0
{H} 6	46	5	1	13	3	2	56	5	2	6	12	0	0	0	1	0	3	0	1	0	24	0
{P}13	47	5	4	19	0	1	63	0	2	8	26	1	0	3	4	0	4	1	0	0	25	0
{M}12	48	2	1	10	0	0	48	2	0	0	17	0	0	3	2	0	1	1	0	1	22	1
{Q}10	49	1	2	20	3	1	73	6	0	10	31	1	0	4	5	0	5	0	0	0	34	0
{J} 12	50	3	3	17	2	0	68	2	2	4	11	1	0	2	9	0	4	1	0	0	37	0
{F}11	51	1	2	13	4	0	46	3	2	1	22	0	0	1	5	0	6	0	0	0	9	0
{C}10	52	0	1	10	1	1	44	0	0	5	8	0	0	0	2	0	2	0	0	1	9	0
{B}13	53	0	3	7	0	0	36	3	2	0	12	0	0	3	5	0	5	0	0	0	17	0
{E}14	54	1	0	8	0	0	55	1	1	1	24	1	0	2	11	0	6	1	0	1	20	0

Table 2.3 (continued). Tabulation of Material Surface Collected from Girikihaciyan in 1968

Grid Designations*																						
1968 Season	Redman 1971	Painted bowls	Painted jars	Painted body sherds	Plain bowls	Plain jars	Plain body sherds	Flint cores	Flint blades	Flint obviously utilized flakes	Flint waste flakes	Flint tools	Obsidian cores	Obsidian blades	Obsidian chips and flakes	Obsidian tools	Highly patinated flints	Highly patinated flints reutilized	Ground stone	Grinding stone fragments	Bone splinters	Shell fragments
{L}15	55	3	1	13	2	0	57	2	0	9	14	1	0	2	4	0	2	1	1	1	11	0
{K}18	56	0	0	7	0	1	32	1	4	5	18	2	0	2	1	0	3	0	0	0	10	1
{g}18	57	0	1	9	0	0	24	2	0	2	27	0	0	2	6	0	7	0	1	1	11	0
{H}15	58	0	1	14	1	1	25	0	0	7	12	0	0	1	0	1	3	0	0	1	9	0
{D}17	59	0	3	15	3	1	30	0	4	4	28	0	0	2	6	0	1	0	0	0	12	0
{A}16	60	1	1	13	0	2	43	0	1	6	36	1	0	3	3	0	5	0	0	0	8	0
{C}19	61	3	2	7	0	1	66	6	5	16	45	5	0	2	3	0	15	3	0	1	7	0
F 16	62	1	1	8	0	0	19	1	0	3	26	0	0	0	5	0	7	0	0	1	23	0
H 15	63	1	2	9	1	0	23	1	1	0	22	2	1	0	4	0	4	0	0	0	13	1
E 13	64	0	0	8	1	0	23	0	0	4	28	0	0	1	6	0	2	0	0	0	13	0
G 12	65	0	0	7	0	0	27	0	0	2	28	2	0	3	5	0	4	0	0	0	10	0
C 17	66	1	0	7	0	1	24	0	3	5	30	0	0	5	4	0	9	2	0	0	9	1
B 14	67	0	2	5	1	0	27	0	0	4	32	0	0	2	3	0	6	0	1	0	12	0
L 14	68	0	0	16	0	0	30	0	0	2	18	2	0	1	3	0	9	0	0	0	12	0
N 11	69	1	0	9	1	0	15	3	0	2	15	0	0	2	3	0	10	0	0	0	10	0
K 11	70	1	2	8	0	0	25	0	2	2	13	0	0	5	6	0	6	0	0	1	6	0
{D17}	71	2	0	21	2	0	110	2	1	9	37	1	0	5	7	0	6	0	2	0	11	0
{B15}	72	1	1	11	4	3	50	6	3	6	22	0	0	4	7	0	4	1	0	0	13	0
{A 18}	73	0	2	25	3	1	72	7	5	13	28	4	0	2	4	0	9	3	0	3	7	0
B {14}	74	0	1	16	2	0	45	0	4	4	22	0	0	6	2	0	8	0	0	1	7	0
{F} 2	75	2	2	16	13	0	134	0	1	8	49	0	0	3	4	0	4	0	0	1	38	8
{E} 5	76	1	0	10	12	0	114	2	0	3	18	1	0	5	11	0	4	0	0	1	35	2
{E} 8	77	1	1	22	3	2	84	3	0	7	27	0	0	3	2	0	5	0	0	3	15	0
{B} 7	78	1	1	13	0	2	83	1	0	2	23	0	0	22	7	0	9	0	0	0	22	2
{B} 4	79	1	1	16	8	1	86	5	1	3	17	0	0	3	3	0	5	0	0	1	36	2
{C} 1	80	0	1	11	4	3	84	5	0	1	26	0	0	5	2	0	1	0	0	0	26	1
A 2	81	0	1	15	2	1	57	1	0	1	23	0	0	3	5	0	4	0	0	0	42	2
B 8	83	2	1	17	2	0	60	0	0	4	24	0	0	2	2	0	8	0	1	0	19	0
A 11	84	0	1	14	3	1	40	1	1	3	30	1	0	2	8	0	4	2	0	0	18	0
D 10	85	3	1	10	0	0	24	0	1	1	11	0	0	3	3	0	2	1	0	0	8	0
E 7	86	1	2	11	3	2	52	1	1	5	19	1	0	1	5	0	5	0	1	2	8	0
E 4	87	1	0	11	2	1	66	0	0	0	12	0	0	8	3	0	5	0	0	1	12	0
{B 3}	89	0	1	18	7	3	82	4	0	6	27	2	0	3	5	0	2	1	0	0	20	1
{D 5}	90	0	2	22	7	5	176	1	2	11	36	1	1	5	7	0	3	0	0	0	17	2
{g 4}	91	0	0	15	3	2	104	2	0	2	21	1	0	6	4	0	1	0	0	0	17	2
{A 6}	92	1	1	23	8	3	160	0	1	4	33	5	0	8	4	0	3	0	0	0	17	3
{A 9}	93	0	3	10	7	2	163	1	2	5	21	0	0	5	8	0	5	0	0	0	27	3
{D 8}	94	0	1	2	6	2	133	4	2	6	27	1	0	4	5	1	2	0	0	0	6	0
{F 11}	95	1	0	17	13	1	130	2	0	6	21	0	0	2	7	0	3	0	0	1	23	1
{C 12}	96	0	1	14	7	2	102	0	1	3	28	0	0	4	3	0	2	0	0	0	8	1
{E 14}	97	0	1	7	0	1	48	1	1	5	6	0	0	5	3	0	2	0	0	2	11	0
{B 2}	98	1	1	14	5	1	93	0	1	3	24	4	0	2	8	0	2	2	0	0	19	1
C {5}	99	1	1	15	16	4	90	0	0	8	22	0	0	7	1	0	4	0	0	0	17	2
E {3}	100	2	2	14	1	2	80	2	0	1	26	0	0	2	3	0	7	0	0	1	27	0
F {6}	101	0	3	6	4	1	107	1	3	6	28	0	0	7	1	0	5	0	0	0	7	3
C {8}	102	3	1	13	5	1	84	0	1	9	25	3	0	2	0	0	1	0	0	1	6	1
F {9}	103	2	2	10	8	1	73	3	1	9	18	3	0	5	0	0	5	0	0	1	17	0
A{11}	104	1	1	11	3	0	103	4	0	5	21	0	0	1	4	0	2	0	0	3	17	1
D1	105	1	1	13	5	1	68	3	0	3	7	1	0	2	8	0	1	1	0	1	10	0
J{7}	106	1	4	15	5	1	84	2	0	6	15	1	0	5	7	0	4	0	0	1	10	0
D{12}	107	1	3	11	2	1	52	5	1	2	22	1	0	0	1	0	3	0	1	2	0	0
J {4}	108	3	3	10	5	3	94	1	1	4	10	1	1	5	4	0	8	0	0	0	13	0
g{10}	109	1	1	12	2	0	73	3	0	9	16	2	0	2	0	0	3	0	1	1	6	0

* Tabulations for surface collection data from squares 6, 82, and 88 (= L8, B5, {E2}) are shown in table 2.4.

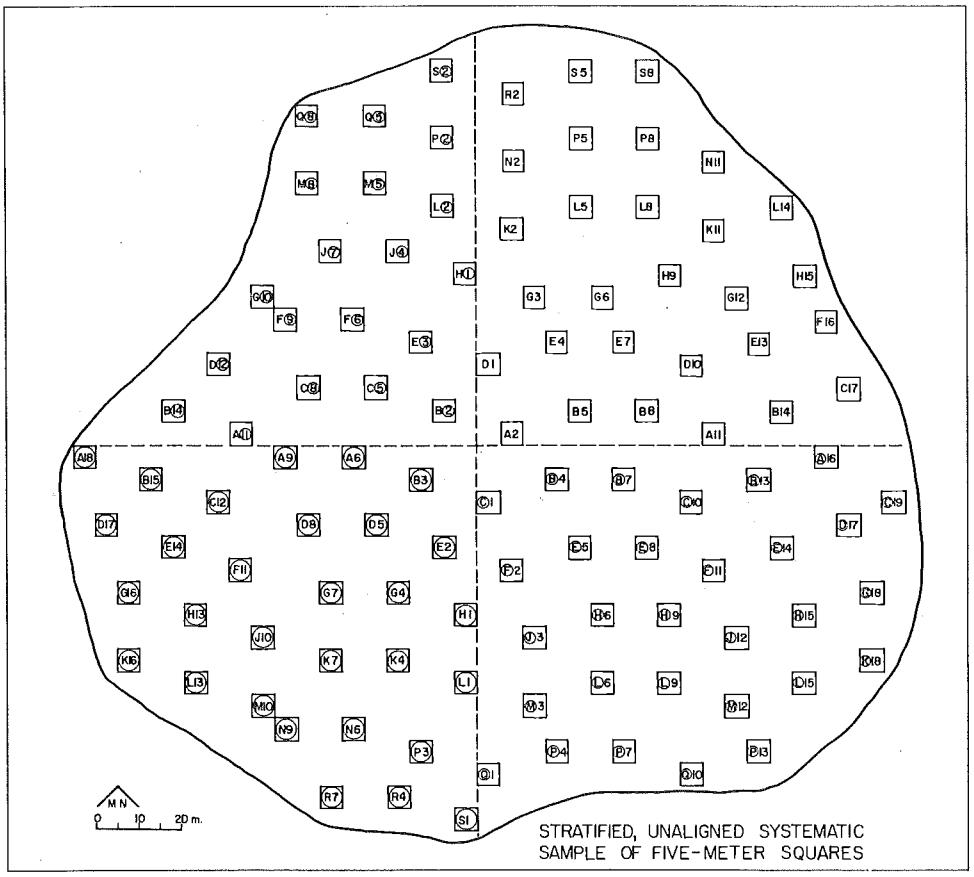


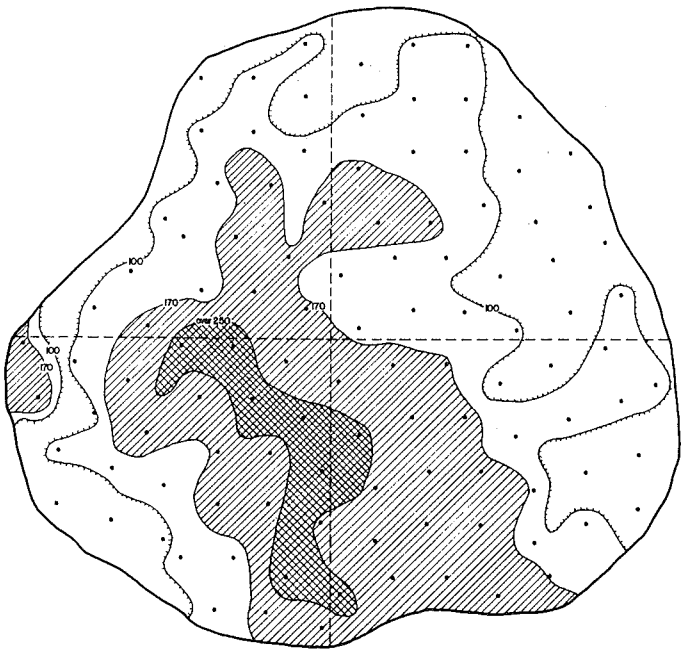
Figure 2.3. Surface survey map (1968).

2. The highest counts of painted ware sherds occur in the high-density area, but the ratio of painted sherds to plain ware is much higher farther north, as is the ratio of chipped stone to total pottery.

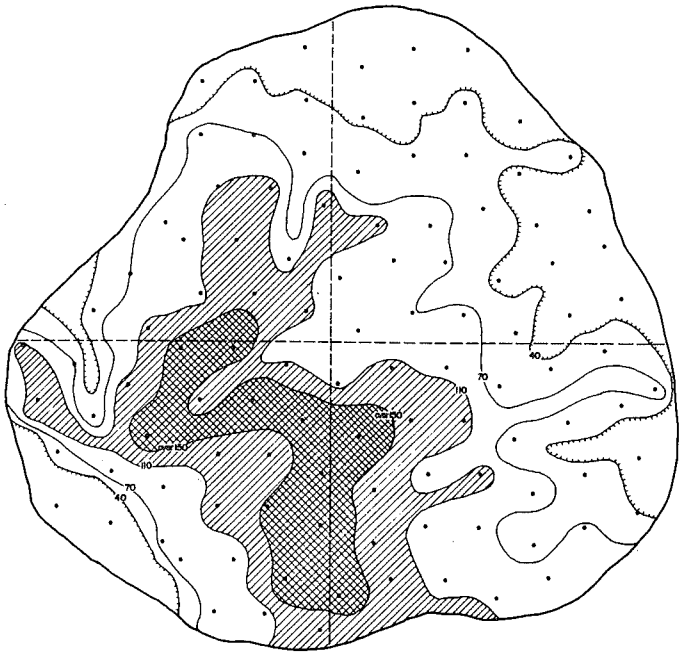
3. Chert cores and flakes are more numerous in the northern part of the site than elsewhere, whereas recognizable chert tools tend to be concentrated to the south. Figure 2.4:10 shows the distribution of an unusual lithic category we called "patinated flints." These flakes bear a characteristic coating like that acquired by ancient, weathered flint in arid or semi-arid regions. We believed these to be old flakes (possibly paleolithic) that may have been collected by the later prehistoric inhabitants of Girikihaciyan for use as raw material for their own stone tools. If this interpretation is correct, then it is not by accident that the patinated flake distribution coincides with that of the chert manufacturing debris.

4. The area northeast of that where cultural debris is most densely concentrated emerges as an interesting region because it is high on the mound, but artifact density on the surface is low. We thought this might mean that relatively undisturbed strata (probably containing in situ architecture) lay below the surface.

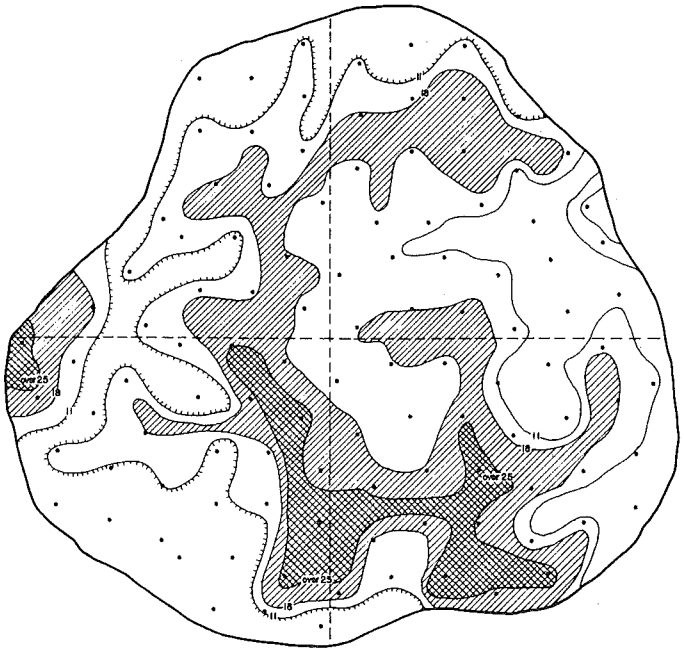
Members of the Prehistoric Project were working at two sites in 1968, and the surface collection at Girikihaciyan was carried out during the time of excavation at the other site, Çayönü. The excavation period allotted to Girikihaciyan was November 22 to December 12. Because of the shortness of the interval, we decided to put in only three 5 x 5 m test squares whose placement would be determined on the basis of the surface survey results. Square {E2} was chosen in the area of high density of cultural debris, B5 was chosen in the area high on the mound but



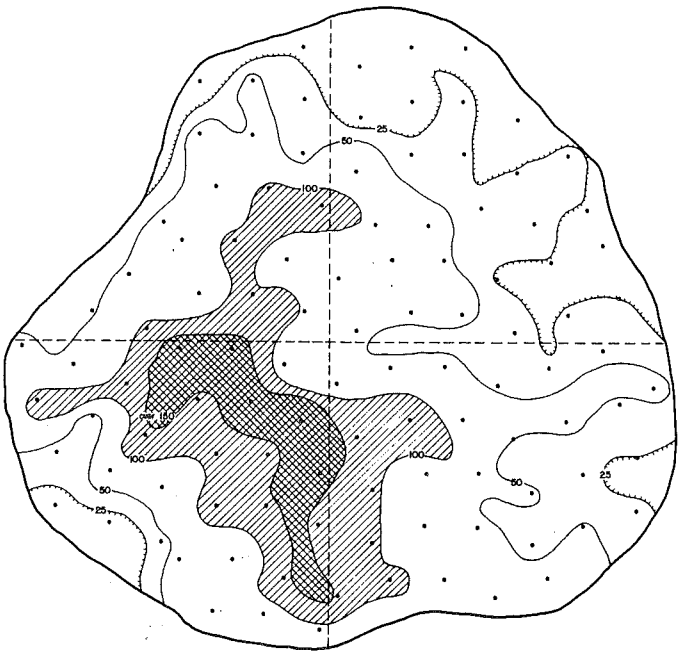
1. Total cultural debris



2. Total pottery

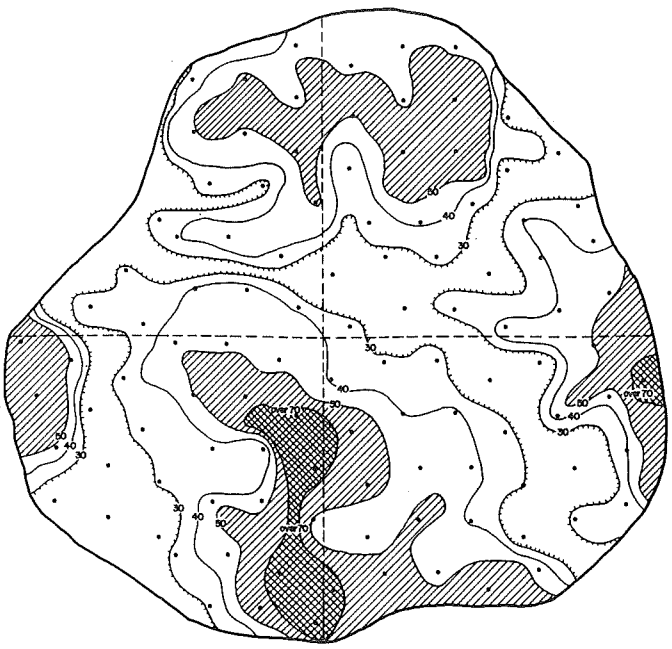


3. Painted pottery

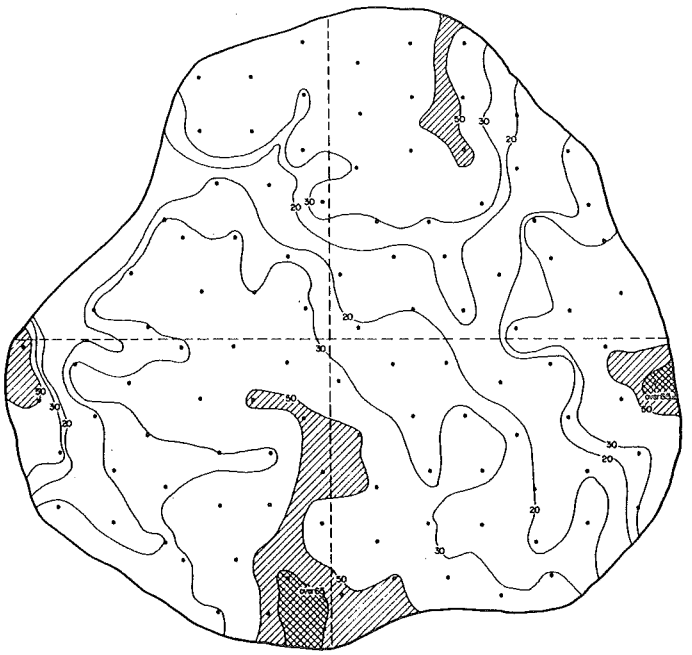


4. Plain ware

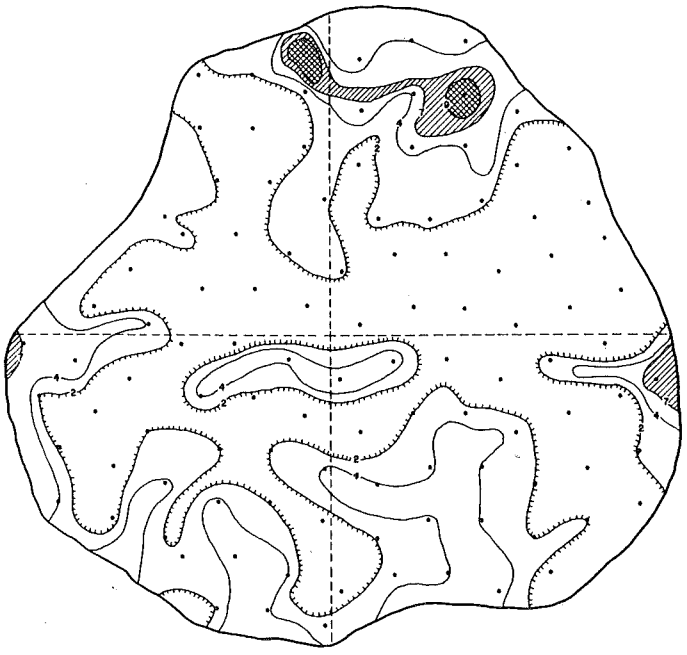
Figure 2.4. Surface survey artifact distribution maps (1968 season). • = sample squares. Contours indicate artifact densities at sample squares within contour boundaries.



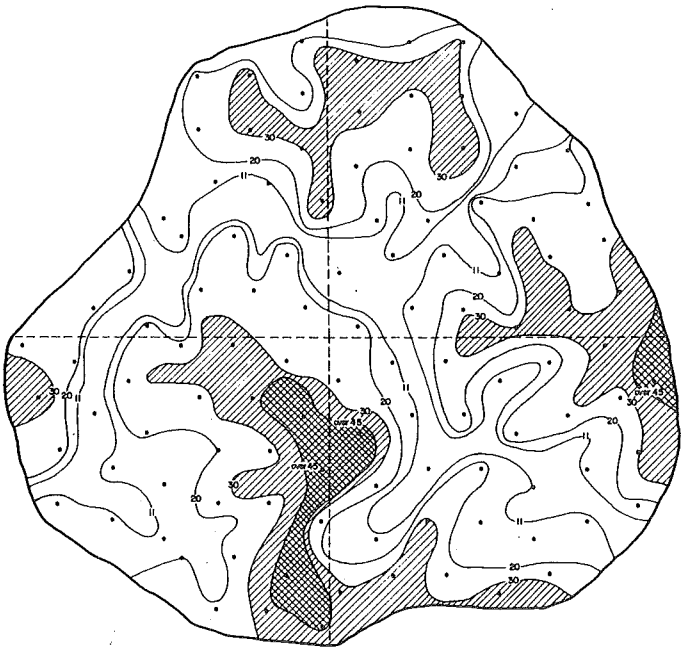
5. Total chipped stone



6. Total chert

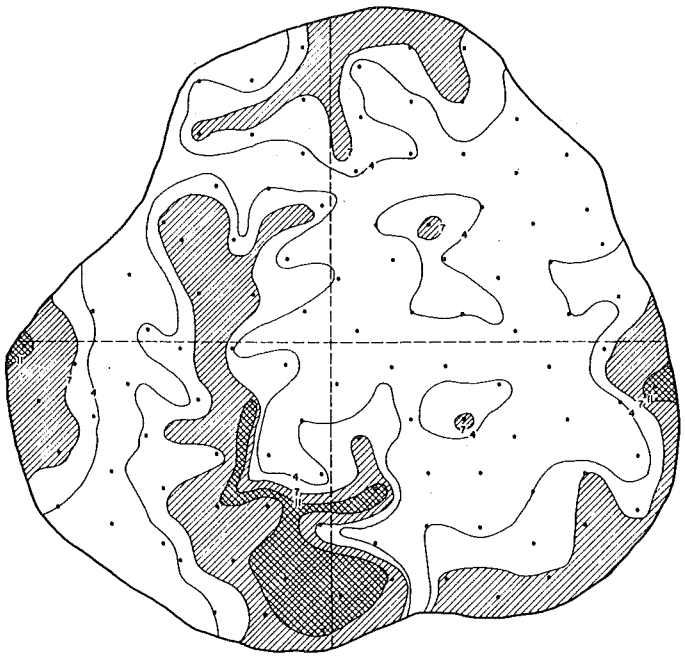


7. Chert cores

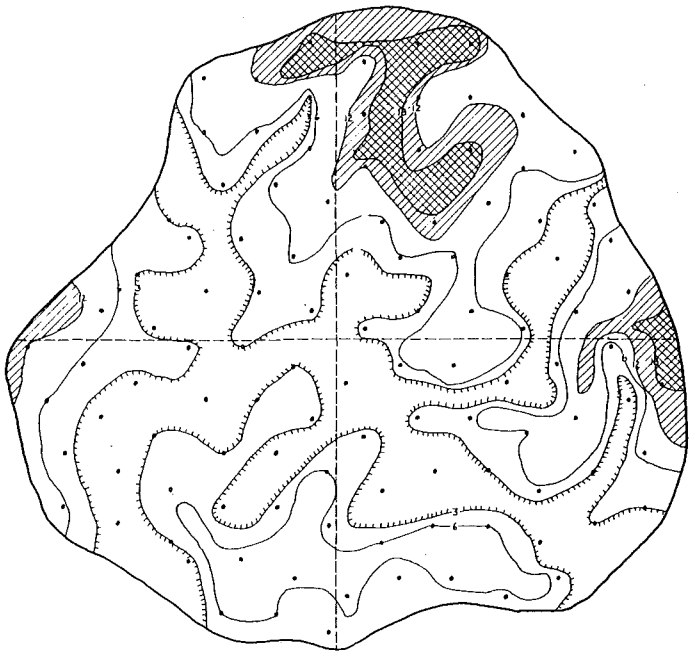


8. Chert waste flakes

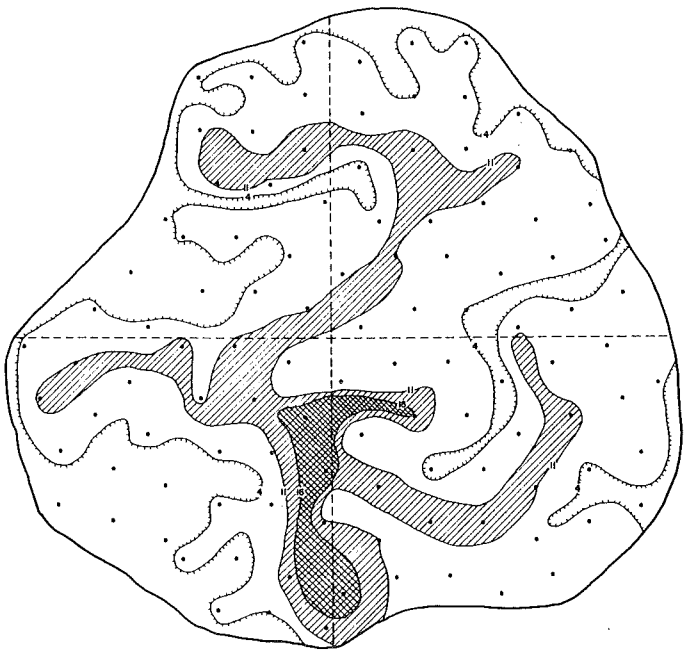
Figure 2.4. Surface survey artifact distribution maps (1968 season). • = sample squares. Contours indicate artifact densities at sample squares within contour boundaries.



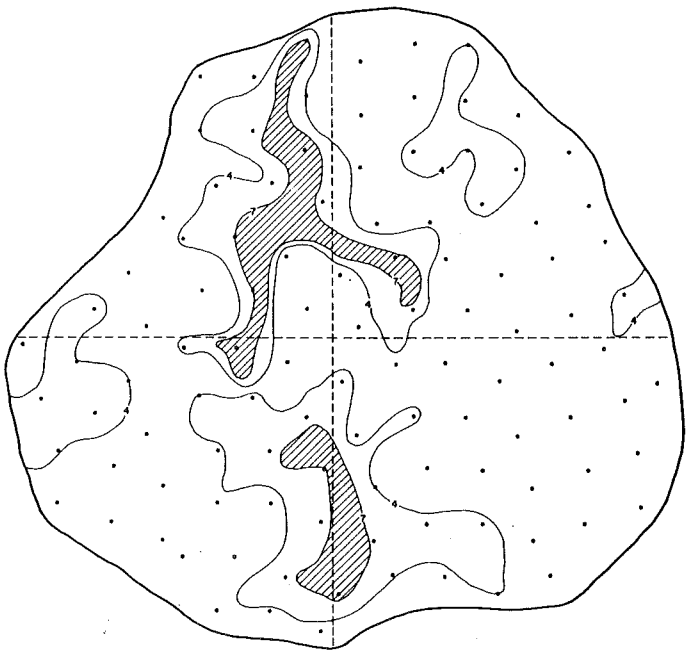
9. Obviously utilized chert flakes



10. Patinated flints

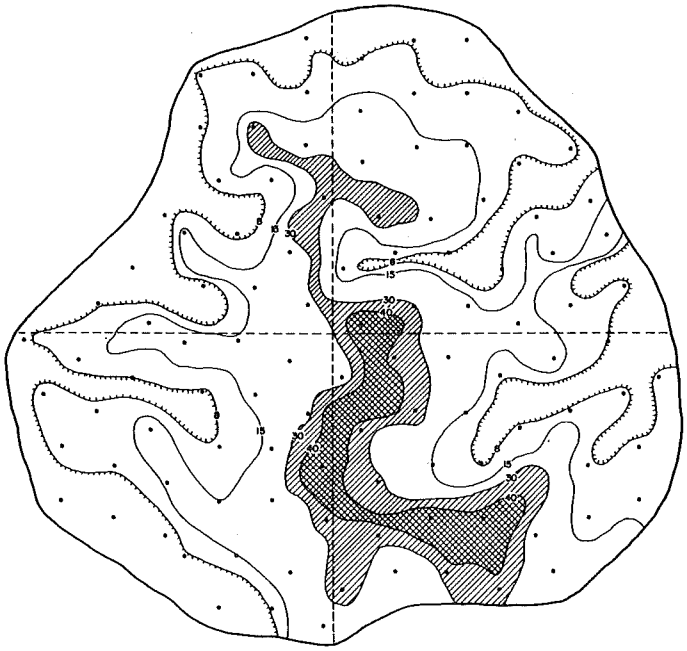


11. Total obsidian

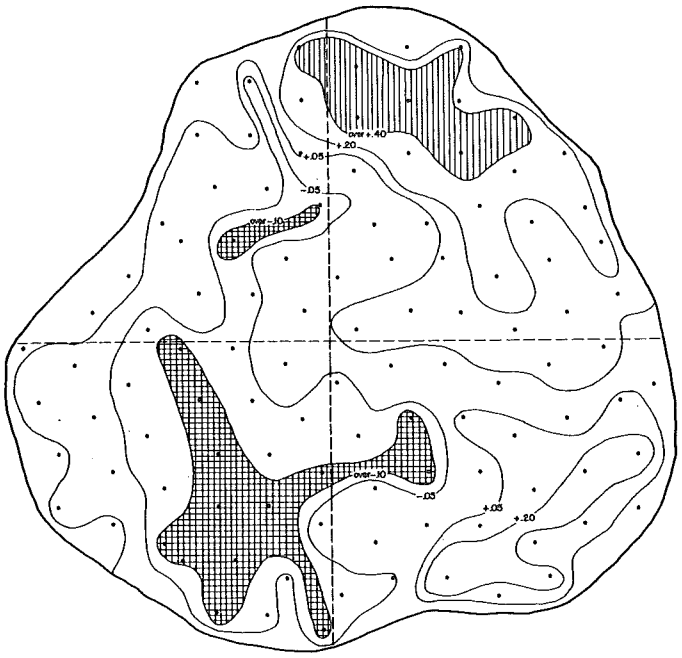


12. Obsidian blades

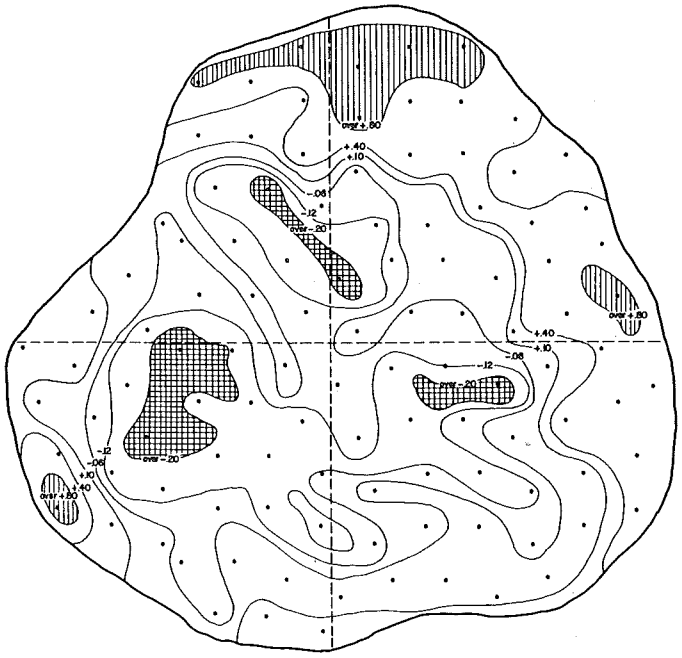
Figure 2.4. Surface survey artifact distribution maps (1968 season). • = sample squares. Contours indicate artifact densities at sample squares within contour boundaries.



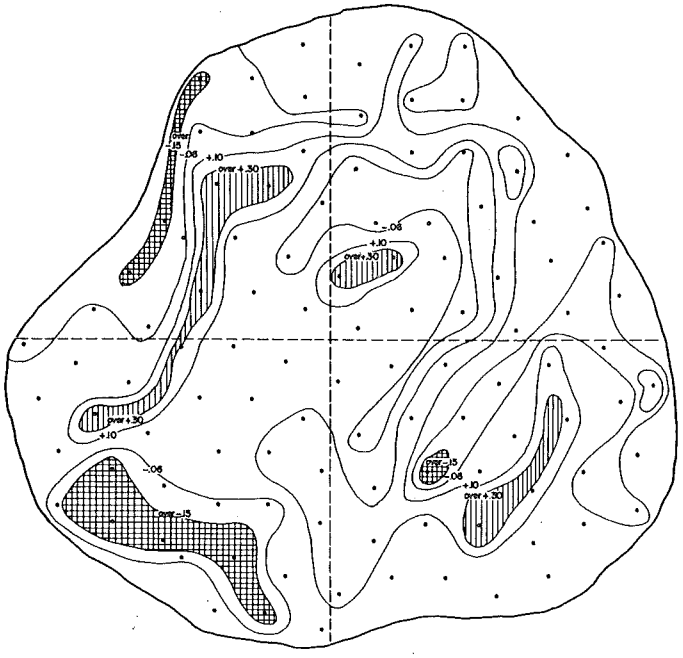
13. Bone



14. Ratio of plain to painted pottery



15. Ratio of chipped stone to pottery



16. Ratio of obsidian to chert

Figure 2.4. Surface survey artifact distribution maps (1968 season). • = sample squares. Contours indicate artifact densities at sample squares within contour boundaries.

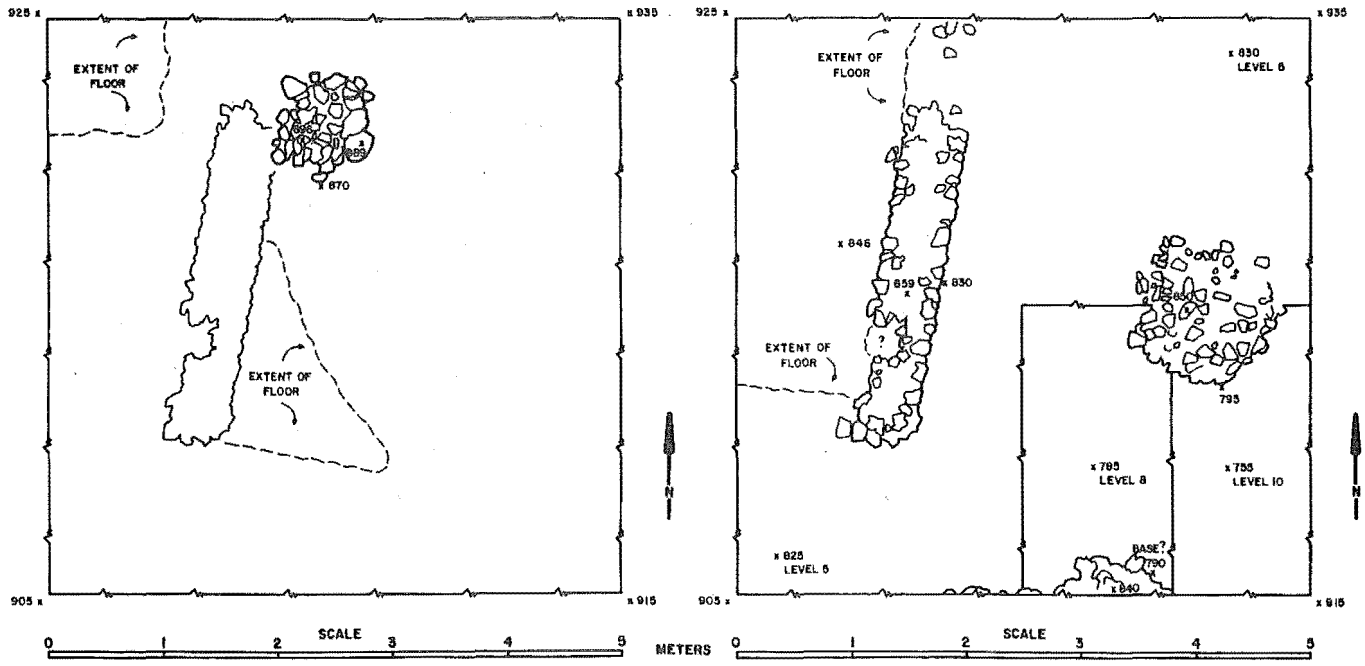


Figure 2.5. Architectural remains of {E2}, 1968 (equivalent to W235, 1970). (Left): level 4; (right): levels 5-10. Three-digit numbers are elevations in cm.

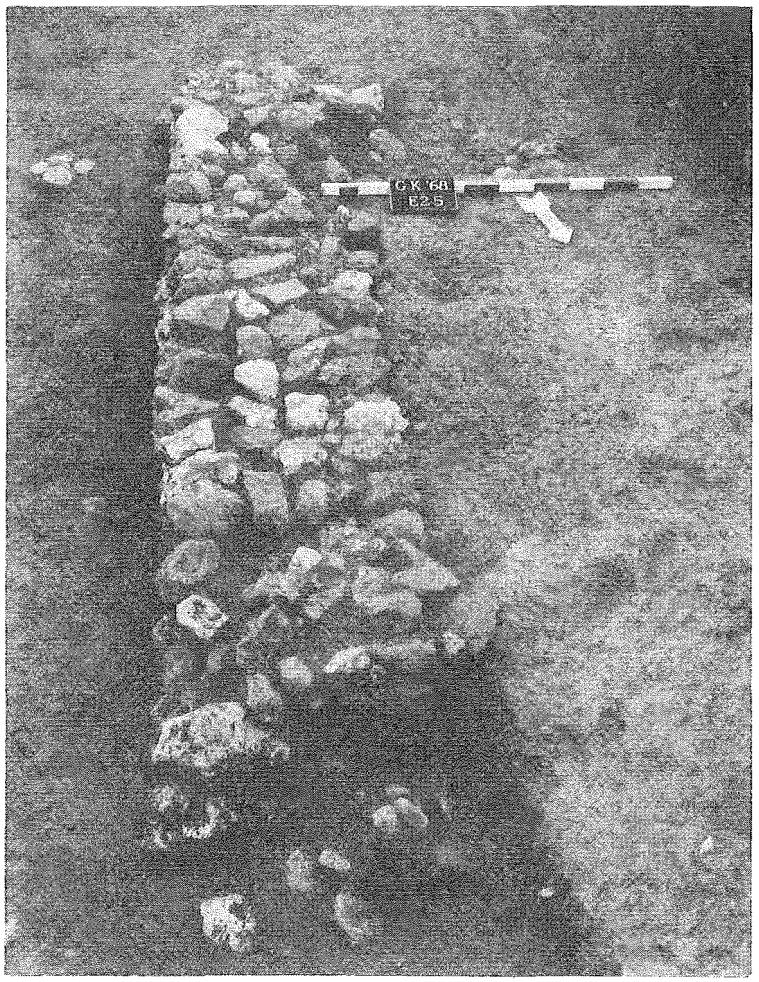


Figure 2.6. Unit {E2}, showing walls of small limestone rocks in levels 3 to 5 (1968 season).

with low artifact density, and L8 was chosen in the northern part of the mound where both chipped stone manufacturing debris and the proportion of painted to plain ware were high.

Unfortunately, there was so much rain during the excavation period that—even with the use of plastic and wood frame trench covers—we were able to dig only 10.5 days. None of the squares reached a depth greater than 2 m, and L8 was only 60 cm deep at the end of the sondage period.

The results of the work did, however, tend to confirm the major hypotheses suggested to us by the surface survey distribution maps. In {E2}, artifact density remained high as far down as 1.5 m below the surface, with the first fairly well-defined features occurring at about 70 cm. These features comprise the remains of a wall of small limestone rocks and fragments of floors apparently associated with it (figs. 2.5:1, 2; 2.6). There were also two large pits containing rock and some cultural debris. The entire area seems to have

Table 2.4. Girikihaciyan Data from Excavated Levels and Surface*

Grid designation	Level	Painted bowls	Painted jars	Painted body sherds	Plain bowls	Plain jars	Plain body sherds	Chert cores	Chert blades	Chert obviously utilized flakes	Cher waste flakes	Chert tools	Obsidian cores	Obsidian blades	Obsidian chips and flakes	Obsidian tools	Highly patinated flints	Highly patinated flints reutilized	Ground stone	Grinding stone	Bone splinters
{E2}	Surface	2	1	24	17	2	184	0	3	4	44	0	0	6	14	0	4	0	0	0	29
{E2}	1	8	5	92	43	21	888	3	2	50	202	13	0	20	47	5	13	2	2	1	114
	2	4	7	33	46	17	900	4	2	62	214	19	0	27	57	7	6	1	3	1	345
	3	7	13	73	150	83	1758	28	1	88	486	31	0	26	59	11	25	1	5	3	866
	4	8	12	50	88	100	3083	31	2	70	375	34	0	10	42	7	36	0	2	0	332
	5	5	7	82	135	47	2219	34	1	35	225	15	1	15	32	7	12	2	0	0	495
	6	3	4	22	19	10	290	3	0	1	37	1	0	5	5	1	8	1	1	0	70
	7	5	2	17	9	13	171	1	0	8	23	1	0	2	2	0	7	1	1	0	40
	8	1	2	10	6	3	81	0	0	2	9	0	0	0	0	2	2	1	0	0	80
	9	0	2	11	6	7	110	0	0	0	0	1	0	4	4	0	2	0	0	0	205
	10	0	3	6	3	4	44	2	0	1	1	0	0	0	3	0	2	0	0	0	13
B5	Surface	1	5	12	3	1	49	1	1	4	14	0	0	6	0	0	3	0	1	0	30
B5	1	10	17	70	12	10	546	3	2	33	114	12	4	22	43	14	39	3	0	0	144
	2	5	7	35	7	7	257	1	2	22	102	7	0	20	45	8	25	3	1	3	300
	3	6	9	49	16	20	452	0	0	15	84	10	0	23	34	10	32	0	1	2	274
	4	8	8	30	15	8	437	3	0	3	28	5	0	7	10	5	16	1	0	1	124
	5	1	0	4	6	62	181	0	0	2	3	0	0	1	1	0	0	1	0	1	20
	6	5	12	1	6	13	152	1	0	0	5	0	0	1	2	1	4	0	1	1	108
	7	7	2	11	7	22	170	2	0	0	7	0	0	2	1	0	3	0	0	0	40
L8	Surface	1	3	18	1	1	28	4	4	2	42	1	0	4	3	0	20	1	0	2	15
L8	1	4	8	66	3	4	84	11	0	9	55	3	1	13	11	5	36	1	1	1	9
	2	1	7	32	4	7	96	1	1	3	28	3	0	10	7	1	15	1	0	0	40
	3	2	3	31	15	10	151	0	1	6	29	4	0	15	13	6	51	3	0	1	137
	4	0	0	2	1	1	14	0	0	2	1	0	0	0	1	0	5	1	1	0	18

* These counts exclude pottery fragments that passed through a 1/2" screen, nor do they include core renewal flakes. "Plain body sherds" includes lugs, knobs, miscellaneous rims, and miscellaneous bases. Retouched flakes and blades are counted as tools.

Note: Slightly modified from Redman 1971:119, 120.

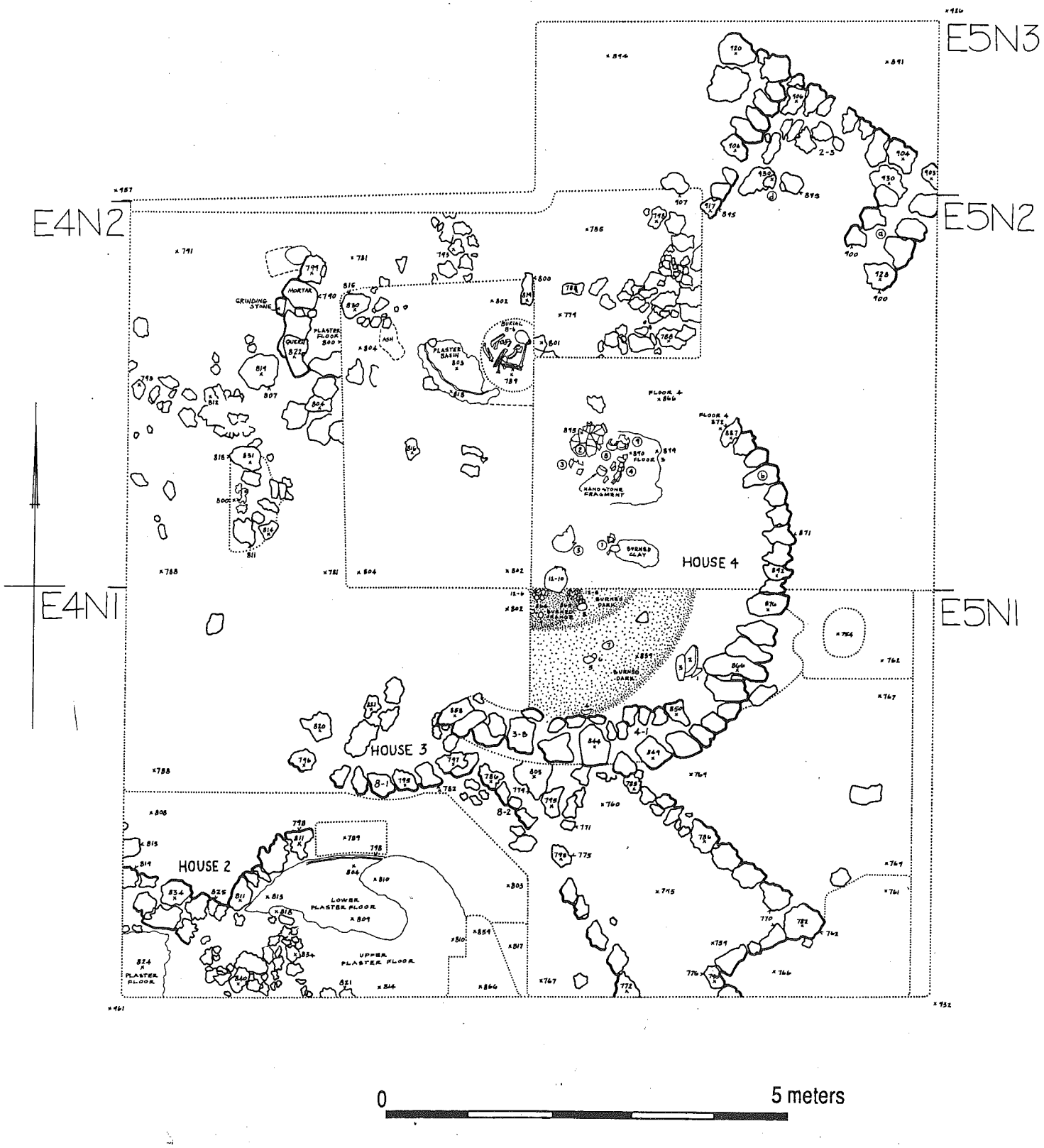


Figure 2.7. Plan view of architecture and other features in central excavation. Elevations are in cm.

been first residential, then a dump considerably disturbed by the digging and other activities of the later inhabitants.

In contrast to {E2}, square B5 revealed architectural remains only 30 cm below the surface (part of a wall base made of two parallel rows of large stones). Beginning about 60 cm down, fragments of several prepared floors, part of a curved stone wall base, and a series of pots crushed in place within a burned area were found (fig. 2.7, lower left of E5N2). Artifact density remained low down to the level of the crushed pots.

In L8, within 30 cm of the surface, fragmentary walls of two structures associated with possible floors were uncovered. Proportions of painted pottery and chipped stone were high for the first two levels but decreased below that (work in this square in 1968 was severely truncated by lack of time). The artifactual yield of these squares is summarized in table 2.4.

Redman statistically compared the surface material from these three squares with the material excavated from below the surface (Redman 1971:126ff). In {E2} the painted-to-plain ware ratio is 13% for surface material. The average of the first three levels is 8%, and the total for all 12 excavated levels is 8%. The ratio of chipped stone to total pottery is 31% for the surface, 32% for the first three levels, and 21% for all 10 levels. The total quantity of surface debris is 339 items; in the first three levels approximately 7,000 items; and in all levels, 17,000 items.

In square B5, the ratio of painted ware to plain is 34% on the surface, 16% in the first three levels, and 11% for all seven levels excavated. The ratio of chipped stone to pottery is 37% on the surface, approximately 40% for the first three levels, and about 23% for all seven levels. The total quantity of surface debris is 133 items; in the first three levels, 3,000 items; and in all seven levels, 4,400 items.

In L8 the surface ratio of painted to plain is 73%, 50% in the first three levels, and 38% for all four excavated levels. The ratio of total chipped stone to total pottery on the surface is 111%, 70% for the first three levels, and 63% for all four levels. The total quantity of surface debris is 150 items; in the first three levels, 1060 items; and in all four levels, 1,107 items.

Although the correspondence between surface and subsurface is by no means exact, there certainly seems to be a direct relationship between the two as indicated by the fact that the ranking of the squares for the chosen characteristics of surface vis-a-vis subsurface distribution is the same for both (table 2.5).

Redman also carried out computer-aided computations with the surface material from Girikihaciyan, including coefficients of variation and a series of factor analyses. The former were not easily interpretable, but the latter fairly clearly delineated three different geographical areas of the mound characterized, respectively, by plain ware, painted and plain ware jars and obsidian, and both flint and obsidian but not pottery.

1970 SEASON

The second season at Girikihaciyan began on September 27, 1970, when a six-person crew spent half a day at the mound locating the 1968 center point, setting up a transit over it, and locating and clearing out {E2} and B5, two of the backfilled 1968 trenches. Because of the awkwardness of the brackets used in the 1968 system to designate 5 x 5 m squares, we decided to change to a system using cardinal directions and numbers instead of letters of the alphabet plus numbers. This makes the designation for each square longer, but eliminates the need for special marks to distinguish direction. Square {E2} then becomes W2S5 and B5 is E5N2.

Because of protracted negotiations with the village headman and the landowners, further work was delayed until September 29 when we were able to lay

Table 2.5. Rank Order of Three Characteristics for Surface Collected Material Versus Excavated Material in Three 5x5 m Squares*

Provenience	Surface	Levels 1-3	All excavated material
	Ratio of Painted Pottery to Plain Ware		
{E2}	3	3	3
B5	2	2	2
L8	1	1	1
Spearman's *r* for surface to levels 1-3 for this ratio is +1 (prob. 1/6)			
Spearman's *r* for surface to all levels for this ratio is +1 (prob. 1/6)			
	Ratio of Chipped Stone to Total Pieces of Pottery		
{E2}	3	3	3
B5	2	2	2
L8	1	1	1
Spearman's *r* for surface to levels 1-3 for this ratio is +1 (prob. 1/6)			
Spearman's *r* for surface to all levels for this ratio is +1 (prob. 1/6)			
	Total Number of Pieces		
{E2}	1	1	1
B5	2	2	2
L8	3	3	3
Spearman's *r* for surface to levels 1-3 for this characteristic is +1/2 (1/3 prob.)			
Spearman's *r* for surface to all levels for this characteristic is +1/2 (1/3 prob.)			

* There is only one out of 72 chances that all three of these characteristics would have ordered themselves in this manner by chance alone.
Note: Redman 1971:128-129.

out the areas to be excavated. These consisted of three new units plus W2S5 (which we intended to clear and deepen as a stratigraphic test). The new units were three 5 x 5 m squares adjacent to B5 (E5N1, E4N1, and E4N2) so that we would have a 10 x 10 m square in the mound center and a long trench running south from old L8.

On September 30 excavation equipment was taken to the mound, and on October 1 digging began in the E8N10 (L8) trench in three 2 x 4 m sections separated by 1 m balks. These sections were in the following 5 x 5 m squares: E8N9, E8N8, and E8N7. Excavation also began in E5N1, E4N1, and E4N2, and in the southern 2 m of E5N3 where we were exposing more of the stone wall base found in E5N2 (old B5) in 1968.

Full-scale excavation with 20 to 25 workmen and 8 to 10 American and Turkish supervisors continued (excepting Sundays) until October 17. A small crew was employed from October 19 to 22 to clean up; final mapping, drawing, and recording on the site were carried out between October 29 and November 5. Laboratory analysis of the recovered material occupied three people full time from then until December 23. In addition to these activities, we surface-collected six squares in the same manner as in 1968 to see how consistent the tabulations were when compared with the 1970 results for the same part of the mound.

The 1968 surface collections were analyzed in various ways, but three variables seemed to be the most useful (Redman and Watson 1970): (1) the total density of artifacts, (2) the ratio of painted ware to plain, and (3) the ratio of chipped stone to pottery. The counts from the 1970 surface collections and those from the nearest unit collected in 1968 are given in table 2.6. Values for the three

Table 2.6. 1970 Surface Collection Squares Compared to the 1968 Squares Nearest Them

Season	70	68	70	68	68	70	68	70	68	68	70	68	70	68	68
Square	N1	N2	{D10}	{D8}	{C12}	{D4}	{D5}	{C}3	{C}1	{B}4	J{1}	J{4}	{H}8	{H}6	{H}9
Painted bowls	1	-	1	-	-	1	-	3	-	1	-	3	4	5	2
Painted jars	1	3	1	1	1	-	2	2	1	1	-	3	2	1	4
Painted body sherds	19	15	12	2	14	16	22	20	11	16	12	10	17	13	23
Plain bowls	1	1	5	6	7	2	7	1	4	8	1	5	4	3	3
Plain jars	-	-	-	2	2	2	5	4	3	1	2	3	-	2	3
Plain body sherds	44	20	164	133	102	170	176	115	84	86	94	94	64	56	87
Flint cores	2	5	2	4	-	1	1	2	5	5	3	1	1	5	6
Flint blades	2	-	1	2	1	2	2	2	-	1	1	1	1	2	1
Flint flakes (obviously utilized)	9	5	12	6	3	12	11	7	1	3	4	4	4	6	2
Flint waste flakes	21	34	73	27	28	45	36	32	26	17	41	10	25	12	26
Flint tools	2	1	-	1	-	1	1	2	-	-	-	1	3	-	-
Obsidian (not broken down)	11		11			15		7			6		9		
Obsidian cores		-		-	-		1		-	-		1		-	-
Obsidian blades		1		4	4		5		5	3		5		-	2
Obsidian chips and flakes		5		5	3		7		2	3		4		1	5
Obsidian tools		-		1	-		-		-	-		-		-	-
Patinated flints	9	14	5	2	2	2	3	-	1	5	5	8	3	3	3
Ground stone	2	1	1	-	-	-	-	-	-	-	-	-	1	1	-
Grinding stone fragments	-	1	1	-	-	-	-	2	-	1	-	-	-	-	1
Bone splinters	25	21	52	6	8	23	17	34	26	36	33	13	16	24	14
Shell fragments	-	-	3	-	1	5	2	1	1	2	1	-	-	-	-
Flint core material	11		10			10		11			5		7		
Patinated flints reutilized	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Total	160	128	355	202	176	307	298	245	170	189	208	166	161	134	182
Ratio: Painted/plain	0.47	0.86	0.08	0.02	0.14	0.10	0.13	0.21	0.13	0.19	0.12	0.16	0.34	0.31	0.31
Ratio: Chipped stone/pottery	0.85	1.67	0.57	0.36	0.32	.0.40	0.32	0.36	0.39	0.33	0.55	0.30	0.50	0.36	0.37

most useful analytic variables (noted above) may also be compared with the distribution maps for these variables as shown in Redman and Watson (1970).

At first there appears to be a considerable difference between artifact densities for the two seasons. On average, the 1970 season surface collections produced 1.3 times as many artifacts as did the 1968 collections. This was probably due to differences in weathering and plowing conditions between the two years. For the most part, however, units that had high densities of artifacts in 1968 also showed high densities in 1970. Some of the differences between the years seen in table 2.6 can be attributed to the fact that often the nearest 1968 unit was some distance away. When one takes into account the general increase in artifact density in 1970 and the expected density as given on the density map, the frequencies are close to what would have been predicted.

The ratio between painted and plain sherds is expected to be less sensitive to differences in collecting conditions between the two years than is the total artifact count. This is, in fact, the case, and there is a reasonably close similarity in the ratios. Except for the N1/N2 squares, variability between seasons was as low as the variability found for units very near each other in 1968.

There is somewhat more variability in the ratio of chipped stone to ceramics between the two seasons, but, in general (again with the exception of squares N1 and N2), differences seem to be patterned. The ratio of chipped stone to ceramics is consistently higher in 1970 than 1968. This difference seems to be related to the overall increase in artifact density in 1970. Chipped stone is generally more difficult to see than are sherds. The poorer collecting conditions in 1968 probably further reduced the recovery of chipped stone

relative to sherds. As in the case of total artifact densities, once the chipped stone-to-sherd ratio is adjusted for these differences in collecting conditions, the patterns found in 1968 are replicated quite closely in the 1970 collection.

The conclusion that can be drawn is that, in the case of Girikihaciyan, there was a high correlation between collections from the two years, with differences being relatable to different collecting conditions. If the overall systematic collection had been spread over more than one season, we would have had to correct for the differences, but this could have been easily handled had it been necessary.

Results of the 1970 excavations indicate that there were at least two different occupations at Girikihaciyan: an earlier one (the Halafian) with painted pottery and grit tempered plain ware and a later one characterized by chaff tempered plain ware. The magnitude of the interval between the two is unknown, but need not have been great. The Halafian settlement apparently covered the entire area of the mound, but the later occupation was smaller, covering only the center and southwestern portion of the *hüyük*.

Excavation and Recording Methods

Excavation at Girikihaciyan in 1968 and 1970 was accomplished with small picks, whisk brooms, trowels (or, when necessary, grapefruit knives, artist's brushes, and dental picks), and shovels; excavated dirt was removed in wheelbarrows. Dirt shoveled out of a square after having been examined by the pickman was looked through again by the wheelbarrow man before being dumped. Half-inch screens were used to sift material from floors or other special proveniences, but, because of the shortness of the excavation period and the difficulty of screening the tough, blocky clay that makes up much of the fill at Girikihaciyan, we decided that screening everything was unjustifiably time consuming. (Because of the toughness of the deposit, further excavation at the site should include use of some sort of water separation process.) Hearths, ash, or charcoal lenses, and the contents of pots were floated by van Zeist to recover charred plant material. Identifiable botanical remains were recovered from 44 of these proveniences (see van Zeist 1979-1980).

Each 5 x 5 m square or similar unit was excavated by four to six Turkish workmen under the supervision of one or two American and/or Turkish graduate students. All measurements were made with reference to the datum established at the mound center. Recording was done by the trench supervisors on forms we had printed in Ankara. These forms were on graph paper (5-mm squares), with columns provided for stratigraphic code, date, and provenience. There was also a series of columns where the numbers of bags or boxes could be indicated for plain pottery, painted pottery, bone, carbon samples, float samples, soil samples, chert, obsidian, ground stone, clay objects, and miscellaneous finds. Space was provided for notes about photos or drawings, and general notes or scale drawings could be made on the backs of the sheets. These forms were not entirely satisfactory, but the basic recording system developed to use with them worked very well (LeBlanc 1976).

Excavation units were referred to by grid nomenclature (e.g., E5N2) or by a special designation (Operation A). Vertical units within the square or trench were numbered from top to bottom beginning with 0-0 for the surface, 1-0 for level 1, and so on. Separated from the vertical code number by a hyphen is another series of numbers beginning with 1 and going as high as necessary to pinpoint anything of significance found within that particular level. For instance, 1-1 might be a pendant found in level 1 (to be appropriately noted, sketched, and described in the trench notebook), 1-2 could be a pit or

hearth uncovered in level 1, 1-3 a portion of a stone wall base, 1-4 a celt, 1-5 half a painted bowl, and 1-6 a flotation sample. The main drawback to this system is that the number carries no information as to what it designates, but we found that the convenience and flexibility provided far outweighed this disadvantage.

EXCAVATION SUMMARIES

W2S5

The 1968 excavation (then called {E2}) included the entire W2S5 5-m square from the surface to the bottom of level 5, but levels 5 through 8 were dug only in the southeastern 2.5 x 2.5 m and levels 9 and 10 in half of that area (the eastern 2.5 x 1.25 m). The bottom of level 5 was at an elevation of 8.20 m (calculated from an arbitrary 10.00 m datum established at the top of the mound center, resulting in excavation levels such that the greater the elevation, the higher in the mound), and the bottom of level 9 was at about 7.60 m. The excavation parameters and plain ware types found in 1968 are summarized in table 2.7 and shown in figures 2.8 through 2.12.

Excavation of this square began again on October 1, 1970, and continued until October 22. The square was dug in 20 levels from an elevation of 8.40 m to a maximum depth of nearly 4.40 m below datum.

Levels 15 and 16, dug in 1970, represent the removal of backfill from 1968 over the entire square, but levels 17 to 20 were excavated in undisturbed fill in the northeast, northwest, and southwest quadrants. From levels 21 through 24, undisturbed fill was excavated in all four quadrants. Beginning with level 25 (the top of the level had an elevation of approximately 7.10 m), only the northwest and southeast quadrants were excavated, the former to level 27 (elevation 6.60 m) and the latter to level 34 (elevation 5.62 m). The culturally sterile premound horizon was not reached in the southeast quadrant of W2S5, the deposit in this part of the mound apparently being appreciably thicker than in E7N9 where sterile clay was encountered at an elevation of 6.15 m.

E5N2

E5N2, a 5 x 5 m square, was begun in 1968 (then designated B5). The entire square was excavated to an elevation of 8.81 m; level 4 was removed over the whole square except for the southwestern portion where a wall base and several smashed pots were found; level 5 was confined to the northwestern 2.25 x 2.25 m only and went from 8.61 to 8.41 m. In 1970, the northwestern 2 x 2 m was carried down in five levels to an elevation of 7.85 m. The excavation parameters and plain ware types found are summarized in

Table 2.7. Excavation and Plain Ware Summary of Square W2S5 (= {E2} of 1968)*

Area Excavated (m)	Level	Depth (cm)	Plain Ware
5 x 5	1	0-15	Chaff tempered
	2	15-35	Chaff tempered
	3	35-55	Chaff tempered
	4	55-70	Chaff tempered
SE 2.5 x 2.5	5	75-90	Chaff tempered
	6	90-110	Chaff tempered
	7	110-120	Chaff tempered
	8	120-130	Grit tempered (Halafian)
E 2.5 x 1.25 of SE quadrant	9	130-150	Grit tempered (Halafian)
	10	150-170	Grit tempered (Halafian)

* See also figures 2.5, 2.6, 2.8-2.11, amd 3.1.

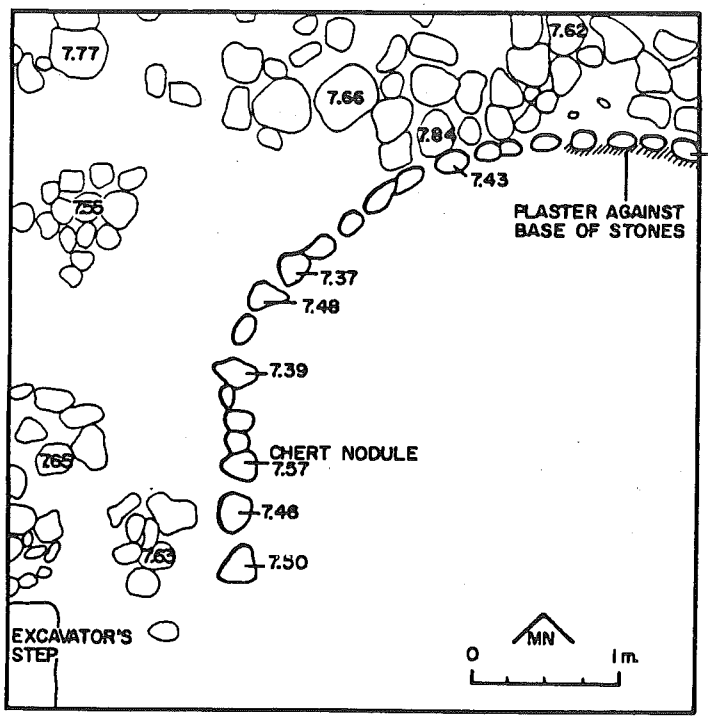


Figure 2.8. Plan view of architecture in unit W2S5 basal level (level 21), feature 21-8 (house 8). Elevations are in meters.

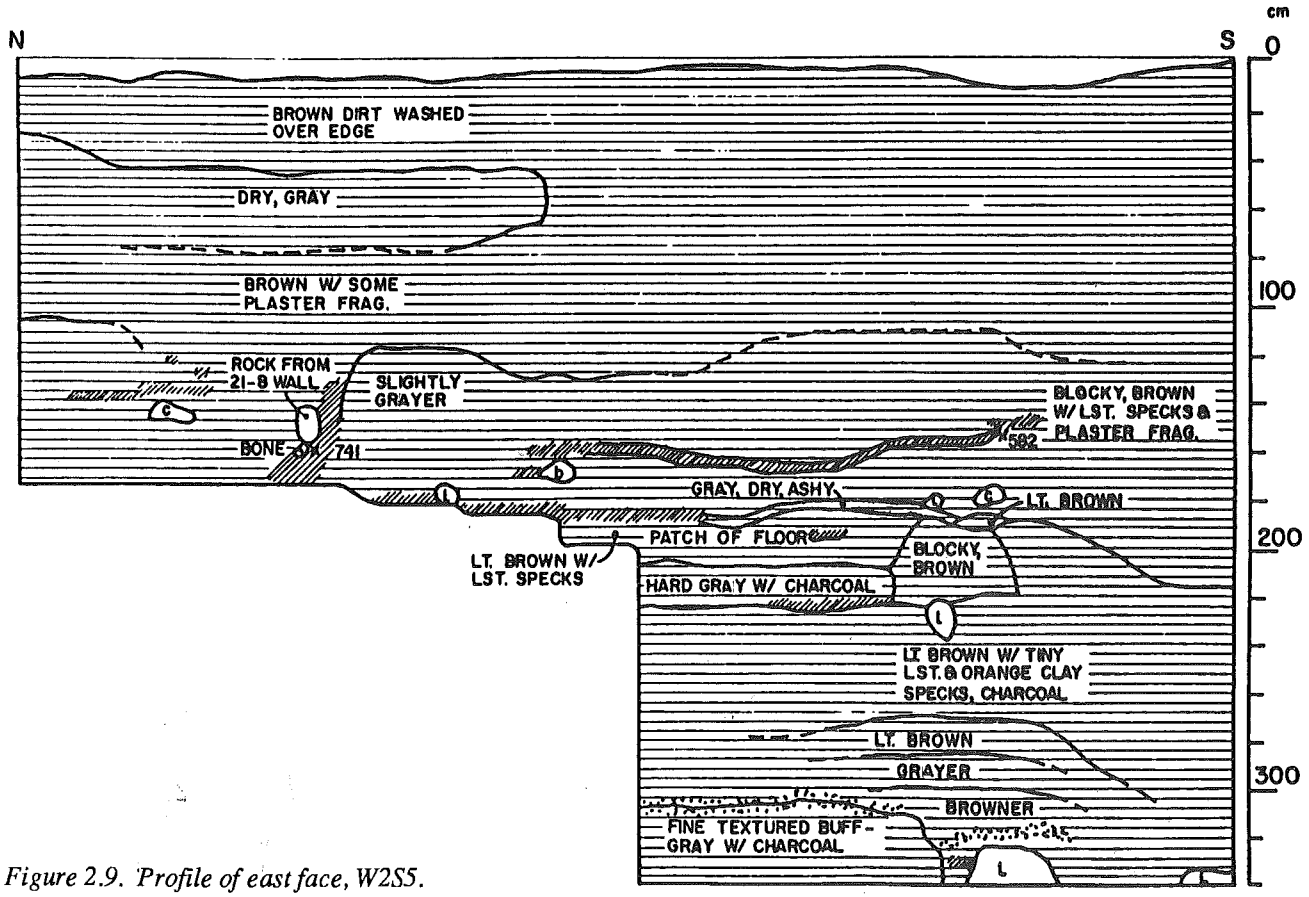


Figure 2.9. Profile of east face, W2S5.

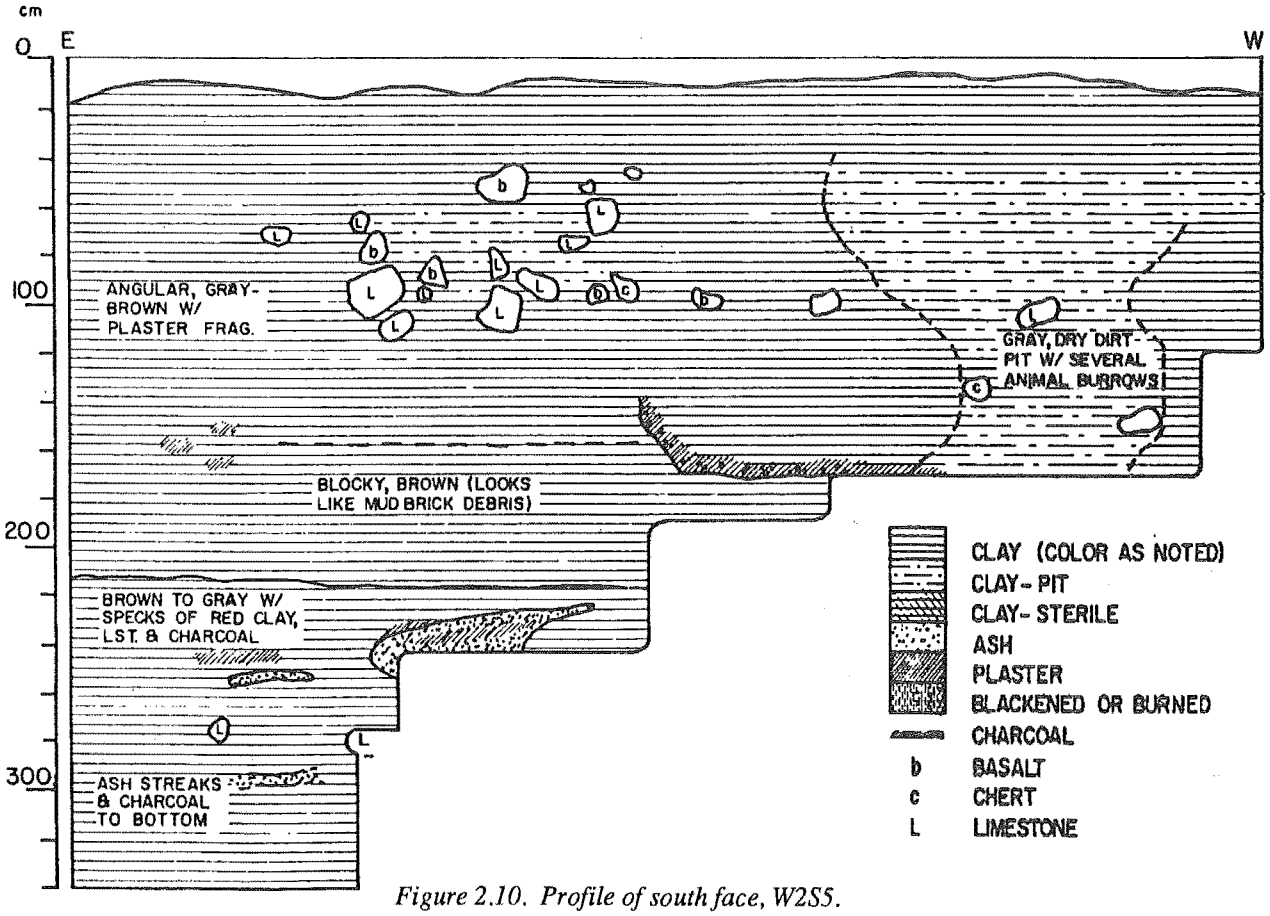


Figure 2.10. Profile of south face, W2S5.

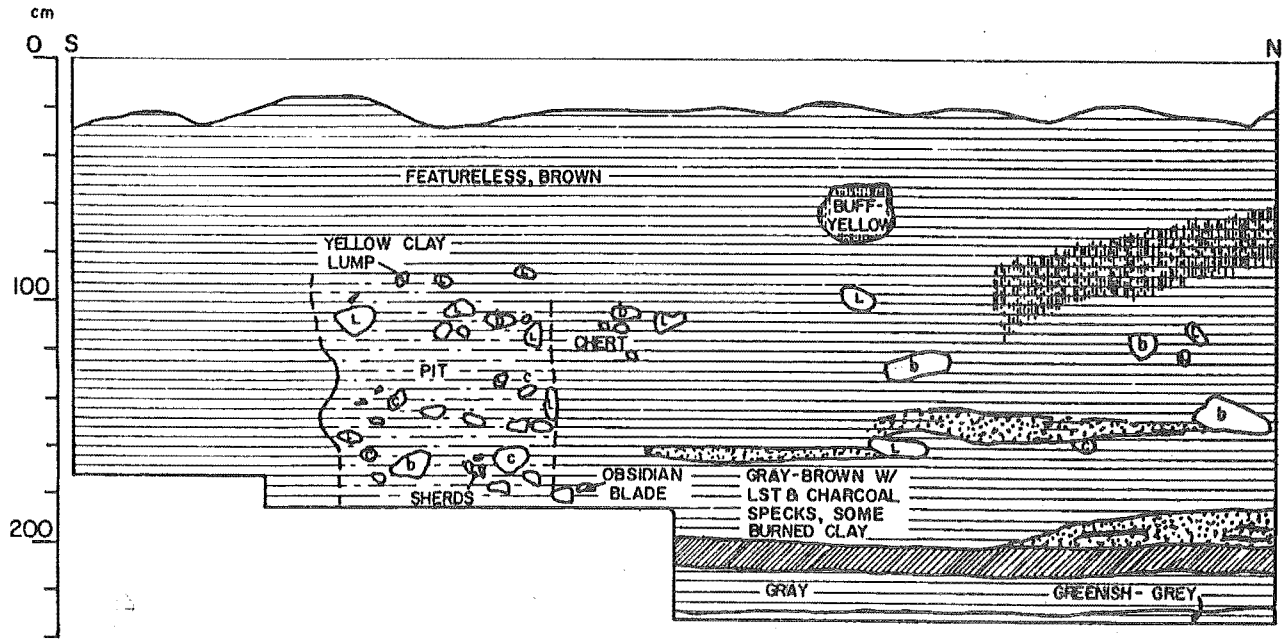


Figure 2.11. Profile of west face, W2S5.

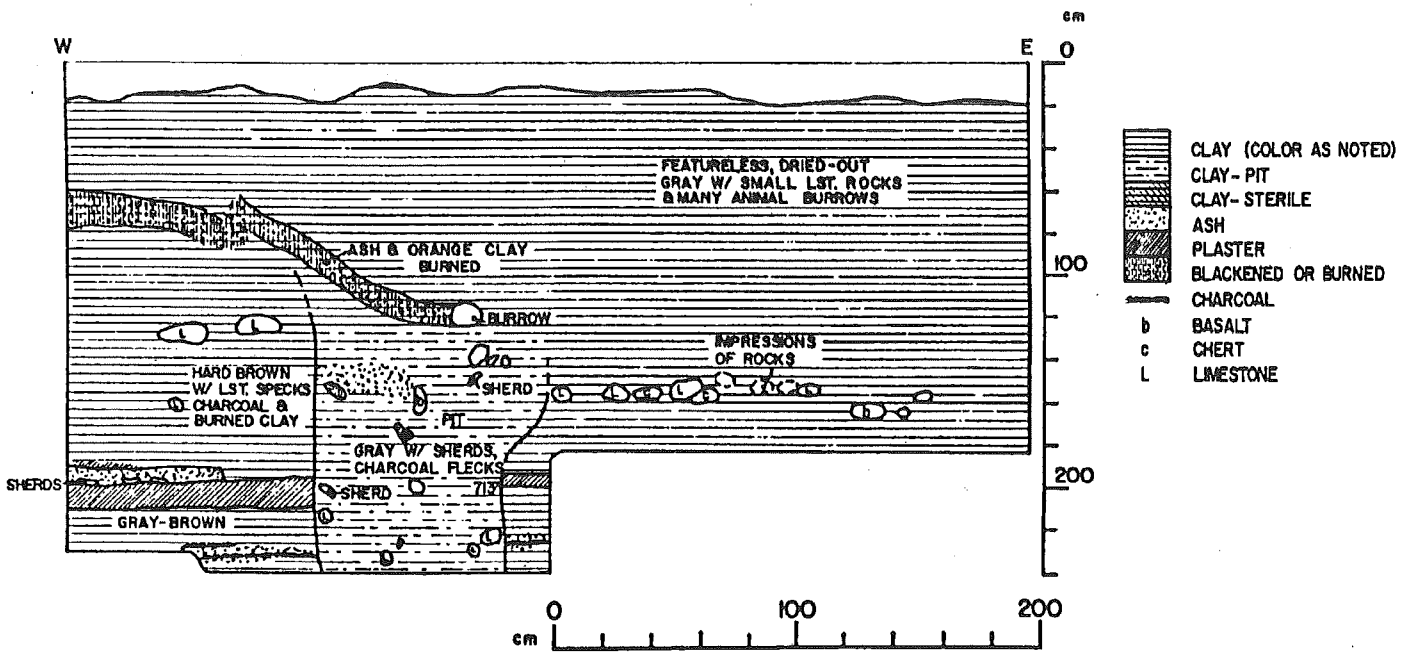


Figure 2.12. Profile of east face, E8N7.

table 2.8. Fragmentary foundations of three round houses were uncovered in this square, house 4 in 1968 and two older ones, houses 2 and 3, in 1970; see figure 2.7 and chapter 3, this volume.

E5N3

In 1970 the southern 2 x 5 m of square E5N3 were excavated sufficiently (to a depth of about 40 cm) to expose what seemed to be a wall line, first located in E5N2 (fig. 2.7, upper right). The scatter of rock found may represent the remains of a *dromos* associated with a round house postdating those exposed just to the south (fig. 2.7), perhaps a late phase of house 4.

E4N1

E4N1 was a 5 x 5 m square excavated in seven levels to an elevation of 8.0 m. The northern half of the square was then carried down to 7.82 m (fig. 2.7, lower left).

E4N2

E4N2 was a 5 x 5 m square excavated in eight levels to a general elevation of about 8.0 m. The western half and the northern-

Table 2.8. Excavation and Plain Ware Summary of Square E5N2*

Area Excavated (m)	Level	Depth (cm)	Plain Ware
5 x 5	1	0-20	Chaff tempered
	2	20-40	Chaff tempered
	3	40-60	Grit tempered (Halafian)
	4	60-80	Grit tempered (Halafian)
NW 2.25 x 2.25	5	80-100	Grit tempered (Halafian)
NW 2.0 x 2.0	14	100-115	Grit tempered (Halafian)
	15	115-125	Grit tempered (Halafian)
	16	125-135	Grit tempered (Halafian)
	17	135-145	Grit tempered (Halafian)
	18	145-160	Grit tempered (Halafian)

* Square B5 of 1968

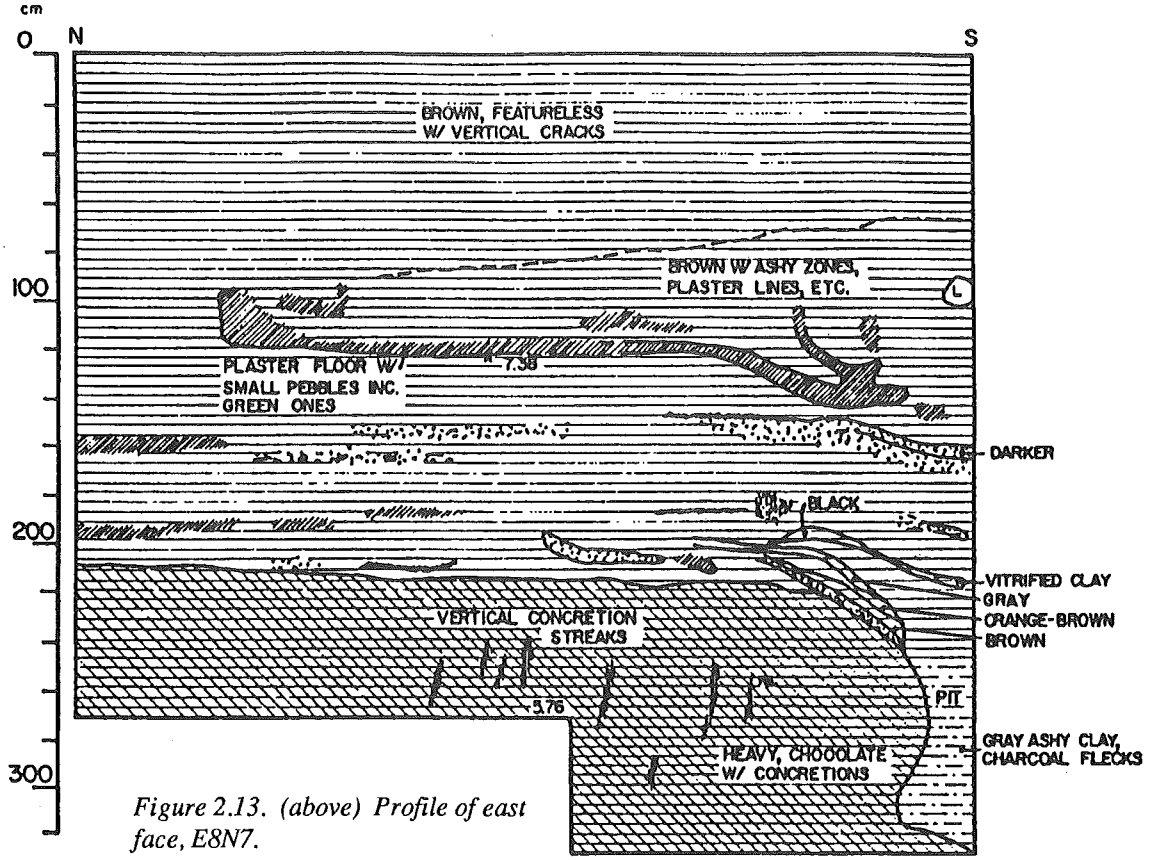


Figure 2.13. (above) Profile of east face, E8N7.

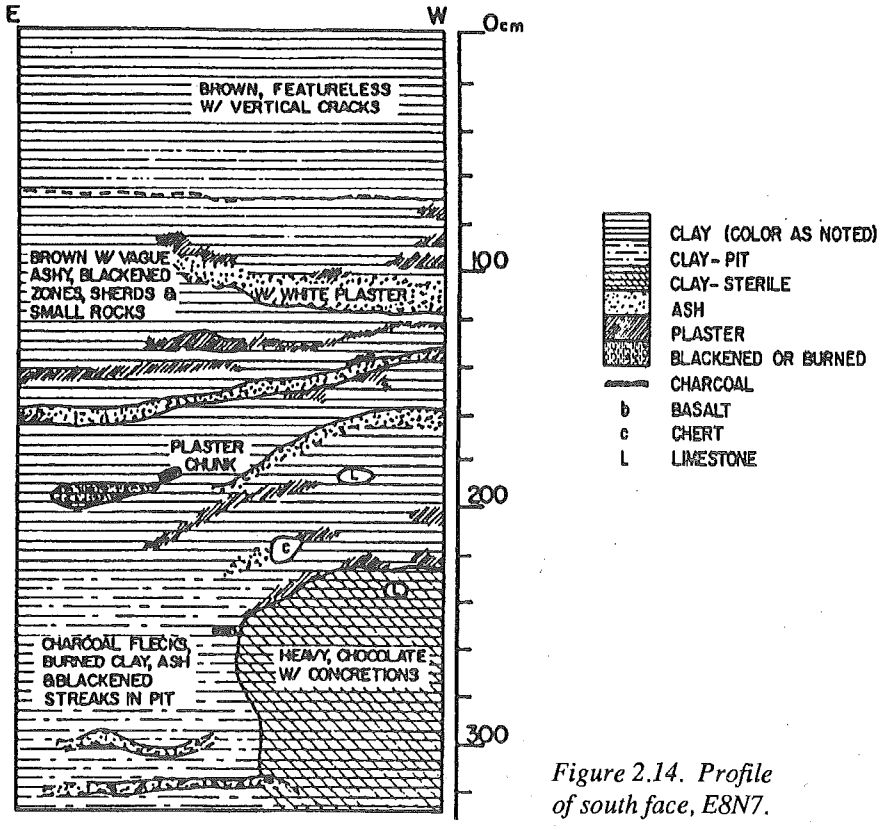


Figure 2.14. Profile of south face, E8N7.

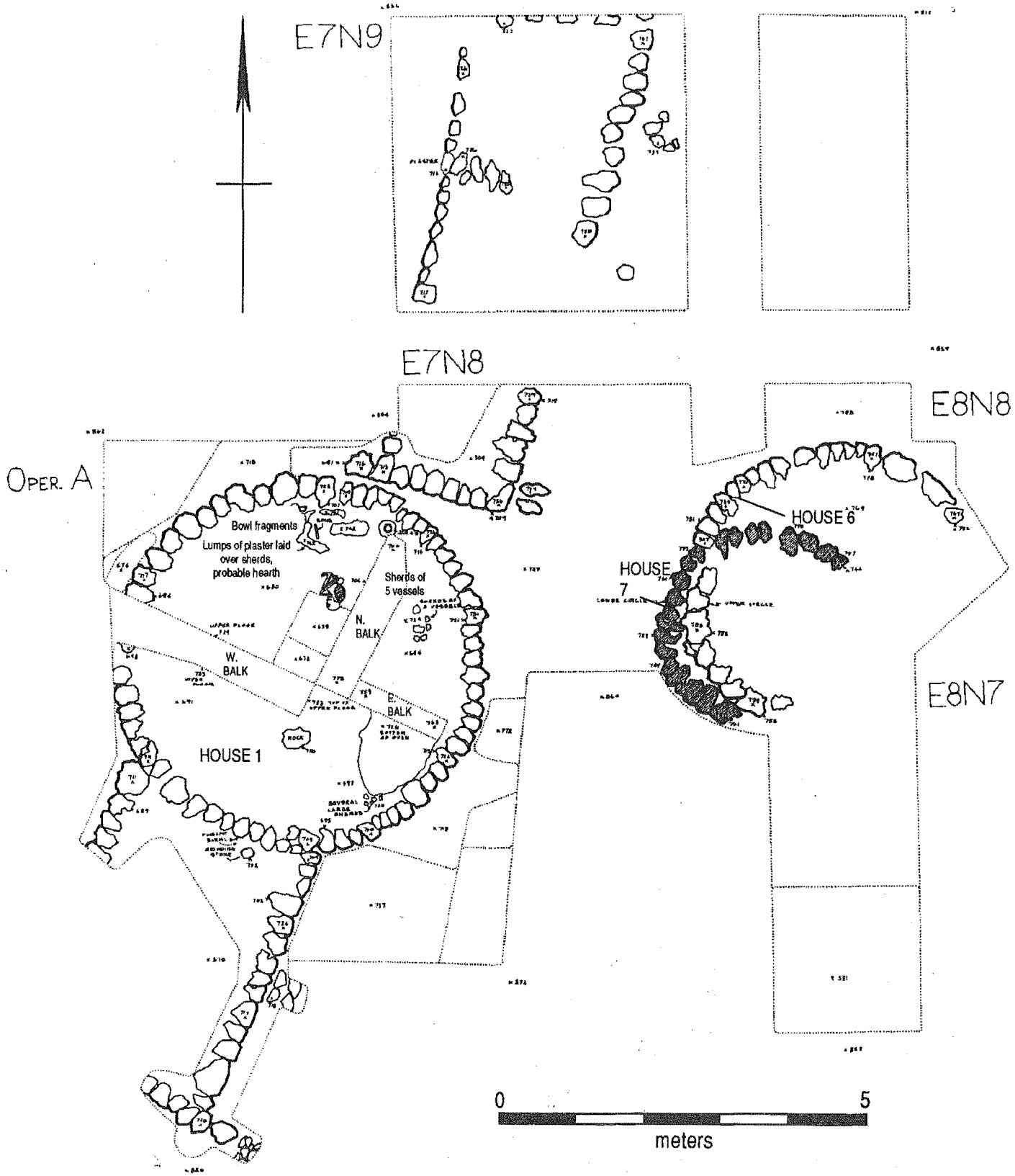


Figure 2.15. Plan view of architecture and other features in northern excavation. Elevations are in cm.

most 1 m of the eastern half were then carried down one more 20 cm level (fig. 2.7, upper left).

E5N1

E5N1, a 5 x 5 m square, was excavated to a general elevation of 8.40 m. The northwest quadrant was left at that level, which exposed the continuation of a house foundation first found in E5N2 in 1968. The rest of the square was dug to 7.60 m, the maximum depth for this unit (fig. 2.7, lower right).

E8N7

E8N7 (figs. 2.13-2.15) was a 4 x 2 m trench dug in 25 levels to an elevation of about 5.30 m. The latter figure represents the bottom of a prehistoric pit that had been dug into sterile premound sediment.

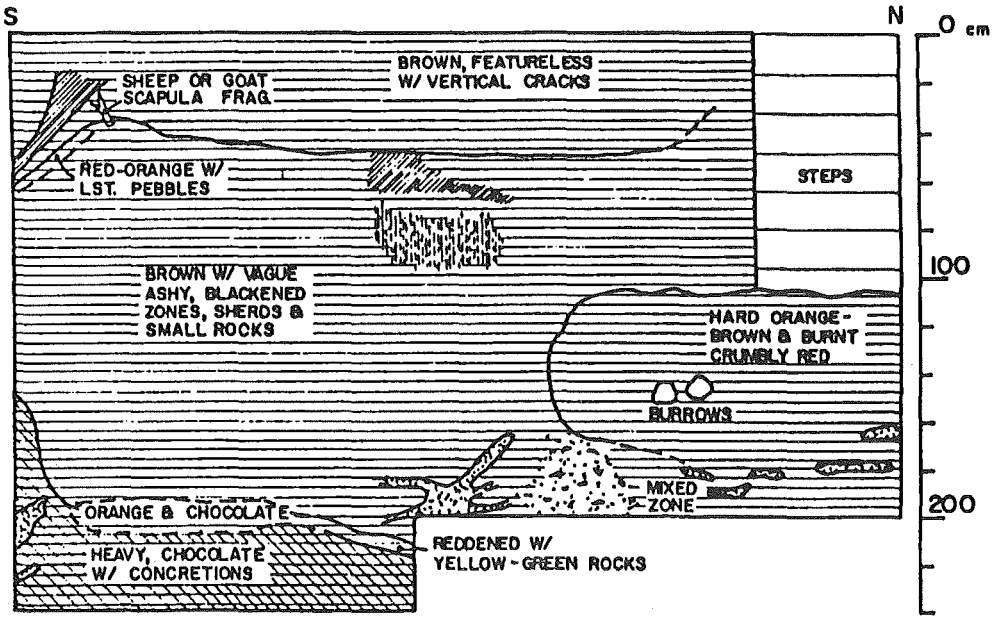


Figure 2.16. Profile of west face, E7N9.

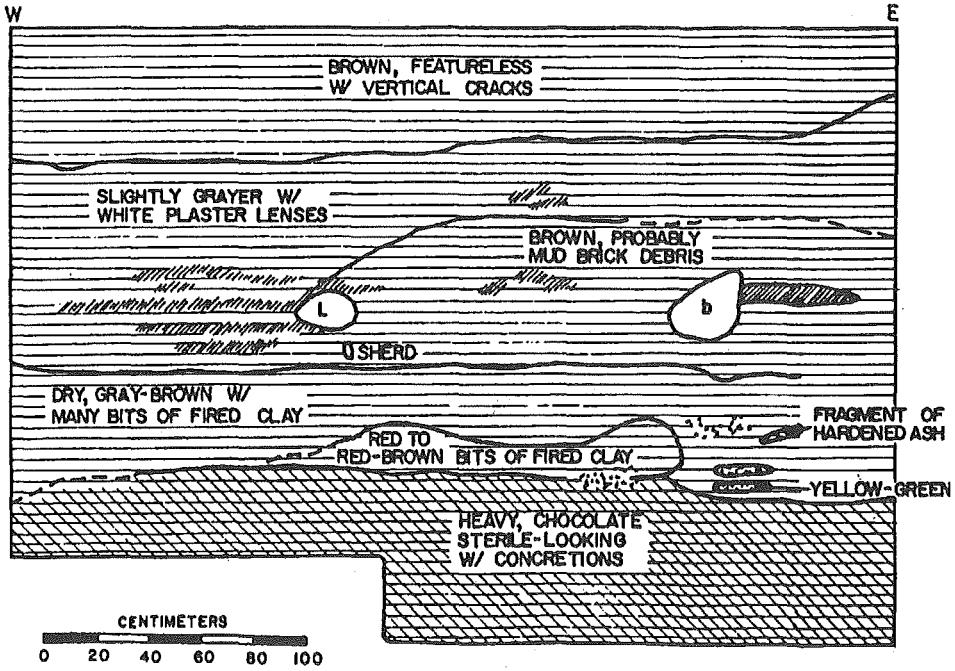


Figure 2.17. Profile of north face, E7N9.

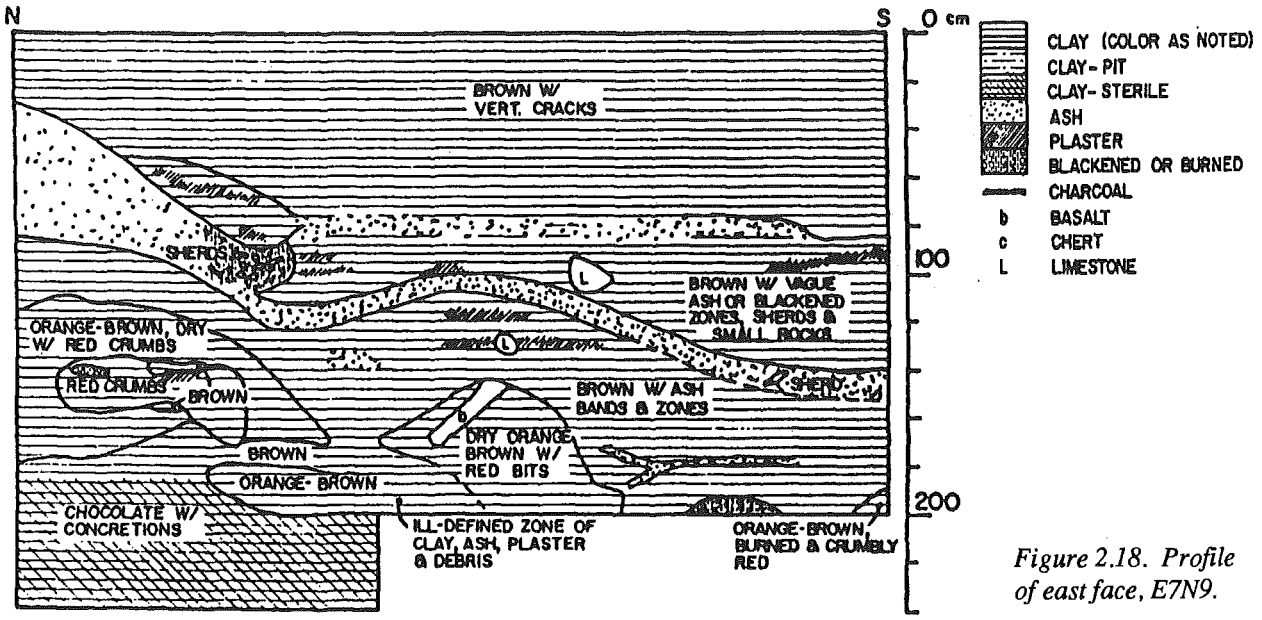


Figure 2.18. Profile of east face, E7N9.

The upper limit of the sterile horizon was first encountered in this trench at an elevation of 6.40 m.

E8N8

A 4 x 2 m square, E8N8 was dug in five levels to an elevation of 7.69 m, exposing the partial foundations of two round houses that were further traced in E7N8, and in the balk between E7N8 and E8N8. The balk between E8N8 and E8N7 was excavated in hopes of finding the southern portions of these house circles, but the stones were missing (fig. 2.15, central right).

E8N9

E8N9, a 4 x 2 m square, was dug in four levels to an elevation, at maximum depth, of 7.60 m.

E7N8

A 4 x 4 m square, E7N8 was dug in ten levels to an elevation of 7.25 m where a well-preserved portion of a round house foundation was exposed in the southwest quadrant. This house (house 1), later excavated in Operation A, opened to the west of E7N8 (fig. 2.15).

E7N9

E7N9 was a 4 x 4 m square dug in 15 levels to an elevation, at maximum depth (the bottom of a prehistoric pit), of 5.95 m. Sterile, premound deposits were reached at 6.15 m (figs. 2.16-2.18).

Operation A

Operation A was a special excavation in the area west and south of E7N8 designed to recover the full plan of the round house whose foundation was first exposed in level 10 of E7N8. About 80 cm of overburden was removed; then the house was excavated in quadrants, with four right-angled balks left bisecting the circle and overlying the foundation. The foundation stones made a complete circle varying in elevation from 7.31 m in the northeast quadrant to 6.98 m in the southwest quadrant (fig. 2.15, lower left).

3.
Architecture and Stratigraphy

When Girikihaciyan was first located by the Joint Prehistoric Project in 1963, it was thought to be a one-period mound. Results of the 1968 surface and initial test excavations cast some doubt on this hypothesis, but it was not until the 1970 season that the situation was reasonably well clarified. There were certainly two occupations, but the great majority of the mound deposit is Halafian proper (fig. 3.1). If the radiocarbon date from the 1968 season is representative of the chronological position of the second occupation, it is close to the Halafian in time and may be a development out of it. We know little about this post- or epi-Halafian assemblage, but chaff tempered plain ware and backed crescents made of chert seem to be highly characteristic. In the W2S5 area, the epi-Halafian deposits are slightly more than 1 m thick, whereas in the E5N2 area they are less than half that, and in the northern and eastern part of the site they are seemingly not present (fig. 3.1).

In terms of stratification exposed in trench walls, Girikihaciyan is a very frustrating place to work. In every excavation unit, the 75 or 100 cm (in some places more than this) below the plow zone consisted of homogeneous, tough, blocky clay with well-developed vertical cracks (fig. 2.6), but lacking differentiation in color or texture. This is apparently at least in part the result of some sort of geological or physiographic weathering phenomenon (probably acting on the debris of disintegrating adobe buildings) that also destroys charcoal. Charred plant material was not found in the upper 1 m of the deposit (this same situation is true at Çayönü). Sometimes, faint color differentiations slowly emerged after the trench walls had been exposed for several days, but distinctions in the upper meter of any section were always elusive. In addition, the burrowing of small rodents destroyed parts of the profiles in some trenches.

Stratigraphic Summaries

W2S5

Unfortunately, W2S5 did not reach culturally sterile sediment, but in the profile, as now known, there is evidence for four main subdivisions of prehistoric activity in this area. The earliest subdivision, attested only in the southeast quadrant sounding, consists of dumped ash, charcoal, broken pottery, and other trash (bottom meter in the southeastern corner of the square). The next phase seems to reflect the construction of a mudwalled building with one or more plaster floors (figs. 2.9, 2.10).

Above the remains of this building was a round house (*tholos* 8 shown in fig. 2.8) with a wall footing of limestone rock laid over a gravel and plaster base. The latter surrounds the house on the west and north; in combination with several patches

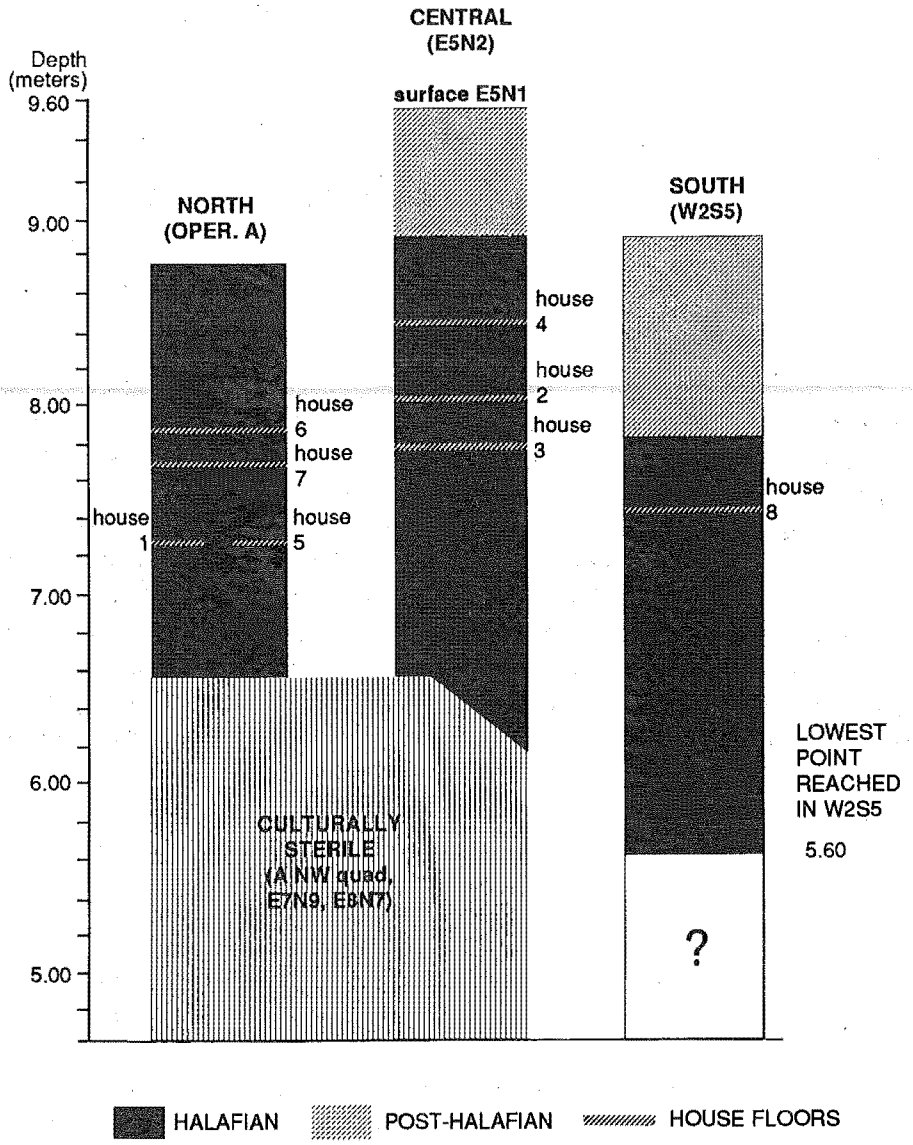


Figure 3.1. Diagrammatic summary of the Girikihaciyan stratigraphy.

of rough stone paving, it probably served as a surfaced courtyard. Inside the house was a white plaster floor smoothed against the stone foundation.

When the round house was abandoned, the area again became a dump; but this time, as indicated by the chaff tempered pottery of the upper 1 m of deposit, the epi-Halafians dug pits here and also disposed of their broken pottery, animal bone, and other refuse. The W2S5 excavation is summarized in table 3.1.

E4N1, E4N2, E5N1, E5N2, and E5N3

The earliest structure in the central excavation is house 3 (fig. 2.7), a tholos with only a few foundation stones remaining and a dromos uncovered in squares E4N1 and E5N1, respectively. The dromos foundation is nearly complete, but lacks its southwest corner, or perhaps there was a small annex here (fig. 2.7, lower right).

The next earliest material, found at the south end of E4N1, is the remains of a

Table 3.1. Stratigraphic Summary of W2S5

Level	Comment
1-7	Epi-Halafian dump
15-18	Epi-Halafian dump
19-22	Halafian round house (tholos 8), fill
23-24	Halafian mud-walled house, fill
25-34	Halafian dump

round house (tholos 2, possibly with a dromos running to the northwest) with two plaster floors and a hearth area, a possible wall fragment in the northwest quadrant of E4N2, and a portion of stone paving in E5N2's northwest quadrant (fig. 2.7).

Round house 4, the first found in E5N2 in 1968, perhaps incorporates foundation stones from the earlier round structure and possibly was built with a dromos to the northeast. A plaster hearth found in the southwest quadrant of E4N2 may have been contemporary with the house; if so, it lay in the courtyard just west of the structure. This house was refloored at least once, both floors being packed earth rather than plaster, and then seems to have burned. After its abandonment, all the foundation stones on the west side were removed. Another plaster basin was built, perhaps by the epi-Halafians, intersecting the old line of the foundation stones. The burial found in E4N2 (E4N2 8-6) may have been put in after this basin was no longer used and had partially crumbled away. Alternatively, the burial could have been placed there by the builders of the E5N2 house (tholos 4). It is impossible to choose between these two alternatives on the basis of the present evidence because the basin does not extend over the skeleton nor is it cut by the burial pit.

The E5N2 house 4 is interesting because a considerable array of pottery and several grinding stones were found in situ on its upper floor. The pottery is all grit tempered Halafian plain ware and includes both large jars (pots 2 and 5 from 1968 and pot 12-10 from 1970) and a large, hole-mouth bowl (no. 4 from 1968). Two querns were found lying against each other and partially upright (nos. 2 and 3 near the southeast wall of the house; no. 1 is a pestle). Other grinding stones included querns 4, 7, and 8, handstones 6 and 9, and a pestle (in the northeast quadrant of E4N1). The floor of the house found in E5N2 and E5N1 was burned, as indicated in the northwest quadrant of E5N1 where it was best preserved. One of the jars (no. 5) contained six ovoid pottery objects that could have been either pot boilers or sling missiles (several sling missiles were found elsewhere at the site; see chap. 6). This excavation is summarized in table 3.2.

Table 3.2. Stratigraphic Summaries of E4N1, E4N2, E5N1, E5N2, and E5N3

Excavation	Level	Comment
E4N1	1 to upper 3	Epi-Halafian
	Lower 3-5	Upper round house (no. 4)
	6	Fill
	7-8	Lower round houses (nos. 2 and 3)
E4N2	1-2	Epi-Halafian
	3	Fill
	3-5	Upper round house (no. 4)
	6-7	Fill
	8-9	Lower round houses (nos. 2 and 3)
E5N1	1-3	Epi-Halafian
	4-10	Fill
	11-13	Upper round house (no. 4)
	14-18	Lower round houses (nos. 2 and 3)
E5N2	1-2	Epi-Halafian
	3-4	Upper round house (no. 4)
	5 and 14-18	Lower round house (nos. 2 and 3)
E5N3	All	Upper round house (no. 4)

E8N7

Two major events are recorded in the E8N7 deposit (figs. 2.13, 2.14). First, a rather large pit was dug into the sterile soil by the inhabitants and filled with ash, charcoal, sherds, and animal bone. Sec-

Table 3.3. Stratigraphic Summary of E8N7

Level	Comments
1-7	Post-floor
8-10	Plaster floor
11-17	Pre-floor
18-24	Pit

Table 3.4. Stratigraphic Summary of E8N8

Level	Comments
1-2	Post-house
3-4	Upper house (no. 7)
5	Lower house (no. 8)

Table 3.5. Stratigraphic Summary of E8N9

Level	Comments
1-2	Post-floor
3	Floor

ond, a thick plaster floor was laid down, possibly in a courtyard for we found no walls associated with it, although it may be that the walls simply lay outside the confines of the trench. The floor was probably renewed more than once; at any rate, plaster lines occur in the face above it. Finally, the area was abandoned, and mud wall debris accumulated there to a depth of some 70 cm. This excavation is summarized in table 3.3.

E8N8

Remains of the foundations for two houses were uncovered in E8N8 (fig. 2.15, lower right). The earlier of these (no. 7) with an inner diameter of only 2.25 m is the smallest measurable house (if, indeed, it was a dwelling and not a storage structure) so far found at Girikihaciyan. The later house circle (no. 6) is somewhat larger (3.5 m inner diameter). A few scattered patches of white plaster suggest that the later house had a plaster floor. The stratigraphy in trench E8N8 is summarized in table 3.4.

E8N9

Trench E8N9 revealed only two fragments of a white plaster floor, one patch in the northeast corner (1.0 x 0.4 m in extent) and one in the northwest corner (0.8 x 0.45 m in maximum extent). The floor was at an elevation of approximately 7.60 m, so it was probably contemporary with the E8N8 houses rather than with the deeper, and hence presumably earlier, tholos in Operation A. E8N9 is summarized in table 3.5.

E7N9

E7N9 (figs. 2.16-2.18) is a frustrating and enigmatic square. At the bottom, dug into sterile soil in the southwest quadrant, is a roughly circular pit filled with stone, sherds, ash and charcoal, and animal bone. Above that zone, the profiles are extremely difficult to interpret. The square seems to have cut through deposits in a dump of some sort where not only ordinary trash was thrown, but also a considerable quantity of fired clay, burned to a bright orange, was deposited (see the north end of the east wall profile, fig. 2.18, and the east end of the north wall profile, fig. 2.17). Perhaps this represents the clearing out of a kiln or of an accidentally burned building.

Next seems to have come a period of dumping and pit digging (there are possible pits in both the west and south wall profiles) succeeded by the construction of a long and quite narrow building, or possibly the dromos of an unexcavated tholos (fig. 2.15, top), the south end of which appeared in E7N8 adjacent to the Operation A tholos. A fragment of plaster floor (E7N9 6-1) was found in the southeastern corner of E7N9 at an elevation suggesting

Table 3.6. Stratigraphic Summary of E7N9

Level	Comments
1-5	Dumping
6	Plaster floor fragment, southeastern quadrant
6-7	Stone foundation lines
7-14	Accumulation of orange, fired clay
15	Pit

that it is to be associated with the eastern wall line (see also the northern face profile, fig. 2.17, where a plaster floor line abuts a basalt rock from this eastern wall line). This plaster flooring, however, would have lain to the east of and outside the room or building.

The next phase seems once again to be one of trash accumulation, with one of the final events being the construction of a plaster-lined pit visible in the southwestern corner of the square. In the area east of the eastern wall line, the plaster surfacing must have worn out or been dug away because a thick ash band appears here slanting down across the level of the plaster (fig. 2.18).

The uppermost zone in this square, as elsewhere, consists of tough brown clay with prominent vertical cracks, perhaps originally accumulated from disintegrating mud walls. E7N9 is summarized in table 3.6.

E7N8 and Operation A

A patch of burned clay floor approximately 35 cm in maximum dimension was found in the northeast quadrant of E7N8 at an elevation of 7.75 m. At 7.29 m in the southwest quadrant a portion of the well-preserved stone foundation of a round house (house 1) was exposed. We decided to shift our excavation from the arbitrary 5 x 5 m square (E7N8) to the architectural unit (christened Operation A) provided by the house foundation in hopes of finding in situ material there. As it turned out, the foundation of the house was almost completely preserved (fig. 2.15, left, house 1), but a large proportion of the deposits inside reflected postoccupational dumping and other disturbance rather than in situ patterning reflecting activities of the dwelling's original occupants.

Activity predating construction of the round house is recorded in profiles of the northwest and southeast quadrants of Operation A (figs. 3.3, 3.4, 3.6). In the southeast quadrant balk (fig. 3.6), outlines

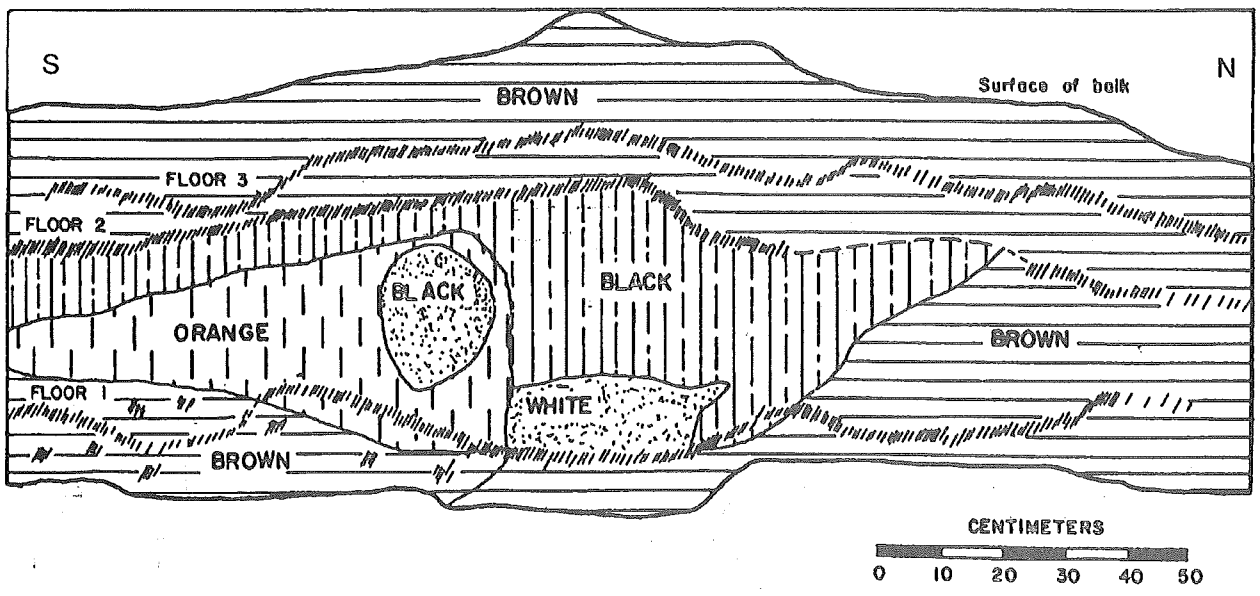


Figure 3.2. Operation A, north balk, east face.

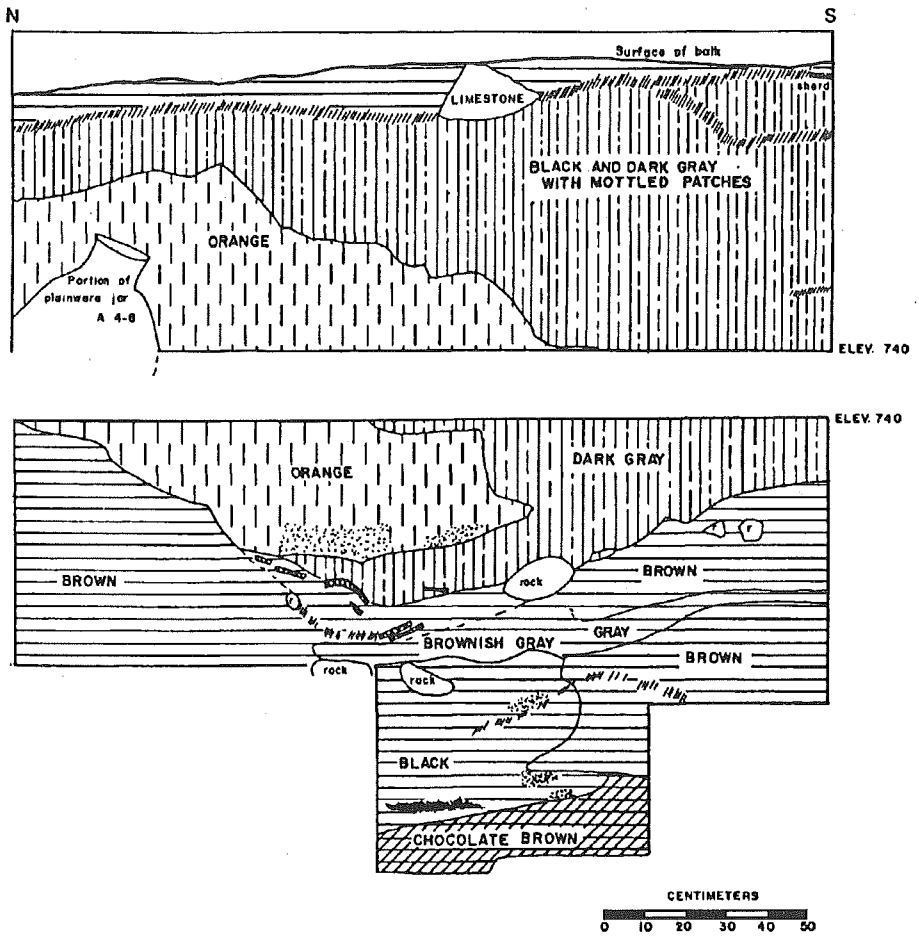


Figure 3.3. Operation A, north balk, west face. Upper profile as originally exposed with portion of large plain ware jar in situ. Lower profile shows bottom of balk after jar was removed and further excavation took place to apparently sterile pre-mound sediment.

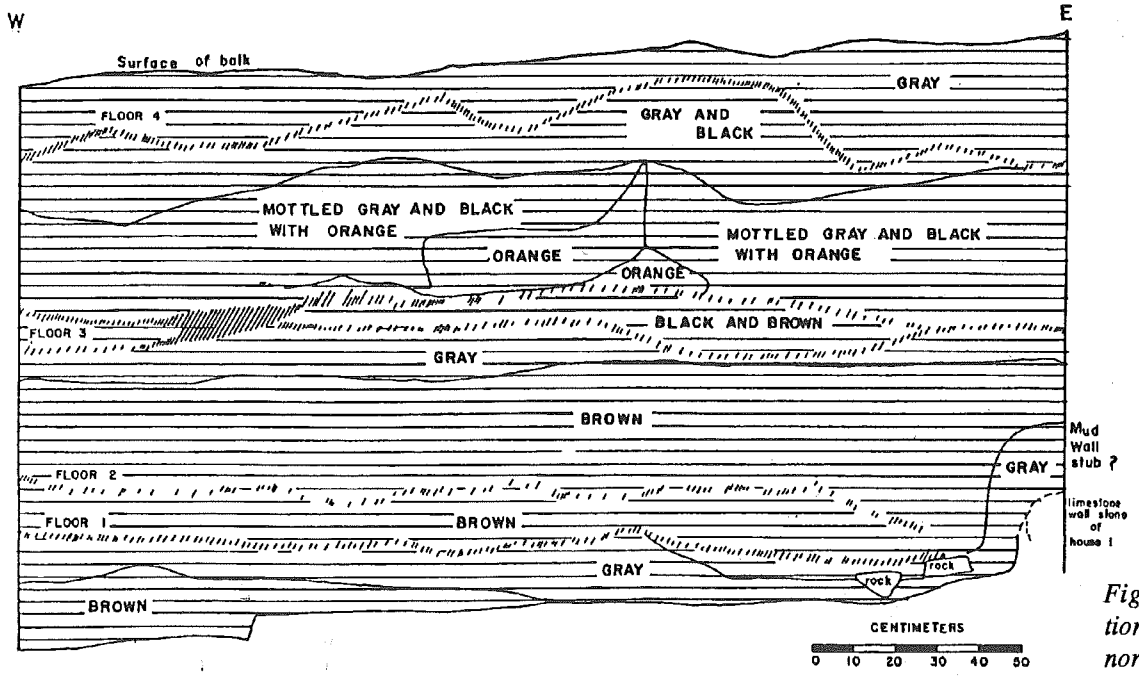
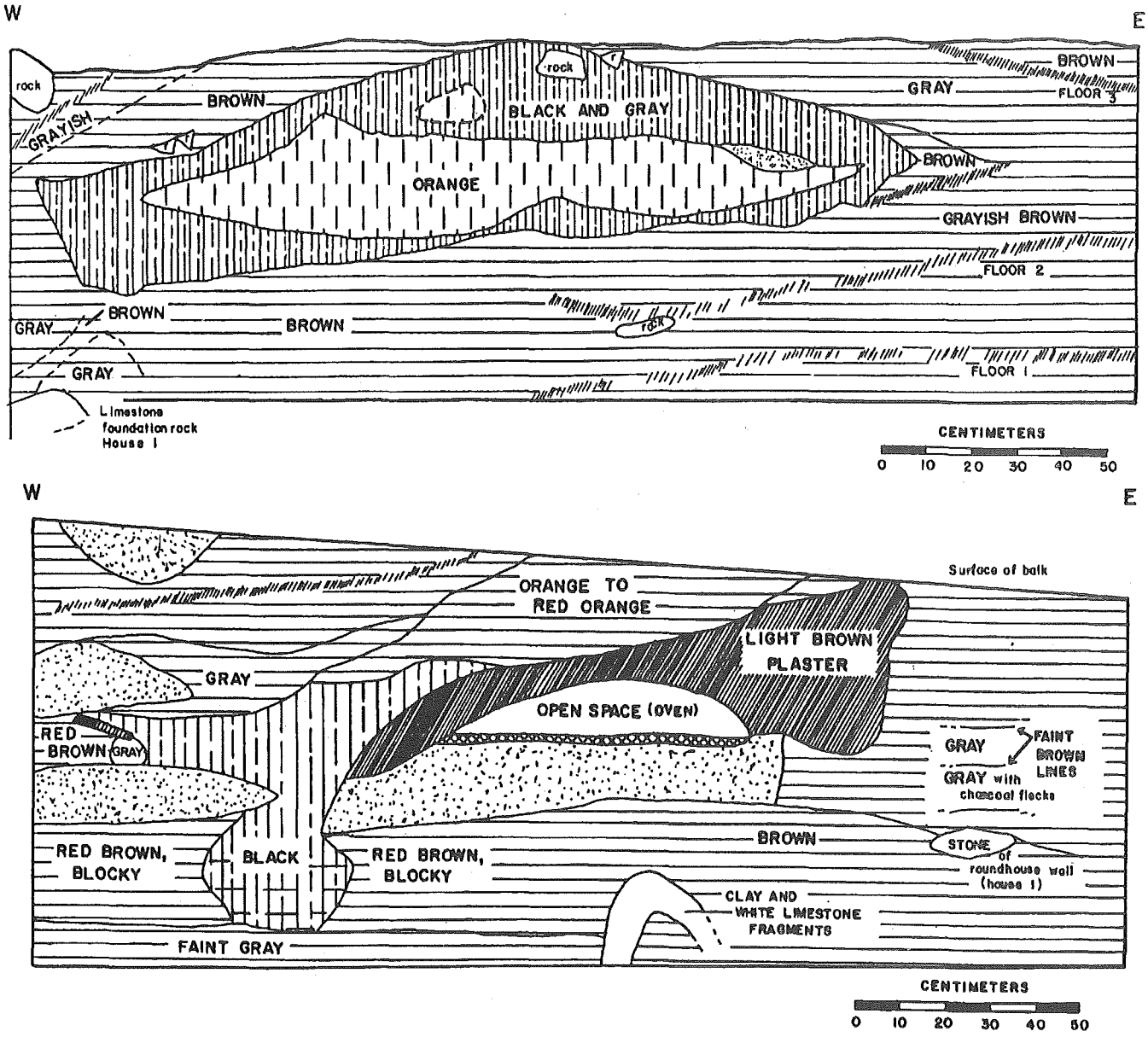


Figure 3.4. Operation A, west balk, north face.



(Top) Figure 3.5. Operation A, west balk, south face.

(Bottom) Figure 3.6. Operation A, east balk, south face.

of a pit are visible, cutting the house floors adjacent to a plaster, ovenlike structure. The bottom of the pit rests on a possible prehouse walking surface, but the pit itself must postdate use of the house.

The west-facing profile of the north balk (fig. 3.3) indicates a larger and more irregular pit with its base at an elevation of approximately 6.80 m. This pit must also postdate the round house, but the material below it should be prehouse in age. A small sondage (0.75 x 0.75 m) dug from 6.80 to 6.25 m revealed cultural debris extending to an elevation of 6.40 m. The lowest 15 to 20 cm of the sondage were dug into chocolate brown, sterile clay. Thus, house 1 was built on top of 50 to 60 cm of earlier trash. The house consisted of mud walls on a stone foundation (remains of these are visible in figs. 3.4-3.6). There were apparently at least four floors associated with the round house (fig. 3.4). The earliest floors (1 and 2) are represented by the lines (at approximately 7.00 and 7.25 m) in figures 3.4 through 3.6; fragments of the upper floors are

Table 3.7. Stratigraphic Summaries of E7N8 and Operation A

Excavation	Level		Comments
E7N8	1-6		Dump
	7		Floor and subfloor in northeast quadrant
	8-9		Dump
	10		Wall foundation of round house (and pottery)
Operation A	1-4	NW quadrant	Dump
	5	Other quadrants	Dump
	5-7	SE quadrant	Upper floor with oven or hearth
	5-6	Other quadrants	Upper floor with oven or hearth
	7	NE, SW quadrants	Lower floor (stone foundation)
	8-9	SE quadrant	Lower floor (stone foundation)
	5-10	Northwest quadrant	Pit 1
	7	Northwest quadrant	Burial A 7-7
	11	Northwest quadrant	Pit 2

visible in figures 3.3 and 3.4. None of these floors was found in horizontal extent. Fragments from several plain ware pots found in the northeastern sector of the house at an elevation of 7.29 m (fig. 2.15) are probably also associated with one of these early floors, the foundation stones being 25 to 30 cm higher on the northern and eastern part of the circle than they are on the south and west (see the elevations noted in fig. 2.15).

There seems to have been at least one later floor level at an elevation of about 7.40 m, as indicated by a partially plaster-lined hearth area in the northwest quadrant and an ovenlike feature, also of plaster but with a hard clay floor, in the southeast quadrant (fig. 2.15).

After the abandonment of the house and destruction of the roof and upper walls, the area filled with trash and was used as a burial place for a baby (burial 3 from A 6-7). Another burial, that of a young child (burial 2 from A 7-7) was made at about the elevation of the second house floor (the top of the skull was found at 7.18 m, long bones at 7.17 m) in the northwest quadrant. The evidence is insufficient to indicate definitely whether the child was put here by the house occupants (just before or at the same time as one of the upper floors was being used) or whether the burial postdates the house. No clear trace was found of the burial pit around the bones themselves, but the outline of the broad irregular depression referred to above is discernible in the lower part of the north balk, west-facing profile (fig. 3.3), which is only some 25 cm east of the skeleton. If the body was disposed of by means of this (probably preexisting) depression, it must postdate the occupation of the house because the pit was not sealed by a floor or walking surface.

Fragments of another burial (burial 4 from E7N8) were found above the floor area in the northwest quadrant of the tholos. They postdate the structure and were disturbed at a later time, or were redeposited from some other area of original deposition.

Following abandonment of the house, trash accumulated here, including, as in E7N9, concentrations of burned clay. When we first came upon this material, we thought it might be the remains of burned roofing, but it occurs at various depths within the house fill and never contains any trace of charred beams or brush. In the northwest quadrant profile (fig. 3.3), it partially fills the irregular pit referred to earlier. Thus, it seems to be a component—perhaps burned *kerpiç* (adobe)—of the rubbish dumped into the abandoned house. E7N8 and Operation A are summarized in table 3.7.

Table 3.8. Summary Descriptions of Girikihaciyan Tholoi

	Tholos		Dromos	
Number and Location	Inside Diameter (m)	Wall Thickness (m)	Present	Orientation
1. Operation A	4.50	0.35	Yes	SSW
2. E4N1 6-8	3.40	0.35	Possibly	NW
3. E4N1 8-1 (and E5N1, levels 17-18)	3.10	0.35	Yes	SE
4. E5N2 3-4	4.25	0.50	Possibly	ENE
5. E7N9	Tholos, if present, unexcavated		Possibly	SSW
6. E8N8 3, 4	3.50	0.35	?	?
7. E8N8 5	2.25	0.35	?	?
8. W2S5	4.50	0.35	?	?

ARCHITECTURAL SUMMARY

The Halafian architecture at Girikihaciyan is known only from stone wall foundations, although traces of pisé or puddled adobe were also observable in some of the trench profiles. Buildings were of the round tholos type, now well documented for Halafian communities throughout their area of distribution (Watson 1983b). Several of the Girikihaciyan tholoi had rectilinear chambers attached to the round ones, and in no case was a gap left at the point of juncture, although it is not clear whether or not there was actually a wall between the two chambers.

The inside diameter of the tholoi ranged from 2.25 to 4.5 m (see table 3.8). It is difficult to imagine the smallest tholos being used as a dwelling, although it could have been a large silo (al-Radi and Seeden 1980:121; Seeden 1982: 72, 90-91). Unfortunately, the foundation of this structure had been partially robbed of stones, and it is unclear whether or not a dromos was present.

The two best preserved tholoi (1 and 4 from Operation A and E5N2, respectively) were clearly dwellings with floor features such as hearths and with in situ pottery. A handstone was found on what may have been the floor of the dromos in Operation A, but there is no other evidence to indicate the functioning of these rectilinear structures. In general, however, there is no indication that the tholoi or the attached rectangular chambers were used for special, nondomestic functions.

Excluding the portions of straight walls found in the post-Halafian layers, there is only one possible exception to the tholos-dromos building style in our soundings at Girikihaciyan. In E7N9 and E7N8, a long, rectilinear outline of foundation stones was found. This could have been part of a rectilinear building, or possibly an unusually long dromos (perhaps subdivided like that at the recently excavated Halafian site of Cavi Tarlası on the Euphrates in Urfa Vilayet [von Wickede 1984; Misir 1985]), with the tholos lying outside the excavated area to the north (fig. 2.15, top).

RADIOCARBON DETERMINATIONS

A radiocarbon determination for the post-Halafian levels at Girikihaciyan was made on charcoal recovered from level 9 in {E2} and levels 4 and 5 in B5: GrN 5882, 6465 ± 100 BP. From the Halafian levels there are two more determinations: GrN 6245, 6805 ± 45 BP (W2S5 38-2) and GrN 6246, 6950 ± 45 BP (E8N7 24-1 and E7N9 15-3 combined). The W2S5 38-2 date is based on the fragments of a small log found 3.0

m below the surface in the southeastern corner of the square. The E8N7 charcoal is from a pit dug into sterile sediment at a depth of 2.70 to 3.0 m below the surface; the charcoal from E7N9 15-3 came from a pit in the southwest quadrant of the excavation unit, dug into the culturally sterile, premound sediment. All determinations were supplied by Dr. T. Waterbolk of the Natuurkundig Laboratorium at the Rijks-Universiteit, Groningen, Netherlands, and are calculated on the basis of the Libby half-life with a 1950 base date.

GIRIKIHACIYAN POST- OR EPI-HALAFIAN

Although detailed data are lacking for the post-Halafian occupation at Girikihaciyan, some discussion of it is necessary. The cluster and factor analyses indicate that the artifactual material found in the upper levels of W2S5 and the 10 x 10 m excavation on top of the mound are not greatly different from those of the true Halafian levels (LeBlanc 1971:89). The nature of the architecture is unknown (possibly still round houses, although the only well-defined remains are those of a straight wall in W2S5; fig. 2.6). It is clear, however, that Halafian painted pottery was either very rare or absent, that the plain ware was different in form and technique from that accompanying the earlier Halafian painted pottery, and that a few classes of characteristic artifacts are included which are absent or extremely rare in the Halafian levels: backed crescents, punctate sherds, sieves, and thick basalt bowls.

The available radiocarbon dates suggest a span of 200 to 500 years between the basal Halafian and this post-Halafian occupation.

4.
Painted Pottery

The limited excavations made during the 1968 season did not provide adequate qualitative or quantitative samples of Halafian painted pottery at Girikihaciyan because most of the material came from the area of the post-Halafian occupation. During the 1970 season, however, more than 5,000 fragments of Halafian fine ware were recovered. None of the excavated material may leave Turkey; hence, we had to complete all desired recording in the period left between the end of the excavation and the termination of the Joint Prehistoric Project field season in mid-December 1970. We intended to apply computer-aided statistics to the data, and therefore we were able to take some shortcuts in recording that enabled us to finish the work in spite of limited time and personnel.

Artifactual finds were sorted by the workmen at the time of excavation into three main groups: pottery, bone, and stone. The procedure applied to pottery in the laboratory was as follows: first, all pottery was washed and labeled. Next, for each provenience unit, plain ware was sorted from fine ware and the plain ware divided into two groups: sherds with classifiable shapes and body sherds. Each group was weighed and counted; the plain ware body sherds were put into dead storage and the sherds with shapes were temporarily shelved to be studied later. Painted pottery from each provenience unit was counted, weighed, and sorted for distinguishable shapes and designs. All sherds with either or both these characteristics were numbered in a series to be recorded in greater detail, sherd by sherd. Small fragments with neither shape nor design were classified as bowl or jar fragments if this was possible, their thicknesses were measured, and they were then returned to dead storage.

Three different running tallies were used to keep track of the sherds throughout this stage of the work. Form 1 is a record of the weights and counts of plain ware "shapes" (i.e., plain ware sherds with recognizable vessel shapes), plain ware body sherds, and fine ware for each provenience unit.

Form 2 records the following for each provenience unit: total number of fine ware painted sherds; catalog numbers of fine ware sherds selected for detailed recording; number of fine ware sherds remaining after those selected for detailed recording were removed; count of bowl sherds, jar sherds, and indeterminate sherds for those remaining (with thickness noted for each sherd); and remarks on unusual fabric or anything else thought to be of interest.

Form 3 documents the provenience, the catalog number, and the means of recording each selected fine ware sherd. The alternatives for recording these cataloged sherds were photograph only, profile drawing only, profile and photo, or full-scale drawing showing both sides (if a

painted design were present on each) and profile. Criteria for choosing among these alternatives were based on the nature of each sherd. If it had a classifiable shape and a clearly distinguishable design, it was profiled and photographed; if shape but no design, profiled only; if design but no classifiable shape, photographed only; if the design was worn or partially destroyed, a drawing was made. Finally, for a residue of the most nondescript sherds (totaling 154), dimensions were recorded together with form class (see below) where possible and notes made on the nature of whatever paint was preserved, but no profiles or drawings were made. On Form 3 we also noted whether there was paint on the inside of the sherd and on the outside; or whether it was worn off or whether neither surface had ever been painted. The cataloged sherds were treated in the various ways described, each one being accompanied by its number, provenience, and any measurable dimensions (rim, base, etc.).

The following discussion of the Girikihaciyan painted pottery—except for the general description below by Behin Aksoy, University of Istanbul—is based on tabulations made from the various records just described and not on direct manipulation of the sherds.

A BRIEF GENERAL DESCRIPTION OF GIRIKIHACIYAN PAINTED POTTERY

There has as yet been no formal technical analysis of Girikihaciyan painted ware. The following account by Behin Aksoy of Istanbul University concerning the Halafian-style painted pottery recovered from Girikihaciyan by the Turkish Prehistoric Project should therefore be understood as tentative and preliminary.

Clay

The temper used may be discussed in two groups: fine ware and coarse ware. In most cases, the former group contains almost no temper. If there is any, it is often very fine sand (inorganic) or, rarely, plant (organic) together with sand. Coarse ware generally contains sand particles of various sizes; rarely, seeds and straw as organic temper have been noticed. It may be said that the fabric is generally well levigated.

Shape

The pottery, which is handmade, is divided into two main groups: open vessels (plates and bowls) and closed vessels (jars of various types). In the present sample, there are no true plates, but some of the shallow bowls may perhaps be considered plates (fig. 4.1:1, 2). Four main types of bowls, typical of Halafian painted wares, have been observed: straight-sided (fig. 4.1:3, 4), concave-sided (fig. 4.1:5, 6), round-sided (fig. 4.1:7), and flaring rim (fig. 4.1:8-10). They all have flat bases. The first three have either flat or rounded rims. The flaring-rim bowls are of two types: cream (fig. 4.1:8) and sinuous-sided (fig. 4.1:9, 10). They all have rounded rims.

Closed vessels may also be considered in four main types: hole-mouthed (fig. 4.1:11, 12), sinuous-sided (fig. 4.1:13), squat (fig. 4.1:14), and jars (fig. 4.1:15), all in various sizes.

One or two spout sherds, some carinated sherds, and a few ring base sherds (possibly of jars) are also present. There is one example of a pedestal and one of a foot of some sort.

Surface Treatment

To designate the types of slips on the Girikihaciyan painted pottery, I use the terms *light slip*, *self slip*, and *dark slip*. Light slip is lighter than the color of the actual clay after firing. (This is the so-called white slip [Dabbagh 1966:24-25]). Self slip is the same color as the clay itself. Perhaps the term *wash*, indicating wet smoothing, would be more convenient to

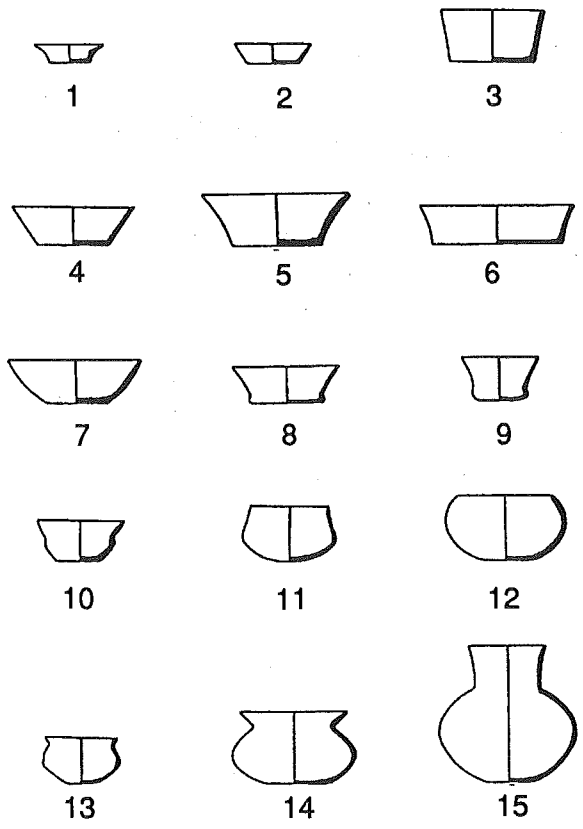


Figure 4.1. Painted pottery forms. (1, 2) Shallow bowls considered as plates; (3, 4) straight-sided (or flaring straight-sided) bowls; (5, 6) concave-sided (or flaring concave-sided) bowls; (7) round-sided bowl; (8-10) flaring-rim (or flare-rimmed) bowls; (11, 12) hole-mouthed bowls; (13) sinuous-sided bowl; (14) squat jar (Büchse); (15) flaring-neck jar.

use in this case. Dark slip is darker than the color of the actual clay, again after being fired. (This is the so-called cream slip [Dabbagh 1966:24]). Both the light and the dark slips tend to flake off.

Open vessels (plates and bowls) were slipped both on the inside and outside, sometimes also on the rim, but usually not on the underside (the base). Closed vessels were slipped as far down on the inside as the beginning of the shoulder, completely on the outside, but again excluding the underside.

Although the paint is generally not very lustrous, some burnishing is noticeable on many sherds. Lack of luster may indicate the use of a bone or a wooden tool for burnishing. Fine striations are also often noticeable on the insides of painted jars, probably the result of wiping with a cloth.

Paints and Painting

Although one surface sherd has a white-painted design (fig. 4.2), the color of the paint on all other sherds falls into three categories: buff, brown, and black. The buff paints generally tend to be either on the yellowish or the reddish side. The browns are either reddish or blackish. The appearance of color on a vessel (bichromatic, polychromatic) seems in most cases to be accidental rather than intentional. So it can be said that monochrome painting is usual.

The paints used are generally matt, fine grained, seemingly mineral pigments (Shepard 1956:36-40). The texture and the luster of the reds and some of the blacks seem to be independent of the vessel itself and have the effect of being plated (Shepard 1956:70-72), possibly indicating the presence of iron oxides. On the other hand, it is quite possible that some of the blacks are manganese or manganese and iron oxide pigments (Shepard 1956:36-42).

No fingerprints have been observed to indicate that the painting was done directly with the fingers. The fingerprints occurring seem to be the result of inefficient holding of the vessel while painting. Apparently, a brush of some sort was used,

Figure 4.2. Sherd with white paint (found on site surface in 1968).

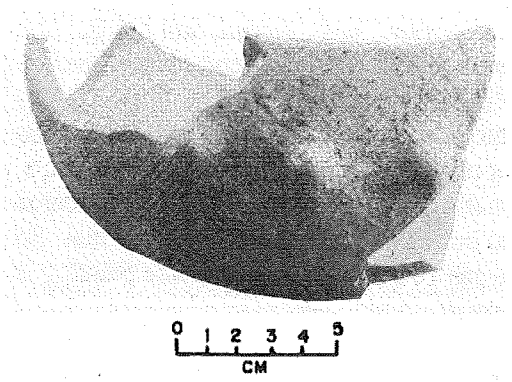


Figure 4.3. Unpainted fine ware, #373 from E8N7 19-2.

and it is more probable that it was made of hair or plant fibers than of reed, because no reed impressions have been noticed.

Apparently, at least a small amount of unpainted fine ware was also produced at Girikihaciyan (fig. 4.3).

Motifs

An array of painted designs is shown in figure 4.4. The motifs fall into two main categories: geometric and representational. For purposes of analysis, geometric motifs are considered in terms of basic patterns (basics), patterns derived from these (derivatives), and variations produced by several basic patterns and/or several derived patterns (combinations). Basic patterns are line, band (of various sizes), zigzag line, wavy line, circle, and dot. Patterns derived from a line or a band are dashes, crosses, crosshatches, squares, and rays. Those taken from a zigzag line are chevrons, lozenges and lozenge series, triangles and triangle series, ribbons, and formée crosses (often referred to in the literature as Maltese crosses; these are stylized combinations of ribbons). From a wavy line come chains and scales of various types. The patterns derived from a circle are lenses and arcs of various sorts. Patterns such as dotted lines and dotted circles are made by arranging dots in various ways. Most of the Girikihaciyan painted pottery has geometric motifs, usually combinations of basics and derivatives.

Representational motifs, which are generally stylized and occur very rarely, can be divided into two groups: plant and animal (birds included). Stylized to a certain extent, the only plant motif found is a flower pattern (number of petals varying from vessel to vessel) produced by painting all parts except the petals, thus using the slip color for the flower petals. The animal patterns in each case are bucrania of various types, except in the case of one sherd (and possibly one other) on which a line of long legged birds (storks?) appears. In almost every case, the natural motifs are combined with geometric motifs.

On open vessels, motifs, often elaborate, appear on the inside and outside walls, sometimes on the rim, and sometimes on the base, either interior or exterior. Of the closed vessels, the hole mouth and especially the squat type jars have elaborate motifs appearing on the inside, outside, and underside of the lip (squat type) and on the outside of the body (hole mouth and squat type). Motifs on the underside (the base) are almost nonexistent. On big jars, simple patterns such as lines and/or bands of various sizes appear, especially on the inside and outside of the neck.

Firing

In most cases, the color of the actual paste after firing is either yellowish or orangy buff; sometimes grays appear. However, most of the gray sherds seem to have been exposed to fire during a conflagration of some sort rather than being the result of reduction during the actual firing of the vessel itself. Sometimes it is hard to decide which is the case.

As a mean, it can be said that the firing temperature was perhaps about 900° C. Oxidation is quite common. The clear colors, such as oranges, are the result of complete oxidation; the surface and the core of such vessels are the same color.

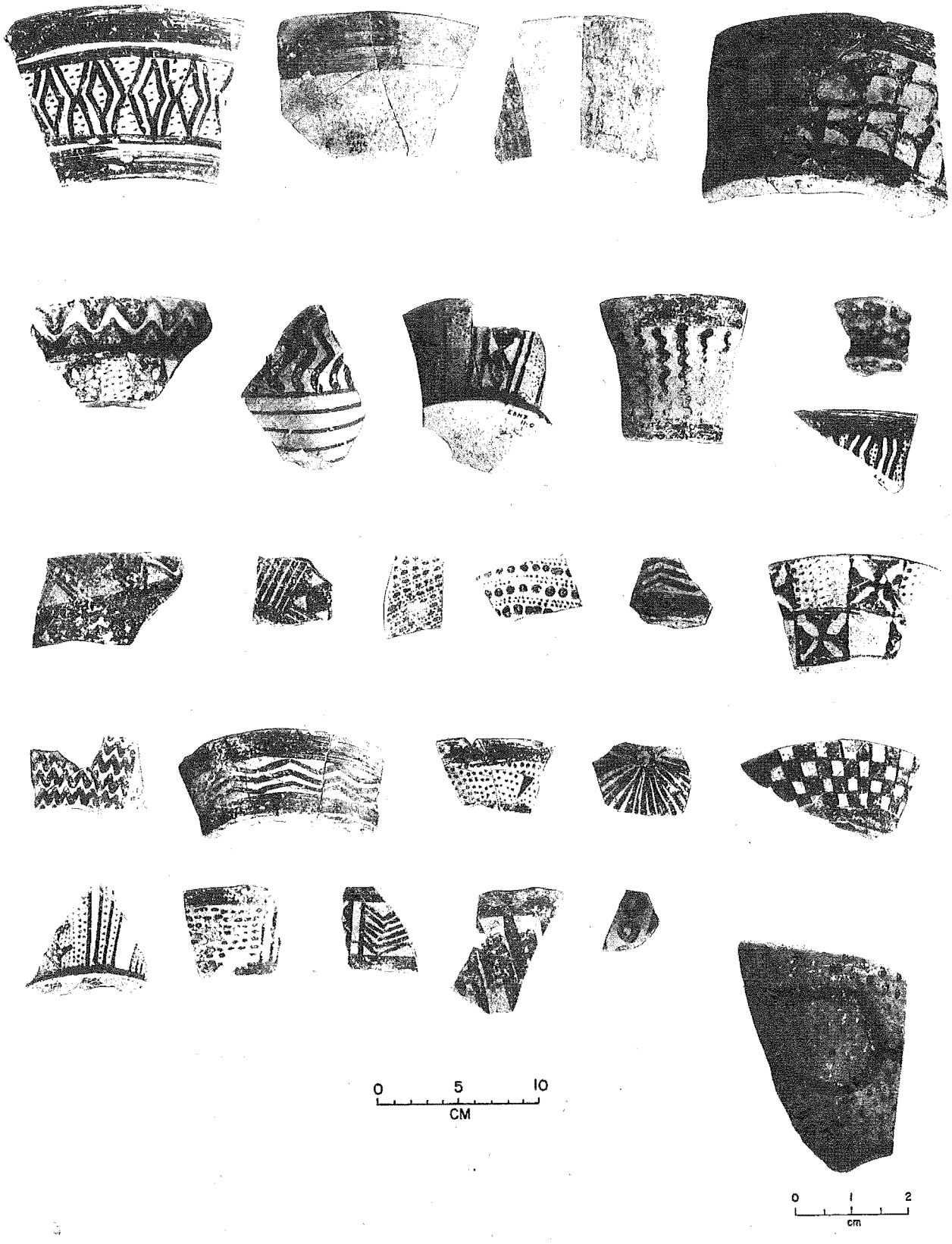


Figure 4.4. Painted pottery designs on a selection of sherds from the 1970 season.

This fact also points to the presence of Fe_2O_3. Incomplete oxidation is rare; in such cases, the core is light gray, probably due to insufficient temperature and firing time. Reduction is very rare but certainly present, and some of the grays fall into this category.

FORM CLASSES OF PAINTED WARE

For purposes of general description, Girikihaciyan fine ware, as noted by Aksoy in the preceding section, can be readily grouped by inspection into a few basic form classes (fig. 4.1, table 4.1): round-sided bowls; straight-sided bowls; concave-sided bowls; flare-rimmed bowls (including the cream bowl variant first distinguished by Mallowan at Arpachiyah [Mallowan and Rose 1935: figs. 62:5, 63:1]); hole-mouthed vessels; squat, large-mouthed vessels of the sort called *Büchsen* by Schmidt (von Oppenheim and Schmidt 1943: pls. XII-XIII); and various size jars.

Table 4.1. Girikihaciyan Halafian Painted Ware Form Classes

I. Bowls
  A. Round-sided
  B. Flaring, straight-sided
  C. Flaring, concave-sided
  D. Flare-rimmed
  E. Hole mouths
  F. Indeterminate
    Rims
    Bases
    Body sherds
II. Squat, bowl-like jars (Büchsen)
III. Jars
  A. Flaring-necked
  B. Fragments from neck/shoulder junction
  C. Collared
  D. Body sherds
  E. Bases
IV. Miscellaneous
V. Indeterminates
  A. Probably bowls
  B. Probably jars
  C. Rims
  D. Bases
  E. Bodies

Table 4.2. Painted Pottery Totals (1970)

Form class	Count	Percent of form class	Percent of total shapes (n = 1461)
I. Bowls			
A. Round-sided	22	2.59*	1.51
B. Flaring, straight-sided	143	16.80*	9.79
and/or C	15	1.76*	1.03
C. Flaring, concave-sided	98	11.52*	6.71
D. Flare-rimmed	164	19.27*	11.23
E. Hole mouths	16	1.88*	1.10
F. Indeterminates	393	46.18*	26.90
II. Büchsen	36	14.23**	2.46
III. Jars			
A. Flaring-necked	39	15.42**	2.67
B. Neck/shoulder junction	149	58.89**	10.20
C. Collared	8	3.16**	0.55
D. Body sherds	329		22.52
E. Bases	21	8.30**	1.44
IV. Miscellaneous	28		1.92
Total shapes	1461		
V. Indeterminate			
A. Probably bowls	75		
B. Probably jars	41		
C. Rims	113		
D. Bases	48		
E. Bodies	2705		
Total	4443	(1970)	
	+ 224	(1968)	
Grand total	4667		

* Percentage of all bowls (n = 851)
** Percentage of all jar shapes, excluding jar body sherds (n = 253)

Table 4.3. Painted Pottery Bowl and Jar Counts

Date	Bowls	Jars
1970	1070	971
1968	89	135
Total	1159 = 51.2%	1106 = 48.8%

We assume that there is a basic functional difference between fine ware bowls (i.e., open vessels that are rather small, volumetrically speaking) and fine ware jars (relatively closed vessels that are also relatively large volumetrically). Ethnographic data indicate that bowls are usually used for food and water serving, and for certain aspects of food preparation (mixing, for instance), whereas jars are usually used for food and water storage. Variation in details of vessel profile within the bowl and jar categories are taken to be

stylistic, like the painted designs on the vessels. As the sherd counts indicate (tables 4.2, 4.3), flaring straight- and concave-sided bowls are by far the most common, flare rims are fairly common, but round-sided bowls, hole mouths, and Büchsen are relatively rare. Jars are approximately as numerous as bowls, and many of these jars apparently had flaring necks. The available data on the dimensions of the various form classes are summarized in table 4.4.

GIRIKIHACIYAN PAINTED POTTERY FORM CLASSIFICATION

Although more than 5,000 fine ware sherds were recovered from the 1970 exca-

Table 4.4. Girikihaciyan Painted Pottery Diameters

	Form classes																
Diameter (mm)	I.A r	I.B r	I.B-C r	I.C r	I.D r	I.D b	I.E r	I.F r	I.F b	II r	II s	III.A r	III.A s	III.B s	III.C r	III.E b	Totals
40														1		1	2
50						1											1
60													2	6		2	10
70									3				1	8	1	1	14
80		1				5			2		1		1	6		1	17
90			1	1		6			3	1	3	3		5	2	3	28
100		1	1	3		7		3	10			2	2	5		3	37
110	1	1		3	1	12	2	3	5	1	1	1		3	1		35
120	2	2		2	4	9	1	5	5		2			2		2	36
130		3		4		5	2	2	6	1			1	1			25
140		3	1	6	3	10	1	5	8	1	1	1		4			44
150	2	6	1	9	1	4	1	3	6	1		1		4	1	2	42
160		9	1	4	2	4		7	4	1		3	1	4			40
170		2		2	1	6		1	8	2		2		1			25
180	1	6	1	6		3	2	3	3			1		3	1		30
190		1				1		3				1		1			7
200	2	6	1	7		2		8	3	1							30
210		3		1	1	3		2	2			1		1			14
220		2	1	2	2			6	1		1			1			16
230	1	1		1			1	2				1		1			8
240	2	5		1				2									10
250				2				1									3
260		4		2					1					2			9
270		2		1				1	1				1				6
280		2										1					3
290		2		1										1			4
300	1	9		2	2			2		1	1	1					19
310																	0
320		3									1	1					5
330		1								1							2
340		1															1
350								1									1
360												1					1
370																	0
380	1																1
Totals	13	76	8	60	17	78	10	60	71	11	11	20	9	61	6	15	526

Note: r = rims
b = bases
s = shoulders

vations at Girikihaciyan, only 1,461 could be classified as belonging to form categories I through IV listed in table 4.1 and described below. An additional 3,782 sherds could be classed only as rims, bases, body sherds, probable bowls, or probable jars. We wish to stress once more, however, that the final classification could not be done in the field and that, therefore, most of these tabulations were carried out on the recorded profiles and photos of the sherds, not on the actual sherds themselves. This situation, together with the fact that we tried to be as conservative as possible in assigning form categories, means that a larger quantity of indeterminates is present in the final classification than would have been the case had we made these assignments on the basis of actual sherds.

The detailed tabulations presented here represent, for the most part, ceramics from the 1970 excavation. Fewer Halafian fine ware sherds came from the 1968 soundings (89 bowl sherds, 135 jar sherds), and many were from ambiguous contexts. Bowl and jar counts of fine ware sherds from the intensive surface collections made at Girikihaciyan in 1968 are presented in tables 2.3 and 2.4.

Throughout the ensuing account of Girikihaciyan painted pottery forms, comparative reference is made to the Halafian painted pottery from Banahilk in northern Iraq (Braidwood and Howe, 1960:33-35; Watson 1956, 1983a; table 4.5, this vol.), to that from Arpachiyah (Mallowan and Rose 1935; Hijara 1980; Hijara et al. 1980), and to several Halafian ceramic industries analyzed by Thomas Davidson (1977).

Davidson's dissertation contains

Table 4.5. Comparison of Girikihaciyan and Banahilk Painted Ware Bowl and Jar Forms

	Girikihaciyan		Banahilk (Watson 1983a)	
Vessels	Number	Percent	Number	Percent
Bowls				
Round-sided (hemispherical)	22	2.59	526	71.37
Flaring-sided with straight or concave sides in profile	256	30.01	43	5.83
Flare-rimmed (includes cream bowls)	164	19.27	28	3.80
Hole-mouthed	16	1.88	140	19.00
Indeterminate	393	46.18		
Totals	851		737	
Jars (excluding body sherds)				
Büchsen	36	14.23	57	10.40
Flare neck	39	15.42	97	17.70
Collared (vertical necks)	8	3.16	17	3.46
Vertical necks with everted rims			38	6.93
Indeterminate jar necks			45	8.21
Neck/shoulder junction	149	58.89	145	26.46
Bases	21	8.30	149	27.19
Totals	253		548	
Jar body sherds	329		415	
Miscellaneous	28	1.91	48	1.5
Total painted ware sherds	4443		3230	
Bowls	1070	52.43	737	44.86
Jars	971	47.57	906	55.14
Totals	2041		1643	
Bowl/jar ratio		1.10		0.81

much valuable specific information on a number of Halafian pottery collections as well as a detailed discussion of Halafian origins and intersite relationships. We are very grateful to him for allowing us access to this material. Because it is not available through the University Microfilms outlet and is therefore not easily accessible to scholars based in the United States, we provide a brief abstract outlining those aspects most relevant to our concerns in this report.

Davidson systematically analyzed the stratified Halafian pottery from Arpachiyah by using unpublished sherds stored at the Institute of Archaeology, London, and the information in Mallowan's 1935 publication. In collaboration with Hugh McKerrell at the University of Edinburgh, he also carried out a series of neutron activation analyses on Halafian pottery from a number of sites in Iraq, north Syria, and south Turkey. In addition, he reported the results of survey and excavation in the upper drainage of the Khabur, emphasizing the long Halafian sequence from a site north of Chagar Bazar, Tell Aqab (excavated in 1975 and 1976 by a team from the University of Edinburgh).

Davidson's work on the Arpachiyah sequence enabled him to clarify the phases of Halafian development there (Early [pre-TT 10], Middle [TT 10-8], and Late [TT 7-6]) and to define chronological markers in pottery forms and designs that characterize each phase. Thus, he presents a master sequence (see below the discussion of Hijara's work at Arpachiyah) to serve as a standard for the ordering of eastern Halafian materials from less well-stratified contexts. By using the stratified pottery from Chagar Bazar and Aqab, he performs the same service for the western area: levels 13 through 15 at Chagar correspond to Early Halaf at Arpachiyah; level 12 is the Middle phase, and levels 11 through 6 are Late Halaf. He finds some differences in basic vessel forms and in the use of specific design motifs and combinations between eastern and western Halafian sites but believes the developmental sequence to be essentially quite similar. In later chapters, he discusses Halafian pottery from sites in the area of the upper Euphrates Valley (Turlu, Yunus, Shams ed-Din), the northern boundary region of Halaf settlements (Tilkitepe, Girikihaciyan, and sites in the Keban area), and the Halafian-influenced developments at sites in the Levant (Sakçe Gözü, Ras Shamra, Mersin, etc.).

Before describing the painted pottery forms found at Girikihaciyan, we turn to a summary of the recent excavations at Arpachiyah by Ismail Hijara (1978, 1980; Hijara et al. 1980) and compare his results with those of Davidson. The details of Hijara's important work are available only in his dissertation, which, like Davidson's, is not obtainable by U.S. scholars through University Microfilms. For this reason and because he has generously provided us with a copy, we include here an extended discussion of his Arpachiyah research. Although we disagree with some of his interpretations, we gratefully acknowledge our respect and admiration for his scholarship and his kindness in sending us his dissertation.

Hijara's work at Arpachiyah has considerably expanded our knowledge of the Halafian sequence at that important site. During an eight-week season in the fall of 1976, Hijara directed the excavation of three trenches on the mound adjacent to Mallowan's pits. Two of his trenches ran north-south on the mound center (one being 9 x 3 m, the other 8 x 2 m), whereas the third was an east-west 40.5 x 2.5 m exposure bisecting the mound just south of the TT 8 tholos cleared by Mallowan and reaching sterile premound deposits at 7.5 m below the surface.

Hijara groups the 42 excavated levels (spits) into four cultural periods[1] distinguished largely on the basis of pottery forms (fig. 4.5). Only the last of these

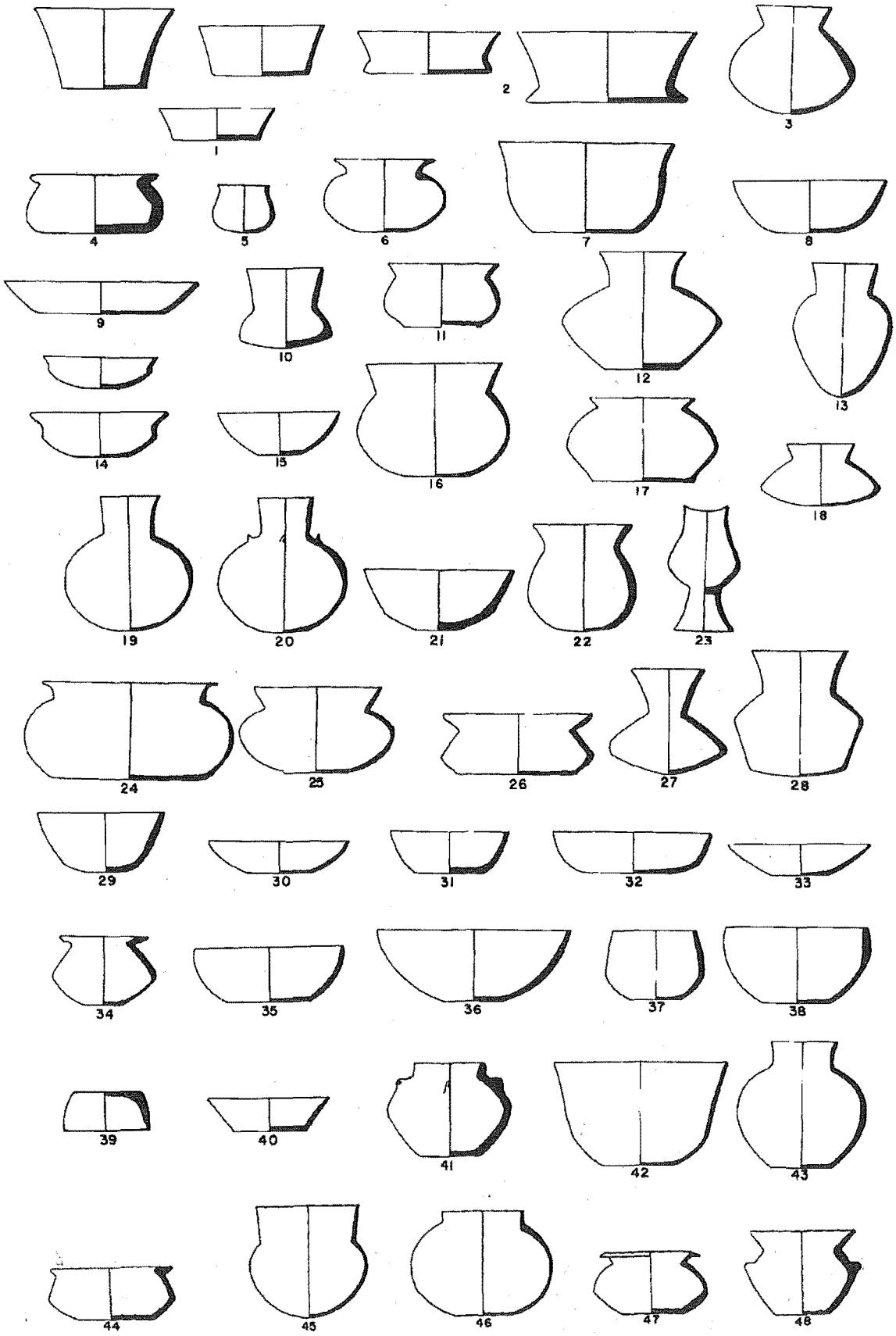


Figure 4.5. Hijara's pottery form corpus for Arpachiyah (Hijara 1980: figs. 7-12).

Table 4.6. Comparison of Hijara's, Mallowan's, and Davidson's Halafian Chronologies (Modified from Hijara 1980: Table 10)

Arpachiyah					Aqab
Hijara				Mallowan	Davidson
Architectural phase	Pottery period	Excavated layer	Stratigraphic level	Sequence	Phase
4	4B	1-5	I	TT 6	Late
		6	II	TT 7	
3B		7	III	TT 8	Middle
		8	IV	TT 9	
3A		9-10	V	TT 10	
2	4A	11 12 13 14 15	VI		Early
	3	16 17 18 19 20 21			
		22 23 24	VII		
1	2	25 26 27 28 29 30 31 32 33	IX X XI		
	1	34 35 36 37 38 39 40 41			

periods, period 4 (corresponding to Hijara's levels 1 through 15), was excavated by Mallowan on the main mound at Arpachiyah. Hijara's periods 3, 2, and 1 take the Halafian sequence at Arpachiyah down to virgin soil (reached in both trenches II and III). The total depth of deposit is somewhat over 7 m, whereas Mallowan's excavation did not go below 3.5 m in the mound itself. Hijara's period 3 extends from 3.5 to about 4.5 or 5 m, period 2 from 4.5/5 to 6 m, and period 1 from 6 to 7/7.5 m. Thus, Davidson's Early, Middle, and Late Phases are all equated with Hijara's period 4, and Hijara's pottery periods 1, 2, and 3 antedate Davidson's Early Phase as presently known (see table 4.6).

On the basis of his 1976 excavations, Hijara also defines four building phases at

Arpachiyah. They are not coterminous with the pottery periods just discussed, but their correlation with those pottery periods, with Mallowan's TT 6-10 sequence, and with Davidson's Early-Middle-Late Transitional (to Ubaidian levels) system is shown in table 4.6. Hijara's architectural or building phase 4 is equivalent to Mallowan's TT 6 and to Davidson's Transitional Phase; Hijara's architectural phase 3B equates with Mallowan's TT 7-9 (and with Davidson's Late Phase plus the latter part of Davidson's Middle Phase); Hijara's phase 3A equates with TT 10 (and the earlier part of Davidson's Middle Phase); Hijara's phase 2 equates with the pre-TT 10 deposits below the bottom of Mallowan's trench, and with Davidson's Early Phase; and Hijara's phase 1 extends even further into the Early Halafian. These equivalences must be kept in mind while reading the comparative statements in the discussion of Girikihaciyan pottery forms. Hijara's interpretation of the Halafian painted pottery from Arpachiyah is analyzed next.

HIJARA'S INTERPRETATION OF HALAFIAN PAINTED POTTERY FROM ARPACHIYAH

Because the Arpachiyah ceramic sequence is so central to the understanding of the Halafian development and because Hijara's work is so important but is available only in his dissertation, his painted pottery analysis is briefly critiqued here.

Hijara (1980) believes that the sequence at Arpachiyah is considerably longer than that for other, known Halaf sites, most of which, including Girikihaciyan, he equates with his cultural or pottery period 4. While he does, indeed, show a lengthy stratigraphic sequence at Arpachiyah, it is primarily via ceramic comparisons that he argues for these actual temporal differences.

Two questions immediately arise about the ceramic comparisons: Does Hijara actually demonstrate ceramic design and shape evolution at Arpachiyah? If so, is it true that the pottery designs and shapes at Girikihaciyan or any other specific Halafian site relate it to a particular period within this evolutionary sequence?

Hijara's approach results in interpretive problems. He defines so many motifs (214 for bowls alone) that nearly every sherd constitutes its own motif class, making generalizations and comparisons with other sites difficult. Moreover, most of the motifs he defines are combinations of various elements. This leads to further difficulties because small sherds, like the majority of those at Girikihaciyan, will not show multiple elements even when they were present on the original vessels. Thus, because of the nature of the samples being compared, Hijara's approach tends to show differences in design that are not necessarily significant. He makes a similarly highly detailed differentiation for vessel shapes.

With these caveats in mind, we do not find his analysis of the Arpachiyah sherds entirely convincing. For example, bowl motif 2 is almost identical to bowl motif 20. Motif 2 occurs only in levels 32 and 33, and motif 20 only in level 15. Similarly, motifs 1 and 8 of bowl form 2 (our flare-rimmed bowl) are almost identical, yet bowl form 2 motif 1 is from period 1 and motif 8 is from period 3. Jar motif 5 from period 1 is very similar to jar motif 12 for period 2, as is the case for motifs 6 and 13. At a slightly different level, motif 5 of bowl form 2, found only in period 2, is equivalent to bowl-plate motif 47 from period 4. Finally, early (periods 1 and 2) bowl motifs 2, 4, 5, and 6 differ only by their interior rim designs; however, each of these interior designs is known to occur also in period 4. There are other examples of such similarities in what are supposed to be early and late attributes, but those just noted are sufficient to indicate the problem.

To accept that these instances repre-

sent meaningful differences requires us to believe that motifs were invented in period 1 and then abandoned, only to be reinvented some tens or hundreds of years later in almost identical form. At the same time, other motifs would have to have been in use for hundreds of years but combined in some ways earlier and in other ways later. Finally, we must postulate such processes on the basis of as few as one or two examples of each combination pattern. It seems more plausible that the design motifs proposed do not have the time-diagnostic sensitivity that is claimed.

Hijara's vessel form analysis is on somewhat firmer ground, but here again he has so highly differentiated the samples that internal comparisons at Arpachiyah are difficult to make, as are comparisons with other sites. Although there were over 4,000 sherds, he used fewer than 550 for the vessel form analysis. We have recombined his 48 shapes into six categories: straight-sided or slightly flaring-sided bowls (his forms 1 and 40), flare-rimmed bowls (his forms 2 [the cream bowl] and 14), Büchse-like jars (his forms 4, 6, 24, 25, 26, 44, 47), various round-sided and other bowls (8, 15, 30, 35, 36, 38; 5, 7 , 9, 21, 29, 31, 32, 33, 42), and jars (3, 12, 13, 16, 17, 18, 19, 20, 22, 27, 28, 34, 41, 43, 46, 48). We note the following patterns: bowls are much more common earlier than later. In periods 1 and 2, 16% and 6%, respectively, of all sherds are from jars, while in periods 3 and 4 there are 42% and 34% jars, respectively (late period 4 had 64%). Also straight-sided or slightly flare-sided bowls decrease in quantity as round-sided bowls increase. During periods 1 and 2, 77% and 83%, respectively, of all sherds are straight-sided bowls; by period 4 there are only 22%, while round-sided bowls comprise 21%, up from a complete absence in period 1 and from only 3% in period 2. However, other shapes, such as the Büchse and Hijara's form 2 (the cream bowl, included in our flare-rimmed bowl category), are rather constant over time. The Büchse forms range from 4% to 8% with no temporal trend, and cream bowls are from 4% to 7%, also with little temporal trend.

On the basis of these findings, one could argue that Banahilk with its high frequency of round-sided bowls is late, but these data do not help to place Girikihaciyan unless one is willing to argue that the scarcity of round-sided bowls would make it equivalent to Hijara's periods 1 and 2, the opposite from his conclusion.

Before too much is made of these results, we must remember that only about 14% of the painted sherds were used in creating the typology and that the small exposures allow for the possibility that different types of functional areas were being sampled in the different periods, thus accounting for the variability in shapes.

Given the preceding considerations, one finds it difficult to believe that evidence from the Arpachiyah sequence demonstrates that Girikihaciyan falls within Hijara's period 4. As we have seen, the distribution of vessel forms would argue that Girikihaciyan is early (periods 1 or 2). Evidence from motifs is equally unconvincing. Forty-five motifs are assigned to periods 1 and 2 by Hijara, including 6 from bowls and 39 from jars. The fact that most of these bowl motifs have equivalent later motifs has already been noted. All interior bowl motifs are also present at Girikihaciyan except for motif 3, which is not present at Girikihaciyan on either form 1 (straight or concave [flare-sided] bowls) or form 2 (cream bowls). In any case, it does not appear that the designs on early bowls from Arpachiyah are significantly different from those on Girikihaciyan bowls.

A similar situation holds for the jars. It must be remembered that Hijara's motifs are, for the most part, combinations of elements. This makes comparison diffi-

cult because so many of the Girikihaciyan sherds are small, making it unlikely that one will find a particular motif combination on a sherd even if it existed on the original vessel. Also, Hijara's motif classes, as noted, are very finely subdivided, so much so that most jar motifs are represented by only one example. In spite of these problems, one can make a good case that Hijara's jar motifs 1, 2, 4, 13, 14, 15, 16 (in part), 36, 38, 46, 57, 58, 72, and 93 are present at Girikihaciyan, and that motifs 11, 26, 45, 67, and 76 have close parallels at Girikihaciyan. Many other motifs show some general similarity, but they are not considered further here.

Hijara argues that his motifs 1 through 9 occur in period 1, motifs 10 through 39 in period 2, 40 through 59 in period 3, and 60 through 112 in period 4. From Girikihaciyan we can match 5 of his 9 period 1 motifs, 8 of his 30 period 2 motifs, and 4 of his 20 period 3 motifs, but only 2 of his 53 period 4 motifs. Either these motifs have no temporal significance, or Girikihaciyan is contemporary with the entire Arpachiyah span, or it is at the early end. At any rate, there is no clear basis for arguing that it is late.

It does not appear to us that Hijara has demonstrated any appreciable seriation of designs, and there is only a slight indication of seriation in vessel shapes.

Another point should be made. Hijara's levels 30 through 42 (all of period 1 and part of period 2) appear only on one side of a wall on the end of his trench. No profile actually shows level 29 overlying these deposits. As a consequence, there is no convincing evidence that these levels are as early as claimed. Furthermore, no stratum can be followed completely across the profiles because of the presence of pits and walls. While most of the correlations seem plausible, the sequence of levels that is translated into the ceramic sequence is not unequivocal, thus perhaps accounting for the similarity of designs, as seen above, in levels supposedly widely separated in time. Hence, it is unclear how long the Arpachiyah sequence actually is.

In concluding this discussion of comparative Halafian ceramic sequences, we refer briefly to Carrie Gustavson-Gaube's independently derived critique of Davidson's and Hijara's research (Gustavson-Gaube 1981:78-90; see also the summary of her Shams ed-Din ceramic analyses at the end of this chapter). Gustavson-Gaube's primary concern is to derive a comparative chronological placement for the Syrian Halafian site of Shams ed-Din with respect to the Halafian material from Davidson's work at Tell Aqab and from Mallowan's and Hijara's at Arpachiyah. Regarding Aqab, she notes that the Early Phase is not well documented ceramically because the exposure is limited (6 m^2) and the sample of pottery chosen for publication is a very small percentage of that recovered. She finds, however, that the vessel forms at Shams ed-Din are "a thorough mixture" of those found in both the Middle and Late Phases of Davidson (Gustavson-Gaube 1981:81), and concludes that Shams ed-Din is contemporary with both the Middle and Late Phases at Tell Aqab.

Gustavson-Gaube's discussion of the Arpachiyah ceramic sequence is much more detailed and provides an interesting complement to ours. To compare with the stratified sequence at Tell Aqab, she derives a chronologically seriated corpus of vessel forms for Arpachiyah by combining Mallowan's published results (Mallowan and Rose 1935) with those from Hijara's 1976 trenches. She notes that Mallowan and Hijara disagree with respect to the placement of materials from the mound periphery. Mallowan's crews excavated more of this outlying deposit than they did the mound proper, but there was no direct stratigraphic link between the outlying trenches and the sondage on the mound. Nevertheless, Mallowan sug-

gests a correlation between the TT 6-10 Halafian sequence on the mound with a series of elevations in the outlying area:

TT 6 on the mound:	-1.0 to -1.5 m in the outlying area
TT 7-10:	-1.5 to -2.5 m
pre-TT 10:	-2.5 to -3.5 m

On the basis of his 1976 excavations, however, Hijara concludes that the population of Arpachiyah did not occupy the outlying area after the second of his four architectural phases (see table 4.6). Hence, he believes the outlying area is all pre-TT 10. Gustavson-Gaube's alternative ordering of the pottery form sequence at Arpachiyah (using Mallowan's interpretation and then Hijara's) does not enable her to decide between the two, and she concludes that there are insufficient data for the outlying areas to justify including them in a stratigraphically based intrasite sequence, let alone a master sequence for the entire Halafian area (Gustavson-Gaube 1981:86). Nevertheless, she finds the strongest correlation between the Arpachiyah and Shams ed-Din vessel form repertoires to be in Hijara's phase 4 (equivalent to Mallowan's TT 6). She also notes the strongest correlation between Tell Aqab and Arpachiyah to be in the middle phase of each (Arpachiyah phase 3 and Aqab Middle Phase).

The intricacies of Gustavson-Gaube's discussion of comparative chronology based on the presence/absence of vessel forms (Gustavson-Gaube 1981:78-90 and graphs 1-5) and our own such discussions in this chapter based on frequency distributions of vessel forms, in combination with the lack of clear cut or persuasive results, underscore the obvious conclusion that an understanding of Halafian ceramic chronology cannot be reached by means of the current data. Stratified sequences are essential for at least a few sites within and at the periphery of the Halafian universe, as is a series of regional studies. The recent work at Tell Aqab and Tell Mozan (Hijara, in press) in the Khabur region and Arpachiyah in the Mosul region are steps in this direction, as is research by archaeologists from the University of Amsterdam in the Balikh drainage (Akkermans 1987a, b; van Loon 1987) and by the Italian expedition at Tell Hassan and the Edinburgh team at Kharabeh Shattani, both in northern Iraq (Fiorina 1987; Watkins 1987). At issue here is the classic archaeological problem of building a time-space framework for an area with so few data points that one is forced either to interpret well beyond what the data will bear or to say little or nothing. It is preferable to overinterpret rather than to underinterpret, but it is, of course, also essential to be explicit about this and to be sufficiently flexible to revise those interpretations—sometimes radically—as new data become available.

PAINTED POTTERY VESSEL FORMS

We have sorted the classifiable painted ware sherds into form classes grouped into the three major categories of bowls, jars (including the squat jars called Büchsen by Schmidt [von Oppenheim and Schmidt 1943]), and miscellaneous shapes (table 4.1). The bowl category includes round-sided bowls, flaring straight-sided bowls, flaring concave-sided bowls, flare-rimmed bowls, hole-mouthed bowls, and bowls of indeterminate form. The jar category includes squat jars, flaring-necked jars, collared jars, jar body sherds, jar bases, and fragments from the junction of the jar neck and shoulder. In the miscellaneous category are rare or unique forms such as oval vessels, pedestaled vessels, ring-based vessels, miniature vessels, spouts, and lids. These form classes are individually described below.

Bowls

Round-sided Bowls (Form I.A). This simple hemispherical bowl form (fig. 4.6) is very rare at Girikihaciyan, making up

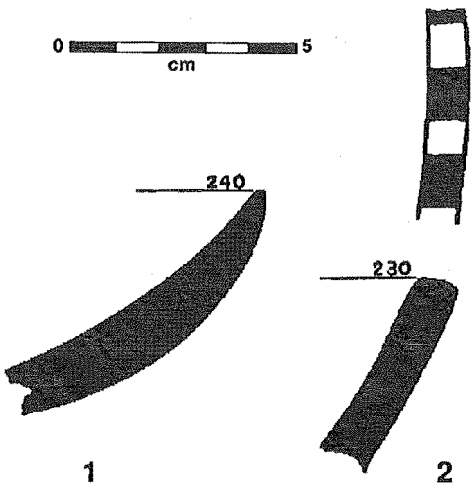


Figure 4.6. Painted round-sided bowls (I.A). (1) #940, W2S5-2; (2) #1497, E4N2 6-3.

only 1.5% (22 sherds) of the total 1,461 classifiable sherds (table 4.2) and 2.6% of the 851 bowl sherds. This is in sharp contrast to the situation at Banahilk (Watson 1983a) where round-sided bowls were the most common vessels, 30% of the 1,748 classifiable sherds and 71% of all bowl sherds (table 4.5). Davidson found hemispherical bowls (his form 3) to be especially characteristic of the Middle Phase at Arpachiyah (Mallowan's levels TT 10 to 8), although the form is present in the Early Phase (pre-TT 10) and Late Phase (TT 7-6) as well (Davidson 1977: 33-34, 41-43, 57).

Squared rims with rim ticking are present on some Arpachiyah Middle Phase bowls, but not in the Early Phase (these characteristics are very common at Banahilk). Only three of the Girikihaciyan round-sided bowls have square sectioned rims and on only one of these was rim ticking preserved (fig. 4.6:2).

Hemispherical bowls closest in form to those at Banahilk and Girikihaciyan are not present in the Arpachiyah sequence, as Hijara has redefined it (fig. 4.5) until his Phase 4, level 13 (Hijara's form 36; see also his form 35 in Hijara 1980). The earliest rim ticking on a squared rim illustrated by Hijara is from his level 27 (Hijara 1980: pl. XI, 71), but the vessel was probably a straight-sided bowl (Hijara's form 1; see below).

The marked difference between Girikihaciyan and Banahilk, with respect to the abundance of this bowl form, immediately raises the question as to whether the discrepancy is due to a chronological difference between the two sites or to stylistic or functional differences between more or less contemporaneous ceramic assemblages at the two communities. This point is discussed in greater detail below.

Diameters of the Girikihaciyan round-sided bowls range from 110 to 240 mm, with fragments of two large vessels falling outside this range at 300 and 380 mm (table 4.4). Rim diameters of these bowls at Banahilk range from 130 to 320 mm (Watson 1983a: table 43).

Flaring Straight-sided Bowls (Form I.B). The flaring straight-sided bowl (fig. 4.7) is a more common form at Girikihaciyan (143 sherds in the present sample) than is the round-sided bowl. Together with concave-sided bowls (Girikihaciyan class I.C), these vessels comprise 17.5% of classifiable sherds and 33% of the 851 bowl sherds, a situation that contrasts once more with Banahilk where straight- and concave-sided fine ware bowls total only 2.5% of all classifiable sherds and 5.8% of all bowls (table 4.2).

Davidson found bowls with straight or concave sides (his form 1; Girikihaciyan forms I.B and I.C) to be especially characteristic of his Early Phase at Arpachiyah, although like hemispherical bowls, they occur in the Middle and Later Phases as well. As is the case with the hemispherical bowls, square rims with rim ticking appear on these bowls with straight or concave sides in the Middle Phase at Arpachiyah. At Girikihaciyan, 34 I.B sherds have square rims (20 of these also have rim ticking), and two I.C sherds have square rims (one with rim ticking).

Davidson also describes a similar vessel (his form 16) that is more shallow or more open and displays the main design

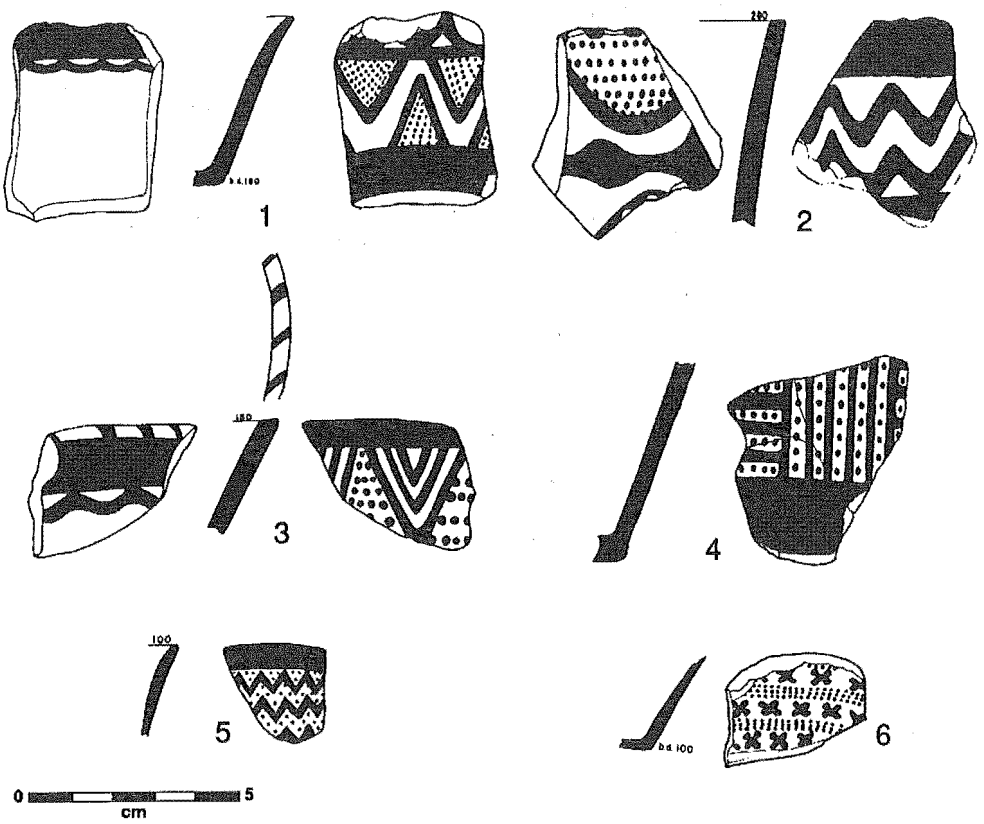


Figure 4.7. Flaring, straight-sided bowls (I.B). (1) #1201, E4N9 13-1; (2) #952, A 3-6; (3) #823, E5N1 13-0; (4) #1324, E4N1; (5) #925, E7N9 5-0; (6) #928, W2S5 26-2.

inside rather than outside. He believes form 16 to represent a western Late Halaf Phase equivalent of the form 10 (eastern Late Phase) polychrome bowls at Arpachiyah. A few of the Girikihaciyan I.B and I.C bowls might be classed with Davidson's form 16 rather than his form 1 (approximately 16 of the I.B sherds and 9 of the I.C sherds).

This Girikihaciyan form class corresponds to Hijara's form 1, which begins in his pottery period 1 and continues to period 4. According to both Hijara's and Davidson's analyses, the straight-sided bowl form is probably older at Arpachiyah than is the hemispherical bowl. Hence, the striking difference between the ceramic repertoires of Girikihaciyan and Banahilk with respect to this vessel form again raises the question of possible chronological versus other kinds of distinctions between the two sites.

Rim diameters of straight-sided bowls range from 80 to 340 mm, with most of those in the present sample falling between 140 and 200 mm (table 4.4). At Banahilk, the diameters of straight- or concave-sided bowls range from 70 to 220 mm.

Flaring Concave-sided Bowls (Form I.C). Like the straight-sided bowl, the concave-sided vessel (fig. 4.8) was apparently quite popular at Girikihaciyan (98 sherds in the present sample: 11.5% of all bowls, 6.7% of all classifiable painted ware sherds) (table 4.2). As noted above, both Hijara and Davidson include the two bowl forms in a single morphological class (as Watson also did for Banahilk). Hijara finds his form 1 is one of the oldest bowl forms at Arpachiyah, first appearing in the lowermost stratum.

Diameters of the measurable rims of concave-sided bowls at Girikihaciyan range from 90 to 300 mm, thus closely paralleling the size range of the straight-sided bowls (table 4.4). Most concave-sided vessels in the current Girikihaciyan

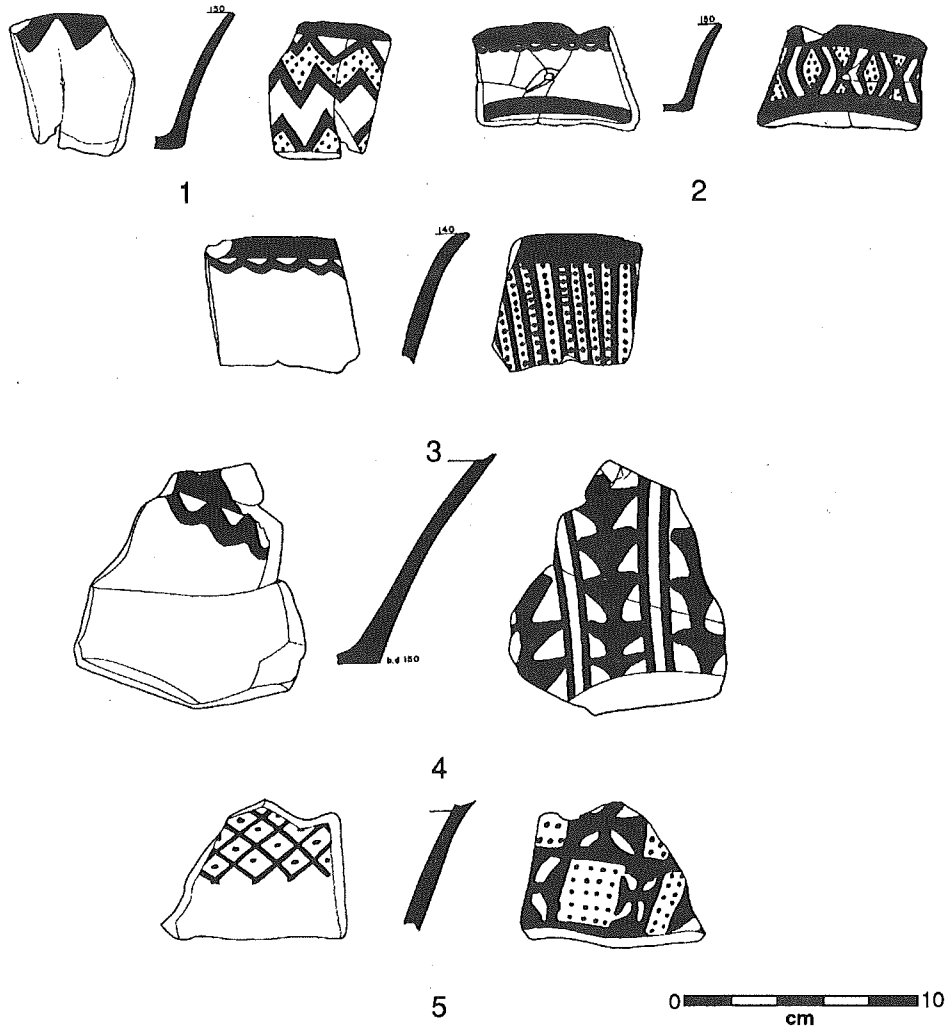


Figure 4.8. Flaring, concave-sided bowls (I.C). (1) #1297, E5N1 17-0; (2) #1616, E8N7 17-0; (3) #1210, E7N8 6-0; (4) #553, E4N2 9-1; (5) #434, E7N8 9-3.

sample were between 130 and 200 mm in diameter.

Flare-rimmed Bowls (Form I.D). The flare-rimmed vessel (a total of 164 sherds in the current sample) is perhaps the most distinctive of the Halafian vessel forms. It is well represented at Girikihaciyan, making up 11.2% of the classifiable sherds from the 1970 excavations and 19.3% of all bowl sherds (table 4.2). Once again, there is a striking contrast with Banahilk where flare-rimmed bowls are quite rare (1.6% of all classifiable sherds and 3.8% of all bowl sherds).

Davidson finds a chronological and spatial distinction at Aqab, Chagar Bazar, and Arpachiyah between flare-rimmed bowls with sharply angled lower profiles (Mallowan's cream bowl [Mallowan and Rose 1935:131]; this is Davidson's form 2; see figs. 4.9:1, 2 here, and probably 4.9:3-5) and flare-rimmed, sinuous-sided bowls with deeper, rounded lower profiles (Davidson's form 18; see fig. 4.9:6-8). According to Davidson, the cream bowl form is an eastern trait and is earlier (Early to Middle Phase) than the western form with its rounded lower profile (Middle to Late Phase). Both forms occur at Girikihaciyan (77 of Davidson's form 2, comprising 5.3% of the classifiable sherds and 9.0% of the bowl sherds, and 39 of his form 18) where there is no stratigraphic evidence that one precedes the other. Both forms are present in the upper, middle, and lower levels of the 1970 excavations at Girikihaciyan. Both forms are also present at Banahilk, although the cream

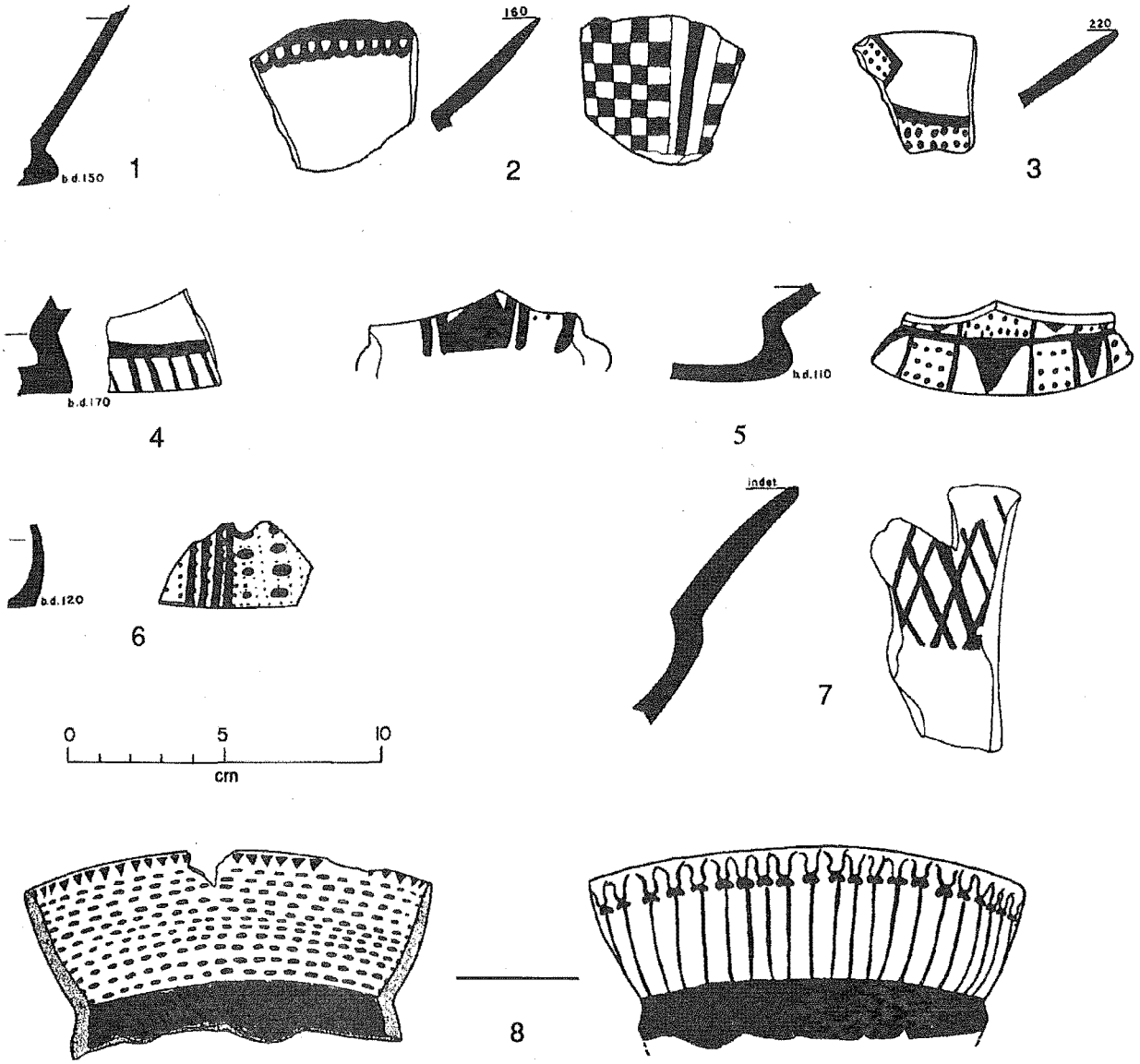


Figure 4.9. Flare-rimmed bowls (I.D). Cream bowls: (1) #678, A 7-21; (2) #1360, E4N2 7-1; (3) #1395, W2S5 27-11; (4) #891, E4N2 8-0; (5) #391, E4N1 6-3. Sinuous-sided: (6) #151, A 5-5; (7) #743, W2S5 22-7; (8) #1919, W2S5 22-6, 7, 11, 17, and W2S5 18-4.

bowl is very rare (no more than three cream bowls represented versus 12 of the flare rims with a rounded lower profile), and at Shams ed-Din (see the discussion at the end of this chapter).

In Hijara's expanded stratigraphic sequence for Arpachiyah, his form 2, the cream bowl, like the straight- or concave-sided bowl (his form 1), is one of the earliest to appear (one sherd was found in the lowest stratum) and is present throughout all four pottery periods. It is, however, much less common than form 1 bowls, which are present in all four periods (most abundantly in periods 2 and 3). In periods 2 and 3, there are two sherds (one in each period) of the flare-rim bowl with rounded lower profile (Davidson's form 18), but this bowl is most common in period 4 (19 sherds).

Rim diameters of the flare-rimmed vessels at Girikihaciyan ranged from 110 to 220 mm, with two outliers at 300 mm and one with an apparent rim diameter of about 500 mm (table 4.4). Most of the currently known examples fall between 120 and 170 mm.

Hole-mouthed Bowls (Form I.E). Although the hole-mouthed bowl class (including 16 sherds in the Girikihaciyan

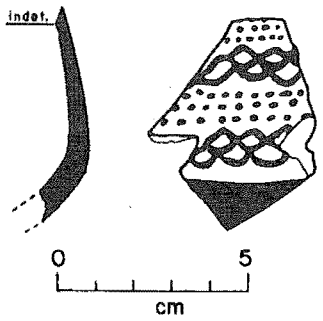


Figure 4.10. Hole-mouthed bowl (I.E). #595, W2S5 21-3.

sample) (fig. 4.10), like the round-sided bowls, is a common Halafian form, it was apparently not very popular at Girikihaciyan where hole-mouthed bowl sherds comprise only a little over 1% of the total classifiable sherds and 1.9% of all bowl sherds (table 4.2). This form class thus provides another contrast between the Girikihaciyan and Banahilk ceramic industries, because at Banahilk hole-mouthed bowls were relatively common (8% of all classifiable sherds and 19% of all bowl sherds). Again, one must consider whether the difference between Girikihaciyan and Banahilk in the relative quantity of this bowl form is a chronological difference or is owing, instead, to some other factor (functional or stylistic, for instance).

Davidson notes that this bowl form (his form 11) does not appear at Arpachiyah until the Late Phase (he believes it to be a development from the hemispherical bowl). This form corresponds, however, to Hijara's form 37, which appears in level 15 and hence characterizes all of his pottery period 4 (including one sherd in the pre-TT 10 levels).

Rim diameters for Girikihaciyan hole mouths range from 110 to 230 mm, with most of those in the present small sample falling between 110 and 150 mm (table 4.4). At Banahilk, the range is from 90 to 200 mm.

Sherds from Bowls of Indeterminate Form (Form I.F). The sherds from bowls of indeterminate form (fig. 4.11), a total of 393, are either too small to classify into one of the bowl subcategories or are parts of the vessel (the base, for instance) that are not sufficiently distinctive to permit more precise classification. As noted earlier, had we been able to carry out the final stages of analysis on the sherds them-

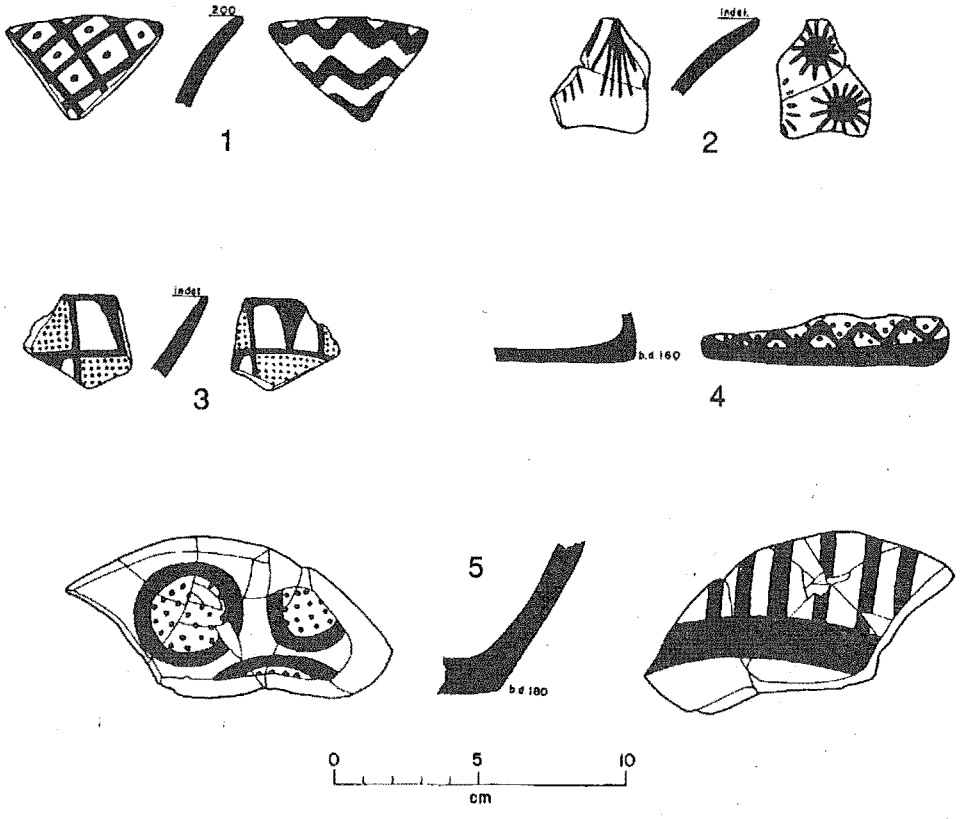


Figure 4.11. Indeterminate bowls (I.F). (1) #1508, E8N8 3-0; (2) #366, A 3-3; (3) #1515, E4N2 7-0; (4) #123, E8N9 3-6; (5) #1361, E4N2 7-1.

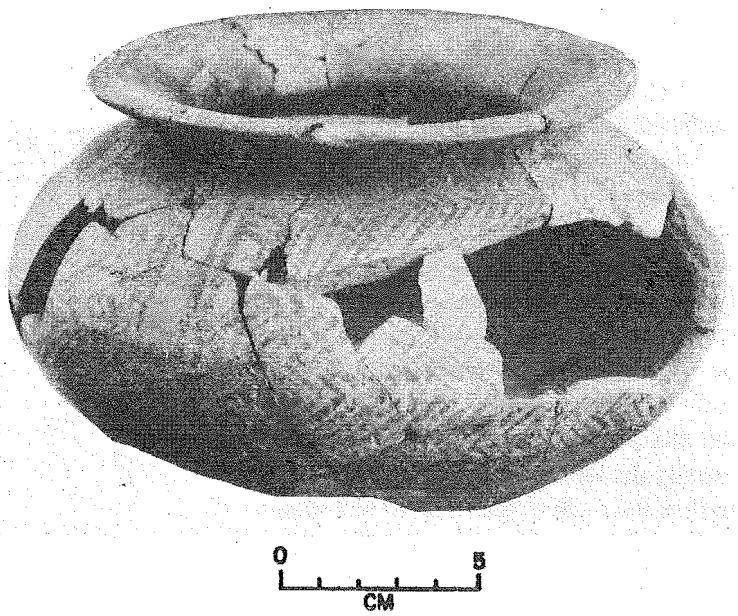


Figure 4.12. Büchse (II). #378, W2S5 18-2, 18-3, 20-5, 20-6, 21-4, 22-5; E4N1 6-3.

selves rather than on drawings, notes, and photographs, we would surely have been able to reduce the number of indeterminates, but at present that number must remain large.

Squat, Bowl-like Jars (Büchsen) (Form II). For convenience, we have adopted one of Schmidt's terms—*Büchse*—to designate the distinctively squat, large-mouthed, Halafian bowl-like jars (von Oppenheim and Schmidt 1943: pls. XII, XIII; fig 4.12 here). Büchsen were perhaps a little less common at Girikihaciyan than Banahilk in the ceramic industry as a whole (2.5% versus 3.3% of all classifiable sherds and 14.23% versus 10.40% of all jar shapes; table 4.2).

Davidson refers to three different jar forms that may have squat or ellipsoid profiles (his forms 4, 5, and 14), but his form 5 seems closest to what are called Büchsen at Girikihaciyan and Banahilk. The equation is somewhat uncertain because many of the sherds at both Girikihaciyan and Banahilk are body sherds or body and base sherds rather than rims, and it is the angle of juncture between rim and shoulder that distinguishes Davidson's form 4 from his form 5. Of the 36 Büchse sherds at Girikihaciyan, 20 appear to conform fairly well to form 5 of Davidson, whereas only 4 might possibly be closer to his form 4, and all of these are rather dubious. Davidson's form 14 is referred to below in the discussion of jar forms with vertical necks.

There are two büchsoid vessel types among the earliest (beginning in period 1) of Hijara's Arpachiyah form sequence: forms 4 and 6. Beginning in period 2 is another (form 11), in period 3 one more (form 17), and in period 4 there are six, although all are rather rare (forms 24, 25, 26, 34, 44, and 47). Form 47 of Hijara closely parallels Davidson's form 14. The closest parallels for the Girikihaciyan and Banahilk Büchsen among Hijara's Arpachiyah sample are his forms 6, 11, and 24 (and, to a lesser degree, 4).

Rim diameters are more like those of jars than of bowls and range from 90 to 170 mm for most measurable examples (table 4.4), with a few larger ones (200, 300, and 330 mm). At Banahilk, the diameters range from 70 to 220 mm.

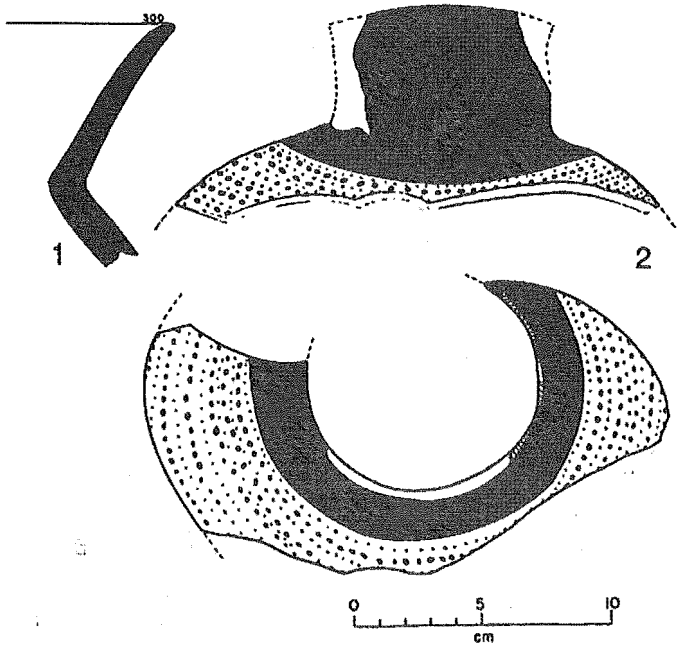


Figure 4.13. Jars with flaring necks (III.A). (1) #1590, E7N9 4-0; (2) #1920, W2S5 18-4; E8N7 10-2.

Jars

Jars With Flaring Necks (Form III.A). The 39 sherds of jars with flaring necks (fig. 4.13) are fragments from the jar necks

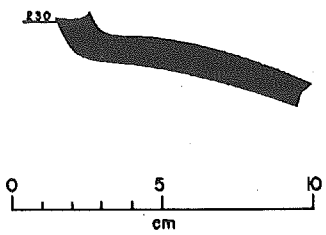


Figure 4.14. Jar neck/shoulder (III.B). #184, A 6-3.

themselves so, of course, the sherd count vastly underrepresents the numbers of these jars once in use at Girikihaciyan. Many of the sherds from jar neck-shoulder junctions, jar bodies, and jar bases must surely have been from flare-necked jars. Such vessels were not uncommon at Banahilk (sherds from flare necks make up 17.70% of the classifiable fragments). Davidson (1977:119) includes in his form 4 flaring-necked jars with ellipsoid body profiles (the vessels singled out as Büchsen at Banahilk and Girikihaciyan), together with flaring-necked jars with piriform or globular body profiles. At Banahilk, some of the flare-necked jars were definitely piriform (Watson 1983a: fig. 200). At Girikihaciyan, although no reconstructible painted ware jars were found, this also seems to have been the case. Davidson notes that the ellipsoid-bodied, form 4 jars occur in the Early Phases at Arpachiyah and at Aqab and that the piriform and globular bodied variants first appear in the Halafian Middle Phase a Tell Aqab (Davidson 1977:34, 43, 119).

Hijara includes jars with flaring necks in his forms 3, 12, 13, 16, 18, 19, 20, 21, 22, 27, 28, and 43. In addition, rim sherds of two beakerlike forms (10 and 45) would probably be confused with flare-necked jars. The big piriform jar from Banahilk (Watson 1983a: fig. 200) is most closely paralleled by Hijara's form 43, which does not appear until period 4 (but in only two find spots of that period).

Rim diameters for the Girikihaciyan flare-necked jars range from 90 to 230 mm, with outliers at 280, 300, and 320 mm (table 4.4). (The larger diameters may represent small sherds from bowl rims rather than sherds from jar rims; it is sometimes difficult to make this distinction). The Banahilk range is tighter with extremes at 60 and 200 mm.

Sherds from Junction of Jar Neck with Jar Shoulder (Form III.B). The 149 sherds from the junction of the jar neck with shoulder (fig. 4.14) could have come from either flare-necked or collared (vertical-necked) jars; some of them might even be from büchsoid vessels (Girikihaciyan form II), but probably very few because the sharp eversion of the Büchse rim is usually detectable. Inside diameters at the base of the neck range from 40 to 230 mm, with outliers at 260, 290, and 320 mm, and one apparently as large as 400 mm (table 4.4).

Collared Jars (Form III.C). Jars with vertical necks (fig. 4.15), represented by 8 sherds, do not seem to have been very common at Girikihaciyan in contrast to Banahilk where 3.5% of the classifiable jar sherds come from the necks of these collared jars (table 4.2). Diameters of the few measurable specimens range from 70 to 180 mm at Girikihaciyan and 70 to 160 mm at Banahilk.

This Girikihaciyan and Banahilk category must correspond in part to Davidson's form 13 (Davidson 1977:64-65, 123-126), although the latter is a rather special vessel form first appearing in the Late Phase at Arpachiyah and in the Middle Phase at Tell Aqab. This form is characterized by four perforations through the shoulder (or four lugs placed on the shoulder). At neither Girikihaciyan nor Banahilk were reconstructible examples

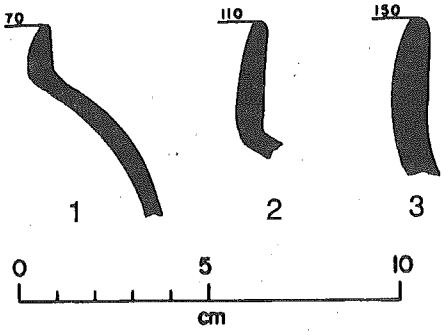


Figure 4.15. Collared jars (III.C). (1) #1822, W2S5 20-4; (2) #1498, E4N2 6-3; (3) #648, E5N1 17-5 and 17-6.

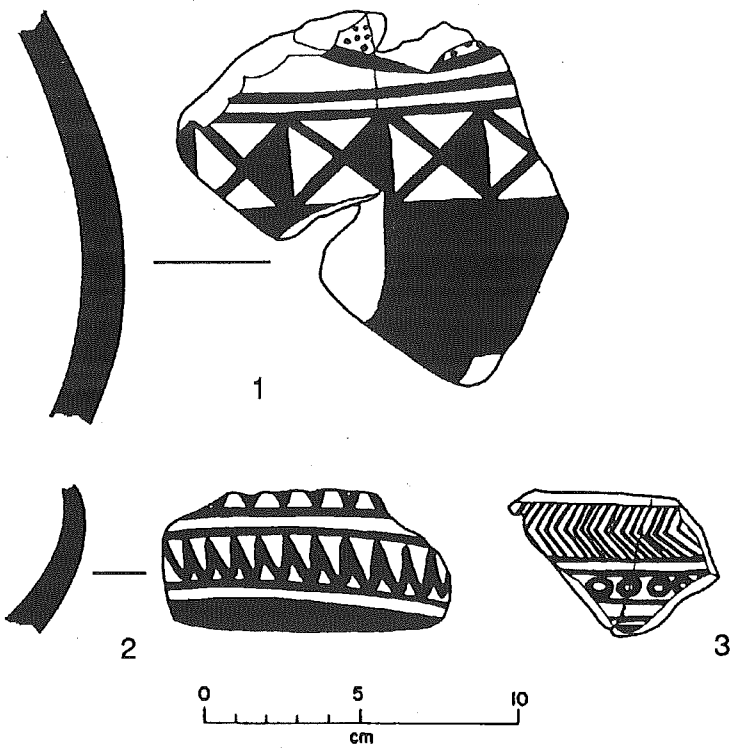


Figure 4.16. Jar body sherds (III.D). (1) #408, W2S5 24-6; (2) #1934, surface; (3) #508, W2S5 22-11.

found of the jar bodies associated with the vertical neck form.

Davidson's form 13 corresponds to Hijara's form 41, beginning in period 4 of Hijara's Arpachiyah pottery-form sequence. Hijara also includes another jar with a short vertical neck (his form 46) but without lugs. Like form 41, form 46 begins in period 4, but both forms are represented in the present sample by only one example.

Eleven of the vertical-necked jars at Banahilk have everted rims and thus resemble another of Davidson's jar categories (form 14) which first appears late in his Middle Phase at Arpachiyah, Aqab, and Chagar Bazar. These everted rims are also closely paralleled at Arpachiyah by Hijara's forms 24 and 47, both of which are büchsoid vessels that first appear in period 4.

Jar Body Sherds (Form III.D). The 329 jar body fragments (fig. 4.16) could be from either flare-necked or collared jars.

Jar Bases (Form III.E). The 21 jar base fragments, like the body sherds (III.D), could be from flare-necked or collared jars. Diameters of those bases intact enough to measure range from 40 to 150 mm.

Miscellaneous (Form IV). The miscellaneous category, comprising 28 sherds, is a catch-all classification that includes 6 lids, 5 fragments of vessels that were apparently oblong in plan (see Mallowan and Rose 1935: figs. 58:3, 65:4; Hijara's form 23 beginning in his pottery period 3; and the trays of Arpachiyah and Banahilk), 5 sherds of ring bases, 2 spouts, 2 miniature bowls, fragments of 3 pedestaled vessels, 1 perforated lug, 1 funnel-like object, pieces of 2 very strongly everted rims, and a sherd from what was apparently a very large hole-mouthed vessel.

Lids, which are also present at Banahilk and are quite common at Tell Halaf, are found rarely at Arpachiyah and only in the Late Phase. They are represented in Davidson's classification by form 12

(Davidson 1977:64) and in Hijara's classification by form 39 (only in period 4).

Pedestal vessels and ring bases (Davidson's forms 8 and 9) are Middle to Late Phase at Arpachiyah. It should perhaps be noted that four of the fragments classed as Büchsen at Girikihaciyan have ring bases (sherds 1213, 1083, 1683, and 1189), as does Hijara's büchsoid form 11 (fig. 4.5:11).

CONCLUSIONS

With respect to vessel forms, Banahilk fits fairly readily into the Late Phase of Davidson's Halafian model. The major criteria are the presence of Davidson's forms 11 through 14 and the scarcity of his form 2. Forms 11 through 14 were found only in the late phases at Arpachiyah, whereas form 2 is confined to the Early and Middle Phases. In addition, a number of forms at Banahilk begin at Arpachiyah in the Middle Phase of Davidson and continue into his Late Phase. These include his forms 1 and 3 (straight- or concave-sided and hemispherical bowls) which, in the Middle Phase, often have square rims with rim ticking, a frequent combination on the Banahilk hemispherical bowls. Other Middle to Late Phase forms at Banahilk are Davidson's forms 6 through 9.

Hijara's data may indicate some modification of the comments about Banahilk based on Davidson's model. Hijara found Davidson's form 11 (Hijara's form 37) in levels 15, 9, 5, and 3 of his Arpachiyah excavations, which equate with all three of Davidson's phases—Early, Middle, Late—not just with the Late Phase. Similarly, Davidson's form 13 (Hijara's 41) appears in level 12 (one example only), which corresponds to Davidson's Early Phase; hence it is perhaps not confined to the Late Phase as Davidson's data indicate. However, the presence of Hijara's forms 39 and 47 (Davidson's 12 and 14) only in the uppermost levels of the 1976 Arpachiyah excavations so far substantiates their placement by Davidson very late in the Halafian sequence at Arpachiyah.

The Girikihaciyan form assemblage is rather different from that of Banahilk but also seems to fit a Late Phase placement within Davidson's scheme. The major differences between Girikihaciyan and Banahilk are in some of Davidson's bowl categories, especially forms 1, 2, 3, and 11. As noted in the discussion of Girikihaciyan form classes, sherds of Davidson's forms 1 and 2 are much more abundant at Girikihaciyan than at Banahilk, whereas the situation is reversed with respect to forms 3 and 11, which are more common at Banahilk than at Girikihaciyan. The disproportions between the two sites are especially striking for forms 1 and 3. These discrepancies are probably not indicative of chronological differences, however, because, except for form 11 found only in the Late Phase, all these bowl forms occur in all three phases of the Mosul area sequence as interpreted by Davidson. Form 2, the cream bowl, is almost exclusively Early to Middle Phases in both the Mosul and the Khabur areas; only at Tepe Gawra does Davidson find it in a Late Phase context (but see the discussion above of Hijara's data from Arpachiyah; Gustavson-Gaube 1981:80-81). Thus, the occurrence of form 2 bowls at both Banahilk and Girikihaciyan is an amplification of the cream bowl situation summarized by Davidson. Cream bowls are definitely present but very rare at Banahilk (a maximum of two to three vessels is represented in the present sample), whereas at Girikihaciyan (77 sherds) they comprise more than 5% of the 1,461 classifiable sherds (a little over 9% of all bowl sherds). Cream bowls are present at Tell Halaf, a Khabur area site, but their chronological placement there is unknown. So far, the cream bowl form is not reported for either Yunus or Turlu. However, two of the Turlu sherds we saw at the

Gaziantab Museum in December 1970 appeared to be fragments of a cream bowl (bag or lot 203, sherds 13 and 17).

Hijara's new data on the stratigraphic positions of painted pottery forms at Arpachiyah, if taken at face value (see the discussion above), partly support and partly modify the placement of Girikihaciyan with reference to Davidson's model. Hijara's forms 1 and 2 correspond to Davidson's forms 1 and 2, both of which are markedly more abundant at Girikihaciyan than at Banahilk. This fact might be interpreted to mean that the Girikihaciyan Halafian occupation is, at least in part, earlier than that at Banahilk, especially when one notes that Hijara did not find form 1 bowls later than his level 9 (corresponding to Mallowan's level TT 10 and Davidson's Early Phase). However, Davidson does note the presence of form 1 bowls, although very rarely, in his Arpachiyah sample in the Middle and Late Phases, as well as Early (Davidson 1977: 57).

As to form 2, the cream bowl, Davidson does not find it later than his Middle Phase, but Hijara reports two new examples (one each in levels 3 and 4) from levels corresponding to Davidson's Late Phase.

If one combines Davidson's and Hijara's observations, one must conclude that both forms 1 and 2 begin very early in the Arpachiyah Halafian sequence and continue to the end. Therefore, neither can be used as evidence for an earlier chronological placement of Girikihaciyan vis-a-vis Banahilk.

Davidson's bowl forms 3 and 11 (Hijara's forms 35 and 37) are found only in Phase 4 by Hijara but, contrary to Davidson's data indicating a Late Phase placement for his form 11 (Hijara's 37), this form is present in the levels of Hijara's excavations which correspond to all three of Davidson's phases. Similarly, form 3 of Davidson (Hijara's form 35) is found in levels corresponding to all three of Davidson's phases, in this case confirming Davidson's evidence for its chronological position.

Once again combining Hijara's and Davidson's information, one might suggest with respect to Davidson's forms 1, 2, 3, and 11 (Hijara's forms 1, 2, 35, and 37) that Girikihaciyan is perhaps a little earlier than Banahilk because the vessel forms indicated by Hijara's sequence to begin in period 4 (forms 35 and 37, which correspond to Davidson's 3 and 11) are less common at Girikihaciyan than at Banahilk. The forms Davidson and Hijara believe to be among the earliest Halafian vessels (Hijara and Davidson forms 1 and 2) are significantly more abundant at Girikihaciyan than at Banahilk. On the basis of this discussion, one could conclude that Girikihaciyan might be late period 3 to period 4 in Hijara's terms, whereas Banahilk is solidly period 4.

It seems, however, that both on typological criteria and on the basis of currently available C^{14} determinations, Banahilk and Girikihaciyan are at least roughly contemporaneous; the occupations at both sites were relatively short and fall somewhere between 5000 and 4300 BC. Because of the geographical distance and the nature of the terrain separating the two sites, it is possible that the differences in preferred bowl forms reflect stylistic or functional differences rather than chronological ones, in which case we believe stylistic differences to be more likely than functional ones. Functional differences might more readily emerge in bowl/jar ratios, and these are similar (nearly 50/50) at the two sites. On the other hand, one would certainly expect stylistic differences at sites as far apart as are Girikihaciyan and Banahilk. Presumably Banahilk, although somewhat peripheral geographically, was part of the Mosul area Halafian region discussed by Davidson, whereas Girikihaciyan must belong to a different regional

development. Perhaps Davidson is correct in his suggestion that the northernmost Halafian sites (Tilkitepe, Girikihaciyan, and a small group of even less well-known sites in the Keban area near Elazig) represent an expansion of population or simply of trade connections from farther south rather than an indigenous Halafian regional development like those in the Mosul, Khabur, and Euphrates Valley areas. Evidence is insufficient, however, to sustain a strong argument on either side of this question.

The Halafian Pottery of Shams ed-Din

As this report was being prepared, Helga Seeden, Department of Archaeology and History at the American University in Beirut, kindly sent us copies of recent publications concerning the Syrian Halafian site of Shams ed-Din (fig. 1.1), including the previously mentioned detailed analysis by Gustavson-Gaube (1981) of the pottery. Hence, we conclude our comparisons of Girikihaciyan painted pottery to other Halafian ceramic industries with a discussion of Gustavson-Gaube's results.

Her analysis is based upon 7,437 sherds from the 1974 excavations at Shams ed-Din where the Halafian deposit is 1.2 m deep. She sorted these sherds into six major wares:

- Common (85% of the total) and fine (9%); 80% of these two wares are from painted vessels. The ratio of jars to bowls in the common ware is 5:4 if body sherds are not included, closer to 3:1 if body sherds are included (Gustavson-Gaube 1981:44)
- Medium coarse (2%) and coarse (3%) cooking pot wares (not painted)
- Red-slipped or red-slipped and burnished ware (1%)
- Dark-faced burnished ware (less than 0.5%)

The fine ware category comprises the fanciest (well-levigated, hard, thin, mostly without temper) ceramic vessels, nearly all of which are carefully painted. A few were deliberately left unpainted, however, and, in the common ware group, many vessels of various forms were not painted. Thus, the Shams ed-Din industry differs from those of Girikihaciyan and Banahilk where, although there are many sherds without paint, all the finer ware in the available samples seems to be from painted vessels (with one exception at Girikihaciyan) (fig. 4.3). Most impressive among this unpainted Shams ed-Din common ware is the frequency of wide-mouthed storage jars with everted rims (Gustavson-Gaube's form class 7), which comprises 75% of all jars. This form class is virtually lacking at Girikihaciyan and Banahilk, whereas flare-necked jars, quite common at both these sites, are rather rare at Shams ed-Din. Finally, the büchsoid forms that are popular at both Girikihaciyan and Banahilk (14 and 10% of all jars, respectively) are quite rare at Shams ed-Din.

As to bowl forms, cream bowls (approximately 9% of all bowls at Girikihaciyan but less than 1% at Banahilk) are present only in the fine ware (about 127 sherds). The most common forms are S-curved and sinuous-sided bowls (most of these are comparable to what we call flare-rimmed bowls), hole mouths or beakers, and hemispherical (our round-sided) bowls. Flaring-sided bowls (30% of the bowl total at Girikihaciyan but only about 6% at Banahilk) are a minor component (5% of all Shams ed-Din bowls).

The Shams ed-Din form repertoire contrasts strongly with Girikihaciyan and Banahilk (and Arpachiyah) in its rarity of büchsoid forms and flare-necked jars, and in the popularity of (unpainted) wide-mouthed storage jars with everted rims. With respect to bowl forms Shams ed-Din resembles Banahilk in the high frequency

Table 4.7. Distribution of Bowls and Jars Found at Girikihaciyan, Banahilk, and Shams ed-Din (Percent)

	Girikihaciyan	Banahilk	Shams ed-Din
Bowls			
Flare rims	10 of bowls	3 of bowls	Roughly 50
Cream bowls	9	<1	Roughly 10
Flaring-sided	30	6	Roughly 5
Round-sided	3	71	Roughly 17
Hole mouths	2	19	Roughly 19
Jars			
Flare-necked	15 of jars	18 of jars	Rare
Wide-mouthed, everted rim	Rare	Rare	75 of jars

of hole mouths or beakers and the relatively low frequency of flare-sided cups and bowls. Shams ed-Din compares favorably to Girikihaciyan rather than Banahilk with respect to frequency of cream bowls, but the proportion of hemispherical or round-sided bowls is greater than at Girikihaciyan (far less than at Banahilk, however), and the frequency of flare-rimmed bowls is much greater than at Girikihaciyan (where they are three times more common than at Banahilk). Finally, as Gustavson-Gaube notes, the outstanding characteristic of the Shams ed-Din common and fine ware categories is the great abundance of two forms (rare to only moderately common at Arpachiyah, Banahilk, and Girikihaciyan): sinuous-sided and S-curved bowls (most of these are what we call flare-rimmed bowls) and the unpainted wide-mouthed storage pots with everted rims. This discussion is summarized in table 4.7.

NOTE

1. Details of the phases, periods, and numbers of the pottery form types in the final version of Hijara's dissertation (Hijara 1980) differ somewhat from those used in preliminary accounts (for example, Hijara et al. 1980; see also Gustavson-Gaube 1981:82, footnote 27). The information in Hijara's 1980 dissertation is used here, so it does not agree in every particular with earlier summaries such as Watson's (1983b:232-233). In addition, however, there is a typographical error in the last mentioned publication at the top of p. 233 where the first words in the first line should read "Mallowan's TT 10 and 9" rather than "Mallowan's TT 8 and 9)."

ACKNOWLEDGMENTS

We are grateful to Behin Aksoy and to Professor Halet Çambel for permission to include in this report Aksoy's preliminary description of the Halafian-style painted pottery recovered from Girikihaciyan by the Turkish Prehistoric Project.

5.
Unpainted Pottery

The plain ware associated at Girikihaciyan with the Halafian painted pottery is a grit tempered ceramic with smoothed to lightly burnished surfaces that are tan, orangish, gray, brown, or nearly black. The fine rock particles are black or gray. A fresh break usually reveals a "sandwich" pattern of brown or orange outer zones enclosing a black or brown strip. Sometimes, however, the fabric is solid black or brown.

Post-Halafian plain ware is markedly different with respect to nearly all these attributes. It is tempered with fine chaff, and the surfaces are gray or light tan and rough. The most common shapes are round-sided bowls, wide-mouthed jars (often with thick, short, everted rims), and hole mouths. Loop and strap handles and small lugs are often present.

Plain ware is much more abundant than painted ware at Girikihaciyan (87% plain ware to 13% painted ware) and is clearly utilitarian domestic ware used for food preparation (and possibly food serving). Several of the jar bases are blackened inside, probably because the food being cooked in them had burned on various occasions. One of the smashed but nearly complete jars (B5, number 5), from the house first found in B5 (E5N2) in 1968, contained six ovoid objects, two of plaster and four of baked clay. These were originally interpreted as pot boilers, but during the 1970 season many more such objects, clearly the kind of item usually called a sling missile, were found in different contexts (see chap. 6, this vol.). (It is possible that the ovoids served both purposes.)

A particularly interesting feature of the Halafian ceramic industry is the overlap in form categories, particularly among the bowls, between painted and plain ware. These parallels are noted in the descriptions of the form classes below.

Halafian Plain Ware Form Classes

During our initial field sorting of the pottery, we recorded the total weight of plain ware body sherds and of plain ware shape sherds for each provenience unit. While making the initial sherd sorting, we divided the plain ware from each provenience unit into shapes and body sherds, then later sorted the shapes from each unit into bowl sherds, jar sherds, hole-mouth sherds, indeterminate rims, indeterminate bases, and miscellaneous (lids, lugs, etc.). We recorded the numbers of each plus any measurable diameters and removed all sherds with classifiable profiles. The latter were given separate numbers, and the profiles were drawn to scale; 521 sherds were so numbered and profiled. The detailed form classification of Girikihaciyan Halafian plain ware presented in tables 5.1 through 5.3 was composed at Washington University and is based on the data recorded for these sherds.

When deciding what detailed data to

Table 5.1. Girikihaciyan Plain Ware Form Classification

I. Bowls
  A. Round-sided
  B. Flare-sided (bowls with straight or concave sides that flare out from the base)
    1. Flare-sided with plain rims
    2. Flare-sided with profiled rims
  C. Flare-rimmed
  D. Miscellaneous
    1. Miniature bowls
    2. Lugs
  E. Indeterminate bowl fragments
    1. Rims
    2. Bases
II. Jars
  A. Flare-necked
  B. With everted rims
  C. Collared
  D. Sack-shaped
  E. Fragments of necks and neck/shoulder junctions
    1. Probable flare necks
    2. Indeterminate neck/shoulder fragments
  F. Bases
III. Hole mouths
  A. Plain
  B. With lugs
IV. Miscellaneous (trays, spouts, lids, stands, loose lugs, etc.)
V. Indeterminate
  A. Rims
  B. Body sherds
  C. Bases
    1. Ring bases
    2. Plain bases

Table 5.2. Girikihaciyan Plain Ware Shapes Identified by Sherds (1970)

Plain ware sherds:	4,883	shapes
	24,595	body sherds
	29,478	grand total
Painted ware sherds:	4,443	
Ratio painted/plain:	0.15	
Ceramic industry:	86.9%	plain ware
	13.9%	painted ware

The distribution of the 2,522 identifiable shapes is: bowls 32.8%, jars (including hole-mouth sherds) 67.2%; of 4,883 plain ware shapes, 4,145 were classifiable:

	Number	Percent
Bowls	828	19.98
Jars	1,514	36.53
Hole mouths	180	4.34
Indeterminate rims	753	18.17
Indeterminate bases	870	20.99
Total	4,145	100.01

record for the plain ware pottery, we experimented with vessel thickness, rim diameter, and rim angle. Information on 187 sherds (98 bowls, 50 jars, and 39 hole mouths) was plotted on two-by-two graphs: diameter and angle, thickness and angle, thickness and diameter. The result in the first two cases was a completely random scatter of points, i.e., no significant covariation was demonstrated among these attributes. For thickness and diameter there was a general correlation between greater diameter and greater thickness, presumably because larger vessels tend to be thicker. As a result of this experimental recording and plotting, we decided to record only diameters.

During Mitchell Rothman's later study of the detailed data on numbered and profiled plain ware sherds,[1] he experimented with plotting rim diameter and thickness for hole-mouthed vessels and flare-necked jars. He found, just as we had, that there was a general correlation between greater thickness and greater rim diameter, but he also noted that there was a tendency toward bimodal clustering of the diameters for the flare-necked jar sample. Most jar sherds fall in the rim diameter range of 9 to 16 cm, but there is a smaller group of big jars at 26 to 27 cm, with one at 31 (table 5.4). The thickness of these big jars, however, overlaps completely with that of the larger vessels represented by sherds in the main cluster.

Form Classes

Round-sided Bowls (Form I.A). The round-sided bowl category (fig. 5.1:1-5) is also present among the painted ware, although sherds of round-sided bowls are much less common than those of concave-sided bowls. Two chaff tempered, plain ware fragments of this form class (from W2S5 19-2 and W2S5 20-1) are probably post-Halafian. The distribution of rim diameters is not strongly patterned but does

Table 5.3. Girikihaciyan Plain Ware by Form Class and Shape

Form class	Count	Percent of form class	Percent of total shapes*
I. Bowls			
A. Round sided	29	14.36**	5.57
B.1. Flaring, straight or concave sided	65	32.18**	12.48
B.2. Flaring, straight or concave sided with profiled lips	10	4.95**	1.92
C. Flare rimmed	39	19.31**	7.49
D.1. Miniature	18	8.91**	3.45
D.2. With lugs	4	1.98**	0.77
E.1. Indeterminate rims	20	9.90**	3.84
E.2. Indeterminate bases	17	8.42**	3.26
II. Jars			
A. Flare necked	37	24.67***	7.10
B. With everted rims	6	4.00***	1.15
C. Collared jars	12	8.00***	2.30
D. Sack shaped jars	10	6.67***	1.92
E.1. Jar necks, probably flaring	7	4.67***	1.34
E.2. Neck/shoulders	16	10.67***	3.07
F. Bases	14	9.33***	2.69
III. Hole mouths			
A. Plain	41	27.33***	7.87
B. With lugs	7	4.67***	1.34
IV. Miscellaneous	169		32.44
Total shapes	521		
V. Indeterminate			
A. Rims	32		
B. Indeterminate body sherds	6		
C.1. Indeterminate ring bases	4		
C.2. Indeterminate plain bases	106		
Grand total	669		

* Total shapes = 521
** Form class n = 202
*** Form class n = 150

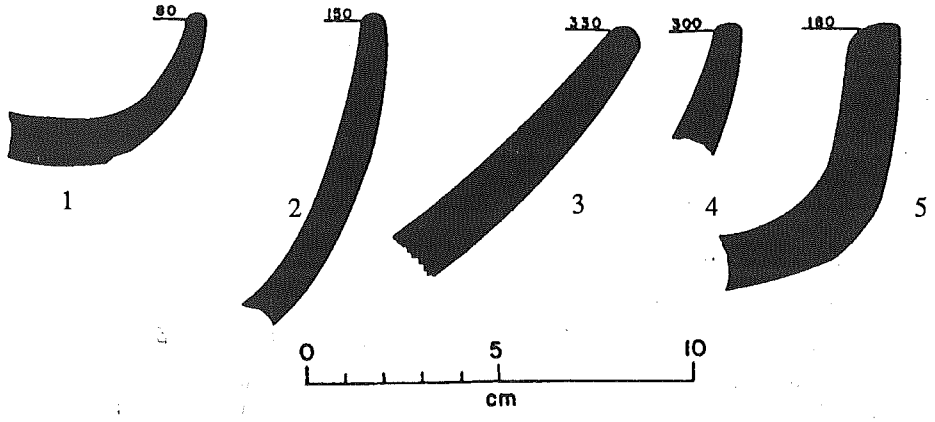


Figure 5.1. Round-sided bowls (I.A). (1) #217, E8N7, 10-0; (2) #385, W2S5 16-1; (3) #356, E7N9 15-3; (4) #290, A 6-3; (5) #37, W2S5 19-1.

Table 5.4. Girikihaciyan Plain Ware: Distribution of Rim Diameters by Form Class

a. Bowl Rims*

Diameter (mm)	IA	IB1	IB2	IC	ID1	ID2	Totals
50					2		2
60		1		1	4		6
70				2	4		6
80	1		1	1			3
90		2	1		2		5
100	1			1	1		3
110		2			1		3
120		2	2	1			5
130	4	1	2				7
140	1						1
150	2	2	3	1			8
160	2	3					5
170	2	1				1	4
180	2	4					6
190	1	3					4
200	2	5					7
210	1	4					5
220	1	6					7
230			1				1
240	1	4					5
250		2					2
260	1	4					5
270		2					2
280							0
290							0
300	3	6		1			10
310		1					1
320	1	3					4
330							0
340							0
350							0
360							0
370							0
380							0
390							0
400							0
410							0
420	1	1					2
Total	27	59	10	8	14	1	119

b. Jars

Diameter (mm)	IIA	IIB	IIC	IID	IIE1	IIE2	IIF	Totals
30							1	1
40					1			1
50					1		1	2
60	1		2			1	1	5
70		1		1	3			5
80	1			2				3
90	4	1	1			1	2	9
100	1					1	2	4
110	3	2			1	2	2	10
120	2		3	1	1	1	2	10
130	1		1		1			3
140	2		1	2		3		8
150	4						1	5
160	4			1		1		6
170				1		1		2
180	2	1	1			1	1	6
190								0
200	1		1					2
210	2							2
220	1							1
230		1						1
240								0
250				1				1
260	3							3
270	2							2
280								0
290								0
300				1				1
310	1							1
Totals	35	6	10	10	8	12	13	94

*Chaff-tempered sherds omitted

c. Hole Mouths

Diameter (mm)	IIIA	IIIB	Totals
60	1		1
70	1		1
80	2		2
90	3		3
100	1	1	2
110	4		4
120	4		4
130	1		1
140	2	2	4
150	3	1	4
160	2		2
170	1		1
180	3		3
190	1		1
200	4	1	5
210		1	1
220	3		3
230			0
240	1		1
250			0
260		2	2
270			0
280			0
290			0
300	1		1
310			0
320			0
330			0
340			0
350			0
360	1		1
Totals	39	8	47

seem to show a tendency for two peaks (at 13 and 30 cm), perhaps indicating the deliberate production of large and small sized bowls of this form category (table 5.4a, col. IA). Two round-sided bowls have square rims, a trait Davidson (1977:41-42) finds characteristic of Middle and Late Halafian painted ware at Arpachiyah.

Flaring-sided Bowls (Form I.B). The flaring-sided or straight-sided form class (fig. 5.2:1-6) is frequent among the painted ware (figs. 4.7, 4.8) and is the most common plain ware bowl form at Girikihaciyan. It occurs in a variety of sizes, and there is also a small subgroup with slightly everted rims (fig. 5.2:5, 6). One additional chaff tempered sherd of this form from W2S5 16-5 is probably post-Halafian. The distribution of diameters for these bowls (table 5.4a, cols. IB1 and IC) compared with that for the form I.C flare-rimmed bowl form indicates that the flaring-sided variant tends to be larger with a mode around 20 to 22 cm, whereas only one flare-rimmed bowl is larger than 15 cm. However, there are only eight diameters for flare-rimmed bowls, and the distribution could therefore be skewed. The diameters for flaring-sided bowls seem to be bimodally distributed with a major cluster at 18 to 22 cm and a minor cluster at 30 to 32 cm.

Flare-rimmed Bowls (Form I.C). The more complete profiles (fig. 5.3:3-5) suggest that this category (fig. 5.3:1-5) is a plain ware version of the sinuous-sided and flare-rimmed bowls characteristic of Halafian painted ware at Girikihaciyan and elsewhere (fig. 4.9). No chaff tempered (i.e., post-Halafian) plain ware sherds of this form were found.

Miscellaneous Bowl Forms (Form I.D). Miniature vessels are not infrequently found among Halafian painted wares (Mallowan and Rose 1935: fig. 58:1; Watson 1983a: fig. 201, 16-20), but at Girikihaciyan apparently were more often made in plain ware (fig 5.4:1).

Bowls with lugs (fig. 5.4:2) are not very common; only four sherds were found and two of these are from deep, slightly hole-mouthed vessels, so they could perhaps as well be placed within the lugged, hole-mouthed jar category (form III.B). Therefore, most of the loose lugs (see form IV below) are probably broken off jars rather than bowls, although most of them are small to medium sized. (Seventeen additional lugs are chaff tempered and thus probably are post-Halafian.)

Indeterminate Rims and Bases from Bowls (Form I.E). The indeterminate fragments are too small to be classified in greater detail. One additional indetermi-

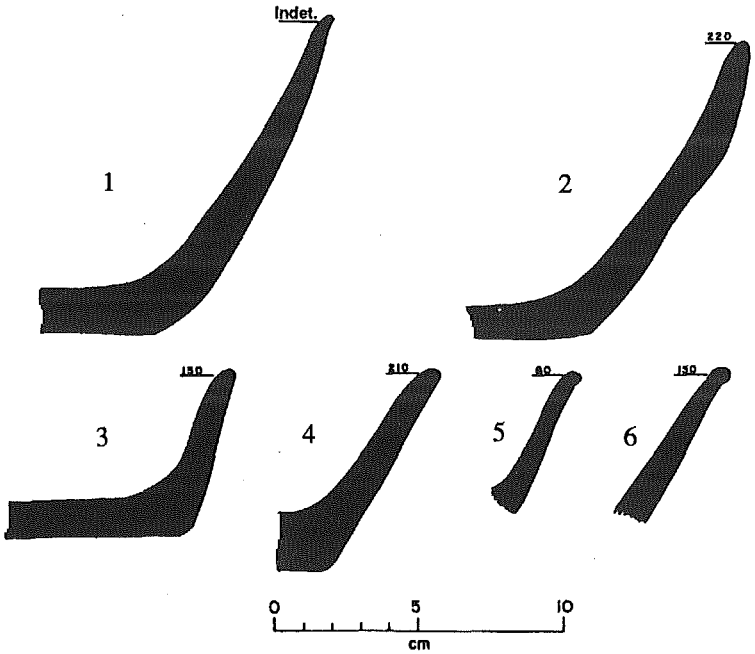
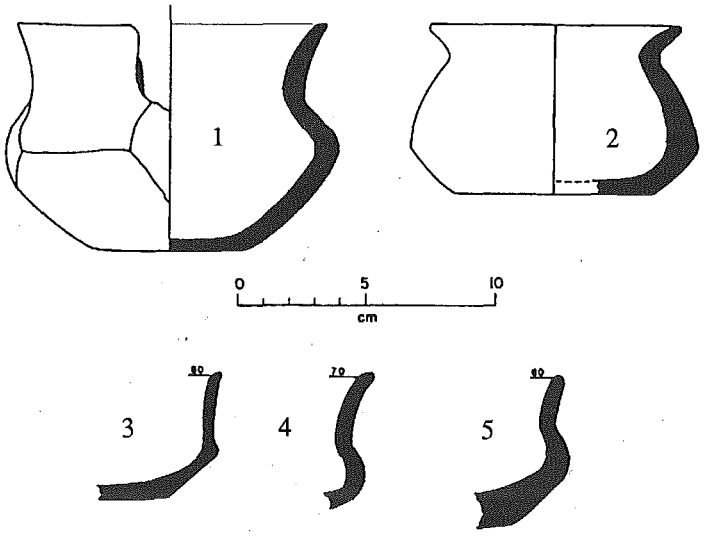


Figure 5.2. Flaring-sided bowls (I.B).
(1) #374, A 5-8;
(2) #477, W2S5 30-2;
(3) #460, E5N1 14-0;
(4) #113, E4N2 6-2;
(5) #351, E7N9 15-3;
(6) #91, E4N1 7-1.

Figure 5.3. Flare-rimmed bowls (I.C).
(1) #371, E5N1 12-13;
(2) B5-5 (E5N2-5);
(3) #490, E4N2 8-6;
(4) #461, E8N8 4-5;
(5) #458, E4N2 3-0.



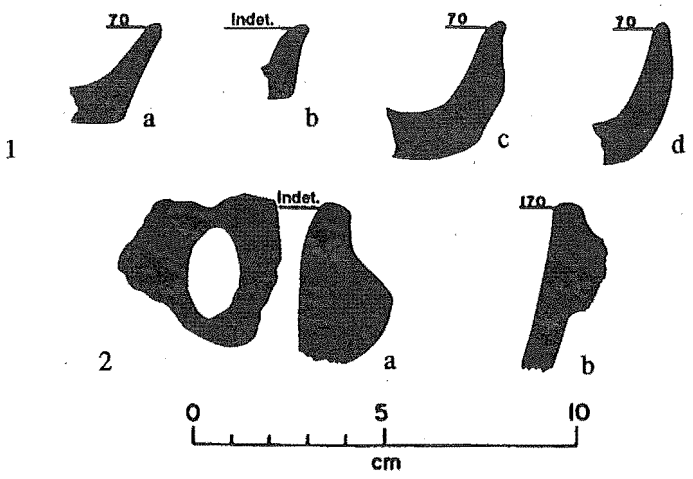


Figure 5.4. Miscellaneous bowls (I.C). (1) Miniatures: a. #398, A 3-13; b. #450, W2S5 20-2; c. #272, A 1-0; d. #431, W2S5 23-14. (2) Bowls with lugs: a. #318, W2S5 16-6; b. #391, E4N1 1-0.

nate rim from W2S5 17-4 is chaff tempered and therefore probably post-Halafian.

Flare-necked Jars (Form II.A). Fragments of the flaring necks of shouldered jars (fig. 5.5:1-4) are the most common plain ware jar form; one has a lug below the rim (fig. 5.5:4) Two additional sherds of flare-necked jars are chaff tempered, so they probably are post-Halafian. As noted previously, the distribution of rim diameters (table 5.4b, col. IIA) suggests a major cluster which peaks at 15 to 16 cm and a minor cluster of large jars at 26 to 27 cm. (A few of the latter could actually be fragments from flaring-sided bowls, and some of the former may be from small bowls. (See the discussion of Factor Analysis 1 in chapter 9.) Most of the detached lugs found (see form IV below) were probably from this vessel form.

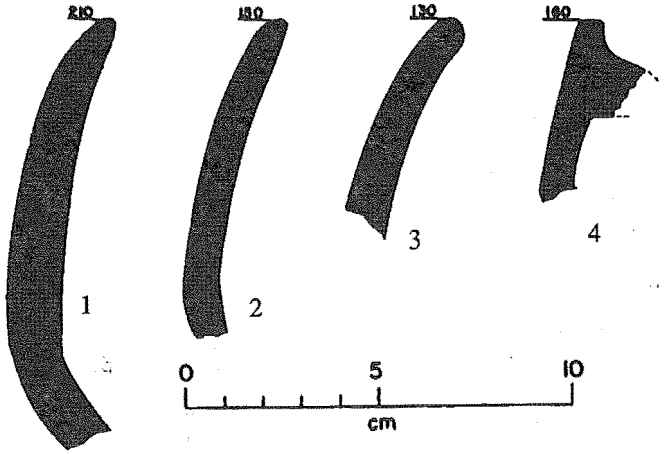


Figure 5.5. Flare-necked jars (II.A). (1) #478, E8N7 10-7; (2) #366, E4N1 4-1; (3) #270, A 1-0; (4) #391, E4N1 1-0.

Jars with Everted Rims (Form II.B). At least one jar with an everted rim also had lugs (fig. 5.6).

Collared Jars (Form II.C). Collared jars (fig. 5.7:1-3) have short, straight necks. Two additional sherds are chaff tempered and probably are post-Halafian.

Sack-shaped Jars (Form II.D). Sack-shaped vessels (figs. 5.8, 5.9) with no marked shoulders are much less common than the flare-necked, shouldered jars. One has a small perforated lug.

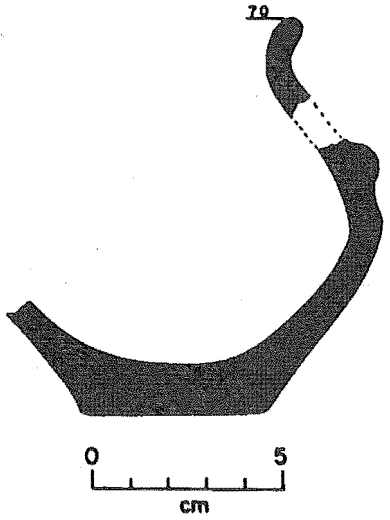


Figure 5.6. Jar with everted rim (II.B). #499, B5-8.

Jar Necks and Jar Neck-Shoulders (Form II.E). One sherd each of a jar neck and a jar neck-shoulder is chaff tempered and so is probably post-Halafian. Both subclasses probably represent sherds of flare-necked, shouldered jars.

Jar Bases (Form II.F). One sherd of the jar base category is chaff tempered and so is probably post-Halafian. Another is the base of a miniature jar (fig. 5.10:3), and five of the total are blackened inside on what would have been the interior bottom of the jar (the sherd shown in fig. 5.10:2 is so blackened). This type of blackening was noted at Banahilk also and presumably resulted from using the vessel as a cook pot.

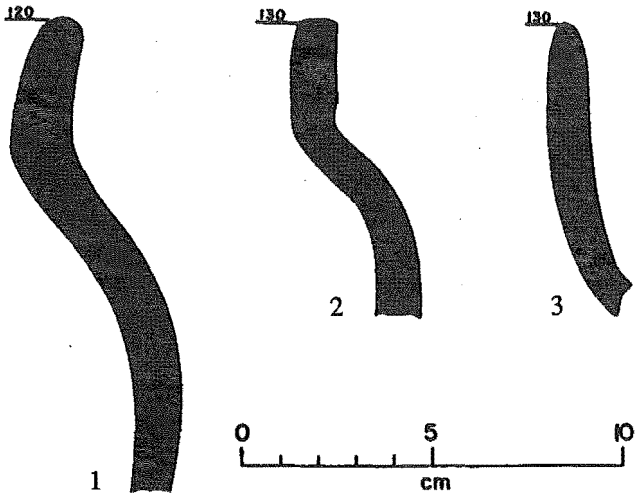


Figure 5.7. Collared jars (II.C). (1) #440, E4N2, 4-0; (2) #280, E8N7 8-0; (3) #294, W2S5 29-1.

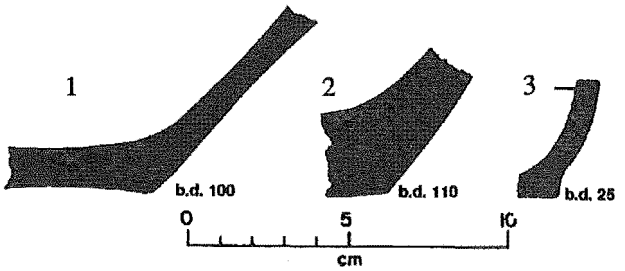


Figure 5.10. Jar bases (II.F). (1) #98, E5N1 14-0; (2) #339b, E4N2 9-0; (3) #313, W2S5 23-1.

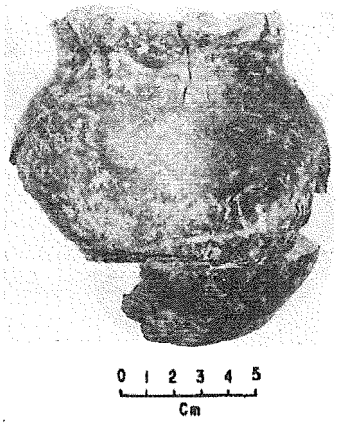


Figure 5.8. Sack-shaped jar (II.D). #367, E7N9 13-4.

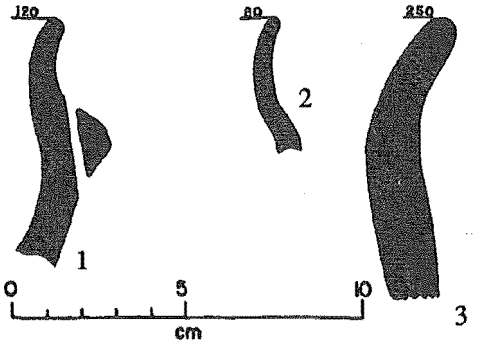


Figure 5.9. Sack-shaped jars (II.D). (1) #439, E4N1 6-3; (2) #464, E7N9 6-0; (3) #63, W2S5 20-2; (4) #442, E7N8 7-0.

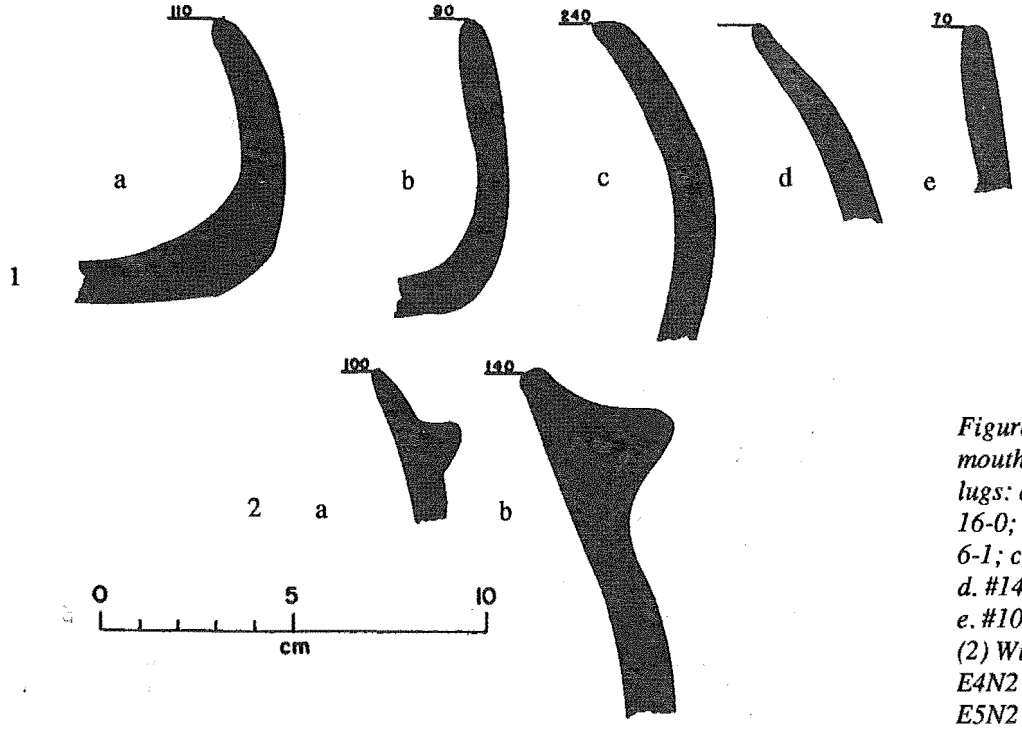


Figure 5.11. Hole mouths. (1) Without lugs: a. #380, E5N2 16-0; b. #393, E8N7 6-1; c. #494; B5 #4; d. #143, A 8-4; e. #109, E4N2 6-2. (2) With lugs: a. #11, E4N2 8-3; b. #496, E5N2 (B5) #6.

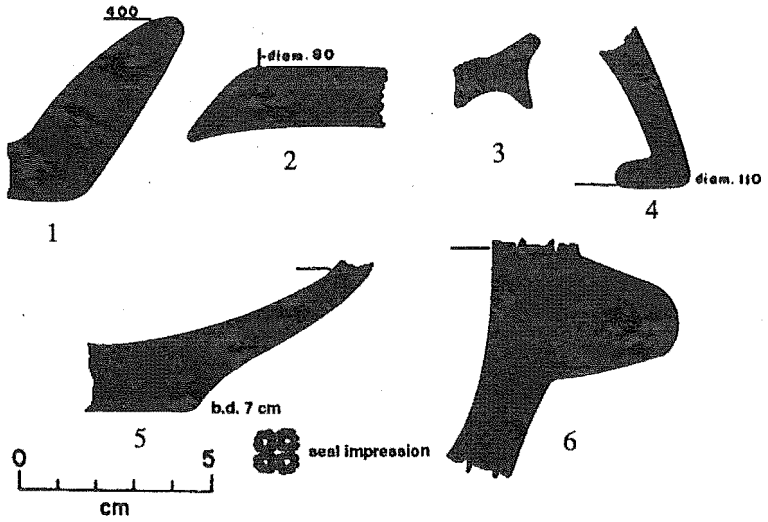


Figure 5.12. Miscellaneous forms. (1) Tray, #396, W2S5 23-6; (2) Lid, #322, W2S5 22-10; (3) Miniature jar with ring base, #94, A 1-1; (4) Pot stand, #211, W2S5 21-12; (5) Pot base with seal impression, #472, E7N9 14-2; (6) Lug, #454, E7N9 10-1.

Hole-mouthed Vessels (Form III.A). These hole-mouthed vessels (fig. 5.11:1) are globular, with rims drawn in to form an opening that is quite small relative to the size of the whole pot. The same form occurs in the painted pottery. Three additional sherds are chaff tempered and so are probably post-Halafian.

Hole-mouthed Vessels with Lugs (Form III.B). Hole-mouthed vessels with lugs (fig. 5.11:2) are not common; only seven sherds were found. One additional hole-mouthed, lugged sherd is chaff tempered and so is probably post-Halafian.

Miscellaneous Forms (Form IV). Included in the miscellaneous category (fig. 5.12:1-6) are fragments possibly of trays (a total of seven) (fig. 5.12:1), a form that also occurs in plain ware at Banahilk (Watson 1983a: 565); spouts (a total of seven); lids (a total of 23) (fig. 5.12:2); a miniature jar with a ring base (fig. 5.12:3); a pot stand (fig. 5.12:4); a very clear seal impression on the under side of a base sherd (fig. 5.12:5); and a series of knobs (or bosses) and lugs (fig. 5.12:6), as well as sherds bearing lug scars (53 lugs, 25 knobs, and 19 lug scars). Seventeen more lugs and lug-scarred sherds are chaff tempered and thus are probably post-Halafian. Besides the incised, punctate, and appliqued sherds described below, the miscellaneous category includes a fragment of a ring base, a partially perforated sherd, and a fragment of a loop or strap handle.

Incised, Punctate, and Appliqued Sherds

Twenty-four of the sherds found in 1970 have unusual surface decoration: 7 show punctations or a combination of punctation and incision, whereas 13 are incised and 4 are appliqued (fig. 5.13; table 5.5). In general, punctate sherds seem to be much more characteristic of the epi- or

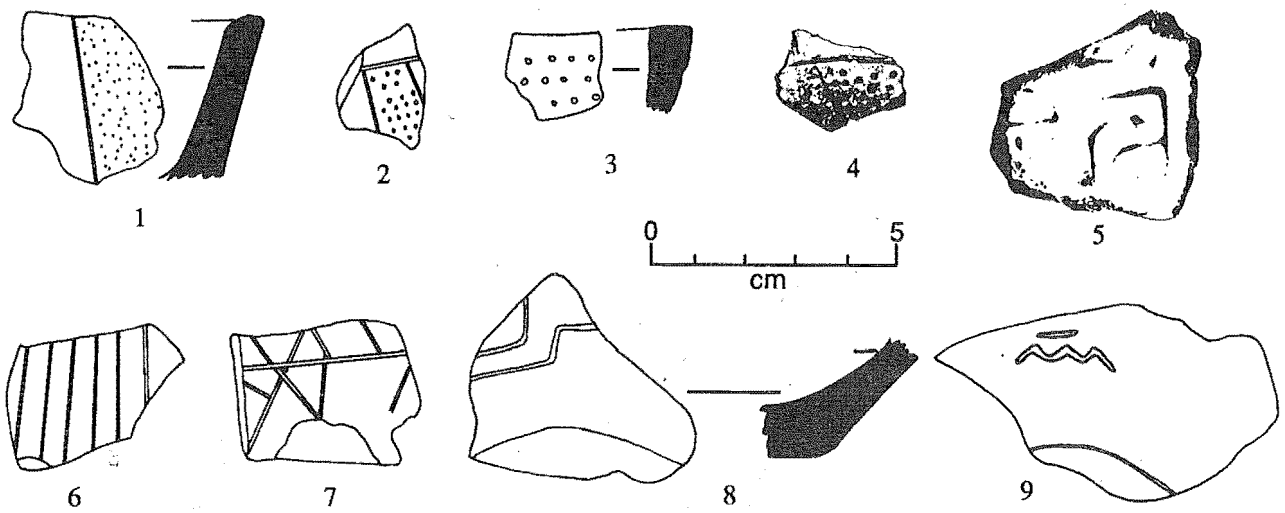


Figure 5.13. Incised and punctate sherds. (1) #250, W2S5 21-14; (2) W2S5 15-3; (3) W2S5 34-0; (4) E1N4 surface; (5) E4N1 2-3; (6) E4N1 4-5; (7) E4N2 9-2; (8) E4N1 6-3; (9) A 7-13.

Table 5.5. Punctate, Incised, and Appliqued Sherds

Provenience	Description
Punctate sherds (1970 season)	
E7N9 15-3	Body sherd probably of small jar, 9 cm maximum body diameter, gouged punctates, 1 to 2 mm in length on outer surface
W2S5 15-3	Body sherd with punctate and incised design on outside (fig. 5.13:2)
W2S5 18-6	Body sherd with incised lines and two punctates
W2S5 21-14	Fragment of bowl rim with design of fine punctates outside (fig. 5.13:1)
W2S5 23-6	Rim sherd of hole-mouthed vessel with punctate and incised design below rim outside
W2S5 33-0	Small body sherd with rows of punctate marks on outer surface
W2S5 34-0	Probably bowl rim sherd (diameter about 13 cm) with punctates on outer surface (fig. 5.13:3)
Incised sherds (1970 season)	
A 4-16	Body sherd with four incisions (10 to 15 mm apart and 2 to 3 mm wide) on outer surface
A 7-13	Base of vessel with potter's mark incised low on the side (fig. 5.13:9)
A 7-20	Jar body sherd with three incised lines (about 20 mm apart and 2 to 3 mm wide) on outer surface
E4N1 2-3	Two body sherds with incisions forming bas relief design (fig. 5.13:5)
E4N1 4-5	Body sherd with six incised lines (6 to 7 mm apart and about 1 mm wide) on outer surface (fig. 5.13:6)
E4N1 6-3	Base sherd with part of incised design visible on side (fig. 5.13:8)
E4N1 8-0	Jar body sherd (neck/shoulder fragment) with two incised lines on outer surface (lines are 3 to 5 mm wide and 2.5 to 10 mm apart, converging toward the vessel base)
E4N2 9-2	Body sherd with coarse, incised cross hatching on outer surface (fig. 5.13:7)
E5N1 12-0	Body sherd with a series of fine lines incised on outer surface (lines are less than 1 mm wide spaced 10 mm or less apart)
E7N9 15-6	Body sherd with three lines incised on outer surface (lines are 7 to 8 mm apart and 1 to 1.5 mm wide)
E9N7 19-0	Small body sherd with incised lines on outer surface (lines are about 1 mm wide and 7 mm apart)
W2S5 33-0	Body sherd with three incised lines on outer surface (lines are about 1 mm wide and 6 to 10 mm apart)
Appliqued sherds (1970 season)	
W2S5 16-4	Body sherd with two long, low ridges of applique
W2S5 18-1	Body sherd with a semi-rectangular bump of applique
W2S5 33-0	Fragment of applique design
E7N9 3-0	Body sherd with unspecified applique
Punctate or incised sherds (1968 season)	
Three from the surface collections	
E1N4	Small rim fragment of bowl with punctate field outlined by incised lines (fig. 5.13:4)
E14N2 and W11S9	Body sherds with multiple lines less than 5 mm apart and less than 1 mm wide
Five from W2S5	
Level 2	Linear incision on body sherd
Level 4	Small body sherd with punctate marks all over outer surface
Level 5	Two body sherds showing portions of punctate fields outlined by incised lines
Level 6	Small body sherd with portions of punctate fields outlined by incised lines
One from E5N2	
Level 3	Body sherd with narrow incised lines on outer surface

post-Halafian materials in the W2S5 and upper E5N2 areas than of the Halafian proper.

DISCUSSION AND CONCLUSIONS

The quantity of plain ware relative to painted pottery or fine ware at Girikihaciyan is much greater than at any of the other Halafian sites for which there are quantitative data. Available information is summarized in table 5.6.

The Girikihaciyan plain ware seems quite similar to that noted at other Halafian sites: a relatively thick-walled ware with tan to very dark brown, almost black, smoothed, or lightly burnished surfaces. This general description would fit much of the plain ware of Arpachiyah, Aqab, Turlu, Tell Halaf (the *altmonochrom*), Banahilk, and at least some of that from Shams ed-Din (Gustavson-Gaube 1981: 13, 70-78). At some of these sites (Banahilk, Tell Halaf, Aqab, Shams ed-Din, and Arpachiyah), straw or chaff temper was used. At Aqab apparently all the plain ware is straw tempered, and at Arpachiyah and at Shams ed-Din at least some pots contained both straw and grit, whereas at Banahilk, and perhaps Tell Halaf as well (von Oppenheim and Schmidt 1943:94-95) it is rare for both types to be used in the same vessel. At Girikihaciyan, grit is the temper used during the Halafian occupation, with chaff tempered plain ware appearing only in the brief post-Halafian occupation.

This Halafian lightly burnished plain ware is not only relatively widespread (it seems to be associated with Halafian painted ware at most of the known excavated sites), but it also precedes the painted ware in the Khabur region. Von Oppenheim says the *altmonochrom* occurs stratigraphically below the *buntkeramik* at Tell Halaf. Davidson (1977:161) states that his observations at Tell Halaf confirm

Table 5.6. Quantity of Plain Ware Relative to Painted Pottery or Fine Ware at Halafian Sites

Site	Quantity
Girikihaciyan (1970 excavations)	87% plain, 13% painted
Banahilk	35% plain, 65% painted (Watson 1983a: 549)
Aqab: Middle, Late, and Transitional Phases (plain ware sherds make up 37% of the 482 total from the Early Phase)	12–14% plain, 86–88% painted (Davidson 1977:110,157)
Arpachiyah	Plain ware is said to make up no more than 10% of the total ceramic industry (Mallowan 1933:172; Davidson 1977:69-70); 34% plain, 66% painted (Hijara 1980:187)
Shams ed-Din	80% of the common and fine wares are painted (Gustavson-Gaube 1981:10-11) corresponding to approximately 75% of the total ceramic sample known from Shams ed-Din
Turlu	Painted Halafian ware was apparently more common in levels 3 and 4 (those of the Halafian occupation) than was the burnished plain ware (see Mellink 1964 and Davidson 1977:213)

this, and he also notes a parallel stratigraphic situation at the site of Tell Habech on the Wadi Dara (a tributary to the Khabur; Davidson 1977:88).

The form classes represented in the Girikihaciyan plain ware sherds provide an interesting contrast to the form classes of the Banahilk plain ware (table 5.7). The bowl forms common to the two sites are round-sided, straight-sided, flare-sided, and lugged. The Banahilk variant of the latter, likened to Hassunan "milk-jars" in the Banahilk report (Watson 1983a: 563), have straight or slightly flaring sides, but at least a few of the Girikihaciyan large, lugged pots were hole mouths (like a few of the Banahilk large, sack-shaped jars). As was the case with Girikihaciyan and Banahilk painted pottery, there are some strong contrasts in the abundance of these various bowl forms. Round-sided bowls make up nearly 70% of all the bowls at Banahilk, whereas at Girikihaciyan they are less than 15% of the bowl total. Flaring concave-sided or straight-sided bowls make up some 37% of all bowls at Girikihaciyan, but at Banahilk the figure is 9%. At neither site are large, lugged bowls very abundant (about 2% at Girikihaciyan and less than 3% at Banahilk), but at Banahilk there is a category of hole-mouthed bowls (18% of the total) that is lacking at Girikihaciyan. However, the Girikihaciyan potters made flare-rimmed plain ware bowls, a category that does not exist in the Banahilk plain ware industry (and is very rare even in the painted ware).

For both Girikihaciyan and Banahilk, there is a general similarity between the forms of the plain ware and the painted

Table 5.7. Girikihaciyan and Banahilk Plain Ware Bowl and Jar Forms

	Girikihaciyan		Banahilk (Watson 1983a)	
Vessels	Number of sherds	Percent	Number of sherds	Percent
Bowls				
Round-sided	29	14.36	249	67.48
Flare-sided	75	37.13	33*	8.94
Flare-rimmed	39	19.31		
Miniatures	18	8.91		
Hole mouths	0		65	17.62
Large bowls with lugs	4	1.98	10**	2.71
Indeterminate bowls	37	18.32	12	3.25
Totals	202		369	
Jars				
Flare neck	44	29.34	62	11.17
Everted rims	6	4.00		
Collared (vertical neck)	12	8.00	156***	28.11
Sack-shaped	10	6.67		
Hole mouths	48	32.00		
Neck/shoulder junction	16	10.67	127	22.88
Bases	14	9.33	210	41.58
Totals	150		555	
Total plain ware sherds	29,478		1,762	
Bowls	828	32.83	369	39.94
Jars	1,694	67.12	555	60.06
Totals	2,522		924	
Bowl/jar ratio		0.49		0.49

* This figure includes a few sherds from round-sided bowls.
** "Milk jars" (Lloyd and Safar 1945: plate XXII:2, fig. 3:7)
*** "Wide-mouthed, short-necked jars" (Watson 1983a: 563) include both everted and more or less vertical rims.

Table 5.8. Girikihaciyan Import Ware

	Shape				Decoration		
Provenience	Body	Neck	Rim	Shoulders	Red Paint	Incision	Incision on Red
A 3-14	1*				1*	1*	
A 4-1	1						
A 5-4	1				1		
A 5-6	1					1	
A 5-11	1				1	1	
A 5-14	1					1	
A 6-13	1		1		1		
A 7-15	1					1	
A 7-20	1					1	
A 7-23	1				1	1	1
A 165 SWQ				1			
E5N1 14-0	1		1			1	
E5N1 16-0	3**				3**	1**	1**
E7N8 6-0		1			1		
E7N8 10-2	1						
E7N9 6-0	2				1		
E7N9 7-0	1	1			2		
E7N9 8-0	1				1		
E7N9 8-1	1						
E7N9 8-4	1				1		
E7N9 9-2	1				1		
E7N9 10-1		1			1		
E7N9 10-2			1				
E7N9 10-3							
E7N9 11-6	1	1	1		1		
E7N9 12-2	3	1			2		
E7N9 12-3	1					1	
E7N9 12-4	1				1		
E7N9 13-1	12	1	2	2	6	1	
E7N9 13-2	2				2		
E7N9 13-3	2				1		
E7N9 13-4	2				3		
E7N9 14-1	1				2		
E7N9 14-2		1			1		
E7N9 14-3	2	1	2		4		
E7N9 14-4	4				4	2	
E7N9 15-6	1				1		
E8N7 21-0	2				2	1	
E8N7 23-0	3				2		
W2S5 16-2	1				1	1	
W2S5 20-4	1				1		
W2S5 22-5	1				1		
W2S5 28-3	1				1		
Total sherds	63	8	8	3			

* 1 body sherd from A 3-14 decorated with red paint and incision.

** 3 body sherds form E5N1 16-0 all have red paint, 1 has incision, and 1 has incision over red paint.

ware bowl industries. At Girikihaciyan, round-sided bowls are much less common than straight- or flaring-sided ones in both painted and plain ware, whereas flare-rimmed bowls make up about 19% of all bowls in each industry.

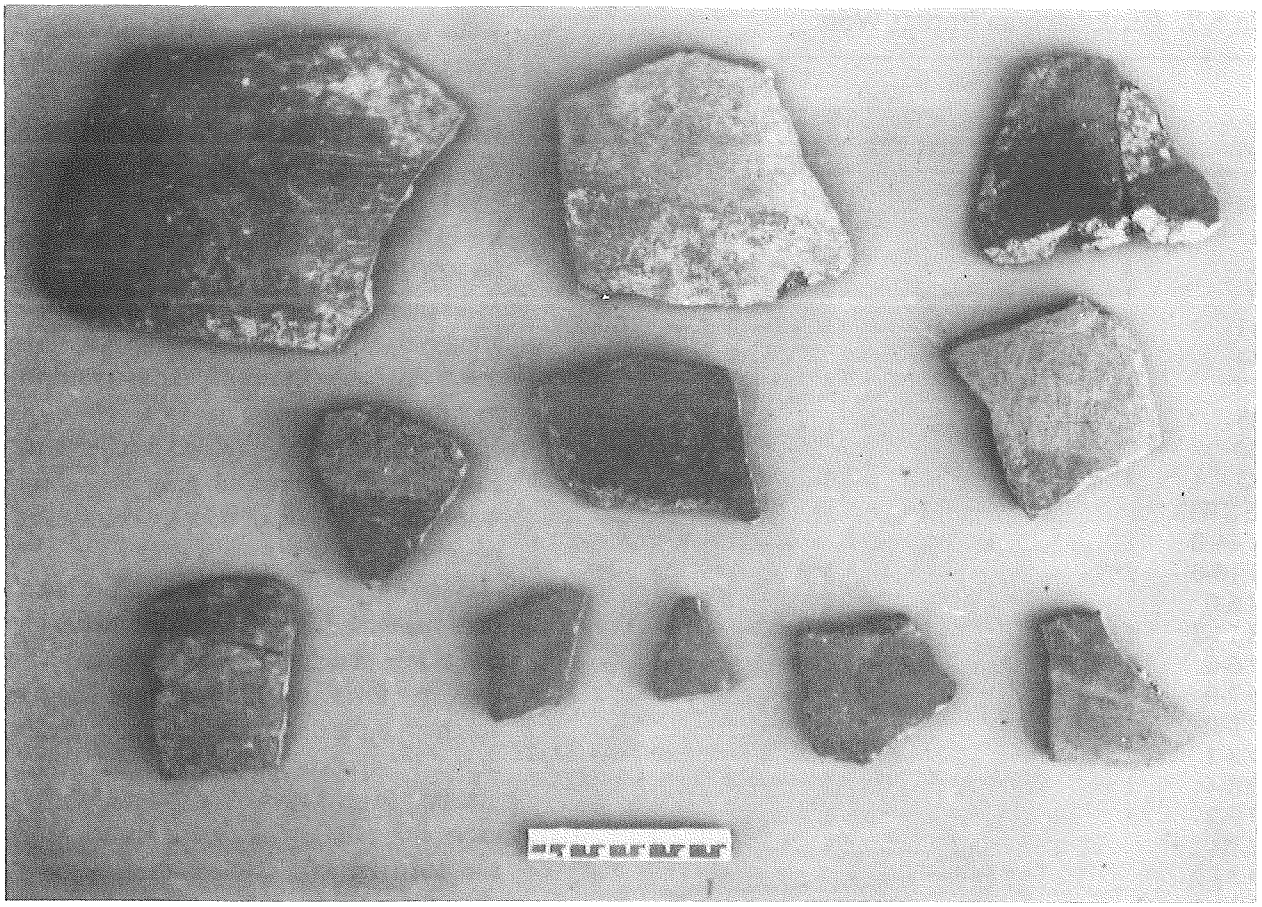
At Banahilk, round-sided bowls approach 70% of the bowl total in plain ware as in painted, whereas flaring straight- or concave-sided bowls comprise less than 5%. In each Banahilk industry, hole-mouthed bowls make up 18 to 19%. At Banahilk, however, the flare-rimmed bowl category is represented only in painted ware (about 4% of all bowls), being completely absent in the plain ware.

Jar forms are more difficult to compare meaningfully between the two sites, but a few statements can be made. The main jar form that the two sites have in common is the flaring-necked, high-shouldered jar (presumably a storage vessel) that makes up 30 to 40% of all jar forms at each site (adding neck sherds to neck/shoulder sherds). Sack-shaped (sloping-shouldered) jars, collared jars, jars with everted rims, and hole-mouthed jars are present at both sites. For both sites, jar sherds make up 60 to 70% of the total classifiable plain ware fragments, whereas the painted ware jar/bowl ratio is closer to 50/50 (48% jars versus 52% bowls at Girikihaciyan and 55% jars to 45% bowls at Banahilk).

IMPORTED POTTERY: RED INCISED WARE

Some 83 sherds of alien ware were found in Halafian context at Girikihaciyan (table 5.8). Although it is extremely difficult to estimate, these sherds may represent as few as 15 to 20 vessels. Most of them come from E7N9, although a few sherds were present in various levels of Operation A, E5N1, E7N8, E8N7, and W2S5.

The foreign ware is dark gray or reddish brown and is decorated with dark red



paint and fine incision (fig. 5.14). The paint is applied in horizontal bands, and the incised lines often parallel these bands without overlapping them. Most of the fragments are body sherds, but the few pieces of rims and necks seem to have come from jars.

Figure 5.14. Imported pottery: red-incised (see table 5.8).

NOTE

1. The form class descriptions are based partially on a study of the Girikihaciyan Halafian plain ware made in 1972 by Mitchell Rothman—at that time an undergraduate at Washington University—during the course of an independent study project under Watson's supervision.

6.
The Chipped Stone Industry and Other Artifact Categories

The Stone Industry

A large quantity of worked flint or chert (we use the terms synonymously here) and obsidian was recovered during the 1968 and 1970 excavations. If it is subjectively compared with earlier material from the Near East, one could say the Girikihaciyan collection appears to be composed predominantly of rather poorly worked pieces. Nevertheless, we believed it important to quantify the chipped stone collection in detail so that meaningful comparisons can be made with quantified material from other sites.

The entire sample of chipped stone from both the 1968 and the 1970 seasons was sorted into the same categories for each excavation unit: core material, i.e., unmodified raw material potentially usable as cores; core trimming material or decortication flakes; waste flakes with no macroscopically visible signs of use; patinated flakes (described below); and pieces of chert utilized either as cores, flakes, blades, or recognizable tools. The last category was further subdivided into cores, blades, utilized flakes, backed crescents, and other tools. Tabulation of these categories provided the data for the factor analysis (chap. 9).

A more detailed analysis was later carried out on the chipped stone from the 1970 season. The 1968 stone was excluded because so much of it came from definitely post-Halafian or ambiguous contexts. Because the cluster analysis performed on the artifacts from Girikihaciyan shows the excavation units from 1970 to be essentially homogeneous in the cultural sense, we believe we are justified in discussing the chipped stone industry as a whole. This does not mean, however, that the material was distributed homogeneously over the site. In fact, the factor analysis showed several possible artifact associations, as noted in chapter 9. In analyzing the 1970 material, we believed the most useful classifications to employ were those devised for the nearby site of Çayönü (Çambel and Braidwood 1980; Redman 1982). Synchronic comparisons with a few other Halafian sites are possible, as are some diachronic comparisons for the local area.

The Çayönü typology consists of 67 categories. Because some categories are either not represented in our sample or are very rare, we used only 26 of the total. These data (including some categories not comparable to any at Çayönü) are given both by counts and by weights in table 6.1; all comparative statements are based on these data.

The weight data generally reflect patterns seen in the count data (this is also demonstrated in the factor analysis in chapter 9), but some significant differences are obvious. The two-season totals indicate that obsidian makes up 30% of the

Table 6.1. Chipped Stone Industry: Counts and Weights for 1970 Excavations at Girikihaciyan

Classification	Chert Count	Chert Weight (g)	Obsidian Count	Obsidian Weight (g)
Core material	608			
Core trimming material	484			
Categories*				
A. Cores and core fragments	132		27	225
B. Waste flakes	1,106	5,364	274	270
C. Blades and flakes				
1. Blades				
a. Intensely utilized	9	75	46	165
b. Moderately utilized	50	192	325	765
c. Slightly to dubiously utilized	28	75	427	540
2. Flakes				
a. Intensely utilized	62	1,950	15	97
b. Moderately utilized	381	4,820	105	425
c. Slightly to dubiously utilized	345	3,190	167	355
D. Distinct tool types modified by use or wear				
1. Retouched blades				
a. Flat retouch	5	18	3	20
b. Steep retouch	16	72	20	47
c. Nibbled retouch	44	182	43	122
d. Other	2	5	6	12
2. Flakes retouched				
a. Flat retouch	2	15	1	
b. Steep retouch	26	460	4	
c. Nibbled retouch	32	210	11	58
d. Other	1	50	0	
3. Retouched end scrapers on blades	4	30	2	
4. Retouched side scrapers on blades	2	175	3	40
5. Flake Scrapers				
a. End scrapers (by use)	20	280		
b. End scrapers (by retouch)	11	290		
c. Side scrapers (by use)	16	540		
d. Side scrapers (by retouch)	4	205	6	52
e. Other scrapers	2	75		
6. Burins	21	120	7	50
E. All other tools	14	45	13	
Category totals	2,335	18,438	1,505	3,243

* Categories are drawn from Çayönü classification system (Redman 1982: table 1).

assemblage by count but only 15% by weight. In making these weight comparisons, we did not include the weights of the chert core material and core trimming material, but the weight of all the obsidian is included. Thus, the actual proportion of obsidian by weight is even less than 15%.

Not only is obsidian relatively more rare than chert, but also there are significant differences in the proportions of the

different tool types between these materials. Waste flakes comprise 23.3% of all the worked chert (or, if core material and core trimming material are excluded, 47.4%), while for obsidian only 18.2% remains as unutilized flakes. What seems to be a more important difference in the uses of these materials is that a much greater proportion of obsidian than chert is in the form of blades. If we exclude waste flakes, the proportion of blades to the total of blades and flakes that were either utilized or made into tools is 15.1% for chert and 73.5% for obsidian, a striking difference. In terms of the proportion of the total industry (including waste flakes, cores, core material, and core trimming flakes) that is blades, the ratio for chert is 4.7% and for obsidian, 59.3%.

A somewhat similar pattern is present in the chert and obsidian industry at Banahilk, although the sample is much smaller (table 6.2). During the Banahilk sondage a total of 1,896 fragments of chert and obsidian was recovered, of which 1,342 (71%) were chert and 554 (29%) were obsidian. Chert blades and the bladelike flakes together total 67 (5% of total chert), and chert waste flakes and chips total 882 (66%), whereas there are 272 obsidian blades or bladelets (49% of all obsidian). However, there are 201 obsidian waste flakes at Banahilk (36%), and 53 of the blades show no utilization to the unaided eye. Thus, at Banahilk as at Girikihaciyan, the proportion of obsidian blades is much higher than that of chert blades, but the Banahilk obsidian industry differs from that of Girikihaciyan in the rather large percentage of obsidian waste flakes. Yet the low percentage of obsidian relative to chert and the lack of obsidian cores at Banahilk (none in the current sample) seems to indicate that obsidian was not too readily available.

Obsidian was much more abundant at some Halafian sites than at Girikihaciyan or Banahilk. For Arpachiyah, Davidson construes Mallowan's remark that obsidian was as common as flint at Arpachiyah (Mallowan and Rose 1935:102) to mean the flint/obsidian ratio there was about 50/50, but there are no actual counts for Arpachiyah. Davidson (1977:332) notes further that obsidian at Tell Aqab made up 80 to 85% of the chipped stone total for all Halafian levels (although, even with such an abundance of obsidian, there is still proportionately less obsidian debitage than chert debitage [Davidson 1977:21]). On the other hand, at Shams ed-Din, a Late Phase Halafian site on the Euphrates (Azoury et al. 1980; Azoury and Bergman 1980), obsidian comprises only 11% of the total chipped stone industry, and there is a relatively high proportion of chert blades and bladelets to flakes: 61.8% of the 2,750 chert blanks (blanks being unretouched flakes, blades, or bladelets) are flakes and

Table 6.2. Chipped Stone at Girikihaciyan and Banahilk

Site	Number	Percent
Girikihaciyan (1970)		
Total chipped stone	4,932	
Chert	3,427	69.48
Obsidian	1,505	30.52 (obsidian is only 15 % of the total weight of all chipped stone)
Chert utilized or retouched pieces	1,229	35.86 of all chert; 52.63% of all worked chert, i.e., excluding fragments of raw material and core trimming debris
Chert waste flakes	1,106	32.27 of all chert; 47.37% of all worked chert
Obsidian utilized or retouched pieces (including 27 cores and core fragments)	1,231	81.79 of all obsidian
Obsidian waste flakes	274	18.21 of all obsidian
Banahilk (1954)		
Total chipped stone	1,896	
Chert	1,342	70.78
Obsidian	554	29.22
Chert utilized or retouched pieces	460	34.28 of all chert
Chert waste flakes	882	65.72 of all chert
Obsidian utilized or retouched pieces	300	54.15 of all obsidian
Obsidian waste flakes	254	45.85 of all obsidian

flake fragments, 30.7% are blades and blade fragments, and 7.3% are bladelets and bladelet fragments. Thus the Shams ed-Din chipped stone industry has a much greater proportion of chert blades and bladelets than do the stone tool industries of Girikihaciyan and Banahilk.

Other Shams ed-Din figures that compare interestingly with those of Girikihaciyan and Banahilk are as follows: of the 4,207 pieces of flaked stone recovered in the 1974 season at Shams ed-Din and described by Azoury and Bergman (1980), 3,734 are chert and only 473 are obsidian. Of the total chert and obsidian, 3,436 are cores, core preparation or core rejuvenation flakes, and debitage (including the 3,173 unretouched flakes, blades, and bladelets called blanks by the authors). There are no obsidian cores; there are 771 retouched tools of which 725 are chert (chert tools comprise 19% of all the 1974 chert). At Banahilk recognizable tools make up only 8% of the total chert industry (1,342 pieces); at Girikihaciyan tools comprise 9% of the chert industry (2,335 pieces). It is evident that lithic technology at Shams ed-Din is somewhat comparable to that known for the earlier Amouq A-B blade-based industries, whereas those of Girikihaciyan and Banahilk are more like the Hassuna-Matarrah flake-based industries. Nevertheless, Copeland notes that for the Qoueiq River region north of Aleppo (and for much of northern Syria) chipped stone tool technology changes significantly after about 5000 BC when Halafian and Ubaidian pottery makes its appearance. Flint artifact repertoires become much more limited and show much less skill (Copeland 1981:94, 97).

At this point it may be useful to make some comparisons with Çayönü (table 6.3). Although there is a gap of more than a millennium and a half between upper Çayönü and Girikihaciyan, the comparison between the two chipped stone assemblages is of considerable interest.

The statement that obsidian could not be obtained locally and was thus a trade item is too facile. A number of related questions require examination: was the obsidian obtained by journeying to the source? Was it a low-value trade item, or was it a scarce and valuable commodity? The answers to these questions are different for different sites.

The evidence from Girikihaciyan and Çayönü suggests that either the means of procurement for obsidian or its relative value changed markedly in the local area during this period of prehistory. It appears that a shift began, or at any rate became detectable, during the last phase at Çayönü. At Girikihaciyan, obsidian was a very valuable commodity and perhaps was not transported in an unmodified form. Thus, while the distance to the source did not change, the position of obsidian as a trade item did change significantly.

Table 6.3. Selected Comparisons between Girikihaciyan and Upper Çayönü Stone Tools (%)

Chipped stone	Girikihaciyan	Upper Çayönü* Phase 4	Phase 5
Obsidian			
Count	30.0	49.5	50.5
Weight	15.0	33.9	12.7
Blades			
Flint	5.0	38.0	31.1
Obsidian	59.0	54.0	65.0
Unmodified pieces			
Flint	64.0	22.0	29.0
Obsidian	18.6	17.0	19.6
Cores and core fragments (excluding core trimming and unmodified raw material)			
Flint	5.6	8.1	7.2
Obsidian	1.8	7.0	3.5
Modified beyond use (retouched) compared with total flakes and blades			
Flint	8.4	13.4	10.5
Obsidian	8.3	16.5	19.3
Modified beyond use (retouched) compared with total utilized and modified beyond use flakes and blades			
Flint	17.0	14.5	12.4
Obsidian	9.0	14.0	17.8

* Çayönü data (Redman 1982: tables 2, 3)

The evidence for this shift is as follows: at Girikihaciyan obsidian comprises 30% of the assemblage by count and 15% by weight. These figures indicate that obsidian was relatively rare and was used in small pieces. At Çayönü in Phase 4, it makes up 50% of the assemblage by count and 34% by weight, but for Phase 5, while the count ratio remains the same, the weight ratio drops to 13%. This suggests that at Çayönü, obsidian began to be used in smaller pieces than previously, and that at Girikihaciyan this same situation pertained.

The use of obsidian as blades shows a similar pattern. At Girikihaciyan a much greater proportion of obsidian than chert is made into blades. At Çayönü between Phases 4 and 5, the proportion of chert blades decreases and that of obsidian increases; again the shift is in the direction of the situation at Girikihaciyan.

The proportion of the industry that is cores also shows a marked change. At Çayönü in Phase 4, there are proportionally almost as many obsidian cores as chert cores, but by Phase 5 there are only 50% as many obsidian cores. This is essentially the same ratio as Girikihaciyan.

The simplest explanation for the preceding data is that, during Phase 4 at Çayönü, obsidian was so easily obtainable by trade that it was not particularly valuable. In Phase 5, the situation had changed; use patterns reflect both an increase in value and a decrease in the amount obtained in a raw state. This trend seems to have continued or been repeated; at any rate, by the time of Girikihaciyan, the use pattern of obsidian is very different from that of chert.

The following assumption underlies the preceding discussion: If obsidian is initially worked at the source, the resulting load will be more valuable because most of the waste material will have been eliminated. We also assume that blades, with their high edge-to-weight ratio, represent a particularly valuable form of this material, and hence that blades are more valuable than flakes.

There are, however, other explanations for the observed distributions. Obsidian blades may have been more useful than chert blades, at least for some common purposes, and this may account for their greater abundance relative to chert blades. This explanation might account for the differences seen at one site or phase, but it does not explain the apparent long-term trend toward more obsidian blades. Alternatively, the ratio difference might have resulted from greater ease in producing blades from obsidian cores than in manufacturing them from the relatively poor quality chert. This still does not explain the shift over time, however, nor does it account for the increasing rarity of obsidian cores.

In summary, Girikihaciyan appears to have received obsidian as a preworked, valuable trade item, a process begun a millennium earlier.

Not all other comparisons between chert and obsidian, or between Girikihaciyan and Çayönü, reflect differences in the procurement of obsidian. It appears that obsidian was used more intensively than chert, as has been shown. However, chert appears to have been less frequently modified only if one includes the total industry in the tabulations. Intensity of utilization can also be measured by the proportion of each category within an industry that was intentionally modified beyond the initial flaking, either by retouching the stone or by making it into tools (e.g., scrapers, burins). There are 186 chert pieces and 119 obsidian pieces that bear additional modifications of some kind besides chipping resulting from use. Of the chert pieces, 8.4% of all blades and flakes are modified, while 8.3% of the obsidian is additionally worked. The proportion of modified pieces to those obviously utilized is higher, however, for chert than for obsidian: 17% chert, 9.4% obsidian.

A very high proportion of chert that

was made into blades was then modified by retouching one or both edges or by more intensive modification. The same pattern is observed for the flakes: a greater proportion of the chert flakes was utilized in a modified form than was thease wityh obsidian flakes. As seen in table 6.3, much the same is true at Çayönü, except that obsidian is modified more often than chert. In general, chert seems to be as important a part of the tool kit as obsidian. These data show another important difference between the two sites: more of the industry is modified at Çayönü than at Girikihaciyan. This appears to be part of what we perceive subjectively as the relative "poorness" of the Girikihaciyan industry.

We noted previously that the local Girikihaciyan chert is of poor quality. Actually, there is a continuum in chert quality. The vast majority of the material is of fairly poor quality, with a small amount somewhat better. Occasional pieces are found that flaked very well, however, and have a high luster and a brownish tint. It is possible that this flint was imported; it displays a use pattern much like that of the obsidian. Two out of the approximately 100 flake cores were of this material, but three-quarters of the blade cores or core fragments were of the superior quality material. Again, almost none of the flake scrapers is of good quality, but about 75% of the burins are. Also, a large proportion of the blades is of this material, but it was used for only a very small proportion of the flakes. Because flint quality is represented by a continuum and the categorization is subjective, precise quantification of the differences in use between the grades of chert or flint was not attempted.

Blade Analysis

Because there are many blades, especially obsidian blades, and because comparable data were being collected for the Çayönü blades, further study was made of this artifact class. Blades and blade fragments that were either utilized or retouched were scored for the following attributes: (1) blade length, (2) maximal width, (3) maximal thickness, (4) cross sectional shape, (5) location of use scars, and (6) the part of the blade present.

Table 6.4. Girikihaciyan Blade Dimensions (mm)

Dimension	Chert (156 blades) Mean	Chert (156 blades) Std Deviation	Obsidian (462 blades) Mean	Obsidian (462 blades) Std Deviation
Length	35.2	15.2	29.1	14.0
Width	18.6	7.2	15.8	5.2
Thickness	5.5	2.7	3.9	1.8

One hundred fifty-six flint blades and 462 obsidian blades were scored. The lengths, widths, and thicknesses are summarized in table 6.4. The data in this table indicate that chert blades are significantly larger in all dimensions than obsidian blades. To determine whether there is significant clustering within the blade category, we made histograms for the values of each dimension and constructed two-dimensional plots for each combination of the measurement values. No bimodality is evident, nor are there any clusterings of length and width, length and thickness, or width and thickness values. Thus, insofar as we could determine on the basis of dimensions alone, there is no reason to subdivide the blade category. Furthermore, no patterned relationships were found between blade lengths or widths and the various kinds of use patterns, cross sectional types, and fragment types.

Further attention was given to use pattern, cross section type, and fragment type while ignoring the dimensions of the blades themselves. Two- and three-dimensional chi-square tables were constructed, but little patterning emerged. In general, there are many more use flake scars on the dorsal surfaces than on the ventral sides, and blades with one edge scarred on both surfaces tend to be longer

Table 6.5. Girikihaciyan Chert and Obsidian Blade Attribute Counts

Parameter		Material Obsidian	Chert
A. Use-scarred edges			
First edge	Second edge		
Dorsal	None	126	47
Ventral	None	20	15
Ventral dorsal	None	39	5
Dorsal	Dorsal	75	22
Dorsal	Ventral	35	7
Ventral	Ventral	7	1
Dorsal ventral	Dorsal	42	8
Dorsal ventral	Ventral	8	1
Dorsal ventral	Dorsal ventral	62	1
B. Shape of cross section			
Triangular		107	41
Scalene		22	10
Trapezoid		238	62
Irregular trapezoid		46	5
Multiple trapezoid		26	28
Irregular		7	11
C. Fragment type			
Whole		31	26
Bulbar end		124	38
Distal end		59	39
Middle		235	54

than average. The counts for each attribute of these three dimensions are given in table 6.5. With respect to fragment type (table 6.5), there should obviously be roughly as many bulbar as distal fragments. This is the case for chert blades, but not for obsidian where there are only half as many distal ends as expected. This could be because the ends were differentially discarded or because many distal ends were recorded as flakes. To the extent this second possibility is true, the ratio of obsidian blades to flakes is greater than that given in table 6.1.

The chipped stone industry from Girikihaciyan is characterized by a high frequency of obsidian blades but a paucity of modified blade or flake "tools." There is a complete absence of anything appearing to be a projectile point. Except on the crescents (late to post-Halafian at Girikihaciyan), sickle sheen is very rare (five examples). Perhaps obsidian blades were used for harvesting grasses.

Obsidian is a minor but important component of the total assemblage, and the differential preparation and utilization of chert and obsidian is quite apparent. It appears that the obsidian was obtained in a semi- or completely prepared state. In the general lack of cores, core trimming material, and waste flakes, obsidian stands in sharp contrast to chert. This situation seems to have begun much earlier in this area than in the time period represented at Girikihaciyan. For every ratio that seems to demonstrate a difference in the value or means of procurement of chert versus obsidian between Phases 4 and 5 at Çayönü, a repetition or continuation of the trend is seen at Girikihaciyan.

Backed Crescents and Trapezoids

A special tool category, backed crescents and trapezoids, seems to characterize the late Halafian and post-Halafian levels at Girikihaciyan. A total of 88 objects, all made of chert, was found, four being trapezoidal rather than crescentic in shape (fig. 6.1, table 6.6); 16 show sickle sheen.

Although these tools are larger than most of those called microliths, the form is one familiar from microlithic industries in the Old World. A few geometric microliths were found at the Iraqi Halafian site of Banahilk (Watson 1983a:572), but there were no macro-crescents comparable to this Girikihaciyan category.

BONE OBJECTS

Three basic categories of objects are made from bone, not including those that had been only slightly modified as a result, for instance, of manufacturing or butchering: (1) flat pieces of rib or split long bone with rounded ends, a kind of implement perhaps used for working leather (Semenov 1964) often referred to as a spatula or

Table 6.6. Backed Crescents and Trapezoids

Provenience	Number		Provenience	Number
Surface finds, 1968 and 1970*			1970 excavations	
E1N13	1	(crescent)	E4N2 4-0	1
E6S9	1	(crescent)	E5N1 4-0	1
E7N5	1	(crescent)	E7N8 4-0	1
E8S15	1	(crescent)	E7N9 3-0	1
E15S11	1	(trapezoid)	E8N7 0-0	1
E18S1	1	(crescent)	E8N7 2-0	1
W10S4	2	(crescents)	E8N8 1-0	1
1968 excavations			E8N8 3-2	2
E5N2-1	1		W2S5 16-4	2
E5N2-2	3		W2S5 16-6	1
E5N2-3	3		W2S5 17-3	1
E5N2-4	2	(1 is a trapezoid)	W2S5 18-1	1
E8N11-2	1		W2S5 19-1	1
W2S5-1	9			
W2S5-2	8	(2 with sickle sheen)		
W2S5-3	13	(5 are sickles: 2 are trapezoids)		
W2S5-4	14	(2 are sickles)		
W2S5-5	10	(2 are sickles)		
W2S5-6	1	(sickle)		

* Four of the crescents show sickle sheen; the only crescents without sheen are one from W10S4 and the one from E1N13.

Figure 6.1. Backed crescents: {E2} 1 (i.e., W2S5-1).

lissoir; (2) various pointed tools, probably awls; and (3) a somewhat problematic category consisting of bones (usually cattle scapulae) with deep, short, parallel grooves, often highly polished, referred to here simply as notched bones.

Spatulas

The spatulas are rather uniform morphologically, especially in their widths; they are often polished, apparently from use. Only one complete specimen was found, all the rest having at least one broken end. The individual characteristics of these tools are summarized in table 6.7 (see figs. 6.2, 6.3).

Because of the conditions of preservation at Girikihaciyan, many of these tools were so badly eroded that little of their original surfaces remain. The majority appear to have been made on pieces of split ribs. Wear consists of two types: a high polish leaving no markings visible

Table 6.7. Spatulate Bone Tools

Provenience	Maximum length (cm)*	Maximum width (cm)	Maximum thickness (cm)	Comments
A 3-20	4.0	1.6	0.35	Split rib end rounded from wear, transverse striations on edges, random striations on surface
A 5-7**	2.0	1.5	0.60	
A 8-9	5.2	1.5	0.30	Probably from same piece as following specimen; split rib from longitudinal striations; end too eroded to estimate wear
A 8-9	4.0	1.55	0.30	See above. Ends missing; no apparent wear
A 8-18	-	-	-	Very small fragment of split rib
E4N2 0-0	4.5	1.6	0.30	Whole rib, transverse striations, end obliquely worn, sides beveled
E4N2 6-2	6.8	2.0	0.20	Split rib, both ends missing, edges worn flat, top polished, no striations
E4N2 8-4	7.0	2.1	0.70	Whole rib, wear mainly on rounded end
E4N2 8-4	9.5	3.5	1.05	Whole rib, badly eroded end and surfaces
E5N1 2-0	3.0	1.2	0.30	Split rib, longitudinal striations on edges, which are worn flat; transverse striations on surface; ends missing
E5N1 4-0	(Dimensions indeterminate)			Split rib with both longitudinal and transverse striations; both ends and one edge missing
E5N2 6	-	-	-	1968 season; 1 fragment of lissoir shaft and 1 chisel or lissoir
E7N8 8-0	4.5	1.8	0.30	Split rib, no ends, more or less longitudinal striations, rounded edges
E7N9 6-0	(Dimensions indeterminate)			Split rib, no obvious wear but edges ground flat
E7N9 8-6	7.5	2.1	0.25	Split long bone, polished both sides and inside, beveled wear on ends, no striations
E7N9 13-4	(Dimensions indeterminate)			Split rib, no striations but end is beveled
E8N7 13-0	5.0	2.1	0.30	Split rib, many long longitudinal striations, one end present
E8N7 16-1	7.0	1.8	0.30	Whole rib, heavily worn, end worn very thin, transverse striations on both surfaces
W2S5 3	-	-	-	1968 season; two fragments of lissoirs
W2S5 20-5	5.0	1.8	0.25	Split rib, slight wear on end but not elsewhere, drilled hole
W2S5 20-4	4.0	1.5	0.45	Split rib, beveled end, no other striations, edges eroded
W2S5 33-0	-	-	-	Small fragment of split rib; no obvious wear
None	6.0	1.8	0.50	Split rib, transverse striations and wear on inside, end heavily worn
None	4.0	2.3	0.30	Split rib, eroded, beveled end, no striations
None	3.5	2.5	-	Split rib, only one edge preserved; obvious wear marks

* All are broken.

** Chisel-like spatulate described on p. 90.

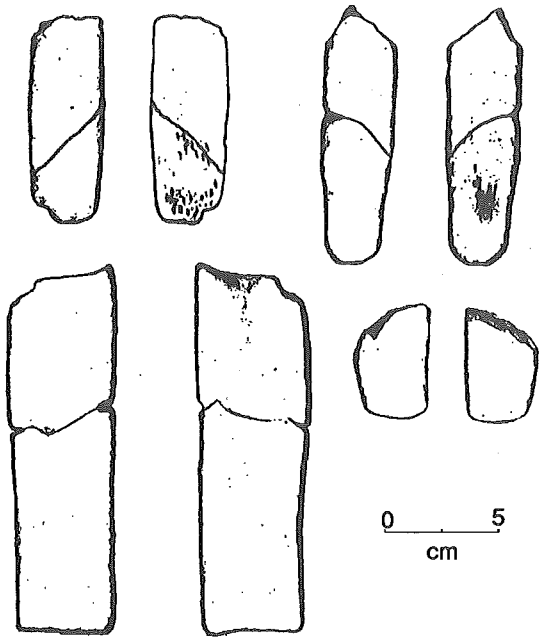


Figure 6.2. Bone spatulas. (1) #15, A 8-9; (2) #11, A 8-9 (rib of large artiodactyl); (3) #9, E7N9 8-6; (4) #20, A 5-7.

under hand lens magnification, and deep striations. The polishing tends to be concentrated on the rounded ends, which are often worn thin. However, one flat surface is occasionally highly polished, and in several cases the edges are polished from apparent use. The end wear seems to result in either beveling or rounding. It is possible that the beveling resulted from the manufacturing process and the rounding developed with use; hence, specimens with beveled ends are those that did not receive much use. This suggestion is based on the fact that only one of the five examples with beveled ends or edges shows use striations. The presence of heavy striations does not seem to be correlated with the presence of polished surfaces. Most sets of striations are predominantly transverse to the long axis of the tool, but longitudinal and random scratches are also present. One specimen has a perforation (probably drilled) centered transversely, but the relationship of this perforation to the ends of the tool is not determinable because it is broken.

One bone tool from A 5 appears to be shaped more like a chisel than are the rest of the lissoirs (fig. 6.2:4). Both the end and sides are beveled, the end having a much more acute angle; the presence of many deep striations at a 45° angle to the transverse axis suggests manufacturing marks. Another possible bone chisel fragment was found in E5N2 6 during the 1968 season.

Bone Awls

The bone awls (figs. 6.4, 6.5) appear to fall into two categories: Type I with long, thin points and Type II with short, blunt points (these categories correspond to the light duty and heavy duty awls described for the Jarmo worked bone industry; see Watson 1983c).

Type I: Points were often made from a long shaft split down the middle all the way to the condyle, which was not removed. The split surface was ground, as were adjacent parts of the original surface, resulting in a long, gently tapering point. Sixteen examples were recovered, as well as what seems to be an example of the splinter removed in making this type (see table 6.8). Of these 16, one from E4N2 8 was found in an outside living area; the others are from fill or rubbish deposits.

Type II: Many of these points were begun as were the Type I awls, but after

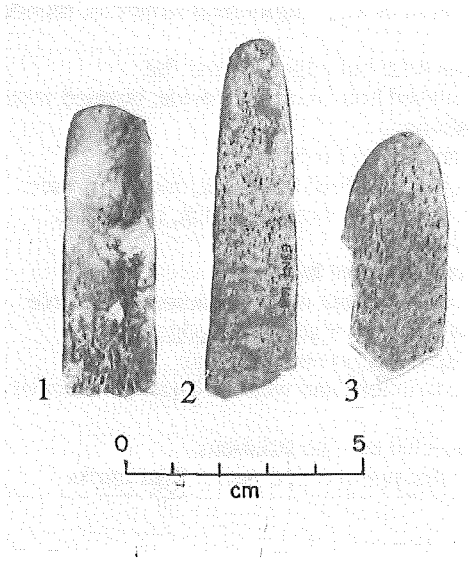


Figure 6.3. Bone spatulas. (1) #3, no provenience; (2) #4, E8N7 16-1; (3) #2, E8N7 13-0.

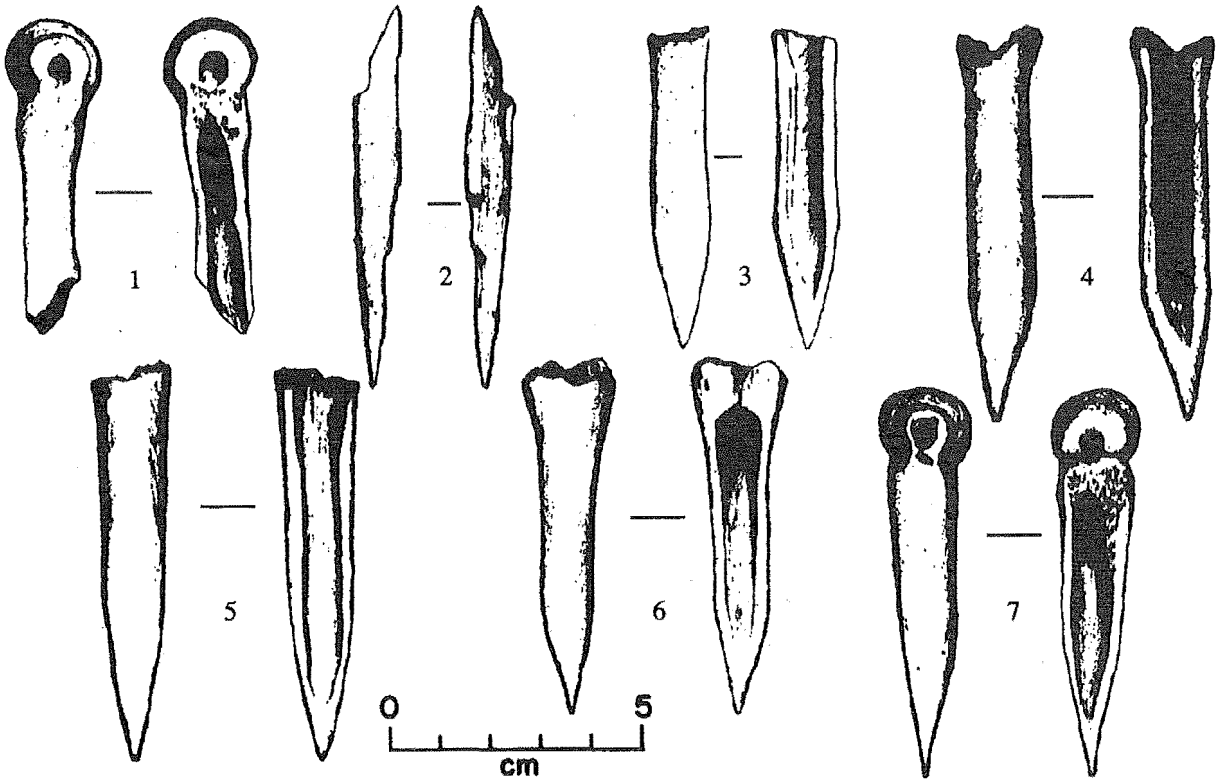


Figure 6.4. Type I bone awls. (1) A 8-6; (2) A 7-20; (3) A 2-2, 3, 4; (4) E4N2 8-10; (5) E7N9 12-10; (6) reg. #25, E8N7 13-3, faunal #2242, young sheep/goat, distal end, metapodial; (7) reg. #26, E8N7 20-1, sheep/goat metatarsal, distal 1/2, adult, probably sheep.

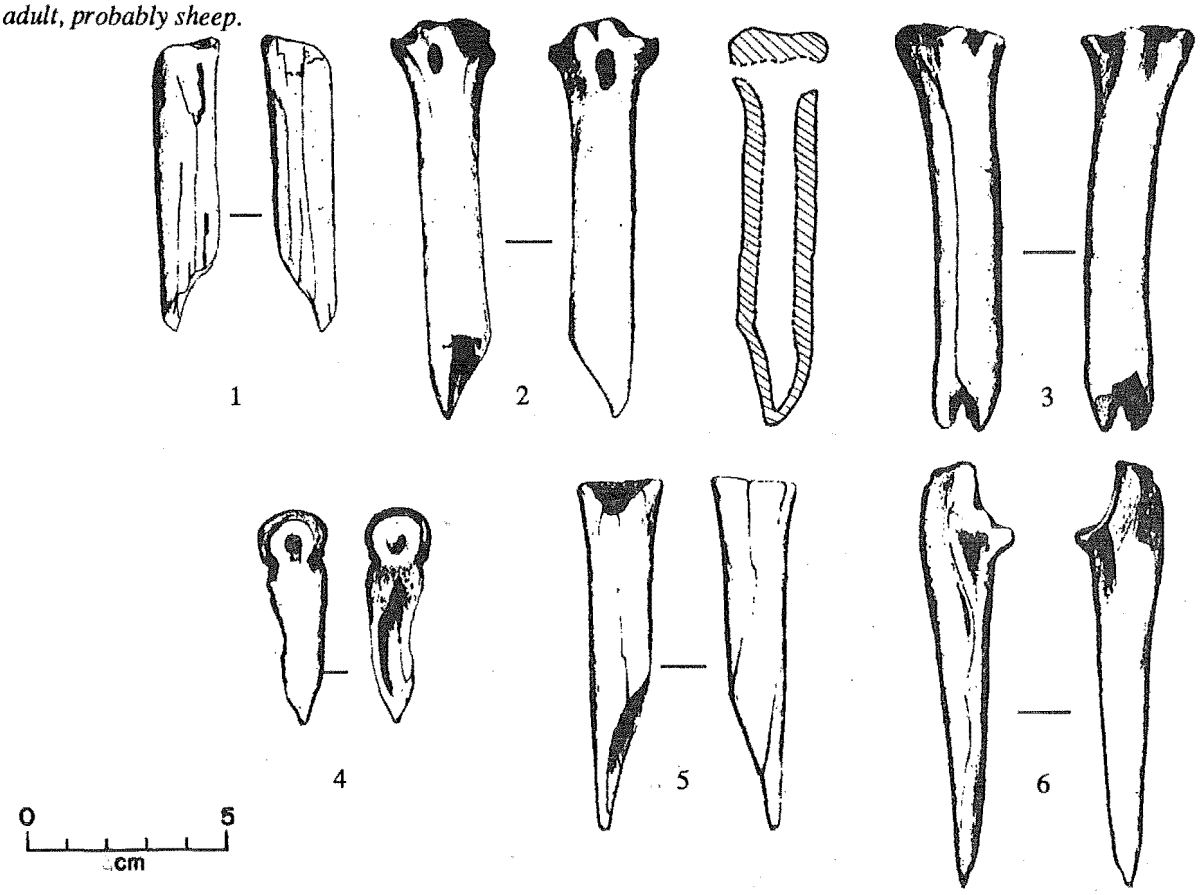


Figure 6.5. Bone awls. (1) A 2-2, 3, 4; (2) reg. #23, A 3-19, sheep/goat tibia, distal, left, pierced horizontally; (3) E7N9 12-10; (4) E8N7 8-11, faunal #2244, distal half, metatarsal, adult sheep/goat, probably sheep;(5)W2S5 30-4; (6) reg. #24, W2S5 23-15, faunal #1977, dog ulna.

Table 6.8. Bone Awls

Provenience	Number	Comments
Type I (total 16)		
A 2-2	1	Point only
A 3-2	1	Point only
A 7-20	1	Proximal end sheep/goat complete metatarsal (85 x 8 mm)
A 8-6	1	Butt end
E4N2 8-10	1	Sheep/goat metapodial; nearly complete (70 x 10 mm)
E5N1 3-0	1	Mid-shaft fragment
E7N9 7-0	1	Distal end ground
E7N9 9-7	1	Point only
E8N7 13-3	1	Registered as number 25; complete (65 x 10 mm); distal end young sheep/goat metapodial (fig. 6.4:6)
E8N7 15-1	1	Point only
E8N7 20-1	1	Registered as number 26; complete (70 x 11 mm); distal end sheep/goat metatarsal (adult), probably *Ovis* (fig. 6.4:7)
W2S5 6	1	Mid-shaft fragment (1968 season)
W2S5 17-2	1	Point only
W2S5 19-1	1	Point only; probably fragment of sheep/goat metapodial
W2S5 22-9	1	Fragment of distal shaft of sheep/goat metapodial; point only
W2S5 32-0	1	Point only
Type II (total 12)		
A 2-3	1	
A 3-19	1	Registered as number 23; complete (92 x 14 x 14 mm); perforated distal fragment of sheep/goat, left tibia (fig. 6.5:2)
E5N1 9-0	1	Point only
E5N1 16-1	1	Unfinished; proximal end left metatarsal of *Bos*
E7N9 12-10	1	Distal end may be slightly worn
E8N7 8-11	1	Distal one-third of the metatarsal of adult sheep/goat, probably *Ovis*; complete (50 x 10 mm)
W2S5 21-22	1	
W2S5 23-15	1	Dog ulna; complete (100 x 12 mm); registered as number 24; distal end ground (fig. 6.5:6)
W2S5 24-10	1	Fragmentary
W2S5 26-2	2	
W2S5 30-4	1	Sheep/goat metapodial; complete (82 x 15 mm)
Miscellaneous awls from 1968 season		
E12S14 (surface)	1	Tip only
E5N2, level 3	2	One awl tip; one splinter awl
W2S5, level 2	2	Fragments of awls
W2S5, level 3	5	Fragments of awl shafts
W2S5, level 4	1	Possible awl fragment
W2S5, level 4	1	Fragment of possible butt end of awl
W2S5, level 8	2	One probable splinter awl and one awl point
Miscellaneous fragments, probably of awls		
A 7-20	1	Splinter awl?
E4N1 5-3	1	Small fragment with ground edges
E5N2, level 3	1	Tip end of bone point, probably awl fragment
E7N8 9-3	1	Possible splinter awl
W2S5 22-11	1	Possible splinter awl

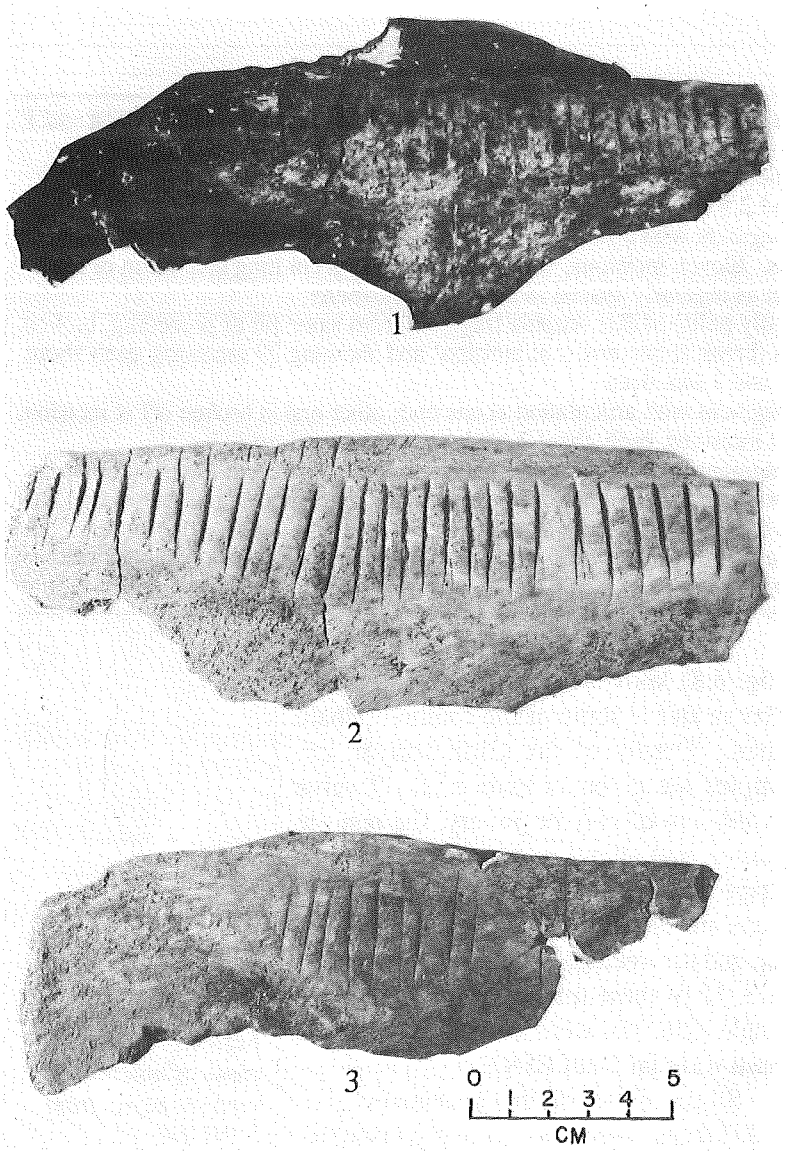


Figure 6.6. Notched bones. (1) #1561, W 33-1; (2) #1248, E7N9 15-3; (3) #1249, E7N9 15-3.

the long bone was split—sometimes only a short distance, rather than the entire length—further modification was made only near the tip end. This resulted in a very fat, short point, which could serve as a punch for making a small hole, but the punch could not penetrate the hole very far. There are 12 of these: three have the distal condyles ground or worn smooth, three were found in the context of living floors (table 6.8), and the remainder are from fill. One specimen (fig. 6.5:2) is pierced, possibly so it could be suspended, but there is no evidence of smoothing from a suspension cord. In addition to the awls listed in table 6.8, there is a fragment of *Bos* long bone (a portion of the shaft of the right radius, provenience A 2-4) that looks as though it had been grooved transversely and broken to obtain a piece of bone suitable for manufacturing a Type II awl.

Besides Type I and II awls, there is perhaps a category of splinter awls, but only a few were found (table 6.8).

Notched Bones

Seven examples of an unusual class of bone artifacts were recovered (fig. 6.6). With one exception, they were made from either the scapulae of sheep or of large cattle (possibly *Bos primigenius*). They all have well-made, deep, parallel notches on one surface, and several show signs of distinct wear or polishing. One such object was also found at Arpachiyah by Mallowan (Mallowan and Rose 1935: pl. XII, 716 B), and at least one was recovered from a Philistine "cultic" context at Tel Miqne (*ASOR Newsletter* 35:9, photo of Paula Wapnish measuring an incised bovine scapula from Tel Miqne).

An examination of the notched areas on the Girikihaciyan specimens suggests that they were used as tools or perhaps musical instruments (i.e., rasps; compare Queen 1978:12-13 and Heiser 1979:184-186). The notched surfaces are covered with a great number of light striations running parallel to the notches, which were probably made during manufacture. The surfaces are highly polished, resulting in the rounding of the areas between the notches and thus suggesting that this polishing was performed by a soft material. This situation is confirmed by the lack of transverse striations large enough to be visible through a hand lens. The greatest number of incisions on any one piece is 30, but no specimen is complete. Each Girikihaciyan example is briefly described in table 6.9.

Table 6.9. Notched Bones

Provenience	Context	Comments
A 8-9	Fill	Sheep scapula fragment with minimum of 30 incisions, each about 5 mm long and 1 mm deep
E4N2 6-0	Fill	Slightly polished sheep scapula fragment with 13 incisions, most of them about 3 mm long and 2.5 mm deep
E7N9 15-3	Pit	*Bos* scapula fragment with articulation at one end; other end snapped off at one of the incisions. Eleven incisions, each approximately 2 cm long and 2 mm or less deep, are not as regularly spaced as on other specimens
E7N9 15-3	Pit	Extremely highly polished *Bos* scapula fragment from same pit as preceding, broken at both ends (break at one end is at incision) and showing 29 incisions, each about 2.5 cm long and 1 mm deep
W2S5 24-8	Living area	*Bos* scapula fragment with articulation at one end; other end is broken off at incision. There are 11 incisions, each about 2 cm long and 1 mm deep
W2S5 33-1	Trash	*Bos* scapula fragment with 25 incisions, each approximately 2 cm long and 0.8 mm deep, polished on much of the incised surface; polish is greater in area where specimen is broken
W2S5 33-0	Trash	*Bos* scapula fragment with 10 incisions, each approximately 2 cm long and 1 mm deep. Polished only in central area of incisions; break occurs at one incision

Note: Identifications made by Charles A. Reed.

Two other specimens should also be mentioned in connection with this tool category. One is similar to the notched scapulae but is a fragment of what was probably a *Bos* long bone; it has transverse striations similar to the incisions on the scapulae. The second artifact is ceramic and in plan view is shaped like a right triangle; there is a series of incisions along the hypotenuse of this right triangle (fig. 6.7). The similarity of this piece to incised bones is suggestive, but there is no evidence that it was actually used in a similar manner.

In two instances, two specimens of notched scapulae were found in the same excavation unit: in one case a rubbish or trash area, in the other a pit.

Miscellaneous Worked Bone

There are only three miscellaneous worked bone pieces: a pierced animal tooth (from E4N2, 7-2), a bone pin (from W2S5, 22-18), and a fragment probably of another such pin (from W2S5 4).

Sling Missiles

Thirty-nine ovoids of plaster or pottery were found, resembling the sling missiles (fig. 6.8) known from Ubaidian levels at Gawra and at some of the southern Ubaid sites. Details of the Girikihaciyan examples are given in table 6.10. Twelve ovoids are of clay or pottery, the rest are plaster, and all are reasonably uniform in shape and weight. The average dimensions are 49 mm long by 32 mm in diameter, and the average weight is 50 grams. In A 5, 12 of these missiles were found in a single pile; six were contained within a plain ware jar from E5N2.

Slings of the sort that presumably propelled these objects are currently manufac-

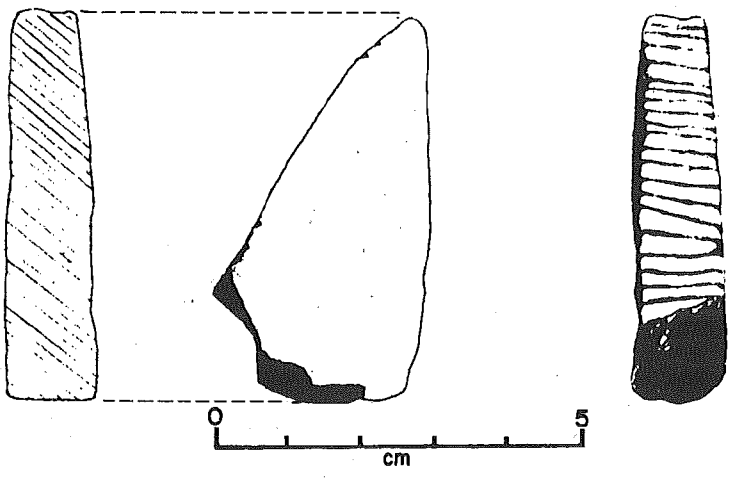


Figure 6.7. Three views of notched ceramic object from E4N1 7-0.

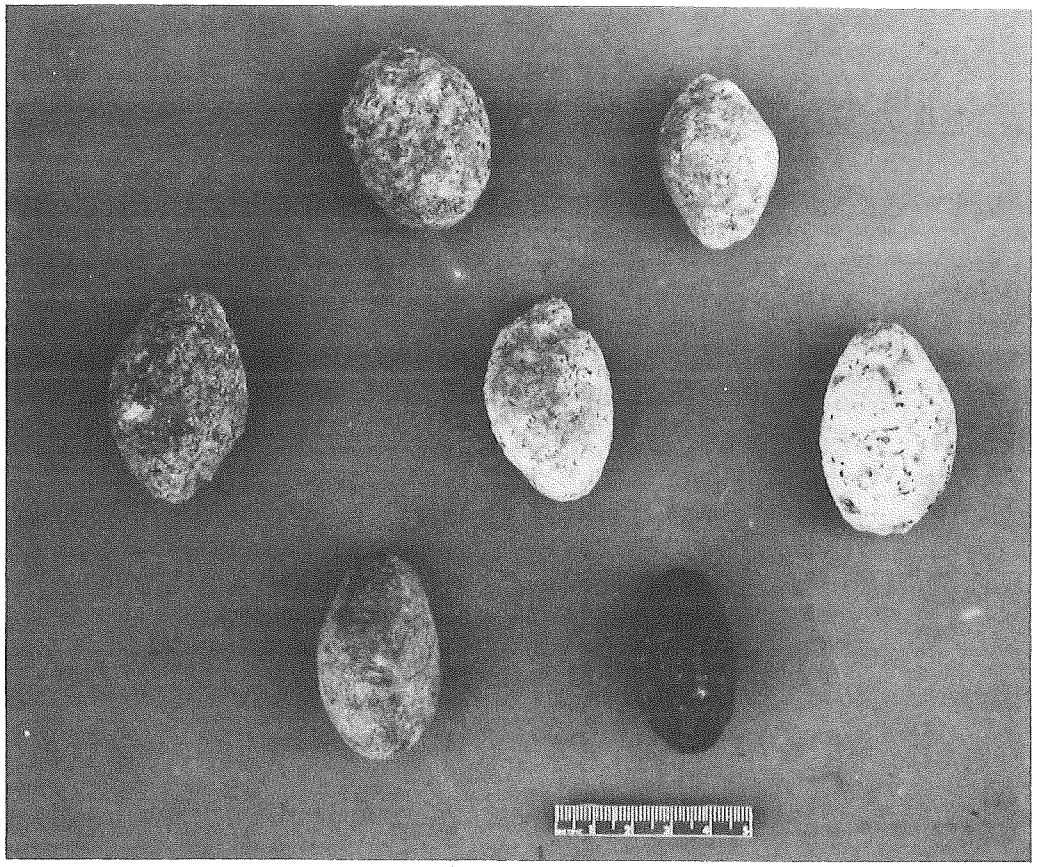


Figure 6.8.
Sling missiles.

Figure 6.9.
Man using sling.

Table 6.10. Girikihaciyan Sling Missiles

Provenience	Material*	Maximum Length (mm)	Maximum Diameter (mm)	Weight (g)	Notes
Surface	Pls	51	35	61	Small fragment missing
Surface	Pls	43[a]	30	48	Tip missing, length probably 48 mm
Surface	Pls	52	32	40[a]	40% missing, estimated weight 66 g
A 1-1	Clay	51	32	41	
A 5-19	Pls	52	35	62	
	Pls	52	36	61	
	Pls	50	35	55	Small piece missing
	Pls	47.5	31	47	
	Pls	49	33	47	Small piece missing
	Pls	46	30	41	Tip missing
	Pls	49	31	51	Almost complete
	Pls	48	33	56	Surface slightly eroded
	Pls	51	35	56	
	Pls	51	34	56	
	Pls	41	33	43	Tip missing
	Fragment—no data—				
A 6-2	Pls	51	35	60	Surface slightly eroded
A 7-21	Pls	54	37	60	Incomplete, apparently asymmetric
A 7-21	?	?	29[a]	?	Mostly missing
A 7-21	?	?	29[a]	?	Mostly missing
E4N1 7-0	Pls	57	36	63	
E4N2 5-2	Clay	46	27	31	
E4N2 8-2	Pls	42	31	40	Both tips missing
E5N1 10-0	Pls	46	34	38	Much eroded
E5N1 10-0	Clay	45	28	29	
E5N2 vessel #5	Pot	54	39	71	
	Pot	—	—	32[a]	Broken
	Pot	44	30	40	
	Pot	48	28	60	
	Pot	60	36	58[b]	Incomplete
E8N7 12-0	Pls	53	34	52	Part missing
E8N7 13-0	Pls	52	35	68	
E8N11 8-1	Pls	—	—	—	(1968)
W 4	Pot	45	28	30	
W 4	Pot	—	—	—	Fragment only (1968)
W 7	Pot	—	—	—	Fragment only (1968)
W 20-5	Clay	46	31	32	Small part missing
W 24-5	Clay	46[c]	24	44-50[d]	Half missing
W 25-2	Clay	52	28	?	

* Pls = Plaster; Pot = Pottery

Notes:

[a] Minimum

[b] Incomplete

[c] Reconstructed

[d] Estimated

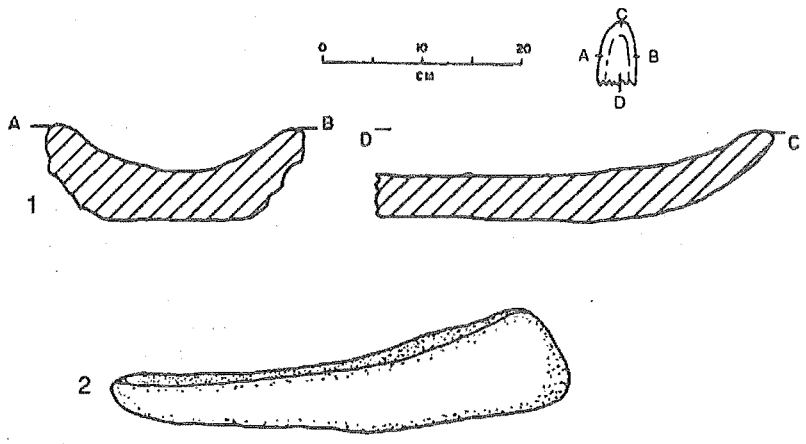


Figure 6.10. Querns. (1) #23, E5N1 12-11; (2) #24, E4N2 9-4.

tured and used by boys and men in the village of Ekinciyan (fig. 6.9) and were used militarily in ancient times (Korfmann 1972).

GRINDING STONES

Querns (Metates)

Thirty-nine complete and fragmentary querns were recovered. With the exception of one fragmentary sandstone example, all are made of basalt, both fine grained and more porous varieties. The Girikihaciyan querns are not particularly large nor are they well finished. The sides and bottoms were usually left unmodified, although the bottoms of several specimens were also used as grinding surfaces.

Using all complete examples, we found lengths to vary from 48 to 16 cm (median = 23 cm); widths are between 27 and 10 cm (median = 19 cm). The greatest variability is in thickness, which ranges from 2 to 17 cm (median = 6 cm).

Table 6.11. Dimensions of Complete Querns (cm)

Provenience	Length	Width	Thickness	Form	Notes
A7-21	21	10	5.5	Shallow	
E4N2, 9-4	48	27	15.0	Shallow	Fig. 6.10:2
E5N1, 5-0	51	28	14.0	Shallow	
E5N1, 9-6	33	20	2.0	Shallow	Raised center
E5N1, 12-11	42	26	10.5	Basin	Fig. 6.10:1
E5N1, 15-0	20	11	3.5	Shallow	
E8N9, 3-0	16	13	3.0	Shallow	
W2S5, 21-16	30	21	17.0	Basin	
W2S5, 21-17	26	21	14.0	Basin	

The querns can be divided into two classes on the basis of overall shape and the shape of the grinding surfaces. The first or basin type was made from bowl-shaped, unmodified stones with rounded bottoms. Querns of this kind are usually more than 10 cm thick. On the top is a relatively deep oblong basin (fig. 6.10:1).

Members of the second class (fig. 6.10:2), shallow querns, are usually made from thin, relatively flat stones averaging no more than 5 cm thick. They are either gently concave longitudinally or have one thick end tapering to a thin, flat, opposite end. Transversely, they are slightly concave with depressions ranging from 0.5 to 1.0 to 1.5 cm. A few examples have completely flat working surfaces, and one is slightly convex. It appears possible that some of these querns were used with handstones that extended over the edges of the grinding surface. Sixty-six percent of the querns recovered were of the shallow type. The one example with a raised area in the center of the grinding surface (from E5N1, 9-6) might have resulted from grinding with a circular motion or from using a very small handstone.

Dimensions of all complete querns are provided in table 6.11.

Handstones (Manos)

Sixty-four complete and fragmentary handstones or rubbing stones were recov-

Table 6.12. Dimensions and Other Attributes of Complete Handstones

Provenience	Length (cm)	Width (cm)	Thickness (cm)	Weight (kg)	Material	Shape of grinding surfaces Longitudinal	Transverse
GK surface	21	13	7	-	Porous basalt	Highly convex	Slightly convex
A 9-7	11	10	3	0.5	-	Slightly convex	Slightly convex
E4N1, 4-1	14	10.5	2	0.7	-	Slightly convex	Slightly convex
E4N2, 5-9	18.5	11	7.5	2.7	Fine-grained basalt	Flat	Flat
E5N2, 5-10	17	15	7.2	3.0	Fine-grained basalt	Slightly convex	Slightly convex
E5N2, 18-4	17	11	3.5	-	River cobble	Moderately convex	Moderately convex
E7N9, 10-5	14	10.5	3	0.75	Fine-grained basalt	Slightly convex	Slightly convex
E8N8, 1-9	22	10	8.5	3.25	Fine-grained basalt	Flat	Slightly convex
W2S5, 16-8	25	17.5	10	3.75	Porous basalt	Moderately convex	Moderately convex
E8N10-3* (L8-3)	15	13	5	1.5	-	Moderately convex	Moderately convex
E5N2* (B5-2)	20	16	3	-	-	Flat	Flat
Turtle backed							
A 7-22	16.5	13.5	4	1.75	Fine-grained basalt	Moderately convex	Slightly convex
E4N1, 4-1	18	13	5	2.25	Fine-grained basalt	Moderately convex	Moderately convex
E5N1, 5-0	18	13	3.7	1.4	Fine-grained basalt	Moderately convex	Slightly convex
E5N1, 12-16	21	14	3.0	2.5	Fine-grained basalt	Flat	Slightly convex
E8N7, 4-0	17	15	3	1.5	-	Slightly convex	Slightly convex
E8N7, 16-3	17	16.5	4.5	2.0	Fine-grained basalt	Highly convex	Highly convex
No provenience	19	14	5	1.8	Fine-grained basalt	Flat	Slightly convex

* From 1968 excavations

ered both from the excavations and the 1968 surface collections (table 6. 12). By inspection one can group them into two classes, one of which can be subdivided. The first class may be called two-handed rubbing stones, the majority of which are of sizes and shapes appropriate to the querns. These handstones are generally distinctly longer than they are wide, with keeled or flat backs (fig. 6.11). The longest complete specimen is 25 cm, and the shortest is 11 cm. Thickness varies greatly, ranging from 2 to 10 cm. Nearly all are made from fine-grained basalt, and the working face is usually well polished. There appears to be a tendency for thick handstones to have little or no grinding on the backs and to be more amorphous in shape, while the thinner ones tend to have polished backs (although backs are usually less polished than faces).

The second class of handstones, referred to here as "turtle-backed," are more round in plan and more conical in cross section than the first class. The backs are not high, and, while many have flat or slightly convex faces, there is a greater tendency to moderate convexity. The great majority are of fine–grained basalt and are generally lighter in weight than non–turtle-backed handstones.

Most of both kinds of manos were probably used with querns, but some do not appear to have been used in this way (those from E8N7, 16-3; W2S5, 16-8; and W2S5, 22-6). These are either of very porous basalt (pore size is 15 mm or greater), are completely round, or have atypically convex faces. It is possible that some of the manos were used as plaster polishers, scrapers, or smoothers for other materials as well. However, there are no striations visible under low power hand lenses to support this contention.

Thirty-four complete and fragmentary two-handed rubbing stones provide the following averages: length, 17.7 cm; width, 11.4 cm; thickness, 6.7 cm; and

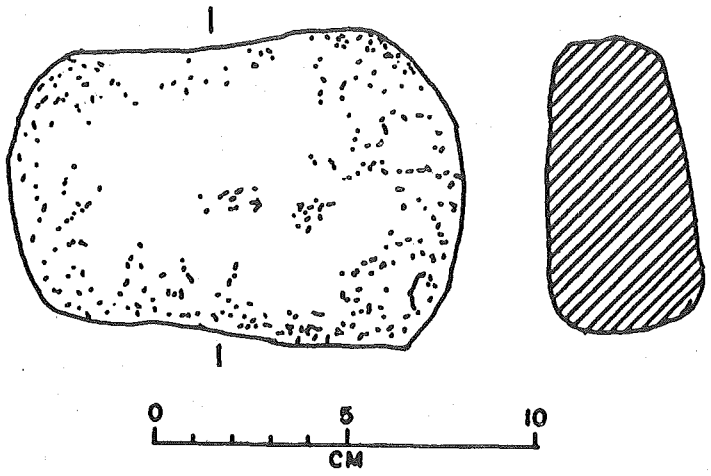


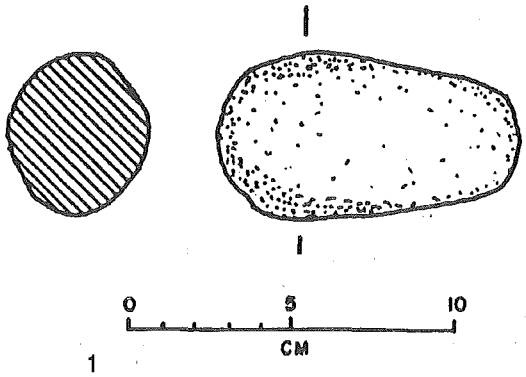
Figure 6.11. Basalt handstone, B5-4.

weight, 2.2 kg. The 24 turtle-backed handstones have mean dimensions of 18.1 cm in length, 13.7 cm in width, and 4.8 cm in thickness, and an average weight of 1.88 kg. Table 6.12 lists the 18 complete handstones. A possible subdivision of the two-handed type is apparent. There appears to be a flat, short, light variety about half the thickness and less than half the weight of the remaining rubbers. Possibly because most of the examples are broken, it is difficult to find a dividing line between these two varieties of handstones, and it is possible that the flat, thin, and the heavy, thick ones are end points in a continuum.

PESTLES, MORTARS, AND STONE BOWLS

A pestle-mortar pounding complex was employed at Girikihaciyan in addition to the quern-handstone complex, although elements of the pounding complex made up no more than 40% of the total complement of grinding tools.

Pestles (fig. 6.12) are far more abundant than mortars (37 pestles, 20 mortars). They are large and on the average well finished, some having one or more sides worn, as well as the ends. Average dimensions (including 19 fragmentary examples) are: length, 15.26 cm (n = 15); width, 6.1 cm (n = 34); thickness, 5.29 cm (n = 35); and weight, 1.2 kg (n = 10) (see table 6.13). The pestles are nearly equally divided between those with the working end being the maximal cross sectional area, and those with the mid-shaft being greater in diameter than the working end. The working end ranges from almost flat to hemispherical. Evidence of chipping was seen on some examples, while others are highly polished, suggesting that not all pestle-shaped objects were used for pounding.



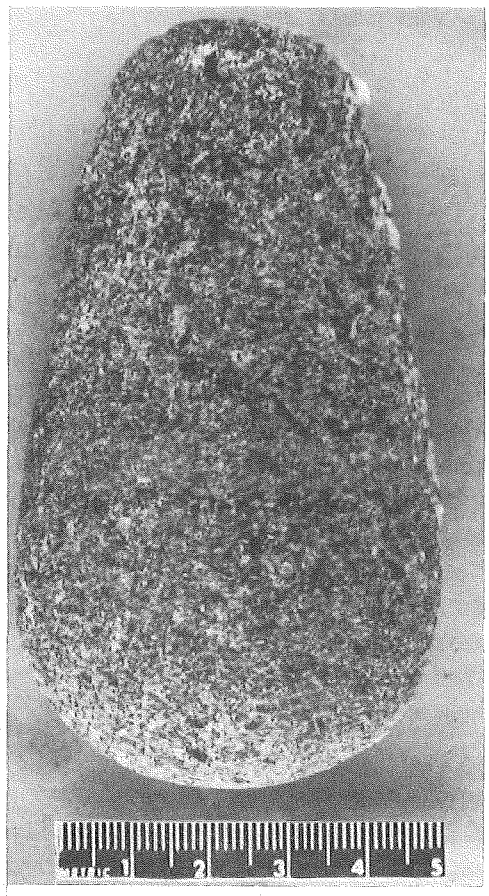


Figure 6.12. Dark gray basalt pestle, B5-5. (1) scale drawing; (2) photo.

It is not clear which artifacts were actually used as mortars. Deep, heavy, boulder mortars were recovered, but, in addition, small stone artifacts with shallow depressions were found that could be classified as "nutting stones" or door sockets. Very rough basalt "stone bowls" were also present and could have served as mortars. However, most of these basalt vessels (9 out of 12) were found on the site surface, only three having been recovered during excavation (one each from A, 2-0; E4N1, 6-3; and E8N7, 13-0).

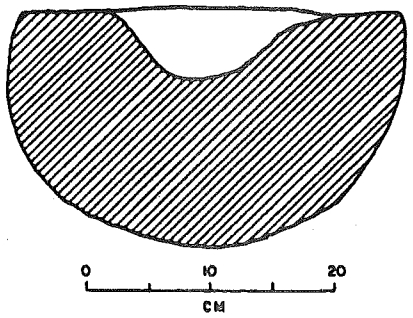


Figure 6.13. Mortar, E4N2 9-3.

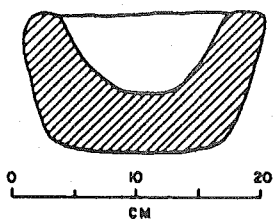


Figure 6.14. Basalt bowl found on site surface in 1968.

Of the 20 examples of possible mortars, three are boulder mortars (fig. 6.13) and five are of the door socket type. The latter are about 10 cm in diameter and have shallow holes 3 to 5 cm in diameter worked into them. The remainder (12) of the possible mortars are flat-bottomed, thin-walled bowls of basalt (fig. 6.14) which, as just noted, are probably epi-Halafian.

CELTS

All celts found at Girikihaciyan are fully ground and polished (fig. 6.15), but there are only 11 all together (six are from the surface; see table 6.14). All are uniformly rather small (the longest is only 7 cm long), and all have axelike rather than adzelike bits.

Table 6.13. Dimensions and Weights of Complete Pestles

Provenience	Length (cm)	Cross section (cm)	Weight (kg)
A 1-0	16.0	6.5 x 6.3	1.5
A 6-14	11	4 x 4	0.5
E4N1, 3-5	24.5	6 x 6	1.5
E4N2, 5-9	20.5	7 x 5.2	1.5
E5N1, 0-0	19.5	7.8 x 6.2	1.5
E5N1, 5-0	6	4.5 x 4.0	0.3
E5N1, 5-0	29	7.5 x 6.2	2.5
E7N8, 7-3	16	7.0 x 4.3	1
E7N9, 9-1	10	5 x 5	0.5
E8N7, 16-2	10.5	4.8 x 4.0	0.375
E8N7, 23-1	16	7 x 6.5	1.25
W2S5, 23-8	-	6.7 x 6.0	1.75
E5N2-5 (B5-5)*	12	6 x 6	-
W2S5-3 ([E2])*	10	8 x 6	-

* From the 1968 excavations (fig. 4.15:1, 2).

STONE BOWLS

Ground and polished stone bowls, exclusive of the rather clumsy basalt vessels, were apparently rare at Girikihaciyan. Only 17 small fragments of such bowls

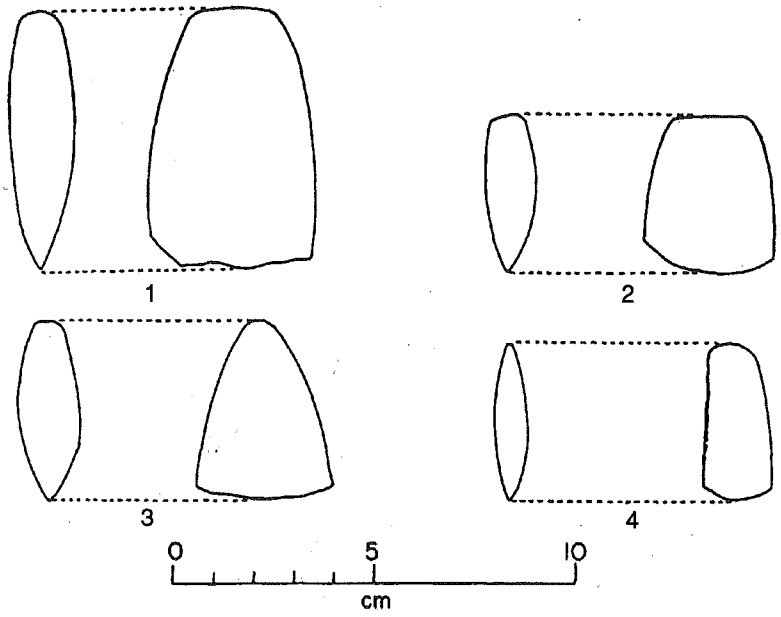


Figure 6.15. Celts. (1) reg. #12, surface; (2) reg. #13, surface; (3) reg. #14, W2S5 20-6; (4) E5N2 18-2.

Table 6.14. Celts

Provenience		Material	Length (cm)	Width (cm)	Thickness (cm)	Notes
Surface		Dark green	62	38	24	
Surface {N2}=W2S13			68	?	25	
Surface	Reg.#12	Greenstone	67	41	20	Battering on sides; fig. 6.15:1
Surface	Reg.#13	Greenish	39	31	14	Fig. 6.15:2
Surface 1968	Reg.# 3	Black stone	25	31	8	
Surface 1968	Reg.# 4		42	38	16	
E5N2-3 (B5)		Greenstone	70	40	22	
E5N2 18-2			40	17	8	Fig. 6.15:4
W 20-6	Reg.#14		47	29	16	Fig. 6.15:3
W 22-13						Broken (13 x 22 x 10)
W 30-0			43	25	9	

Table 6.15. Stone Bowl Fragments

Provenience	Number	Comments
Surface, W12N4	1	Basalt
Surface	3	Soft black stone, all rim pieces, determinable diameters are 170 and 50 mm; the latter is perforated
A 3-2	1	Rim fragment (fig. 6.16:2)
A 6-3	2	Small fragments of greenstone
E4N2 7-4	1	Rectanguloid vessel, apparently of schist
E5N1 1-1	1	Limestone
E8N7 1-0	1	Soft black stone
E8N7 17-0	1	Basalt
W2S5, 1	2	One is a rim fragment
W2S5, 4	1	Rim fragment
W2S5, 6	1	Saucer fragment?
W2S5, 23-6	1	Basalt
W2S5, 24-5	1	Rim fragment (fig. 6.16:1)
E4N1, 4-3	1	Stone bowl blanks
W2S5, 26-2	1	Stone bowl blanks

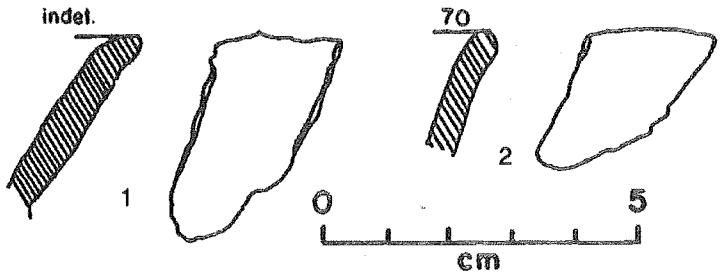


Figure 6.16. Stone bowl fragments. (1) W2S5 24-5; (2) A 3-2.

were found (fig. 6.16), together with two "blanks" or preforms for the manufacture of stone bowls. This situation contrasts with most other Halafian sites from which any quantity of material has been recovered; even from the limited Banahilk sounding there are 39 fragments of well-made stone bowls. Table 6.15 lists the Girikihaciyan stone bowl fragments.

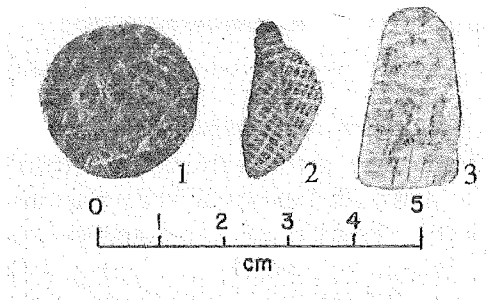


Figure 6.17. Pendants and seals (1) Reg. #43, E7N8 9-1; (2) Reg. #45, W2S5 25-6; (3) Reg. #46, E4N2 3-2.

Beads, Pendants, and Seals

Fourteen beads of limestone or greenstone were found, most of them disk-shaped (table 6.16). Besides a few plain pendants, six incised seal/pendants were recovered, three of them from the mound surface, but all of a type familiar from other Halafian sites (figs. 6.17, 6.18).

Table 6.16. Beads, Pendants, and Seals

Provenience	Comments
Beads	
E4N1 1-1	Limestone disk bead
E4N1 4-1	Greenstone bead
E7N8 4-1	Teardrop-shaped bead with transverse perforation, greenstone
E7N8 4-1	Crystalline disk bead
E8N7 2-0	Limestone disk bead
E8N7 2-0	Limestone disk bead with two perforations
E8N7 9-0	Greenstone disk bead
E8N8 1-0	Greenstone disk bead
W2S5, level 2	Flattened cylinder
W2S5, level 3	Two disk beads
W2S5, 16-1	Unfinished cylindrical greenstone bead
W2S5, 23-9	Limestone disk bead
W2S5, 27-4	Greenstone disk bead
Pendants	
Surface	Incised greenstone pendant, register #44
Surface, W17S4	Incised limestone pendant, register #6
Surface, E7S15	Incised greenstone stamp seal, register #7
E8N2, surface	Unfinished pendant with perforated ridged back; face is smoothed but not incised
E4N1, 5-2	Small drop-shaped pendant, greenstone; transverse perforation (broken)
E4N2, 3-2	Incised pendant of limestone, register #46 (fig. 6.18:3)
E7N8, 9-1	Round incised stamp seal pendant, greenstone; register #43 (fig. 6.18:1)
W2S5, level 2	Unfinished pendant
W2S5, level 4a	Possible incomplete pendant
W2S5, level 7	Incomplete perforation at one end
W2S5, 25-6	Incised asymmetric pendant of greenstone; register #45 (fig. 6.18:2)

Table 6.17. Miscellaneous Artifact Descriptions

Provenience	Object
E5N2, level 2	Worked cylindrical concretion; 47 mm long by 7 mm in diameter, smoothed all over and with incision around one end
E5N2, level 5	Fragment of worked shell, possibly pendant; small crescent with perforation at each end (3 x 0.8 cm maximum dimensions)
E5N2, level 6	Pottery ring, apparently molded; 3 cm in diameter, perforation 1 cm in diameter, 0.8 cm thick
W2S5, level 3	Two fragments of ceramic sievelike objects with hole ranging in diameter from 5 to 8 mm (fig. 6.24:1, 2)
W2S5, level 5	Fragment of a similar object with holes, about 7 mm in diameter, punched while clay was wet (fig. 6.24:3)
W2S5, 16-4	Labret? register #47
W2S5, 19-2	Schist fragment with shallow depression ground into it
W2S5, 22-11	Limestone pebble with beginning of drilled hole; possibly made into pendant

MISCELLANEOUS GROUND STONE OBJECTS

A series of miscellaneous ground stone items is summarized in table 6.17. In addition, nine basalt rings were found, of which two were incompletely perforated. Typical cross sections are shown in figures 6.19 and 6.20. Find spots for the rings are: Girikihaciyan surface, two examples; A5-2; E4N2, 1-0; E4N2, 5-3; E7N8, 8-4; E7N9, 0-0; W2S5, 17-2; and E8N10-1

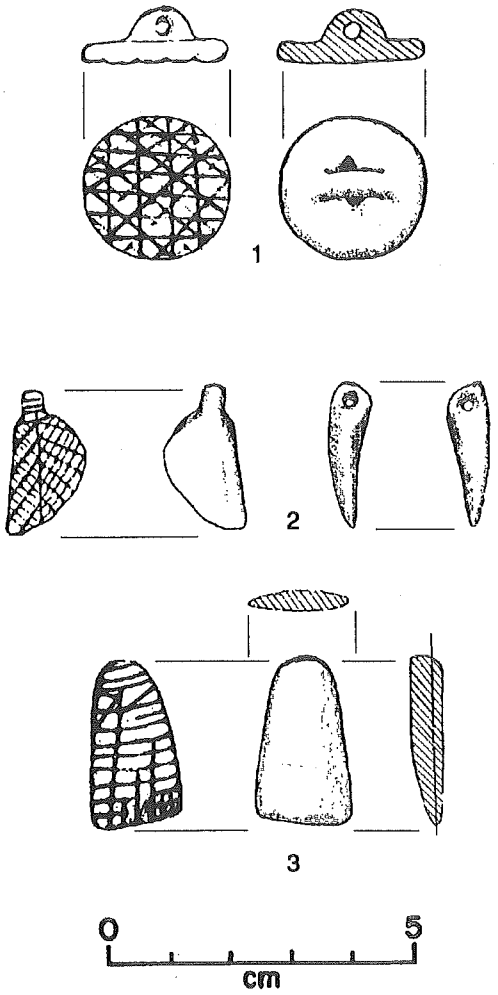


Figure 6.18. Pendants and seals. (1) reg. #43, E7N8 9-1; (2) reg. #45, W2S5 25-6; (3) reg. #46, E4N2 3-2.

(L8-1 of the 1968 excavations). All are only roughly finished and vary considerably in size. They possibly functioned as digging stick weights or loom weights, with the latter being somewhat more likely considering the sizes of the holes and the lack of heavy wear inside the perforations.

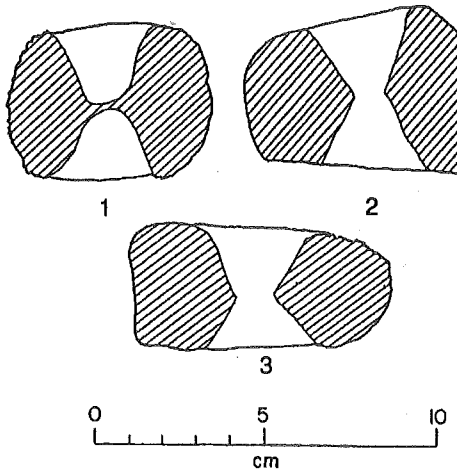


Figure 6.19. Basalt rings (perforated stones). (1) W 17-2; (2) E4N2 5-3; (3) E7N9 0-0.

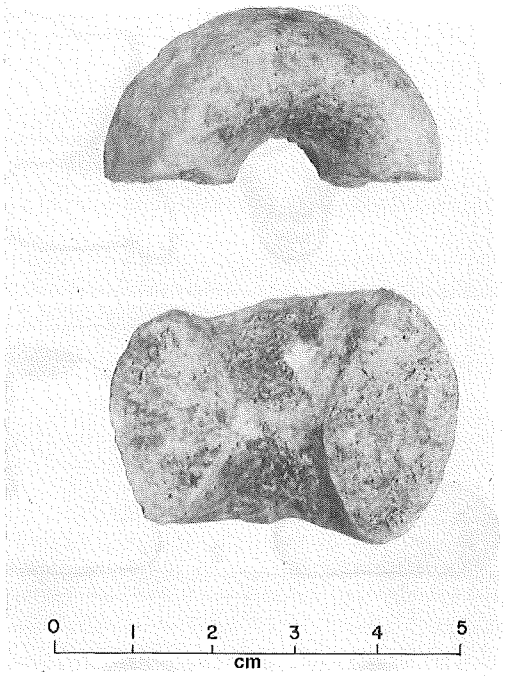


Figure 6.20. Basalt ring fragment. Site surface (1968). Two views.

Twenty flat and six spheroid river cobbles with polishing facets were found, as well as three hammerstones (one from the surface and one from A 2-0, both greenstone; and E7N9, 15-3, chert) with pecked and chipped faces. Proveniences of the polishers are:

Flat: A 1-0; A 2-0 (four examples); A 7-1; E4N1, 1-0; E4N1, 5-3 (two examples); E4N2, 7-6; E4N2, 9-7; E5N1, 5-0; E5N1, 5-4; E5N1, 12-9; E5N1, 17-0; E7N8, 9-3; E7N9, 12-2; E8N7, 10-3; E8N8, 4-5; E7N9, 15-3.

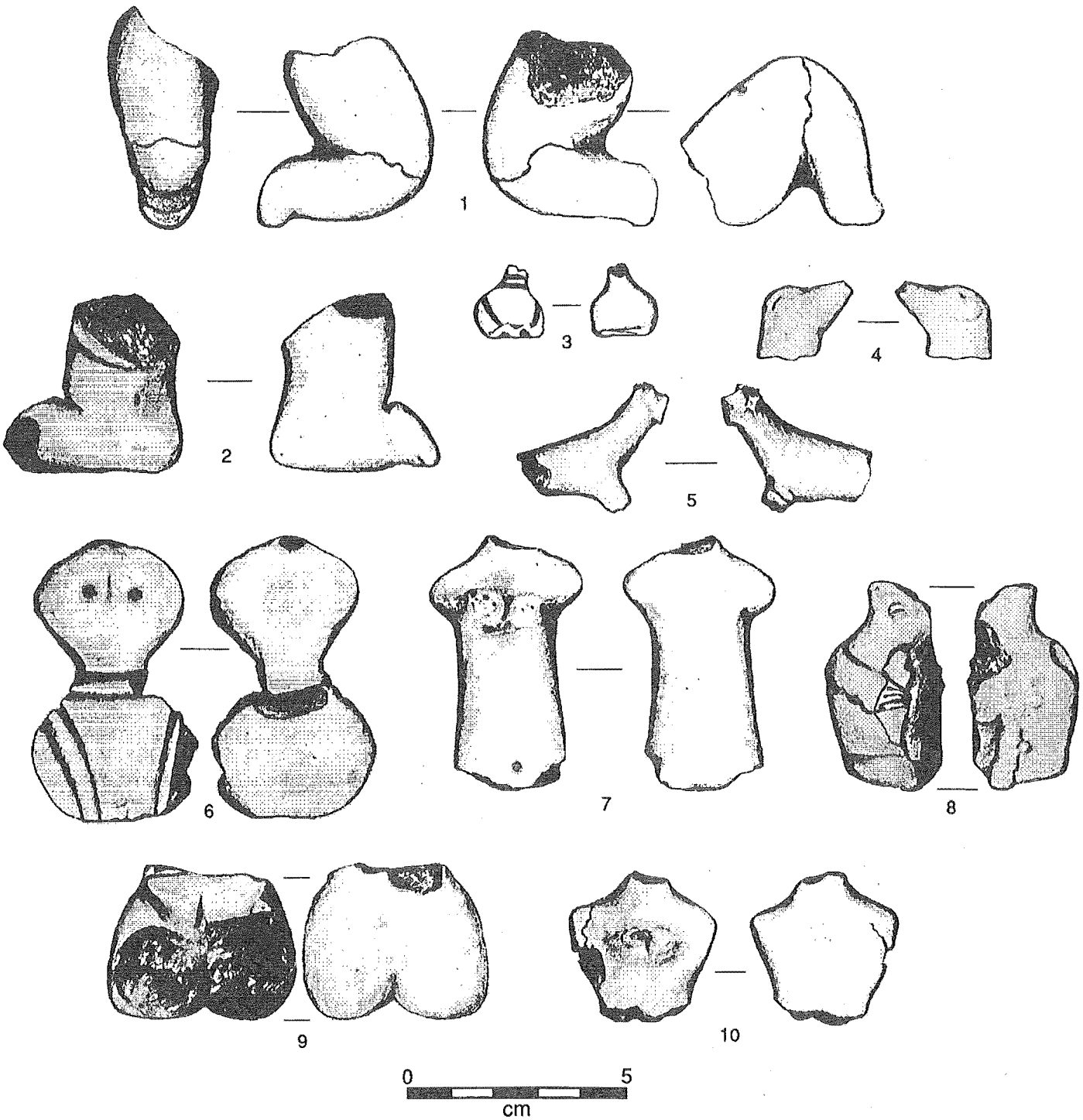
Spheroid: A 4-1; A 6-5; E4N1, 7-0 (two examples); E5N1, 5-0.

One basalt mace-head fragment was found in W2S5, 22-15.

CERAMIC OBJECTS

Clay Figurines

Fragments of 16 human and animal figurines were found during the two seasons at Girikihaciyan (fig. 6.21; table 6.18). One



from W2S5, 17-2 (fig. 6.21:5) is the head of an amorphous animal, and another from W2S5, 21-14 (fig. 6.21:4) is the head and forequarters of a quadruped (possibly a sheep or goat). The other fragments represent humans and all seem to be females. All but two of these were found in the W2S5 excavation. Five pieces are arms or legs only (table 6.18), and two of the legs (E4N2, 3-1, registered as number 48, and W2S5 3, registered as number 49; fig. 6.21:2, 1) are reminiscent of the female figurines produced at Çatal Hüyük (Mellaart 1967: chap. VIII). The fragmentary hips and buttocks from W2S5 (fig. 6.21:9) may also have belonged to such a figurine.

Figure 6.21. Figurines. (1) Reg. #49, W2S5 3-0; (2) Reg. #48, E4N2 3-1; (3) A 7-6; (4) W2S5 21-14; (5) W2S5 17-2; (6) reg. #51,W2S5 32-1; (7) reg. #50,W2S5 23-8; (8) W2S5 19-3; (9) W2S5 23-7; (10) W2S5 22-7.

Table 6.18. Clay Figurines

Provenience	Comments
A 7-6	Tiny upper torso
E4N2	Leg, registered as 48 (fig. 6.21:2)
W2S5, level 3	Leg, registered as 49 (fig. 6.21:1)
W2S5, level 4	Base or pedestal for a figurine, lightly baked, 22 mm maximum diameter
W2S5, level 5	Fragment of torso on rounded base; waist (with possible navel) and arms
W2S5, level 8	Clay leg or phallus
W2S5, 17-2	Animal head (fig. 6.21:5)
W2S5, 17-4	Possible arm fragment
W2S5, 19-3	Torso and arm
W2S5, 20-4	Torso fragment
W2S5, 20-4	Human leg fragment
W2S5, 21-14	Animal body with neck and part of head (fig. 6.21:4)
W2S5, 22-7	Upper torso (fig. 6.21:10)
W2S5, 23-7	Hips and buttocks
W2S5, 23-8	Torso, registered as #50 (fig. 6.21:7)
W2S5, 32-1	"Fiddle figurine," registered as #51 (fig. 6.21:6)

Two torso fragments from W2S5 22 and W2S5 23 (fig. 6.21:10, 7) are quite different and seem to represent a slim young girl type of figurine. Three other torso fragments are in a class by themselves: one (fig. 6.21:3 from A 7-6) is tiny and comprises only neck and shoulders; another (fig. 621:8 from W2S5 19-3) is rather badly broken but seems to be part of a head with the right shoulder and arm. The torso fragment from W2S5 5 is apparently on a rounded base and consists of arms and waist (with possible navel). An isolated base or pedestal, probably broken from a figurine, was found in W2S5 4; this very indistinct piece may also be a torso fragment.

The fragment from W2S5 32-1 (fig. 6.21:6) is strikingly similar to the "fiddle figurines" of the Aegean area and may be compared with similar "fiddle-idols" from Arpachiyah (Mallowan and Rose 1935: figs. 45:11, 46:5-6) and Tepe Gawra (Tobler 1950:170, fig. 9).

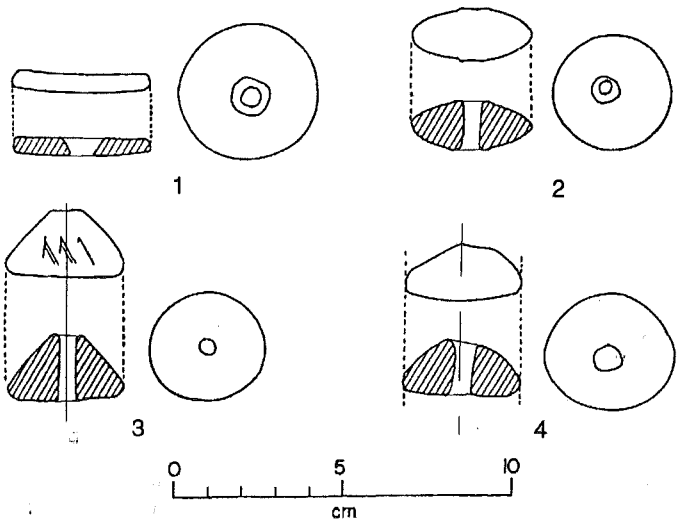


Figure 6.22. Spindle whorls. (1) reg. #29, W2S5 21-5; (2) reg. #38, A 1-0; (3) reg. #42, E8N7 17-1; (4) reg. #41, E7N9 15-5.

Spindle Whorls

Spindle whorls (table 6.19; fig. 6.22) are common and fairly standardized at Girikihaciyan. The whorls are made of pot sherds (25 examples; fig. 6.22:1) or are specially molded (26 examples; fig. 6.22: 2-4). Nearly all of the latter are biconical; only one is decorated (fig. 6.22:3). The mean size dimensions are: diameter, 3.62 cm; thickness, 1.22 cm; and diameter of perforation, 0.693 cm (see table 6.19). Measurements made on 19 wooden spindle whorls observed in use at a contemporary Iranian village (Watson 1979: 178) provide some comparative information. All were 5 to 6 cm in diameter and most were 2.5 to 3 cm thick (one was 2 cm thick and another was 5 cm thick). The perforations were all quite uniform in appearance, being about 0.75 to 1.0 cm in diameter (but only one was measured).

Spoons

There are 13 fragments of pottery spoons or small ladles (fig. 6.23); these were probably rather common domestic utensils (table 6.20). No spoons made of other materials were found.

Worked Sherds

There are 58 worked sherds, 16 in plain ware and the rest in fine ware (table 6.21).

Table 6.19. Spindle Whorls

Provenience	Reg. #	Sherd or molded	Diam.	Thickness	Diameter of perforation	Plain or painted
W7S10		M	4.0	2.4	0.7	Biconical
Surface		M	2.9	1.4	0.4	Plain
Surface		S	3.1	1.0	0.5	Plain
Surface		S	4.0	0.7	0.6	Painted
A1-0	38	M	3.4	1.5	0.5	Plain (fig. 6.22:2)
A3-9		S	2.9	0.8	0.4	Plain; hole off center
A10-5, 6, 7		S	3.2	0.7	0.6	Plain
A10-7		M	4.3	1.6	0.6	Plain
A10-7	33	S	3.7	0.4	0.4	Plain
E4N1		S	4.2	0.8	1.1-0.6	Painted
E4N1 6-4	34	M	4.0	2.0	0.7	Plain
E4N2 4-2		S	3.5	1.0	0.9	Painted
E4N2 5-1	40	M	3.0	2.2	0.4	Painted; hole far off center
E4N2 5-6		S	3.6	0.8	1.0	Painted
E4N2 8-5		S	3.8	0.8	0.7	Painted
E5N1 18-0		M	4.0	1.5	0.6	Plain
B5-7		M	3.0	1.2	0.5	Biconical
E5N2 17-1	39	M	3.3	1.7	0.4	Plain
E7N8 10-6		S	5.0	0.6	0.5	Plain
E7N9 6-1		S	-	1.3	-	Plain
E7N9 8-5	36	M	4.0	1.3	1.0	Plain
E7N9 8-7	31	S	3.3	0.5	0.5	Slate
E7N9 14-6	37	M	3.5	1.3	0.5	Plain
E7N9 15-5	41	M	3.7	1.6	0.6	Plain (fig. 6.22:4)
E8N7 1-0		S	-	0.8	1.0	Painted
E8N7 4-0		M	-	1.7	-	Plain
E8N7 17-1	42	M	3.3	1.9	0.6	Painted (fig. 6.22:3)
E8N8 3-0		M	3.8	1.8	0.8	Plain
E8N9 1-0		S	3.4	1.1	0.7	Plain
E8N11-2		M	?	2.0	?	Conical
W0-0		S?	+9.5	1.0	1.5	Painted?
W2S5-1		M	3.5	1.5	0.7	Biconical
W2S5-1		M	?	1.2	?	Fragmented biconical
W2S5-4		M	4.1	2.8	0.7	Biconical
W2S5-4		M	3.1	1.8	0.5	Conical
W17-3	28	S	4.6	0.6	0.7	Painted
W17-4		M	-	0.8	-	Plain
W19-2		S	-	0.7	0.9	Painted
W20-3		M	3.6	1.1	0.5	? (probably plain)
W20-5	32	S	3.4	0.6	0.9	Painted
W21-2		S	3.1	0.8	0.9	Painted
W21-4		S	3.5	0.9	-	Painted
W21-5	29	S	4.1	0.5	0.6	Painted (fig. 6.22:1)
W22-8	35	M	3.8	1.6	0.7	Plain
W22-11		M	4.0	1.5	0.9	Plain
W22-11	30	S	4.0	1.2	0.8	Plain
W22-11		S	3.0	0.6	0.8	Painted
W22-19		S	3.1	0.9	Incomplete	Painted
W26-2		S	3.8	0.6	0.8	Plain
W26-2		M	-	2.0	0.7	Plain
W30-3		M	3.6	1.1	1.1	Plain
	Average		3.62	1.22	0.693	

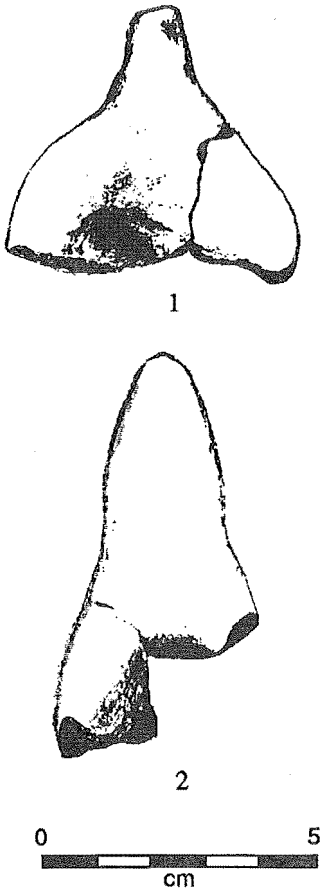


Figure 6.23. Spoons. (1) A 5-11; (2) E7N8 10-0.

Most of them are shaped by chipping or grinding and most are circular, although six are rectangular or square. Three of them show attempted drill holes.

Worked fine ware sherds were common at Banahilk (Watson 1983a: 569) and are probably to be found at most other Halafian sites as well. It is possible that some of these are gaming pieces, others may represent early stages in the manufacture of sherd whorls, and still others are perhaps implements for working clay.

Table 6.20. Spoon Descriptions

Provenience	Comments
A 1-1	Spoon bowl
A 5-11	Stubby handle and part of bowl (fig. 6.23:1)
E4N2, 8-3	Spoon handle
E4N2, 8-4	Handle and portion of bowl
E5N1, 4-2	Handle fragment
E5N2, 16-0	Spoon fragment
E7N8, 10-0	Piece of bowl with complete handle (fig. 6.23:2)
E7N8, 10-3	Handle
E7N9, 9-3	Bowl fragment
E8N7, 13-0	Handle and small portion of bowl
W2S5, 20-1	Possible handle
W2S5, 26-2	Fragment of handle and bowl
W2S5, 29-1	Bowl fragment

Sieves or Strainers

Three fragments of ceramic strainers or sieves were found in the W2S5 excavation (fig. 6.24). Several fragments of similar objects were also recovered from Banahilk (Watson 1983a: 569).

NOTE

1. The identification of the larger notched bones as *Bos scapulae* was tentatively made in the field by Charles A. Reed, then confirmed by his study of *Bos primigenius* skeletal material at the Danish National Museum, where he was aided by Magnus Degerbøl of that institution. See the discussion in chapter 7.

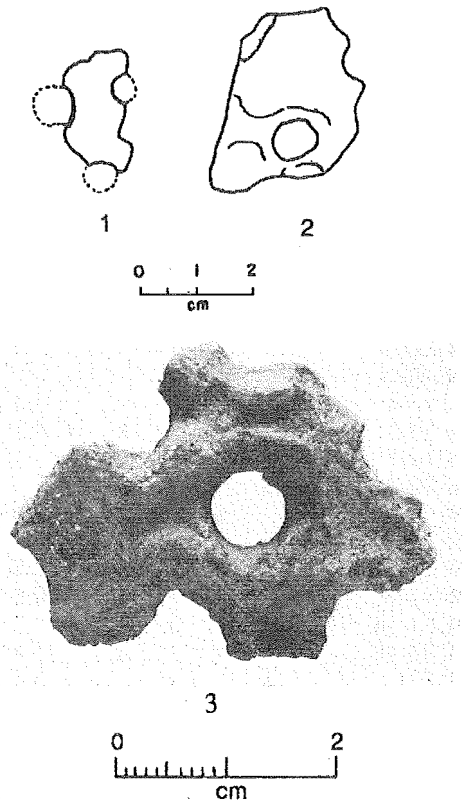


Figure 6.24. Sieves or strainers. (1) W2S5, 3; (2) W2S5, 3; (3) W2S5, 5.

Table 6.21. Girikihaciyan Worked Sherds

Provenience	A	E	G	C	Diameter (cm)	Thickness (cm)	Notes	
A 1-0		x		x	6.8	0.8	Painted	
A 1-0	x			x	8.6	0.8	Painted	bowl
A 2-0	x		x		4.3	0.6	Painted	bowl or base
A 4-18				x		0.9	Painted	rectangular, 7 x 4.5 cm
A 7-20	x		x		5.7	1.4	Plain	base?
A 7-21		x		x	13.2	0.9	Painted	base
E4N1 4-5					3.5	1.2	Plain	bowl
E4N1 6-3		x		x	8.0	1.0	Painted	jar
E4N2 5-5	x			x	3.0	0.8	Painted	
E4N2 7-5			x		-	0.8	Painted	base fragment
E4N2 8-0		x	x		5.3	1.4	Plain	
E4N2 8-2	x		x		3.4	1.0	Painted	
E4N2 8-4		x		x	7.8	0.6	Painted	bowl base (broken)
E5N1 16-0	x		x		3.9	0.8	Painted	
E5N1 16-0							Painted	cross incised
E5N2-1	x			x	4.0		Painted	probably jar
E5N2-3			x				Plain	
E5N2-3			x		3.0		Painted	
E7N8 8-0		x		x	8.5	0.7	Painted	base
E7N9 5-1							Plain	gnawed all around
E7N9 6-0			x			0.8	Plain	broken
E7N9 15-3	x		x		4.6	1.2	Plain	bowl
E8N2 3-0	x			x	7.8	0.9	Painted	base
E8N7 4-0		x		x		1.1	Painted	base fragment
E8N7 10-7	x			x	8.2	1.2	Painted	base
E8N11-1					8.0		Painted	
E8N11-2					9.0		Plain	
E8N11-3		x	x				Painted	D shaped
E8N11-3							Painted	partial disk
W2S5-1							2 plain, 1 painted	
W2S5-3	x		x				Painted	
W2S5-4a*								
W2S5-4b	x			x	5.5			
W2S5-5	x			x			Plain	
W2S5-5	x			x			Painted	
W2S5-5							Plain	pottery ring fragment
W2S5-5							Painted	pottery ring fragment
W2S5-6	x			x	3.5		Plain	
W2S5-9					3.5		Plain	disc
W2S5-9							Painted	0.5 mm perforation rectangle, 4 x 3.5
W2S5-9							Painted	small ovoid
W 16-4				x	3.0	1.0	Painted	
W 18-3	x			x	4.3	1.0	Plain	jar base?
W 19-1	x		x			1.1	Painted	rectangular, 2.3 x 1.8 cm
W 20-2	x		x			1.2	Painted	rectangular, 24 x 14 cm
W 20-4		x		x	8.3	1.0	Painted	jar
W 21-2	x			x	4.3	0.6	Painted	jar
W 21-2		x		x	10.5	1.4	Painted	jar
W 21-3		x		x	10.8	0.9	Painted	jar
W 21-14	x		x			1.4	Plain	rectangular, 4 x 4 cm
W 21-14		x		x	11.4	1.5	Painted	jar
W 22-6	x		x		5.2	1.3	Painted	jar base?
W 22-11						0.8	Painted	broken rectangular, 1.8 cm width
W 22-11	x		x			1.2	Painted	rectangular; length 2.7
W 22-11	x		x	x	4.0	0.9	Painted	shape indeterminate
W 34-0		x		x	9.2 (min)	0.8	Painted	base fragment

* Pottery ring made by shaping and boring a sherd

A = worked all around C = chipped Plain = plain ware

E = one edge worked G = ground Painted = painted ware

7.
Halafian Fauna at Girikihaciyan

John McArdle

Excavations in 1970 produced 2,250 identifiable faunal fragments and 13,575 fragments of unidentifiable scrap that consist primarily of splinters from various artiodactyla long bone shafts. Of the diagnostic fragments, only 2,132 were used in this analysis (table 7.1). The remainder were either specimens from the plow zone or from the post-Halafian occupation of the site. Preservation of the material was excellent, although the degree of ancient fragmentation was considerable. Few of the bones were burned or gnawed.

Bones were bagged at the site according to excavation squares, levels, and features. These bags were then taken to the field laboratory where they were cleaned, sorted for scrap, identified, and recorded. The collection could not be shipped to the United States for detailed study; hence, all identifications, descriptions, and measurements were made in the field. The amount of time available for field study unfortunately was limited, so that some types of data could not be recorded.

Charles A. Reed (University of Illinois at Chicago Circle) and I carried out the identification and description of all specimens in the field. We made extensive use of several papers on descriptive and comparative osteology of the species we expected to encounter. We also had available a comparative collection of modern skeletons of *Dama dama*, and representatives of Turkish populations of *Capra hircus aegagrus*, *Ovis orientalis*, *Sus scrofa*, and *Vulpes vulpes*. In addition, we collected elements of modern *Equus caballus*, *Bos taurus*, *Camelus*, and *Canis familiaris* from fields and dumps near the excavations.

A detailed explanation of the method of recording and analyzing the faunal descriptions is presented in McArdle (1973).[1] A method of numerically coding morphological data was devised, and standardized forms for recording these numeric descriptions were used. These data were transferred to punch cards, and a computer program was used to analyze them. The program generated multivariate cross classification tables of attribute data in one, two, or three dimensions.

Table 7.1. Summary of Identifiable Bone

Total identifiable faunal fragments	2,250
Total identifiable faunal fragments from Halafian context	2,132
Sheep/goat	1,277
Pig	362
Cattle	314
Dog	26
Fox	21
Red deer	17
Equid (probably *Equus hemionus*)	2
Hare	1
Tortoise	2
Bird (perhaps partridge)	7
Fish vertebrae	3
Shell fragments of freshwater mussels	100
Post-cranial remains and teeth of a single weasel-sized animal	

Because the identification of domestic species was of particular importance (especially for the cattle), several criteria were used for each species as evidence or indication of domestication. These criteria were: distinct morphological changes associated with domestication, metric analysis in cases where wild and domestic populations are clearly separate for a given character, and changes in age groups within a given species.

The use of age groups deserves further discussion. Flannery (1969) presents an excellent discussion of the use of age group data as they relate to evidence of domestication. He compares caprine survivorship curves for several sites in the Deh Luran Plain, Khuzistan, Iran (*Ovis aries*); the upper paleolithic Yafteh Cave (*Ovis orientalis*); and modern North American bighorn sheep (*Ovis dalli*). His data for mountain sheep are from Buechner (1960). The populations of both *Ovis dalli* and *Ovis orientalis* had a high (73 and 65%, respectively) percentage of individuals surviving beyond their second and third years, whereas the opposite was true for the domestic populations (42%).

Geist (1971) presents comprehensive data regarding the population dynamics of male bighorn sheep. He found that the minimum life expectancy (age beyond which 95% of the rams are expected to survive) was 3.7 years. The maximum life expectancy (age beyond which 95% of the rams would be dead) was 16.5 years. An analysis of average annual mortality rates showed that, between the ages of 2 and 7 years, 3.7% of the rams died and that the average between the ages of 8 and 17 years was 23%. He concluded that the mortality rates for females were similar to those for the rams. Thus, the populations exhibited a low mortality for juveniles and young adults.

The results described tend to confirm D. Perkins's (1964) conclusion that a high incidence of young individuals is indicative of domestic populations. Although Flannery suggests some degree of caution in the interpretation of high percentages of young animals, the use of such data, combined with other indications of domestication, is undoubtedly very helpful. At Girikihaciyan the dentition of potentially domestic species was used to construct age categories (see table 7.2). This approach provided considerable insight into the manner in which domestic animals were used by prehistoric human populations.

Age groups were determined on the basis of criteria related to relative (not absolute) times of tooth eruption. These criteria were held constant for all species.

Table 7.2. Age Groups of Domestic Species Based on Dental Traits (Percent)

Species	Number of specimens (n = 664)	Newborn (n =0)*	Young (n = 334)	Adult (n = 247)	Mature (n = 61)	Old age (n = 26)
a. Percent of age groups for each species						
Ovis/Capra	503	0.0	46.5	38.0	11.1	4.4
Bos	35	0.0	37.1	51.4	8.6	2.9
Sus	126	0.0	68.3	29.4	0.8	1.6
b. Percent of each species in each age group						
Ovis/Capra		0.0	70.1	77.3	91.8	84.6
Bos		0.0	4.2	7.7	6.5	3.8
Sus		0.0	25.7	15.0	1.6	7.7
c. Percent of each species age group compared with total number of specimens of all species						
Ovis/Capra		0.0	35.0	28.6	8.4	3.3
Bos		0.0	2.0	2.8	0.5	0.1
Sus		0.0	12.9	5.5	0.1	0.3

* Some postcranial material of newborn *Ovis/Capra* and *Sus* was found, but no teeth or jaw fragments.

Absolute age (years) for each group can be determined by comparing these criteria with species-specific data on eruption (Clason 1971). Adult individuals included all those whose third molars or fourth permanent premolars had just begun to wear. Maturity was determined by well-developed wear on these two teeth, and old age was indicated by extreme wear. Extrapolations to the other teeth were made with respect to the conditions on the third molars.

Because of the large number of teeth and jaws found, the need for a uniform definition of age groups, and the lack of correlations between times of epiphysis fusion and tooth eruption for the respective species, I used only the dentitions to compile age group statistics. Because sheep and goat teeth are indistinguishable, they were lumped into one category, *Ovis/Capra*.

The following fauna were found in the nonhuman bone recovered from Girikihaciyan: domestic sheep (*Ovis aries*), wild sheep (*Ovis orientalis*), domestic goat (*Capra hircus hircus*), wild goat (*Capra hircus aegagrus*), domestic cattle (*Bos taurus*), domestic pigs (*Sus scrofa*), domestic dog (*Canis familiaris*), red deer (*Cervus elephas*), onager? (*Equus hemionous*), red fox (*Vulpes vulpes*), hare (*Lepus* sp.), tortoise (*Testudo graeca*), freshwater mussel (*Unio tigridis*), birds, rodents, fish, and small carnivores.

Ovis/Capra

Caprines are the most abundant species found at the site, comprising nearly two-thirds of the identified bone fragments (1,277 specimens). The ratio of *Ovis* to *Capra* postcranial elements is approximately two to one. In this respect, the flocks of Girikihaciyan resemble those found in the area today, which comprise predominantly sheep. Although all portions of the skeleton are represented, teeth and jaw fragments account for 50% of the bones found. Because the teeth of sheep and goats are morphologically identical, only postcranial remains and horn cores were identified to genus. For this same reason, the age groups of caprines, which are based on the dentitions, contained specimens of both sheep and goat.

Two problems are encountered when a zooarchaeologist works with caprine bones: differentiation of sheep and goat skeletal elements, and determination of possible domestication. Until fairly recently, little information was available on the comparative postcranial osteology of caprines. Flannery (1969) discusses this problem and describes some criteria useful for separating the two genera. Boessneck, Müller, and Teichert (1964) published the first detailed descriptions of differences between the skeletons of sheep and goats. Unfortunately, their work concerns only domestic species. Lawrence, working with skeletal collections at the Museum of Comparative Zoology at Harvard, has taken their descriptions and checked them against a series of both wild and domestic caprines from the Near East. She determined which characteristics were valid for the two genera (both wild and domestic). Using her comprehensive unpublished manuscript and modern comparative material, we identified nearly 20% of the caprine fragments as either *Ovis* or *Capra*.

Caprines underwent a distinct morphological change in the horn cores with domestication. Reed (1960) first described these diagnostic characters, and Flannery (1969) has discussed in considerable detail the use of data from the study of horn cores.

Using these criteria, we determined that both domestic and wild caprines were present at the site. Because the mound was not far from the Taurus Mountains, it was not surprising that a few wild individuals were found. Table 7.3 shows an apparent paradox: analysis of the postcranial elements indicates that sheep were more abundant than goats; however, horn cores

Table 7.3. Number of Horn Cores and Horn Core Fragments from Caprine Species

Species	Number
Capra hircus aegagrus	5
Capra hircus hircus	14
Capra hircus?	6
Ovis orientalis	2
Ovis aries	9

of goats are more common than those of sheep.

Flannery (1969) describes a specimen of hornless female sheep from the Bus Mordeh phase at Tepe Ali Kosh. He discusses the possible consequences that would result in the faunal remains from archaeological sites if early breeds of domestic sheep were hornless. If skulls of caprines were hornless, they would be subject to greater fragmentation by the weight of the deposits, and thus evidence of domestication would not be so easily recovered or identified. Perhaps more important is the observation that the ratio of horn cores of sheep and goats would not match the ratios of the postcranial elements. If female domestic sheep were hornless (or possibly dehorned), then only male sheep would contribute horn cores, while horn cores from both male and female goats would be found. Thus in sites where goats were present in substantial numbers, their horn cores would occur more often than those of sheep.

A fragment of the right frontal cranium of a hornless or dehorned caprine was found at Girikihaciyan. Unfortunately, we could not tell whether it was *Ovis* or *Capra*, but the presence of hornless sheep at Girikihaciyan would explain the pattern of bones and horn cores previously noted. Flannery (personal communication) has some reservations about the issue of early hornless domestic sheep; he suggests that some wild, hornless sheep may exist. However, Charles Reed and I believe that hornlessness is probably an indication of domestication and could be used in conjunction with other independent criteria.

Besides the morphological data, data on age groups also indicate that the caprines were domestic and the major source of protein for the villagers. Table 7.2a shows that 47% of the caprines were subadult and 84% were submature. Data on times of tooth eruption in domestic sheep and goats (Clason 1971) indicate that nearly half of the caprines were killed before the end of their second year, and an additional 38% died before reaching maturity. Several mature individuals were found who were either severely pathological or simply very old; they may represent animals maintained for special purposes such as breeding stock. The high percentage of young individuals is indicative of domestic populations. It is interesting to note the significant percentage of animals who survived their second year but lived for only a few additional years. Flannery (1969) notes a similar mortality pattern for domestic species in the sites on the Deh Luran Plain.

The heavy reliance of the villagers at Girikihaciyan on sheep and goats is shown by table 7.2b, c. Caprines comprise over 70% of the individuals found in each age category of domestic species. Of all domestic animals found (based on teeth), 35% are young caprines and 29% are adult caprines.

Sus Scrofa

As with other domesticable species in the Near East, some morphological criterion was needed to distinguish between the wild and domestic populations of *Sus scrofa*. Flannery (1961) conducted a detailed study of teeth measurements from a number of archaeological sites in Africa, Europe, and the Near East which included both wild and domestic forms. The results of his analysis of Near Eastern specimens, with descriptions of 21 wild individuals,

are presented in table 7.4. A distinct separation is seen between the wild and domestic populations with pigs from Girikihaciyan well within the domestic range.

As discussed previously, changes in population structure may indicate the presence of domestic animals. Table 7.2a shows that 68% of the pigs were killed before reaching adulthood, and an additional 29% died before reaching maturity. According to estimates based on age of tooth eruption in modern domestic and wild populations of *Sus* (Clason 1971), the young pigs were killed sometime between 16 and 24 months, with most individuals tending toward the upper limit. Additional data in table7.2b, c indicate that 26% of all young animals, 15% of all adult animals, and 13% of the total number of animals found were pigs. Thus, although domestic pigs were not as abundant as caprines, they make up a significant percentage of the animals present at the site. A total of 362 *Sus* fragments was found. Most portions of the skeleton are represented, but cranial elements and teeth account for 67% of the specimens. In comparison with the other domestic species, pigs had a higher percentage of cranial elements and a lower percentage of teeth and the distal limb elements associated with the feet.

Table 7.4. Comparison of Measurements of Third Molars of Pigs from Girikihaciyan and Other Near Eastern Sites

Site	Count	Range (mm)	Mean (mm)
Upper third molar			
Modern Near East wild	21	33.2-42.8	37.3
Tepe Asiab	1	41.2	
Pre-ceramic Jarmo	2	40.5-43.2	41.8
Upper (ceramic) Jarmo	11	28.5-34.5	32.9
Amouq A	1	31.3	
Banahilk	1	27.6	
Girikihaciyan	4	27.0-33.3	31.2
Lower third molar			
Modern wild	21	37.6-49.3	41.3
Karim Shahir	1	39.0	
Tepe Asiab	5	39.1-50.1	42.6
Pre-ceramic Jarmo	3	38.5-47.1	43.2
Upper (ceramic) Jarmo	3	36.0-38.2	36.9
Banahilk	5	28.6-34.0	31.7
Girikihaciyan	9	29.5-37.1	33.2

Note: Pigs from Karim Shahir, pre-ceramic Jarmo, and Tepe Asiab appear to be wild, while the others appear domestic (data from Flannery 1961).

Bos Taurus

Reed (1960) discusses the possible problem of distinguishing between the skeletal remains of *Bos* and *Bison* in Near Eastern archaeological sites. Flannery (1969) considers this same problem in relation to sites in the Deh Luran Plain. After considerable discussion, he concludes that, for Khuzistan and probably for the Near East in general, there was basically little evidence for the presence of *Bison*. Thus, the large artiodactyla specimens from Girikihaciyan were not considered as possible fragments of *Bison*; however, there was the possibility of confusion between *Bos* and *Cervus* because little or no comparative material for these genera was available. The postcranial skeletons of *Bos* and *Cervus* are similar or identical in several respects, and there is a size overlap between some domestic cattle and male red deer. Identification as either *Bos* or *Cervus* was based on comparative notes compiled by Charles Reed and Barbara Lawrence, and on reference to the partial skeleton of a small Turkish cow.

The excavation produced 314 *Bos* fragments. All portions of the skeleton are represented. Cattle bones have approximately the same percentage distribution of skeletal elements as the other domestic species. There is an increase in the percentage of bones associated with the feet and a marked decrease in the percentage of cranial fragments. The most common cranial fragments are pieces of mandibles; two-thirds of the isolated teeth are from lower jaws. Fragments of the cranium or of the maxilla are rare, as are fragments of horn cores.

Flannery (1969) notes that, for some sites in the Deh Luran Plain, no complete skulls or horn cores of *Bos primigenius* were found, but he did find isolated teeth (mostly from mandibles). He speculates that the villagers may have been saving the cattle crania for some special purpose as at Çatal Hüyük (see Mellaart 1964). Although the cattle at Girikihaciyan were domestic, the pattern of bone distribution previously described is similar to that noted by Flannery.

No morphological characters known indicate the domestication of cattle. Determination of domestic status was made for the specimens from Girikihaciyan on the basis of age groups, types of skeletal elements present (percentages), and metric analysis, the third criterion being the most important.

Table 7.2a indicates that the mortality pattern of *Bos* was quite different from that of the known domestic species: there was a high percentage of adult animals (51%). Based on age of tooth eruption of modern domestic cattle (Clason 1971), more than half the cattle at Girikihaciyan were approximately 3 or more years old. This high percentage of adult animals is in marked contrast to the situation for caprines and pigs. These latter domesticates had the highest percentage of individuals in the young category, with most animals not surviving beyond the second year. Table 7.2b, c shows that, of all the domestic animals killed, cattle were the least abundant. Because mandibles and isolated teeth were relatively common, a special treatment of *Bos* crania is probably not reflected by the statistics for age groups.

As noted previously, all portions of the skeleton were represented, including a number of intact, articulated, or fragmented vertebrae. The percentages of bones present indicate that the "Schlepp effect" (Perkins and Daly 1968) was not operating at Girikihaciyan. The ratio of limb to foot bones at Girikihaciyan (32% long bones and 68% foot bones) is comparable to sites where Perkins noted domestic cattle (D. Perkins 1969: table 3), assuming that Perkins and I classified skeletal elements similarly.

Metric analyses of wild and domestic populations of cattle are available from a number of sources (Degerbøl 1963; Degerbøl and Fredskild 1970; Flannery 1969; Fraser and King 1954; Jewell 1963; D. Perkins 1969). There are two problems in comparing the cattle from Girikihaciyan with specimens described in the literature: few postcranial specimens are sufficiently intact to provide measurements, and there is no assurance that the dimensions recorded at Girikihaciyan correspond exactly to those published for other sites. Of particular importance is the very detailed study of Danish wild and domestic cattle published by Degerbøl and Fredskild (1970). It should be stated here that specimens of the local Turkish populations of *Bos primigenius* were found at the nearby site of Çayönü (Braidwood et al. 1971). These wild cattle were large individuals comparable in size to the Danish population (personal observation based upon study of specimens at Çayönü and examination of skeletons of known *Bos primigenius* in The Zoological Museum, Copenhagen).

Four first and four second phalanges were found sufficiently intact to allow several measurements to be made. In comparison with the Danish cattle (Degerbøl and Fredskild 1970), these phalanges were either within or smaller than the size range for neolithic *Bos taurus*. The arithmetical mean values in each case were less than comparable values for the Danish domestic cattle. A single intact distal humeral fragment was compared (greatest width across the articular surface) with specimens described in Degerbøl and Fredskild (1970), Flannery (1969), and D. Perkins (1969). In all cases, the specimen from Girikihaciyan was well within the size range of domestic

populations. (See table 7.5 for all comparative measurements.)

Two lower third molars were found with a mean length of 42.0 mm. When compared with specimens described in Degerbøl and Fredskild (1970) and Flannery (1969), they fall within the size range for domestic cattle. A single distal metatarsus was compared with the Danish cattle (Degerbøl and Fredskild 1970). It falls within the zone of overlap between *Bos taurus* and female *Bos primigenius*. A proximal metatarsus is below the range for Danish domestic cattle. Several additional skeletal elements were compared with the Danish populations and, with one notable exception (see below), they are all within the domestic size range. The cattle from Girikihaciyan were larger than the modern Turkish type (a very small breed). Comparison of a carpal bone with one from the first millennium BC levels at the site of Tepecik (personal observation) also indicates that the Halafian cattle were slightly larger than the later domestic breeds.

The conclusion drawn from the metric data was that the cattle at Girikihaciyan were clearly domestic. As noted previously, some specimens do not fit this pattern. A few bones or fragments were large enough to indicate that either some individuals of *Bos primigenius* were killed or that specific skeletal elements of this species were brought into the village (e.g., through trade with others who had killed the animals). These specific bones include a collection of specially carved scapulae (see the discussion of notched bones in chap. 6), and three articulated cervical vertebrae. It is also possible that these bones were from unusually large domestic animals.

Unfortunately, there are few published dimensions of cervical vertebrae from *Bos primigenius*. Fraser and King (1954) list a size range for five second

Table 7.5. Selected Skeletal Elements of the *Bos* Remains from Girikihaciyan Compared with Those from Other Sites

Skeletal element	Girikihaciyan Number	Girikihaciyan Measurement (mm)	Denmark (Degerbøl and Fredskild 1970)	Deh Luran Plain (Flannery 1969)	Star Carr (Fraser and King 1954)	Çatal Hüyük (Perkins 1969)
First phalanx (greatest proximal articular distance)	4	27.5–30.3	40.0–45.0 B.p (m) 35.0–44.0 B.p. (f) 30.0–39.0 B.t.			
Second phalanx (greatest proximal articular distance)	4	27.3–36.6	40.0–43.0 B.p (m) 32.0–36.0 B.p. (f) 27.0–33.5 B.t.			
Lower third molar (length)	2	41.0–43.0	46.0–55.0 B.p. (m,f) 34.0–46.0 B.t.	45.0–49.0 B.p. 36.0 B.t.		
Humerus (greatest width across distal articular surface)	1	80.0	100.0–116.0 B.p. (m) 85.0–99.0 B.p. (f)	88.0–102.0 B.p.	70.0–104.0 B.p.	100.9–102.9 B.p. 85.3–108.0 B.t. 63.0–105.0 B.t.
Metatarsus (greatest distal transverse width)	1	63.2	64.0–73.0 B.p. (m) 50.0–62.0 B.p. (f) 49.0–59.0 B.t.			
(greatest proximal transverse width)	1	50.6	73.0–82.0 B.p. (m) 62.0–68.0 B.p. (f) 58.0–71.0 B.t.			
Scapulae (greatest width across glenoid cavity)	5	61.2–73.8	76.0–91.0 B.p. (m) 66.0–75.0 B.p. (f) 50.0–74.0 B.t.			

B.p. (m) = male *Bos primigenius*
B.p. (f) = female *Bos primigenius*
B.t. = *Bos taurus*

cervical (axis) vertebrae of *Bos primigenius* (119.0 to 134.0 mm). The specimen from Girikihaciyan was slightly smaller than this range (111.0 mm), but it may still be within the size range for the local population of *Bos primigenius*.

Seven fragments of scapulae were found (five of *Bos*, two of *Ovis*), each with a series of parallel grooves cut perpendicular to the edge of the scapular blade. On two specimens the glenoid region was intact. Data for Danish cattle (Degerbøl and Fredskild 1970) showed that, for the glenoid width, there is some overlap between domestic cattle and female *Bos primigenius*, but there is a general size distinction. The specimens from Girikihaciyan are in the range for female wild cattle and are noticeably larger than all but one of the domestic cattle. A few uncarved scapular fragments of large animals were also found.

MINOR FAUNAL COMPONENTS

The minor mammalian components of the fauna consist of only a few genera and were apparently of little importance in the diet of the people at Girikihaciyan. Carnivores are the most numerous and most interesting of these genera and are represented by four types: *Canis familiaris*, *Vulpes vulpes*, a very small unidentified carnivore, and assorted fragments of a dog-sized carnivore (probably all *Canis familiaris*).

One of the many recurring problems in Near Eastern zooarchaeology is the difficulty in accurately identifying domestic dogs. Reed (1961), Lawrence (1967), and Flannery (1969) discuss this problem and suggest several criteria for either the determination or the indication of domestication. Using these criteria and additional information from work at other sites in southeastern Turkey, we classified most of the 26 fragments of a dog-sized carnivore found at Girikihaciyan as *Canis familiaris*. The canid fragments consist of a variety of skeletal elements, with no predominance of any particular portion of the skeleton. None of the dog bones shows evidence of cooking or butchering, but an ulna had been modified into an awl.

Lawrence (1967) describes the compression of the tooth row in canids as a possible consequence of shortening of the muzzle during domestication, which results in crowding of the teeth. Canid mandibles from Girikihaciyan exhibit this characteristic crowding, and in some cases teeth actually overlap.

Faunal analysis was carried out on three sites in southeastern Turkey besides Girikihaciyan. These sites range in age from 9000 to 3000 BP. Listed according to decreasing age they are Çayönü, Girikihaciyan, Korucu Tepe, and Tepecik; the latter two are approximately the same age. Domestic dogs are present at all these sites and are more abundant in the younger levels. Several distinct trends were noted that span this time interval and probably reflect the increasing activity of the canids: (1) an increase in the incidence of carnivore gnawed bone; (2) a decrease in certain types of bone fragments; and (3) a change in the relative proportions of certain skeletal elements as represented in the bone fragments.

At Girikihaciyan only a few bones, all from domestic species, show evidence of gnawing by carnivores. The quantity of gnawed fragments at other later sites is so large that a significant portion of the faunal remains was rendered unidentifiable.

Flannery (1969:314) notes a change in the relative composition of fragments of long bones among sites with and without canids. At Ali Kosh, where there were no dogs, he found thousands of shaft splinters with no evidence of gnawing by domestic canids. In contrast, at Tepe Sabz where there were domestic dogs, the quantity of splinters was greatly reduced and, consequently, the faunal fragments consisted mostly of the inedible or hardest portions of the skeletons.

Brain (1967, 1969) describes the various agencies present in a settled village which act selectively to destroy goat bones, and the patterns of bone preservation that result. Although butchering practices and general exposure to weathering and trampling affect final preservation, he notes the substantial destruction of bone by the dogs in the village. The pattern noted by Flannery was also seen at Girikihaciyan in relation to the other sites studied. Brain's work offers a modern example of how the pattern often observed in archaeological sites can develop and the part dogs play in the process.

More interesting than the decrease in quantity of splinters is the change in the relative percentage of skeletal elements. In the lower levels of Çayönü, where activity of dogs was apparently minimal, the bone lots contain numerous ribs, vertebrae, and fragments of scapular blades. At Girikihaciyan these bones are either totally absent or badly fragmented. Thus, the bone lots consist primarily of the harder bone elements (e.g., the long bone articulations) and teeth. If the dogs at Girikihaciyan were consuming most of the more fragile skeletal elements and the long bone shafts, then bones preserved in a context removed from their depredations would be expected to exhibit a different preservational pattern.

At the bottom of one of the excavation squares (E7N9), an ash pit was found dug into the sterile soil. It contained a considerable quantity of bone that differed completely from the normal composition of bone lots from the site. Several of the bones were burned, and all of them were covered with ash. Apparently, the bones and ashes were deposited in the pit before the village dogs could get at the bones. Thus, most of these bones are relatively intact and consist of numerous ribs, several vertebrae, various limb bones, and paired and unpaired mandibles. The usually very common, random, nondiagnostic fragments are nearly absent.

The morphological criteria and the changes in the composition and condition of the skeletal fragments discussed previously indicate that the dog-sized carnivores were probably *Canis familiaris*.

Vulpes vulpes is represented by 21 specimens, including in several cases relatively intact, articulated feet. One bone lot contained the major portions of the metatarsals and metacarpals of all four feet. Of the 20 individual specimens, 11 are distal limb elements (i.e., associated with the feet) and five are fragments of mandibles. The remaining fragments are from a tibia, two ulnae, and an innominate; this innominate is the only burned bone of a carnivore. All fragments are the same size as the modern Turkish *Vulpes*.

Red foxes are described as probably being a regular part of the diet at the sites of Jarmo (Reed 1961), Tepe Guran (Flannery 1969:314), and several sites in the Deh Luran Plain (Flannery 1969:314). In the latter sites, the bones show clear evidence of roasting, and fragments representing most of the skeletal elements are present. A different situation occurs at Girikihaciyan. The single fragment of a burned innominate may indicate that foxes were sometimes consumed as part of the diet. But the presence of intact feet, the relative absence of evidence for cooking, and the predominance of distal limb elements may indicate that the principal use of red foxes was as a source of furs and not as a food. In modern fox stoles, the feet, and frequently the skulls, are left attached to the skin when a fur garment is made. If such a stole were preserved in an archaeological context, a pattern of bone distribution (see above) similar to that at Girikihaciyan would result once the skin decayed. This pattern of preservation is somewhat analogous to the Schlepp effect noted by Perkins and Daly (1968) for large artiodactyls, but in this case it may have occurred for different reasons. The few skeletal elements not fitting the pattern could indicate individuals that were eaten after skinning.

Three teeth and a metapodial fragment of a carnivore smaller than the other specimens of *Vulpes* were found, but they probably represent smaller individuals of this genus. Several bone lots contain remains of a small carnivore. Most of these are postcranial fragments, but in one case the majority of a skeleton was found, including nearly all the lower dentition. This individual was approximately the size of a weasel, but lack of comparative material prevented accurate identification.

Except for *Vulpes*, wild species are rare. *Cervus elephas* is represented by 17 skeletal elements that comprise three individuals. Fifteen of these fragments, which came from a small ash pit, belong to the feet of a single young individual. Seven unfused vertebral centra of a large, young artiodactyl were found in the same pit, but they could not be identified as either cervid or bovid. The other two fragments are an unmodified piece of antler and a metatarsal from another young individual.

Two whole, permanent first incisors of an equid were found, probably from *Equus hemionus*. Onagers are known to have been in the area at an earlier time because they were found at the nearby site of Çayönü. The teeth are relatively comparable in size to the study specimen of *Equus caballus*, but the incisors of onagers are not much smaller than those of a small horse. A single distal fragment of an adult tibia from *Lepus* was found. Remains of rodents consist of two incisors that may represent modern individuals intrusive into the deposit; they were found near the surface.

With the exception of valves of a freshwater mollusk (*Unio tigridis*), nonmammalian species are poorly represented. Reptiles are represented by two incomplete unburned long bones of *Testudo graeca*. Remains of birds consist of seven unidentified bones, probably representing the same species, and were approximately the same size as the partridge living in the area today.

Because the site is near the headwaters of the Tigris River, I expected to find evidence of utilization of various freshwater animals. Fish remains consist of three unidentified vertebral centra of a medium-size fish. It is interesting to note that, although so few fish fragments were recovered, the freshwater mollusk *Unio tigridis* was relatively abundant: over a hundred fragments were found. The shape and size of individual pieces is entirely random and ranges from small rim fragments to complete valves. None of these fragments is worked, and no artifacts of shell were found.

ALTERED AND PATHOLOGICAL SPECIMENS

Altered bones consist of fragments that show evidence of gnawing, butchering marks, or modification into tools. Bones gnawed by carnivores are discussed above, and no evidence of rodent gnawing was found. Undoubtedly, some of the fragmentation of bones resulted from butchering, but few of the fragments have butchering marks. Evidence of butchering techniques for *Bos* is confined to a proximal phalanx with a hole punched into the marrow cavity, and three articular fragments of radii with deep grooves apparently cut into the bone to weaken the shaft. Caprine specimens showing butchering marks include a proximal phalanx with a hole punched into the marrow cavity, a tibial fragment with grooves cut into the shaft and a carved distal articulation, an occipital fragment with the occipital condyle and the paroccipital process split neatly in half by a cleaver during decapitation, and several acetabulae with fracture patterns that probably resulted from knocking off the head of the femur during removal of the leg.

Bone tools were made primarily from limb elements of caprines. In particular, caprine metapodials were most commonly used. Bones of sheep and goats are more

common than those of any other species, and thus would have been readily available. The metapodials are especially suitable for tool use because they are strong, hard, of a convenient size, and easily carved. Details of these tools are given in the discussion of artifacts from the site.

Only two pathological specimens and an example of distinct malocclusion (all mandibles of old caprines) were found. The three mandibles are:

1. A fragment of horizontal ramus with M_{1-3}. All extremely worn with uneven occlusal surfaces (M_1 and M_3 higher than M_2).

2. An extremely pathological mandibular specimen with P_{2-3}, M_3, and roots of P_4 present and no alveoli for M_1 and M_2. The M_3 is moderately worn. The mandible is very thin and corroded between P_4 and M_3, and posterior to P_4 the ramus is bent at a 45° angle. A slight bump at this point probably marks the site of an old fracture.

3. A very old individual with only mandibular P_2 and M_2 remaining. The M_2 is reduced to small patches of enamel on top of the roots, but the P_2 is only slightly worn. Alveoli of the other teeth are partially resorbed. Anterior to the M_2 the jaw is bent at a 30° angle. The general appearance of this mandible is similar to the specimen described previously, but in this case the bending was probably caused by instability in the jaw due to loss of teeth.

It is interesting to note that pathological specimens are not common—despite the heavy reliance on domestic species—but that a few very old pathological individuals were part of the flock and clearly survived for a considerable time with their deformities.

VARIABILITY OF FAUNAL ELEMENTS WITHIN THE SITE

With the aid of a computer program, I made comparisons to check vertical, horizontal, and cultural variability in the percentage distribution of skeletal elements. One-, two-, and three-dimensional cross classification tables were generated that compared types of bone fragments, animal species, degree of preservation, age groups, excavation units, and several additional morphological variables to one another in response to specific questions. The results of this rather detailed analysis indicated that the sample is strikingly homogeneous. No statistically significant variability was found for any of the variables checked.

SUMMARY

Girikihaciyan was a settled village farming community that derived most of its animal protein from domestic caprines, pigs, and cattle. Although some wild species were collected, their contribution to the dietary needs of the village was small. Domestic sheep and goats were the most common animals found. The caprine flocks were predominantly *Ovis* and consisted of young animals, with a certain percentage of mature individuals that may represent breeding stock. Evidence was found indicating that some of the caprines (female sheep?) were either hornless or dehorned. Half of the caprines were killed before the end of their second year. Two-thirds of the domestic pigs, which were less abundant, were also killed before the end of their second year.

Because of the age of Girikihaciyan (5000-4500 BC) and the importance placed on cattle, indicated by Halafian artifacts (especially the bucranium motif on painted pottery), the question of cattle domestication is of special interest. The cattle were domestic, but their role in the village economy was apparently different from that of the other domestic species. The low percentage of young animals (less than 3 years old) killed and the high percentage of adult individuals is atypical of the pattern expected for a domestic food animal. Cattle were allowed to live considerably longer than the other domesticates. This may reflect the increased meat

yield from a single adult bovid or that the cattle were used for some purpose other than as large storehouses of protein. It is possible that the cattle were killed only when they became too large to handle conveniently or were eaten only when they happened to die. This could account for the observed age distribution. It is difficult to speculate meaningfully about the special significance cattle may have had for the Halafian villagers, but the presence of "shrines" featuring representations of cattle at Çatal Hüyük (Mellaart 1967) and the prevalence of the cattle motif on the painted pottery implies some function, either social or economic, beyond that of a food source alone. Among the possibilities are the use of cattle for plowing or the maintenance of a basically adult herd for the production of milk or other dairy products. Unfortunately, no evidence for either activity is available.

A few specimens that are either unusually large domestic bulls or small *Bos primigenius* were found. Of particular interest among these larger individuals are the incised scapulae. Their function is not entirely clear, but they were not restricted to cattle bone: two were made from *Ovis* scapulae.

Domestic dogs were fairly common. The only wild species of any apparent importance are red foxes and a freshwater mollusk. The foxes were possibly eaten, but their primary importance, along with the other small carnivores, may have been as a source of furs. The mussels show no evidence of use other than consumption. It is surprising that, with the Tigris River so near, only minor use was made of this and other aquatic food sources. Judging from the present sample, one would say the villagers apparently did little fishing or fowling and only rarely collected small mammals, but this generalization might be altered if a quantity of fill could be fine screened or floated. However, large, wild artiodactyls are equally rare. Red deer were hunted in very small numbers, but no evidence of antler utilization was found.

NOTE

1. This chapter is drawn from McArdle 1973. Two other reports on Halafian fauna are now available: Laffer 1983 and Uerpmann 1982.

8.
Burials

Three complete burials and one very fragmentary burial were recovered. None contained grave goods, and none could be clearly associated with any particular Halafian deposits because all were intrusive into the architectural units where they were found. An east-west orientation with head to the east seems to have been common, as does flexing of the body. The only adult skeleton was too fragmentary to provide measurements without considerable reconstruction effort. Teeth were measured and these data are synthesized in LeBlanc and Black (1974). The locations and stratigraphic relationships are given in the discussion of architecture and stratigraphy (chap. 3).

Burial 1 (E4N2, 8-6)

Burial 1 is the skeleton of an adult (over 25 and under 40), probably male, buried on its left side in a flexed position with the left arm bent at right angles at the elbow and the right arm bent with the hand on the shoulder (fig. 2.5, upper left). The legs were fully flexed and pushed up toward the body. Some shifting of the bones has occurred. The original orientation of the burial is disturbed but seems to have been approximately east-west with the head to the east. No grave goods were found.

Burial 2 (A 7-7)

Burial 2 is a female aged 6 to 7 years (fig.2.8, center left, and fig. 8.1). She was buried on her left side in a flexed position with both legs together and pulled up slightly toward the chin. The arms were extended away from the body but were bent back at the elbows. The body was oriented southeast-northwest with the head toward the southeast. No grave goods were found.

Burial 3 (A 6-7)

Burial 3, an infant burial, was made beneath a portion of a large jar. When the jar subsided over the body it displaced the skull and somewhat shifted the rest of the skeleton. The individual is age three; sex was not determinable. The body was fully extended with arms lying along the left side. The orientation was east to southeast by west to northwest with the head toward the east. No grave goods other than the partial jar fragment were present.

Burial 4 (E7N8, 8-1 and 9-3)

This "burial" consisted of five rib fragments and a left humerus. It does not appear that more of the burial was in adja-

Figure 8.1. Burial from A 7-7.

cent units, and the excellent state of preservation of the bones does not indicate that the rest of the burial had decomposed. Thus, it must have been disturbed by later occupation or was redeposited from elsewhere. The diameter of the head of the humerus is 36 mm, and the overall length is 28.6 cm. The humerus length indicates a height estimate of 160 cm (63 inches) and does not help in sexing the individual. No grave goods were present, and no orientation was observable.

9.
Statistical Analysis

Statistics provide one means of maximizing the amount of information that can be extracted from archaeological data. One of the basic questions at Girikihaciyan is whether differences in artifacts (in this case, the frequencies of different types) reflect differences in time or differences resulting from functionally specific artifact types being used in functionally specific locations.

Two related types of statistical analyses, factor and cluster, are particularly suited to this interpretive problem. Factor analysis was undertaken to help us delimit possible functional relationships among artifact classes. Application of this statistical technique resulted in the grouping of artifact classes into "factors," each one seemingly reflecting a different functional cluster of artifact classes.

Factor analyses concern only the relationships between artifact classes, that is, the covariation between artifact types. An additional question is the nature of the similarities and differences among assemblages of such artifact types. Which assemblages are most similar to one another? Information gained about the variables (artifact classes) in the factor analyses served as a basis for making comparisons among the assemblages that characterize different excavation units. By using the factors as a means of making comparisons, we were able to generate cluster diagrams descriptive of relationships among excavation units. These, in turn, enabled us to assess similarities in artifact frequencies within different excavation units.

Variables

After the preliminary laboratory analysis was completed, the resulting data were transferred to IBM cards. Forty-nine artifact classes (condensed from approximately three times that number of original classifications) were used to tabulate these data. Consolidation was necessary to make the number of variables manageable and to keep counts large enough to be meaningful. For example, flint and obsidian artifacts were originally classified into 48 separate groups for each type of material; in both cases, these groups were reduced to five categories for purposes of this analysis. Furthermore, there is a very wide range in the numbers of artifacts found for each group. Because some of these counts, such as those for "incised scapulae," are quite small, they were excluded from the factor analysis. Finally, artifact weights were analyzed separately from artifact counts.

Results of Factor Analyses

Four factor analyses were performed, each on a different subset of the total number of variables. Using this information, we carried out an additional factor analysis on a more inclusive set of the variables. In each case, the amount of variation that was ac-

counted for by the factors is given in the communality column of the relevant table. If communalities are too low, the factors that are derived are probably spurious. In general, however, these communalities are high enough to indicate that the factors are probably meaningful.

Factor Analysis 1

The first factor analysis concerned pottery variables plus worked or chipped sherds, and spindle whorls (table 9.1). Worked sherds were included because it was believed they probably were quite different from ordinary sherds and more related to objects like spindle whorls. Including them as variables in this run is a means of testing that hypothesis.

Six factors were extracted, accounting for 82.3% of the variance. The composition of factor 1 was quite unexpected: painted bowls, painted jars, hole-mouth plain ware vessels, and large plain ware bowls were all very highly loaded. Definitely not covarying with these variables are plain ware jars, total plain ware pottery, and total painted pottery. Factor 2 is highly loaded for both worked sherds and spindle whorls; thus these two types of artifacts are clearly unrelated to the pottery vessels. Subsequent factor analyses make the position of these artifacts clearer.

Factor 3 is highly loaded on plain ware jars and small plain ware bowls. This unlikely combination can probably be explained as follows: Most of the objects classed as small plain ware bowls are rim fragments less than 17 cm in diameter, and very few are complete enough to include parts of the base. Because these rims load very similarly to plain ware jars on factor 3, they are, in fact, probably not bowls but the rims of jars. It was noted during the tabulation of these artifacts that it was extremely difficult to differentiate between rim sherds of small bowls and those of jars. The rim diameters of all specimens were plotted on a histogram, and a bimodal pattern was observed defining the two variables of large and small bowls. The factor analysis demonstrates that the bimodality was significant, but it was produced by lumping some jar rims with bowl rims.

Factors 4, 5, and 6 were loaded for total plain ware, total painted ware, and a combination of total painted ware and plain ware bowls. Thus the total amount of painted and plain wares tends not to be

Table 9.1. Principal Axis Factor Loading for Girikihaciyan Pottery Artifacts

Variable	Factor 1	2	3	4	5	6	Communality
1. Plain ware bowls	-0.18	-0.12	0.09	0.42	<u>-0.56</u>	<u>0.67</u>	0.996
2. Plain ware jars	0.14	0.10	<u>0.71</u>	0.29	0.26	0.02	0.685
3. Hole-mouth vessels	<u>0.76</u>	-0.34	-0.18	0.03	-0.26	-0.10	0.798
4. Large plain ware bowls	<u>0.73</u>	-0.13	0.41	-0.17	0.03	0.05	0.760
5. Small plain ware bowls	0.24	0.16	<u>0.60</u>	<u>-0.58</u>	0.03	0.28	0.862
6. Total plain ware	-0.17	-0.06	0.34	<u>0.71</u>	0.33	-0.12	0.780
7. Painted bowls	<u>0.88</u>	-0.09	-0.19	0.15	0.12	0.04	0.862
8. Painted jars	<u>0.77</u>	-0.16	-0.20	0.26	0.15	0.10	0.764
9. Total painted ware	-0.15	-0.09	-0.40	-0.14	<u>0.69</u>	<u>0.52</u>	0.959
10. Chipped sherds	0.34	<u>0.80</u>	-0.10	0.10	-0.06	0.11	0.803
11. Spindle whorls	0.22	<u>0.83</u>	-0.18	0.13	-0.03	-0.03	0.783
Eigenvalues	2.83	1.56	1.47	1.26	1.08	0.85	
Percent variance by factor	25.70	14.22	13.36	11.49	9.78	7.73	
Percent of total variance	82.29						

Note: Factor loadings greater than 0.5 are underlined.

related to other variables and does not appear to be highly significant. The variable "plain ware bowls" should probably be ignored because at least some fraction of it was incorrectly coded as a result of the inability to distinguish some jar rims from bowl rims.

Several conclusions can be drawn from these factors: (1) High percentages of plain ware or painted ware do not seem to be related to other variables. This suggests that excavation units high for these two categories were probably primarily trash areas; artifacts in these units were badly broken up, becoming unrecognizable as to shape. The fact that plain ware and painted ware do not correlate within such units suggests the composition of these units was largely random, some being above average in plain ware and others in painted. (2) Spindle whorls and chipped sherds are unrelated to the other artifact categories and probably reflect some form of activity unconnected with pottery vessels. (3) One can hypothesize that an activity or storage pattern is reflected in the hole-mouth, large plain ware bowls, painted bowls, and painted jar complex. That is, all these vessels could have been used for some activity or activities; or they could have been kept together when not in use. Another possibility is that this factor simply reflects excavation units where preservation was better and artifacts fewer, and therefore more easily recognized as to shape. The interpretation of this factor becomes clearer with the remaining factor analyses.

Factor Analysis 2

The second factor analysis was performed on flint and obsidian variables. Fourteen variables were analyzed and seven factors were extracted, accounting for 81.1% of the variance. The results of the chipped stone analysis, given in table 9.2, fit a fairly typical pattern for factor analysis. One factor accounts for the majority of the variance and most of the variables, while the remaining six factors are correlated with one or sometimes two other factors.

Factor 1 shows high loading with core trimming, flint waste flakes, total utilized flint, utilized flint flakes, waste obsidian, obsidian blades, and utilized obsidian

Table 9.2. Principal Axis Factor Loading for Girikihaciyan Chipped Stone Artifacts

Variable	Factor 1	2	3	4	5	6	7	Communality
1. Chert core material	0.49	-0.34	0.43	-0.15	-0.14	-0.09	-0.52	0.866
2. Chert core trimming	0.66	-0.30	0.01	-0.16	-0.25	0.02	0.02	0.622
3. Chert waste flakes	0.77	-0.16	0.12	0.07	0.12	-0.28	0.15	0.756
4. Patinated flakes	0.59	-0.01	0.25	0.21	0.19	0.52	-0.13	0.787
5. Total utilized chert	0.78	-0.14	0.07	-0.05	-0.35	0.31	0.07	0.765
6. Chert cores	0.41	-0.28	0.48	0.18	0.50	-0.11	-0.34	0.892
7. Chert blades	0.48	0.78	0.09	-0.14	0.12	0.18	0.10	0.930
8. Utilized chert flakes	0.84	0.02	-0.07	0.04	-0.00	-0.13	-0.06	0.731
9. Chert tools	0.23	-0.06	-0.36	-0.54	0.56	0.37	0.22	0.977
10. Backed crescents	0.25	-0.06	-0.46	0.72	0.13	0.07	0.38	0.972
11. Obsidian waste	0.62	0.06	-0.36	-0.12	0.11	-0.42	-0.07	0.723
12. Obsidian blades	0.63	0.34	-0.17	-0.01	-0.34	0.19	-0.28	0.784
13. Utilized obsidian flakes	0.73	-0.20	-0.32	-0.02	-0.01	-0.04	-0.24	0.733
14. Obsidian tools	0.27	0.86	0.24	0.10	0.05	0.09	0.15	0.916
Eigenvalues	4.75	1.84	1.17	1.00	0.98	0.88	0.80	
Percent variance by factor	33.99	13.15	8.48	7.13	7.03	6.27	5.75	
Percent of total variance	81.81							

Note: Factor loadings greater than 0.5 are underlined.

flakes. This seems to be a general chipped stone factor, consisting mainly of categories reflecting little or no use or preparation of the artifact. One could hypothesize that this factor represents chipped stone work areas or tasks involving little or limited artifact use and little preparation; butchering would probably be an example of such an activity.

Factor 2 is of considerable interest because chert blades and obsidian tools are very highly loaded. This is most unexpected because chert tools and obsidian blades do not load highly on this factor. A factor including both blade categories and both tool categories might have been expected because these chipped stone artifacts require more manufacturing preparation and would be expected to associate differently from the artifact types of factor 1. Although all these artifacts do load differently from those of factor 1, there are differences among them. Flint or chert has wearing qualities different from obsidian in that it is not so sharp, but also it is not so brittle. Obsidian tools, as distinct from obsidian blades, are generally retouched and were apparently not used as sharp cutting edges; thus these two classes might be associated with some activity requiring strong as well as somewhat blunt or dull edges.

The remaining factors require only brief discussion. Factor 3 loads moderately on core material and chert cores. Factor 4 loads highly on backed crescents, an artifact type found only in the late levels. In Factor 4 chert cores and tools load highly together, reinforcing the distinction between obsidian and chert tools. Factor 6 loads only for patinated flakes, a category poorly understood, but includes artifacts not actually utilized to any significant degree by the Halafian occupants of the site. Thus patinated flakes function as a random variable and, as predicted, do not covary with any other variables.

The conclusions regarding the chipped stone factor analysis are: (1) there is a general factor representing most chipped stone classes, (2) chert blades and obsidian tools covary, and (3) chert tools vary independently of the first two factors. These results parallel those of the pottery analysis in which there were also a few factors loading for particularly interesting artifact classes, while the majority of the classes seem to be subsumed under a class of general debris.

Factor Analysis 3

With these results in hand, we performed a third factor analysis using (1) those variables that appear to have interesting associations as shown by the first two factor analyses and (2) the remaining variables not considered in the first two analyses. Thus, this last analysis could be considered to involve a set of variables representing highly modified artifacts and excluding the gross count and waste categories. Fourteen variables were included and eight factors extracted, accounting for 84.6% of the variance. The results of this analysis, given in table 9.3, suggest that there are two major constellations of artifacts, but it is difficult to decide whether they should be hypothesized as activity-related associations or depositionally associated phenomena.

The first factor loads very highly for painted bowls, painted jars, chipped sherds, and miscellaneous small objects (the latter category includes stamp seals, beads, pendants, sling missiles, etc.). There were also loadings greater than 0.45 on spindle whorls and pounders/polishers. One could suggest that this represents some form of domestic activity area or primary deposition association in or near living/dwelling areas. That is, although postdepositional disturbance is so great that we cannot claim to have defined completely in situ relationships, we can delineate areas where disturbance has not totally destroyed or obscured overall gross relationships. It should be noted that this

Table 9.3. Principal Axis Factor Loadings for Girikihaciyan Artifacts, Excluding General Count Categories

Variable	Factor 1	2	3	4	5	6	7	8	Communality
1. Painted bowls	0.73	-0.36	-0.41	0.05	0.11	0.05	0.08	0.00	0.857
2. Painted jars	0.64	-0.38	-0.46	0.01	0.25	0.01	0.05	-0.02	0.834
3. Chert blades	0.31	0.83	-0.25	-0.02	0.04	0.10	0.06	-0.09	0.867
4. Chert tools	-0.00	0.16	0.20	0.03	0.11	-0.13	0.77	0.44	0.989
5. Backed crescents	0.15	0.08	0.37	0.70	-0.46	-0.06	-0.02	0.11	0.894
6. Obsidian blades	0.27	0.60	-0.05	0.11	0.12	-0.07	-0.03	0.18	0.499
7. Obsidian tools	0.14	0.81	-0.30	0.15	0.00	0.12	-0.12	-0.13	0.845
8. Grinding stones	0.39	0.08	0.52	-0.13	0.58	0.21	-0.05	0.08	0.842
9. Pounders/polishers	0.49	0.01	0.64	0.18	0.23	0.18	-0.18	0.04	0.796
10. Bone spatula	-0.00	-0.03	-0.16	-0.11	-0.24	0.59	0.09	0.75	0.991
11. Bone points	-0.16	-0.10	0.06	0.05	-0.14	0.66	0.54	-0.38	0.943
12. Chipped sherds	0.63	0.07	0.20	-0.50	-0.30	-0.06	-0.00	-0.14	0.798
13. Spindle whorls	0.46	0.11	0.23	-0.54	-0.49	-0.11	0.01	0.01	0.820
14. Miscellaneous small objects	0.73	-0.25	-0.08	0.46	-0.22	-0.04	0.07	-0.06	0.864
Eigenvalues	2.70	2.11	1.54	1.35	1.17	1.09	0.99	0.90	
Percent variance by factor	19.28	15.06	10.98	9.62	8.33	7.81	7.07	6.43	
Percent of total variance	84.57								

Note: Factor loadings greater than 0.5 are underlined.

factor is unrelated to chipped stone tools, suggesting that they were not significantly employed in the activities engaged in at these hypothesized living/dwelling localities.

The second factor of this analysis confirms the earlier association of stone tools. Obsidian and chert tools are highly associated only in this instance; obsidian blades also score significantly on this factor (these relationships are considered further below). Again, neither chert tools nor backed crescents are part of this factor; these two items load highly and uniquely on factors 7 and 4, respectively. Factor 3 loads highly for grinding stones and pounders/polishers, suggesting that pounders/polishers is probably a heterogeneous class and that some, if not most, of the polishers were functionally grinding stones. Factor 6 is especially interesting in that bone spatulas, or lissoirs, and bone points (awls) are highly associated. Because bone is equally preserved over the site, as demonstrated by the other factor analyses and the results of the faunal analysis by the Association program (chap. 7, this vol.), we cannot explain this co-occurrence as being merely a function of differential preservation. It has been suggested that bone spatulas were used to work hides (Semenov 1964). Their association with bone awls at Girikihaciyan can be regarded as bolstering this suggestion because awls are also thought to be used in the preparation of leather articles. The nonassociation of these two artifact types with factor 1, however, may indicate that they tended not to occur in living/dwelling areas, and hence that hide working may have been undertaken outside these primary areas. Factors 7 and 8 load highly on chert tools and bone awls, and chert tools and spatulas, respectively. The interpretation of the relationships among these three classes of tools is not simple and is discussed below. It is clear that significant information regarding these hypotheses should be available from the cluster analysis of this material; this issue is considered in the subsequent section on combined factor-cluster analysis.

Factor Analysis 4

The fourth factor analysis used data that are much less commonly tabulated for archaeological material: six variables that measured the weights of objects rather than their counts. Table 9.4 gives the results of this analysis which resulted in four factors accounting for 93% of the variance. The general conclusion drawn from these results is that counts and weights reflect very closely the same phenomena and, therefore, recording both measurements is unnecessary. However, as will be shown, weight measurements are probably better measures than counts because their loadings were all much higher or lower than for similar count measures. Finally, the knowledge that the relationships among these artifact classes are unchanged under either measurement technique greatly strengthens the assumption that we were, in fact, measuring something of intrinsic interest.

Factor 1 consists of high loadings for the weights of chert waste flakes, utilized flint, and total obsidian; it is very negatively loaded for total weight of the plain ware. This factor is directly comparable to factor 1 of the combined artifacts factor analysis given below, the only difference being that the average loadings on this factor are significantly higher for the weight factors as compared with those derived from count data (table 9.5). The second factor is uniquely high for scrap bone weight; and the third factor is similarly highly loaded only for the weight of the painted pottery. These factors also demonstrate relationships seen in the other factor analyses, but here the variables involved have significantly higher loadings. Factor 4 loads positively with obsidian and negatively with utilized chert, possibly reflecting the differential use of obsidian tools. Because the weight categories are so general, subsuming several subcategories, it is difficult to assess this factor.

Table 9.4. Principal Axis Factor Loading of Girikihaciyan Weight Variables

Variable	Factor 1	2	3	4	Communality
1. Plain ware	-0.81	-0.41	-0.18	0.07	0.862
2. Painted ware	-0.21	0.21	0.92	0.24	0.988
3. Waste flakes	0.90	-0.22	0.01	0.08	0.874
4. Utilized chert	0.78	-0.02	0.16	-0.55	0.933
5. Obsidian	0.66	-0.26	-0.09	0.67	0.962
6. Scrap bone	0.11	0.91	-0.32	0.18	0.963
Eigenvalues	2.57	1.15	1.01	0.85	
Percent variance by factor	42.80	19.16	16.88	14.21	
Percent of total variance	93.05				

Note: Factor loadings greater than 0.5 are underlined.

Factor Analysis 5

Each of the four factor analyses described above concerns a subset of the total recorded set of variables. In each case, some variables proved to be more interesting than others. Combining the most interesting and potentially more interpretable variables into a single analysis elucidates the relations among these variables. Twenty variables (table 9.5) were chosen for this combined factor analysis.

Factor 1 is the general chipped stone factor and includes a high negative loading on plain pottery. Factor 2 is similar to the factor found in the pottery-only analysis and again loads for hole mouths, big bowls, and painted jars; however, it is not associated with the generalized chipped stone factor. The best hypothesis for this factor is still that it reflects either low disturbance areas or living/dwelling areas (however, the chipped sherds do not load as highly for this factor as they did in the third analysis shown in table 9.3). The third factor again shows the association between chipped sherds and spindle whorls and to a lesser extent grinding stones, but here they are probably activity related because they do not covary with factor 2.

Factor 4 at first glance appears to be a complete contradiction. Factor 3 loads highly for chipped sherds and spindle whorls, moderately for grinding stones, and negatively for obsidian tools. Factor 4 also loads highly for chipped sherds and spindle whorls, but it is equally high for obsidian tools and there is no correlation with grinding stones. An interesting hypothesis is that there is an activity associated with factor 3, probably food grinding, and that a different activity is reflected in factor 4 having to do with obsidian tool use and is probably the same as factor 2 in the second factor analysis (table 9.2). Spindle whorls and chipped sherds were probably not used in either activity but possibly reflect ubiquitous domestic artifacts. The remaining factors again demonstrate the independence of the artifact classes of plain ware bowls, total painted ware, backed crescents, flint tools, and plain ware jars.

INTERPRETATION

The results of all these factor analyses are quite consistent, and the general conclusions to be drawn from the resulting artifact constellations can be readily summarized:

Group 1. General chipped stone; usually including core trimming material, chert waste flakes, combined utilized chert, utilized chert flakes, obsidian waste flakes, obsidian blades, and utilized obsidian flakes. Represents artifacts from areas of chipped stone manufacture or the use of unspecialized chert and obsidian artifacts or (perhaps most likely) a combination of these two activities.

Group 2. General domestic; appears to include plain ware hole-mouth bowls, big plain ware bowls, painted bowls, painted jars, miscellaneous small objects, and possibly chipped sherds. There are

Table 9.5. Principal Axis Factor Loadings for 20 Girikihaciyan Artifact Classes

Variable	Factor 1	2	3	4	5	6	7	8	9	10	Communality
1. Plain ware bowls	-0.16	-0.17	0.06	-0.16	-0.32	0.71	0.31	-0.05	-0.30	0.05	0.882
2. Plain ware jars	-0.26	0.13	0.37	-0.11	-0.52	-0.34	0.18	-0.03	0.28	0.47	0.931
3. Hole mouth vessels	0.61	0.78	-0.46	-0.02	-0.05	0.20	0.00	0.01	0.08	0.09	0.877
4. Large plain ware bowls	-0.15	0.68	0.00	-0.30	-0.18	-0.09	-0.17	-0.18	0.18	-0.05	0.715
5. Total plain ware	-0.67	-0.18	0.10	0.16	-0.13	-0.19	0.22	-0.08	0.10	-0.22	0.692
6. Painted bowls	-0.07	0.87	0.00	-0.16	0.23	-0.00	0.05	-0.01	-0.03	-0.02	0.849
7. Painted jars	-0.20	0.78	0.01	-0.16	0.21	-0.00	0.18	0.10	-0.12	-0.08	0.780
8. Total painted ware	0.09	-0.16	0.03	-0.19	0.59	-0.21	0.55	0.21	-0.10	0.11	0.828
9. Chert waste flakes	0.73	-0.04	-0.02	-0.30	-0.04	0.22	-0.16	-0.24	-0.14	0.22	0.829
10. Utilized chert	0.69	-0.04	0.04	-0.20	-0.14	-0.26	-0.19	-0.21	-0.07	-0.37	0.821
11. Utilized chert flakes	0.82	0.04	0.21	-0.01	0.09	-0.01	-0.07	-0.10	-0.01	0.07	0.746
12. Chert tools	0.23	-0.08	0.15	-0.24	-0.05	0.17	-0.32	0.79	0.23	-0.07	0.959
13. Backed crescents	0.31	-0.19	-0.02	-0.10	0.26	0.38	0.28	-0.25	0.68	-0.15	0.974
14. Total obsidian	0.69	0.06	-0.29	0.32	-0.20	-0.12	0.17	0.10	0.05	-0.00	0.765
15. Obsidian flakes	0.69	0.13	-0.03	0.12	-0.14	-0.24	0.28	0.05	-0.12	-0.20	0.730
16. Utilized obsidian flakes	0.71	-0.04	0.34	-0.28	0.04	-0.10	0.16	0.04	0.01	0.21	0.788
17. Obsidian tools	0.40	0.16	-0.56	0.52	-0.22	0.06	0.15	0.15	0.08	0.12	0.893
18. Grinding stones	0.09	0.24	-0.43	-0.12	-0.49	0.12	0.34	0.14	-0.03	-0.31	0.754
19. Chipped sherds	0.12	0.36	0.60	0.49	0.11	0.14	-0.06	0.01	-0.09	0.07	0.799
20. Spindle whorls	0.14	0.23	0.57	0.53	0.20	0.16	-0.12	-0.08	0.08	-0.02	0.782
Eigenvalues	4.15	2.88	1.81	1.44	1.37	1.19	1.09	0.95	0.82	0.72	
Percent variance by factor	20.63	14.40	9.03	7.19	6.85	5.93	5.44	4.75	4.12	3.61	
Percent of total variance	81.95										

Note: Factor loadings greater than 0.5 are underlined.

two possible interpretations: (1) represents artifacts from areas either within structures or immediately adjacent to them; (2) represents artifacts deposited in relatively undisturbed contexts and merely reflects better preservation.

Group 3. Special activity involving obsidian tools; possibly includes obsidian tools, chert blades, spindle whorls, and chipped sherds. Represents a particular activity involving chipped stone tools with dull working edges, perhaps performed in preparing cordage or textiles by those who used the spindle whorls.

Group 4. Special activity involving grinding stones; includes grinding stones, pounders/polishers, spindle whorls, and chipped sherds. Reflects artifacts used to grind food; an activity also performed by the users of the spindle whorls.

Group 5. Bone artifacts; includes bone spatulas, lissoirs, and bone points or awls; bears some relation to chert tools. Represents leather working; correlation of bone artifacts may represent either final hide preparation or storage practices; independent association of these bone tools with chert cutting or scraping tools may represent differential uses of those tools in the initial stages of hide preparation.

Group 6. Backed crescents; composed of this distinctive tool type only. A chronologically indicative grouping of items representing a tool type confined to the epi-Halafian or post-Halafian occupation of the mound.

The remaining artifact classes do not covary with other classes, but no interpretations have been suggested concerning them. These classes are total plain ware, total painted ware, plain ware bowls, plain ware jars, patinated flakes, chert tools, and nonmodified bone.

One disconfirmation of an original hypothesis can be given. It was initially suggested that painted pottery and obsidian might covary as a result of their being status goods and possibly imported items. There is no evidence from these factor analyses to support this hypothesis, and it must be discarded, at least for the present materials from Girikihaciyan.

RESULTS OF COMBINED FACTOR-CLUSTER ANALYSIS

The purpose of combining factor and cluster analyses was to determine the bases for similarity among the various excavation units. This assessment was to be independent of observations regarding the context, condition, and features of the excavation units and was based solely on artifact frequency counts and weights. The procedure used is given in LeBlanc (1971). First, a series of artifact categories was chosen as the basis for comparison; then they were factor analyzed and the factor scores found. Each excavation unit was compared with all others on the basis of the factor scores by means of the D2 coefficient. This statistic uses differences in artifact class frequencies to define an overall degree of difference between each pair of units. It is, in effect, a measure of the "distance" between each pair of units based on their assemblages. The resulting cluster diagram for the unit was plotted.

This basic procedure was repeated six times. The first four analyses varied the artifact categories (variables) used to compare the units. These four groups of artifacts—pottery, chipped stone, highly modified artifacts, and weight categories—have been described. The last two analyses were performed on essentially the same set of artifact categories, the difference being that one analysis computed D2 on the unweighted factor scores while the other generated D2 by weighted factor scores. Weighted factor scores were found by multiplying the original factor scores by the proportion of the total variance extracted by that factor. This gave greater weight to the first few factors, which therefore contributed the most to the values of D2 for the units.

The basic pattern in all these analyses was that the excavation units clustered for the most part in groups that were not based on either vertical (stratigraphic) or horizontal relationships. In none of the six analyses were excavation units from adjacent levels of the same horizontal unit (grid square) or adjacent grid squares clustered together, with one exception to be discussed below. There appears to be no evidence that any significant changes reflected in artifact frequency counts were occurring through time on the site. If there had been such changes, we would have expected the lowermost levels from the grid squares to have clustered distinctly differently from the uppermost provenience units. The actual result was not surprising, however, because (again except for the later occupation, which is considered separately) no evolution could be seen in any of the particular artifact categories themselves. Therefore, the cluster analysis supports the hypothesis that Girikihaciyan was occupied over such a short time span that no time-related changes could be detected.

This conclusion validates the assumption made in the interpretation of the factor analyses: the factors represent patterns based on activity areas, differential distribution, or preservation of the artifacts that were not related to diachronic changes. A factor analysis may certainly be performed on material recovered from sites spanning a wide time range, as was done by the Binfords (1966), but one cannot assume that the resulting factors represent different activities or tool kits. Different factors may equally well represent the same tool kits at different times. That is, the tools used for the same general function may differ enough in manufacture or may be used in sufficiently different proportions to appear as different factors when long time periods are involved. For Girikihaciyan this possibility can be disregarded.

The fact that there was no horizontal patterning of the excavation units was also expected. There was no tendency for units from the southern, central, or northern part of the site to cluster together. Because the units consisted entirely of samples from a small village, this is not surprising. House foundations, hearths, etc., were found in all three of these areas so that, while there might have been distinctive activity areas within the site, these were probably small and localized; the site as a whole was not divided into large, activity-based quarters. This is known to be true, of course, only for the three excavated portions of the site. While widely separated (the maximal distance between the excavation areas was 90 m), these three areas are all on the mound proper. Therefore, it is still possible that areas at the edge of the mound were used for particular functions such as butchering and did not overlap with other activity areas on the mound.

The only exception to the demonstration of homogeneity of the Girikihaciyan material is a significant cluster of excavation units consisting of the post-Halafian occupation. That is, even when the diagnostic traits—such as the difference in plain ware temper and in presence or absence of backed crescents—are not considered, the cluster analysis shows these late units to be clearly distinct. This fact, together with the lack of differentiation among the Halafian units, strengthens our contention that the Halafian deposits are really quite homogeneous.

The results can be summarized as follows: (1) There is no detectable time-based variation in the Halafian material. (2) There is a slight chronological difference between the Halafian and the post-Halafian material present in the upper levels of the southern excavation unit. (3) There are no lateral differences among the levels; materials from the northern, central, and Halafian portions of the southern area do not form distinct clusters in any

way. (4) There is some clustering of units that were typed as living/dwelling units, but most of these were not distinguishable from fill units. (5) No particular sets of units appear to have high loadings for particular factors; the units with high loadings do not form a cluster but are variously related to the major clusters. This suggests that the artifacts that load highly for different factors did not tend to occur together nor did they occur in any pattern. (6) The overall nature of the cluster diagrams reflects extreme similarity among the units, reinforcing the hypothesis that the site itself was homogeneous.

Therefore, while the factor analyses demonstrate that the artifacts do not associate randomly, but instead occur in particular patterns that make sense at least intuitively, this nonrandom association did not result in significant differences in the total frequency counts from the various units. That is, while the frequencies of some variables reflect the artifact groupings, most of the artifact frequencies of any given square are not appreciably different from those of the rest of the squares. The units do not cluster on the basis of particular combinations of artifact groupings (tool kits).

COMPARISON OF DESIGN MOTIFS AT SEVEN HALAFIAN SITES

After the 1970 field season at Girikihaciyan, we were able to record sufficient basic information about the painted pottery at a few other sites to enable us to make preliminary comparisons of the design motifs used at seven Halafian sites (LeBlanc and Watson 1973): Arpachiyah, Banahilk, Girikihaciyan, Tell Halaf, Tilkitepe, Turlu, and Yunus. Now that Davidson (1977) has suggested a basic chronological framework for Halafian painted pottery, we believe it worthwhile to reexamine some aspects of our earlier study.

On the basis of his study of pottery collections from some of these same sites, Davidson assigns the following chronological positions:

Arpachiyah	Early-Middle-Late Halaf (continuous)
Banahilk	Late Halaf
Girikihaciyan	Late Halaf
Tell Halaf	Early-Middle-Late Halaf-Transitional Halaf/Ubaid (but perhaps not continuous; Halafian stratigraphy unknown)
Tilkitepe	Middle-Late Halaf
Turlu	Late Halaf-Transitional Halaf/Ubaid
Yunus	Middle-Late Halaf

Thus, only Banahilk, Girikihaciyan, Tilkitepe, Turlu, and Yunus are likely to be roughly contemporaneous. In our comparisons with the other sites—Arpachiyah and Tell Halaf—we were probably comparing motifs from two or more different chronological horizons. Ideally, of course, these comparisons should be made among contemporaneous sites so that the possible complications of stylistic change through time can be avoided. However, there are two relevant points to be made in this connection. The first is that Halafian design motifs do not seem to be very sensitive chronological indicators. On the basis of current knowledge, we do not believe that motifs change either rapidly or definitively from Early Halafian to Late, the phases being defined largely on the basis of changes in vessel form, not by presence or absence of particular motifs. This generalization is based on our understanding of Hijara's recent analysis (chap. 4, this vol.) and Davidson's discussions of design motifs on stratagraphically fixed pottery from Arpachiyah, Chagar Bazar, and Tell Aqab. Although he refers to the tendencies of some specific designs to be early or late (for instance, as originally noted by Mallowan in the Arpachiyah report, vertical

bucrania are earlier than horizontal or otherwise stylized ones), these chronological distinctions are exceedingly fuzzy. Even when present, it is unclear that they hold true over a very wide geographic area. In at least one case they definitely do not: Davidson notes that motif 21 (see LeBlanc and Watson 1973:122 or Davidson 1977:466) is found only in the Late Phase at Aqab but occurs on Early, Middle, and Late pottery at Arpachiyah (Davidson 1977: table 5, 149).

The second point, which is related to the first, is that in our relatively gross study of interrelations based only on simple presence/absence counts of design motifs in a rather homogeneous painted style, it is problematic how much effect a chronological discrepancy would have.

Another matter that must be discussed is the question of trade. Davidson suggests, on the basis of neutron activation studies of trace element patterns for samples of Halafian pottery from a variety of sites, that a considerable amount of pottery was systematically traded throughout the Halafian area and often over considerable distances (Davidson 1977, 1981; Davidson and McKerrell 1976, 1980). In particular, with respect to the sites in our study, one Tell Halaf sherd was identified as having come from Arpachiyah (Davidson 1977:321, appendix: diagram 10). Thus, although we were comparing motifs among separate and distinct sites, we may sometimes have actually been comparing motifs on pots originally produced at a single site. Because we do not know the import or export volume of the Halafian pottery trade at any of the seven sites in question, we cannot assess its possible effects on the study we carried out. However, it might be noted that a large number of positive matches between two sites resulting from a large volume of trade between them would surely be an accurate reflection of close ties. In other words, for such a situation where active trade had occurred between and among sites, our relatively crude measure of interrelationship should be a good indicator of exactly what we were attempting to define: differential relations (of whatever kind, either actual physical diffusion or only stimulus diffusion) among the Halafian sites under investigation.

10.
Discussion and Conclusions

The present evidence indicates that Girikihaciyan was a small fifth millennium BC village. The subsistence strategy was one of mixed dry farming and herding, an adaptation similar to that practiced in the area today (although with slightly different cultigens). The fact that domestic cattle were present may mean that draft animals were employed in plow agriculture.

Based on population estimates reviewed by Watson (1978) and Kramer (1982), we suggest that Girikihaciyan, with a surface area of between 2.4 and 3.4 ha, had a maximal population of 200 to 300 people.

In terms of cultural affiliation, Girikihaciyan must be considered a Halafian community. It was inside the boundary of Halafian influence and received Halafian traits presumably as a result of trade. The basic economy and the material remains from Girikihaciyan bear many points of resemblance to those of other Halafian villages.

Several Halafian sites besides Girikihaciyan have produced evidence of domesticated cattle, sheep, goat, and pig: Banahilk (Laffer 1983), Yarim Tepe II (Merpert and Munchaev 1973, 1981), Shams ed-Din (Uerpmann 1982), and Arpachiyah (Hijara et al. 1980). As would be expected, the bones of wild animals were more common than they would be today. Wild sheep and goats, red deer, roe deer, red fox, bear, leopard, birds, and fish are represented at Banahilk; fox, red deer, equid, hare, tortoise, bird, and fish are present at Girikihaciyan; onager, wild pig, wild cattle, red deer, fallow deer, gazelle, fox, wild cat, and possibly wild buffalo (*Bubalus*) are listed for Shams ed-Din (Uerpmann 1982); and gazelle, equid, and large canids have been identified for Arpachiyah.

A similar pattern holds for plant foods, with wheat and barley attested at most sites. Where the evidence is good, flax, lentils, vetch, and chick peas are indicated. Girikihaciyan has also produced evidence of nondomesticated plants: pistachio, hawthorn, goat's face grass, and rye grass (van Zeist 1979-1980).

Girikihaciyan seems to have a typical Halafian food complex. As currently broadly defined, this complex can be characterized as a full complement of domesticated plants and animals noted above, including draft animals, but with a wide spectrum of wild plants as well, probably implying lower human population densities than today.

The architecture at Girikihaciyan also fits within the Halafian pattern. Most Halafian sites have tholoi with and without rectangular antechambers; these occur at Arpachiyah, Çavi Tarlası, Tepe Gawra, Yarim Tepe II, Yunus, Tell Aqab, Shams ed-Din, Turlu, and probably Chagar Bazar, as well as Girikihaciyan. However, the later tholoi at Arpachiyah have walls two to three times as thick as the norm (40

to 50 cm) at other sites. Moreover, construction materials differ. The Arpachiyah foundations are of rock fragments, while large limestone boulders were used at Girikihaciyan. The Girikihaciyan and Arpachiyah tholoi were of tauf, while those at Tepe Gawra were of mud brick; both tauf and brick were employed at Tell Aqab.

As we have noted, there is broad similarity in vessel design, but there is a good deal of variability in the forms of painted vessels. Less than 3% of bowl sherds at Girikihaciyan are from round-sided vessels, whereas 71% of those at Banahilk and 17% of those at Shams ed-Din are round-sided. Flare-rimmed bowls make up 19% of the bowl sherds from Girikihaciyan and nearly 50% of those at Shams ed-Din, but comprise less than 4% of Banahilk bowls. Conversely, hole-mouth vessel sherds comprise 19% of the Banahilk bowls but less than 2% of those at Girikihaciyan. According to Davidson (1981), jars comprise only 7 to 12% of the painted ware at Tell Aqab, but are 53.5% and 44% at Girikihaciyan and Banahilk, respectively. Too little is known about other assemblages to make further shape comparisons (see, however, the Shams ed-Din discussion in chap. 4), but Hijara's findings at Arpachiyah and Davidson's at Tell Aqab suggest that there may be a temporal component to vessel form differences. In particular, flaring straight-sided or concave-sided bowls (5% of the bowl total at Shams ed-Din, 6% at Banahilk, and 30% at Girikihaciyan) are thought to be earlier than round-sided bowls.

There is also a considerable difference in the relative abundance of painted wares at these sites. About 75% of the pottery from Shams ed-Din is painted ware, as is 86 to 88% of that from Aqab and 65% of that from Banahilk, whereas only 15% of the ceramics at Girikihaciyan is painted.

There is even less comparative information for other artifact categories than there is for ceramics, but there are some quantified data on chipped stone. At both Girikihaciyan and Banahilk the relationship between obsidian and chert is about the same: 30% obsidian at Girikihaciyan, 29% at Banahilk. At Shams ed-Din, however, there is only 11% obsidian, while at Tell Aqab 80 to 85% of the assemblage is obsidian. Some of the variation, as is the case for the ceramics, may be due to a bias in the collecting procedure, but these differences seem too great to be accounted for by such a mechanism alone. Davidson suggests that the Halafian chipped stone industries are blade based, but this may be true only at some sites or only for obsidian. At Girikihaciyan 58% and at Banahilk 39% of the obsidian is in the form of blades, but at Girikihaciyan only 7% and at Banahilk only 2% of the chert is in the form of blades.

Incised pendants and female figurines seem to be ubiquitous for the Halafian. Biconical sling missiles are present at several sites, but clearly recognizable stone projectile points are absent. This scarcity of projectile points is surprising given the range of wild game species recovered from Halafian sites, but there is some evidence for the use of microlithic transverse arrowheads (also called trapezes, trapezoids, and *petits tranchets*) by Halafian hunters (Miller, Bergman, and Azoury 1982; Watson 1983a:572).

Although the above comparisons are very meager, one can begin to draw some conclusions, or at least to formulate some plausible hypotheses. One obvious conclusion is that trade was of considerable importance during the Halafian period. Davidson (1977, 1981) believes that some sites were major exporting centers for painted pottery. In particular, Chagar Bazar and Arpachiyah are thought to be production centers for nearby sites and may have supplied most of certain vessel forms to nearby communities. He also thinks that the trade was not reciprocal in that painted pottery was not being traded back into the production sites. At another

level, however, reciprocal, interregional trade in painted ceramics was also taking place. This conclusion is similar to that which we reached on the basis of design analysis (LeBlanc and Watson 1973). Large sites, including some of Davidson's production center sites, seem to have multiple design similarity linkages, whereas smaller, more peripheral sites such as Banahilk or Girikihaciyan seem to have single design similarity linkages to only one larger site. One can envision a series of asymmetric local or subregional exchange patterns of relatively low intensity operating at the same time as much more symmetric, or reciprocal, exchange at the regional level.

A similar argument can be made for an obsidian exchange network. As indicated in chapter 6, it is possible that obsidian cores were prepared at the quarry sites, and that only the blades themselves—perhaps knapped-to-order on the spot—reached outlying communities like Girikihaciyan. A similar argument apparently holds for Banahilk. Given the very high frequency of blades at Tell Aqab, one suspects that some of them were imported, also, or knapped to order by obsidian purveyors. Tell Aqab is not appreciably closer to any known obsidian source than is Girikihaciyan or Banahilk, yet it has a far higher frequency of this material. A possible model to account for this sort of pattern is a complex distribution system, including nodes or major sites from which obsidian was passed on to smaller, lesser sites in the hierarchy of communities. Thus, Tell Aqab would be one of the nodal sites, while Girikihaciyan and Banahilk would be farther down the distribution hierarchy. Some implications of these possible trade patterns are discussed below. It should be noted in passing that the presence of approximately 80% imported obsidian at a site like Tell Aqab is surprising. Why chert, presumably more readily available, could not have served is unclear.

HALAFIAN SOCIETY

Since the completion of field work at Girikihaciyan, the nature of Halafian society has come under discussion. We believe it is useful to suggest models, but it must be remembered that data pertinent to the issue are exceedingly sparse and any detailed interpretation is not far removed from sheer speculation.

We argued (LeBlanc and Watson 1973) that Halaf may have represented a near chiefdom in Service's original sense (Service 1962). This suggestion was based on the widespread distribution of Halafian attributes, such as the painted pottery motifs, tholoi, and incised stamps. It was believed that these traits represented an "overlay" masking more distinctive traits. For example, because vessel forms are differentially distributed, as are various kinds of tholoi, it can be argued that groups with different traditions of vessel shapes and house construction techniques adopted the Halafian style for these categories. A plausible mechanism for such a pattern would be the development of local, middle-range hierarchical societies ("chiefdoms" in 1960s/1970s parlance) among which were distributed certain distinctively Halafian traits representing widely accepted markers of prestige or high status. Such an argument itself is by no means convincing because there are other explanations for the spread of such traits. For example, it is believed by some Americanists that the spread of distinctive Hopewellian traits in the midwestern United States (Braun 1979) does not reflect a chiefdom type of organization but rather a nonstratified society in which there was indeed a prestige hierarchy but one made up of achieved, rather than inherited, status positions. In such a system, there are locally important big men, but there are no hereditary elite families or lineages.

There are other lines of evidence concerning Halafian social organization that can be considered, and it is surely the case

that the issue is more complex than indicated in our earlier discussion. For example, we did not consider a distinction that is sometimes made between ranked and stratified hierarchical societies (Fried 1960, 1967; Sanders and Webster 1978). While such a distinction may have interesting implications for the Halaf and for Near Eastern prehistory (Watson 1983b), we wish to address here the more basic question of whether Halafian society was egalitarian ("tribal") or significantly hierarchical (a chiefdom or set of chiefdoms, either ranked or stratified).

This terminology is fairly consistently used within the Americanist archaeological literature, but there is some differential use outside it. For example, Hijara considers the Halafians to be tribally organized, but, as noted by Watson (1983b:241), it is not at all clear that he is thinking of tribes in Service's (1962) sense. While the distinction is rather readily made in theory, it is not easy to discern on the ground ethnographically or in the ground archaeologically, especially among tribal societies that carry on considerable trade and include some leadership positions, and low level chiefdoms in which status differentiation is not very well developed.

For the Halafians, we have several lines of evidence pertinent to the issue of social complexity. They apparently engaged in directionally controlled, nonreciprocal, extensive trade which seems to have been more structured and more intensive (e.g., imported obsidian comprising three-fourths or more of the chipped stone industry) than we might expect in a tribal society. Coupled with the trade itself is some indication that status goods, as well as utilitarian items, may have been traded. As already noted, the high degree of similarity in painted pottery motifs and shapes may be a reflection of the role these items played as status goods. The similarity of motifs might be the result of craft specialists producing standardized pieces.

On the other hand, the high frequency of painted wares on some sites would seem to relegate them to serving as utility wares. Although the pottery is generally well made, the designs are not usually very complex and could probably have been produced by any competent potter.

Similarly, while items such as stone bowls and incised stamps may also represent status goods or craft-specialized production, none is so well made or curated so carefully as to enable an entirely convincing argument.

Burial customs are frequently considered good evidence for social organization. At the chiefdom level, we would expect some sumptuary interments, including those of relatives of high status individuals; thus, there should also be some high status burials of children. Far too few Halafian burials are published to enable one to address this question properly, but most known to date seem to be rather sparse in their grave goods and in the preparation of the graves themselves. An exception to this is a Halaf burial—found near the TT 6 tholos by Hijara (1978)—that comprises four skulls, each buried separately in a ceramic vessel (three bowls and one jar) and in association with six other pots. Hijara says this burial "includes some of the finest examples of Halaf pottery yet recovered." He goes on to suggest that the people whose skulls were given this special treatment were probably of extraordinary social status. This is indeed plausible, but does not do much to make a case for chiefly status burial as a Halafian trait. Hijara himself interprets this unusual burial as evidence for the importance of Arpachiyah as a ceremonial or religious center.

There are Halafian burials intrusive into Yarim Tepe I, a tell near the Halaf site of Yarim Tepe II. These graves contained considerable goods, including stone bowls, and some of them may be candi-

dates for status burials. If there was a practice of burying high status individuals away from the village and low status individuals within Halafian villages, then, based on our available sample, we would not be surprised at the lack of elite burials in the other Halafian communities excavated so far.

Another line of evidence for social complexity is settlement pattern. Hijara suggests there was a general pattern of a large site surrounded by several smaller ones; this pattern would seem to fit Davidson's discussion as well. Average site sizes seem to be in the 1- to 2-ha range (not unlike Girikihaciyan), indicating populations of about 100 to 200 people each. Large sites range up to 8 ha. If, as Sumner (1979) notes, larger sites tend to be more densely settled with populations averaging about 150 people per ha, then the largest Halaf site may have been occupied by some 1,200 people. If we conceive of a Halaf settlement unit as one large site surrounded by, say, five smaller sites (averaging 175 people each), then the total unit population would be approximately 2,000 people. This is a rather small number to be integrated at a chiefdom level of organization. Moreover, Hijara estimates that the distribution of known Halaf sites in the most dense area is about one site every 15 to 16 km^2. If these sites average 300 inhabitants (a generous assumption) and are regularly spaced, then the regional population density would be about one person per square kilometer, again a figure that is low for chiefdom level organization.

Two other issues should be considered in evaluating Halafian social organization. The first is public works. In most chiefdom level societies there are some examples of constructions that require considerable corporate labor. These often include temples, irrigation canals, or tombs, but none such are known for the Halaf. We might also expect the elite to have houses that are distinctive in location, size, or quality of construction. The present sample of Halafian houses is small, especially for any one site, but one "house" does stand out: the famous burned building excavated by Mallowan at Arpachiyah, level TT 6. Here is a structure, apparently different from most others on the site, that is rather centrally located, with considerable quantities of very well-made goods. Regardless of whether this was a storeroom, workshop, or served some other function, it is a likely candidate for some portion of an elite residential complex.

Finally, one can look at the possible mechanism behind the development of hierarchical social organization. Frequently cited causes include warfare, trade (including the consequences of redistribution networks), religion, and the need for dispute adjudication among dense populations. At present, we have little evidence for warfare, although data from contemporary sites such as Mersin (Garstang 1953) would seem to imply its existence in some places. Nor is there as yet clear evidence for elaborate ritual systems, dense settled population, or for much local differentiation in economy or basic natural resources. Hence, none of these factors calls for the presence of a regulatory elite group. Only the need to regulate and stimulate trade in ceramics and obsidian would seem to be a plausible factor in the development of a postulated elite group in Halafian society.

In summary, the evidence for hierarchical organization of Halafian society is far from overwhelming, although there are some suggestive findings. Much of the most relevant evidence, such as burial practices and house sizes, is too poorly known to evaluate adequately. Although there remains the possibility that Halafian society was hierarchically organized, we do not believe any elite actually resided at Girikihaciyan; rather, the site seems to represent a satellite community to an as-yet-unidentified center.

Quite apart from the level of social or political integration, one can consider the spread and distribution of the Halafian. Is it possible that Halafian culture developed in one locality and then, via migration, covered its eventual range? Following Davidson's suggestion, one might argue that the development of plow agriculture opened a new niche and that developers, wherever their homeland, rapidly increased and expanded. However, the present evidence (uncalibrated C^{14} determinations) seems to indicate a time span for the Halafian of not much more than about 500 years (for detailed discussions and alternative suggestions, see Copeland and Hours 1987b; Watkins and Campbell 1987). How much population growth and expansion could take place in this period?

Growth rates for nonurbanized, food-producing societies of the general Halafian type are probably well under 1% annually, and in fact are more likely to be closer to one-third of a percent. At this rate, the population would have increased only 4.5 times in 500 years. If we take a generally quite high rate of 0.6% annual growth, then any original Halaf population could have grown 20 times in 500 years. Thus it is conceivable, but rather unlikely, that the Halaf represents a small initial group expanding at the expense of other groups over the territory in question. It is probably the case that, although the dichotomy of large and small sites may represent parent-daughter communities as the result of population increase, there was no massive territorial expansion via such a mechanism.

In conclusion, our work at Girikihaciyan does help to refine understanding about some aspects of Halafian society and adaptation, and does amplify knowledge about the Halafian presence in southeastern Turkey. However, it is clear that little additional information on the broader issues referred to above can be gained from the digging of test trenches at a few or even at many sites (see Copeland and Hours [1987:217], who conclude their recent synthesis of Halafian data by stating: "les informations sont trop minces"). Until we have comparative and regional data developed from a number of broad scale excavations at several sites, we will not be able to address successfully the most interesting questions about Halafian culture and society.

References

Akkermans, P. M. M. G.

1987a Tell Sabi Abyad: Preliminary Report on the 1986 Excavatians. *Akkadica* 52:10-28.

1987b The Soundings at Tell Damishliyya. In *Hammam et-Turkman*, vol. I, edited by M. van Loon, 36-38. Istanbul: Nederlands Historisch-Archeologisch Instituut.

al-Radi, S. and H. Seeden

1980 The AUB Rescue Excavations at Shams ed-Din Tannira. *Berytus* 28:88-126.

ASOR

1984 ASOR Announces 1984-85 Fellows. *American Schools of Oriental Research Newsletter 35* (6).

Aurenche, O.

1981 *La maison Orientale. L'Architecture du Proche-Orient ancien des origines au milieu du IV millénaire.* 3 vols. Institut Francais d'Archéologie du Proche-Orient (Beyrouth-Damas-Amman), Bibliothèque Archéologique et Historique, t. CIX. Paris: Librairie orientaliste Paul Geuthner.

Azoury, I., and C. Bergman

1980 The Halafian Lithic Assemblage of Shams ed-Din Tannira. *Berytus* 28:127-143.

Azoury, I., C. Bergman, C. E. Gustafson-Gaube, S. al-Radi, H. Seeden, and H. P. Uerpmann

1980 Stone Age Village on the Euphrates, I-V Reports from the Halafian Settlement at Shams ed-Din Tannira: AUB Rescue Excavations 1974. *Berytus* 28:87-126.

Binford, L. R., and S. R. Binford

1966 Preliminary Analysis of Functional Variability in the Mousterian of Levallois Facies. In *Recent Studies in Paleoanthropology*, edited by J. D. Clark and F. C. Howell. *American Anthropologist* 68 (2, part 2):238-295.

Binford, L. R., S. R. Binford, R. C. Whallon, and M. A. Hardin

1966 *Archaeology at Hatchery West, Carlyle, Illinois.* Archaeological Salvage Report no. 25. Carbondale: Southern Illinois University.

Boulanger, R.

1960 *Turkey.* Translated by Margaret Case. New York: Hastings House.

Boessneck, J., H. Müller, and M. Teichert

1964 Osteologische unterscheidungsmerkmale zwischen schaf (*Ovis aries* Linne) und ziege (*Capra hircus* Linne). *Kuhn-Archiv* 78 (1-2):1-129.

Braidwood, L. S., and R. J. Braidwood, editors

1982 *Prehistoric Village Archaeology in South-Eastern Turkey: The Eighth Millennium B.C. Site at Çayönü: Its Chipped and Ground Stone Industries and Faunal Remains.* Oxford: British Archaeological Reports.

Braidwood, R. J., and L. S. Braidwood

1960 *Excavation on the Plain of Antioch.* Vol. 1: *The earlier Assemblages: Phases A-J.* Oriental Institute Publications, vol. 61. Chicago: University of Chicago Press.

Braidwood, R. J., H. Çambel, and W. Schirmer
1981 Beginnings of Village Farming Communities in Southeastern Turkey: Çayönü Tepesi, 1978 and 1979. *Journal of Field Archaeology* 8:249-258.

Braidwood, R. J., H. Çambel, C. Redman, and P. J. Watson
1971 Beginnings of Village Farming Communities in Southeastern Turkey. *Proceedings of the National Academy of Sciences* 68:1236-1240.

Braidwood, R. J., H. Çambel, and P. J. Watson
1969 Prehistoric Investigations in Southeastern Turkey. *Science* 164:1275-1276.

Braidwood, R. J., and B. Howe
1960 *Prehistoric Investigations in Iraqi Kurdistan.* Studies in Ancient Oriental Civilizations, no. 31. Chicago: University of Chicago Press.

Brain, C. K.
1967 Hottentot Food Remains and Their Bearing on the Interpretation of Fossil Bone Assemblages. *Scientific Papers, Namib Desert Research Station* 32:1-11.
1969 The Contribution of Namib Desert Hottentots to an Understanding of Australopithecine Bone Accumulations. *Scientific, Papers Namib Desert Research Station*, No. 39:13-22.

Braun, D.
1979 Illinois Hopewell Burial Practices and Social Organization: A Reexamination of the Klunk-Gibson Mound Group. In *Hopewell Archaeology; The Chillicothe Conferece*, edited by D. Brose and N. Greber, 66-79. Kent, OH: Kent State University Press.

Buechner, H.K.
1960 The Bighorn Sheep in the United States: Its Past, Present and Future. *Wildlife Monographs*, no. 4.

Çambel, H., and R. J. Braidwood
1980 *The Joint Istanbul-Chicago Universities' Prehistoric Research in Southeastern Anatolia.* Istanbul University, Faculty of Letters, no. 2589.
1983 Çayönü Tepesi: Schritte zu neuen Lebensweisen. In *Beitrage zur Altertumskunde Kleinasiens: Festschrift für Kurt Bittel*, edited by R. Boehmer and H. Hauptmann, 155-166. Mainz am Rhein: von Zabern.

Clason, A. T.
1971 The Flint-mine Workers of Spiennes and Rijckholt-St. Geertruid and Their Animals. *Helinium* 11:1-33.

Copeland, L.
1979 Observations on the Prehistory of the Balikh Valley, Syria, during the 7th to 4th Millennia B.C. *Paléorient* 5:251-275.
1981 The Flint Industries of the Nahr Qoueiq Valley. In *The River Qoueiq, Northern Syria, and Its Catchment; Studies Arising from the Tell Rifa'at Survey 1977-79*, edited by J. Mathers, 81-129. BAR International Series 98. Oxford: British Archaeological Reports.

Copeland, L. and F. Hours
1987a L'Expansion Halafienne, une Interpretation de la Repartition des Sites. Colloque International du Centre National de la Recherche Scientifique, edited by Jean-Louis Huot. In *Préhistoire de la Mésopotamie: La Mésopotamie Préhistorique et l'exploration récente du Djebel Hamrin*, 209-220. Paris: Editions CNRS.
1987b The Halafians, Their Predecessors and Their Contemporaries in Northern Syria and the Levant: Relative and Absolute Chronologies. In *Chronologies in the Near East*, edited by O. Aurenche, J. Evin, and F. Hours. BAR International Series 379. Oxford: British Archaeological Reports.

Dabbagh, T.
1966 Halaf Pottery. *Sumer* 22:23-43.
Davidson, T. E.
1977 Regional Variation Within the Halaf Ceramic Tradition. Ph.D. dissertation, University of Edinburgh.
1981 Pottery Manufacture and Trade at the Prehistoric Site of Tell Aqab. *Journal of Field Archaeology* 8:65-77.
Davidson, T. E., and H. McKerrell
1976 Pottery Analysis and Halaf Period Trade in the Khabur Headwaters Region. *Iraq* 38:45-56.
1980 Neutron Activation of Halaf and Ubaid Pottery from Tell Arpachiyah and Tepe Gawra. *Iraq* 42:155-167.
Davidson, T. E., and T. Watkins
1981 Two Seasons of Excavation at Tell Aqab in the Jezireh, N.E. Syria. *Iraq* 43:1-18.
Degerbøl, M.
1963 Prehistoric Cattle in Denmark and Adjacent Areas. In *Man and Cattle: Proceedings of a Symposium on Domestication*, edited by A. E. Morant and F. E. Zeuner, 69-79. Occasional Paper no. 18. Royal Anthropological Institute of Great Britain and Ireland, 69-79.
Degerbøl, M., and B. Fredskild
1970 The *Urus* (*Bos Primigenius* Bojanus) and Neolithic Domesticated Cattle (*Bos taurus domesticus* Linne) in Denmark. *Det Kongelige Danske Videnskabernes Selskab Biologiske Skrifter* 17(1):234.
Dirvana, S.
1944 Cerablus Cıvarında Yuns'ta Bulunan Tel Halef Keramikleri. *Türk Tarih Kurumu Belleten* 8:403-420.
Ehrich, R., ed.
in prep. *Chronologies in Old World Archaeology*, new ed. Chicago: University of Chicago Press.
Fiorina, P.
1987 Tell Hassan: Les Couches Halafiennes et Obeidiennes et les Relations Entre les Deux Cultures. Colloque International Centre du National de la Recherche Scientifique. In *Préhistoire de la Mésopotamie: La Mésopotamie Préhistorique et l'exploration récente du Djebel Hamrin*, edited by Jean-Louis Huot, 243-255. Paris: Editions CNRS.
Flannery, K. V.
1961 Skeletal and Radiocarbon Evidence for the Origins of Pig Domestication. Master's thesis, University of Chicago.
1969 The Animal Bones. In *Prehistory and Human Ecology of the Deh Luran Plain*, by F. Hole, R. V. Flannery, and J. A. Neely, 262-330. Memoir no. 1, Museum of Anthropology, University of Michigan, Ann Arbor.
Frankel, D.
1979 *Archaeologists at Work: Studies on Halaf Pottery.* London: British Museum Publications.
Fraser, F. C., and J. E. King
1954 Faunal Remains. In *Excavations at Star Carr*, by J. G. D. Clark, 70-95. Cambridge: Cambridge University Press.
Fried, M. H.
1960 On the Evolution of Social Stratification and the State. In *Culture and History*, edited by S. Diamond, 713-731. New York: Columbia University Press.
1967 *The Evolution of Political Society.* New York: Random House.

Garstang, J.
1908 Excavations at Sakje-Geuzi in North Syria: Preliminary Report for 1908. *Annals of Archaeology and Anthropology* 1:97-117.
1953 *Prehistoric Mersin.* Oxford: Clarendon Press.

Geist, V.
1971 *Mountain Sheep: A Study in Behavior and Evolution.* Chicago: University of Chicago Press.

Gustavson-Gaube, C.
1981 Shams ed-Din Tannira: The Halafian Pottery of Area A. *Berytus* 29:9-182.

Heiser, C. B., Jr.
1979 *The Gourd Book.* Norman: University of Oklahoma Press.

Henrickson, E. F.
1980 Chogha Maran and the Zagros Chalcolithic. Paper presented at the 79th Annual Meeting of the American Anthropological Association, Washington, D.C., December 1980.
1985 An Updated Chronology of the Early and Middle Chalcolithic of the Central Zagros Highlands, Western Iran. *Iran* 23:63-107.

Hijara, I.
1978 Three New Graves at Arpachiyah. *World Archaeology* 10:125-128.
1980 The Halaf Period in Northern Mesopotamia. Ph.D. dissertation, Institute of Archaeology, University of London.
in press The Surface Collection from the Regional Survey. In *Mozan II*, edited by G. Buccellati and M. Kelly-Buccellati. Malibu: Undena Publications.

Hijara, I., J. P. N. Watson, R. N. L. B. Hubbard, and C. Davies
1980 Arpachiyah 1976. *Iraq* 42:131-154.

Jewell, P.
1963 Cattle from British Archaeological Sites. In *Man and Cattle: Proceedings of a Symposium on Domestication*, edited by A. E. Mourant and F. E. Zeuner, 80-100. Occasional Paper no. 18. Royal Anthropological Institute of Great Britain and Ireland.

Korfmann, M.
1972 *Schleuder und Bogen in Südwestasien.* Bonn: Habelt.
1982 *Die ersten Ansätze prähistorischer Forschung in der östlichen Türkei.* Tübingen: Verlag Ernst Wasmuth.

Kramer, C.
1982 *Village Ethnoarchaeology: Rural Iran in Archaeological Perpective.* New York: Academic Press.

Laffer, J.
1983 The Banahilk Mammalia. In *Prehistoric Archaeology Along the Zagros Flanks*, edited by L. Braidwood, R. Braidwood, B. Howe, C. Reed, and P. Watson, 629-647. Oriental Institute Publications, vol. 105. Chicago: Oriental Institute.

Lawrence, B.
1967 Early Domestic Dogs. *Zeitschrift fur Saugetierkunde* 32:44-59.

LeBlanc, S. A.
1971 Computerized Conjunctive Archeology and the Near Eastern Halaf. Ph.D. dissertation, Washington University, St. Louis.
1976 Archeological Recording Systems. *Journal of Field Archaeology* 3/2:159-168.

LeBlanc, S. A., and B. Black
1974 A Long Term Trend in Tooth Size in the Eastern Mediterranean. *American Journal of Physical Anthropology* 41:417-422.

LeBlanc, S. A., and P. J. Watson
1973 A Comparative Statistical Analysis of Painted Pottery from Seven Halafian Sites. *Paléorient* 1:117-133.

Levine, L. D., and M. M. A. McDonald
1977 The Neolithic and Chalcolithic Periods in the Mahidasht. *Iran* 15:39-50.
Lloyd, S., and F. Safar
1945 Tell Hassuna. *Journal of Near Eastern Studies* 4:225-289.
Mallowan, M. E. L.
1933 The Prehistoric Sondage of Nineveh, 1931-32. *Annals of Archaeology and Anthropology* 20:127-186.
1936 The Excavations of Tell Chagar Bazar and an Archaeological Survey of the Habur Region, 1934-35. *Iraq* 3:1-59.
Mallowan, M. E. L., and J. C. Rose
1935 Excavations at Tell Arpachiyah, 1933. *Iraq* 2:1-178.
McArdle, J. E.
1973 A Numerical (Computerized) Method for Quantifying Zooarchaeological Comparisons. Master's thesis, University of Illinois at Chicago Circle.
Mellaart, J.
1964 Excavations at Çatalhüyük, 1963, Third Preliminary Report. *Anatolian Studies* 14:39-120.
1966 *The Chalcolithic and Early Bronze Age in the Near East and Anatolia.* Beirut: Khayats.
1967 *Çatal Hüyük: A Neolithic Town in Anatolia.* New York: McGraw Hill.
1975 *The Neolithic of the Near East.* London: Thames and Hudson.
Mellink, M. J.
1964 Archaeology of Asia Minor: Turlu Near Gaziantep. *Amerian Journal of Archaeology* 68:156.
Merpert, N. Y., and R. M. Munchaev
1973 Early Agricultural Settlements in the Sinjar Plain, Northern Iraq. *Iraq* 35:93-113.
Miller, R., C. A. Bergman, and I. Azoury
1982 Additional Note on Reconstructing Aspects of Archery Equipment at Shams ed-Din Tannira. *Berytus* 30:53-54.
Misir, A.
1985 Çavi Tarlası 1984 Yılı Kazısı. *Eski Eserler ve Müzeler Bülten,* Nisan-Haziran 1985, Sayi:2.
Munchaev, R. M., and N. J. Merpert
1981 *Earliest Agricultural Settlements of Northern Mesopotamia: Investigations of the Soviet Expedition in Iraq.* Moscow: Publishing House Nauka.
Oates, J.
1969 Choga Mami, 1967-68: A Preliminary Report. *Iraq* 31:115-152.
1972 Prehistoric Settlement Patterns in Mesopotamia. In *Man, Settlement, and Urbanism,* edited by P. J. Ucko, R. Tringham, and G.W. Dimbleby, 299-310. London: Duckworth.
Perkins, A.
1949 *The Comparative Archaeology of Early Mesopotamia.* Studies in Ancient Oriental Civilizations, no. 25. Chicago: University of Chicago Press.
Perkins, D., Jr.
1964 Prehistoric Fauna from Shanidar, Iraq. *Science* 144:1565-1566.
1969 Fauna of Çatal Hüyük: Evidence for Early Cattle Domestication in Anatolia. *Science* 164:177-179.
Perkins, D., Jr., and P. Daly
1968 A Hunter's Village in Neolithic Turkey. *Scientific American* 219:97-106.
Postgate, J. N., and P. J. Watson
1979 Excavations in Iraq, 1977-78. *Iraq* 41:141-181.

Queen, L.
1978 Southwestern Indian Musical Instruments. *The Smoke Signal,* No. 35:3-24. (Tucson Corral of the Westerners, Inc., P.O. Box 40744, Tucson, AZ 85717.)

Redman, C. L.
1971 Controlled Surface Collection as an Integral Element in Archeological Research Strategies. Ph.D. dissertation, University of Chicago.
1982 The Çayönü Chipped Stone Industry: The 1968 and 1970 Excavation Seasons. In *Prehistoric Village Archaeology in South-Eastern Turkey,* edited by L. Braidwood and R. Braidwood, 17-71. Oxford: British Archaeological Reports.

Redman, C. L., and P. J. Watson
1970 Systematic Intensive Surface Collection. *American Antiquity* 35:279-291.

Reed, C. A.
1960 A Review of the Archeological Evidence on Animal Domestication in the Prehistoric Near East. In *Prehistoric Investigations in Iraqi Kurdistan,* by R. J. Braidwood and B. Howe, 119-145. Studies in Ancient Oriental Civilization, University of Chicago, no. 31.
1961 Osteological Evidences for Prehistoric Domestication in Southwestern Asia. *Zeitschrift für Tierzüchtung und Züchtungsbiologie* 76 (1):31-38.

Reilly, E. B.
1940 Test Excavations at Tilkitepe (1937). *Turk Tarıh Arkeologya ve Etnografya Dergisi* 4:145-165.

Sanders, W., and D. Webster
1978 Unilinealism, Multilinealism, and Evolution of Complex Societies. In *Social Archeology: Beyond Subsistence and Dating,* edited by C. Redman, M. Berman, E. Curtin, W. Langhorne, N. Versaggi, and J. Wanser, 249-302. New York: Academic Press.

Schirmer, W.
1983 Drei Bauten des Çayönü Tepesi. In *Beitrage zur Altertumskunde Kleinasiens: Festschrift für Kurt Bittel,* edited by R. Boehmer and H. Hauptmann, 463-475. Mainz am Rhein: von Zabern.

Seeden, H.
1982 Ethnoarchaeological Reconstruction of Halafian Occupational Units at Shams ed-Din Tannira. *Berytus* 30:55-95.

Semenov, S. A.
1964 *Prehistoric Technology.* London: Cory, Adams, and McKay.

Service, E.
1962 *Primitive Social Organization.* New York: Random House.

Shepard, A. O.
1956 *Ceramics for the Archaeologist.* Carnegie Institution of Washington, Washington, D.C

Sumner, W. M.
1979 Estimating Population by Analogy: An Example. In *Ethnoarchaeology: Implications of Ethnology for Archaeology,* edited by C. Kramer. New York: Columbia University Press.

Tobler, A.J.
1950 *Excavations at Tepe Gawra.* Vol. II. Philadelphia: University of Pennsylvania Press.

Uerpmann, H.
1982 Faunal Remains from Shams ed-Din Tannira, A Halafian Site in Northern Syria. *Berytus* 30:3-52.

van Loon, M., ed.
1987 Hammam et-Turkman I. Istanbul: Nederlands Historisch-Archeologisch Instituut.

van Zeist, W.
1979-80 Plant Remains from Girikihaciyan, Turkey. *Anatolica* 7:75-89.

von Oppenheim, M. F. and H. Schmidt
1943 *Tell Halaf.* Vol. 1: *Die Prähistorische Funde: Bearbeitet von Hubert Schmidt.* Berlin: Walter de Gruyter.

von Wickede, A.
1984 *Çavi Tarlası, 1983.* Vol. 6: *KaziSonuçları Toplantısı. T. C. Kültur ve Turizm Bakanlığı Eski Eserler ve Müzeler Genel Müdürlügü.* Izmir, 16-20 Nisan 1984:191-196.
1986 Die Ornamentik der Tell Halaf Keramik; ein Beitrag zu Ihrer Typologie. *Acta Praehistorica et Archaeologica* 18:7-32.

Watkins, T.
1987 Kharabeh Shattani: An Halaf Culture Exposure in Northern Iraq. Colloque International du Centre National de la Recherche Scientifique. In *Préhistoire de la Mésopotamie: La Mésopotamie Préhistorique et l'exploration récente du Djebel Hamrin,* edited by Jean-Louis Huot, 221-230. Paris: Editions CNRS.

Watkins, T., and S. Campbell
1987 The Chronology of the Halaf Culture. In Chronologies in the Near East, edited by O. Aurenche, J. Evin, and F. Hours. BAR International Series 379. Oxford: British Archaeological Reports.

Watson, P. J.
1955 Notes on Banahilk. In *The Iraq-Jarmo Project, 1954-55,* edited by Braidwood, R. J. *Sumer* 10:120-138.
1956 New Halafian Material from Northern Iraq:The Halaf "Period" Reconsidered. Master's thesis, University of Chicago.
1978 Architectural Differentiation in Some Near Eastern Communities, Prehistoric and Contemporary. In *Social Archeology: Beyond Subsistence and Dating,* edited by C. Redman, M. Berman, E. Curtin, W. Langhorne, N. Versaggi, and J. Wanser, 131-158. New York: Academic Press.
1979 *Archaeological Ethnography in Western Iran.* Viking Fund Publications in Anthropology No. 57. Tucson: University of Arizona Press.
1982 The Halafian Pottery of Tilkitepe, Seen in the Hittite Museum, Ankara (Citadel), 1955. In *Tilkitepe. Die ersten Ansätze prähistorischer Forschung in der östlichen Türkei,* by M. Korfmann, Anhang II, 203-212. Tubingen: Verlag Ernst Wasmuth.
1983a The Soundings at Banahilk. In *Prehistoric Archeology Along the Zagros Flanks,* edited by L. Braidwood, R. Braidwood, B. Howe, C. Reed, and P. Watson, 545-613. Oriental Institute Publications, vol. 105. Chicago: Oriental Institute.
1983b The Halafian: A Review and Synthesis. In *The Hilly Flanks and Beyond: Essays an the Archeology of Southwest Asia* (festschrift for R. J. Braidwood), edited by T. Cuyler Young, P. E. L. Smith, and P. Mortensen, 231-249. Studies in Ancient Oriental Civilization, no. 36. Chicago: Oriental Institute.
1983c Jarmo Worked Bone. In *Prehistoric Archeology Along the Zagros Flanks,* edited by L. Braidwood, R. Braidwood, B. Howe, C. Reed, and P. Watson, 347-367. Oriental Institute Publications, vol. 105. Chicago: Oriental Institute.

Woolley, C. L.
1934 The Prehistoric Pottery of Carchemish. *Iraq* 1:146-162.

Other Titles of Interest from UCLA Institute of Archaeology

The Excavations at Dura-Europos: The Stone and Plaster Sculpture (Final Report III, Part 1, Fascicle 2). S.B. Downey. Monumenta Archaeologica 5. 1977. 375 pp., 48 plates.

From Cremation to Inhumation: Burial Practices at Ialysos and Kameiros during the Mid-Archaic Period, ca. 625-525 B.C. C. Gates. Occasional Paper 11. 1983. 91 pp.

The Marine Thiasos in Greek Sculpture. S. Lattimore. Monumenta Archaeologica 3. 1976. 81 pp., 31 plates.

Achilleion: A Neolithic Settlement in Thessaly, Greece, 6400-5600 B.C. M. Gimbutas, S. Winn, and D. Shimabuku. Monumenta Archaeologica 14. 1989. 182 pp., 42 plates.

Excavations at Sitagroi, A Prehistoric Village in Northern Greece, Vol. 1. C. Renfrew, M. Gimbutas, and E. Elster, eds. Monumenta Archaeologica 13. 1986. 515 pp., 4 color plates, 106 b/w plates.

Lithares: An Early Bronze Age Settlement in Boeotia. H. Tzavella-Evjen. Occasional Paper 15. 1985. 100 pp.

Prehistoric Production and Exchange: The Aegean and Eastern Mediterranean. A.B. Knapp and T. Stech, eds. Monograph 25. 1985. 133pp.

Studies in Cypriote Archaeology. J.C. Biers and D. Soren, eds. Monograph 18. 1981. 189 pp.

A Student's Guide to Archaeological Illustrating. 2nd rev. ed. B.D. Dillon, ed. Archaeological Research Tools 1. 1985. 185 pp.

Practical Archaeology: Field and Laboratory Techniques and Archaeological Logistics. Rev. edition. B.D. Dillon, ed. Archaeological Research Tools 2. 1989. 141 pp.

Pots and Potters: Current Approaches in Ceramic Archaeology. P. Rice, ed. Monograph 24. 1984. 255 pp.

A Conservation Manual for the Field Archaeologist. C. Sease. Archaeological Research Tools 4. 1987. 170 pp., 46 plates.

Scientific Analysis in Archaeology and Its Interpretation. Julian Henderson, ed. Archaeological Research Tools 5 (co-published with Oxford University). 1989.

ISBN:0-917956-69-9