

AMERICAN JOURNAL OF ARCHAEOLOGY

THE JOURNAL OF THE ARCHAEOLOGICAL INSTITUTE OF AMERICA



Volume 110 • No. 1

January 2006

THE AMERICAN JOURNAL OF ARCHAEOLOGY, the journal of the Archaeological Institute of America, was founded in 1885; the second series was begun in 1897. Indices have been published for volumes 1–11 (1885–1896), for the second series, volumes 1–10 (1897–1906) and volumes 11–70 (1907–1966). The *Journal* is indexed in the *Humanities Index*, the *ABS International Guide to Classical Studies*, *Current Contents*, the *Book Review Index*, the *Avery Index to Architectural Periodicals*, *Anthropological Literature: An Index to Periodical Articles and Essays*, the *Art Index*, and the *Wilson Web*.

MANUSCRIPTS and all communications for the editors should be addressed to Professor Naomi J. Norman, Editor-in-Chief, *AJA*, Department of Classics, Park Hall, University of Georgia, Athens, Georgia 30602-6203, fax 706-542-8503, email nnorman@aia.bu.edu. The *American Journal of Archaeology* is devoted to the art and archaeology of ancient Europe and the Mediterranean world, including the Near East and Egypt, from prehistoric to Late Antique times. The attention of contributors is directed to “Editorial Policy, Instructions for Contributors, and Abbreviations,” *AJA* 104 (2000) 3–24. Guidelines for *AJA* authors can also be found on the World Wide Web at www.ajaonline.org. Contributors are requested to include abstracts summarizing the main points and principal conclusions of their articles. Manuscripts, including photocopies of illustrations, should be submitted in triplicate; original photographs, drawings, and plans should not be sent unless requested by the editors. In order to facilitate the peer-review process, all submissions should be prepared in such a way as to maintain anonymity of the author. As the official journal of the Archaeological Institute of America, *AJA* will not serve for the announcement or initial scholarly presentation of any object in a private or public collection acquired after 30 December 1973, unless its existence was documented before that date or it was legally exported from the country of origin. An exception may be made if, in the view of the Editor-in-Chief, the aim of the publication is to emphasize the loss of archaeological context. Reviews of exhibitions, catalogues, or publications that do not follow these guidelines should state that the exhibition or publication in question includes material without known archaeological findspot.

BOOKS FOR REVIEW should be sent to Professor John G. Younger, Editor, *AJA* Book Reviews, Classics Department, Wescoe Hall, 1445 Jayhawk Boulevard, University of Kansas, Lawrence, Kansas 66045-2139, tel. 785-864-3153, fax 785-864-5566, email jyounger@ukans.edu. The following are excluded from review and should not be sent: offprints; reeditions, except those with great and significant changes; journal volumes, except the first in a new series; monographs of very small size and scope; and books dealing with the archaeology of the New World.

THE AMERICAN JOURNAL OF ARCHAEOLOGY (ISSN 0002-9114) is published four times a year in January, April, July, and October by the Archaeological Institute of America, located at Boston University, 656 Beacon Street, Boston, Massachusetts 02215-2006, tel. 617-353-9361, fax 617-353-6550, email aia@aia.bu.edu. Subscriptions to the *American Journal of Archaeology* may be addressed to the Institute headquarters. A subscription request form can also be downloaded from the *AJA* Web site (www.ajaonline.org). An annual subscription is \$75 (international, \$95); the institutional rate is \$250 (international, \$290). Membership in the AIA, including a subscription to *AJA*, is \$125 per year (C\$192). Student membership is \$73 (C\$118.50); proof of full-time status is required. International subscriptions and memberships must be paid in U.S. dollars, by a check drawn on a bank in the U.S., by money order, or by credit card. Subscriptions are due 30 days prior to issue date. No replacement for nonreceipt of any issue of *AJA* will be honored after 90 days (180 days for international subscriptions) from the date of issuance of the fascicle in question. When corresponding about memberships or subscriptions, always give the account number, as shown on the mailing label or invoice. A microfilm edition of the *AJA*, beginning with volume 53 (1949), is issued after the completion of each printed volume. Subscriptions to the microfilm edition, which are available only to subscribers to the printed *AJA*, should be sent to ProQuest Information and Learning (formerly Bell & Howell Information and Learning), 300 North Zeeb Road, Ann Arbor, Michigan 48106. Back issues of *AJA* and the *Index 1907–1966* may be ordered from the Archaeological Institute of America. Back issues of the *AJA* from 2000–present are available in nonprintable pdf format on the *AJA* Web site. Exchanged periodicals and correspondence relating to exchanges should be directed to the Archaeological Institute of America in Boston. Periodicals postage paid at Boston, Massachusetts, and additional mailing offices. Postmaster: send address changes to the *American Journal of Archaeology*, Archaeological Institute of America, located at Boston University, 656 Beacon Street, Boston, Massachusetts 02215-2006.

The opinions expressed in the articles and book reviews published in the *American Journal of Archaeology* are those of the authors and not of the editors or of the Archaeological Institute of America.

Copyright © 2006 by the Archaeological Institute of America

The *American Journal of Archaeology* is composed in ITC New Baskerville
at the offices of the Archaeological Institute of America, located at Boston University.

The paper in this journal is acid-free and meets the guidelines for permanence and durability of the
Committee on Production Guidelines for Book Longevity of the Council on Library Resources.

Investigating the Early Pottery Neolithic of Northern Syria: New Evidence from Tell Sabi Abyad

PETER M.M.G. AKKERMANS, RENÉ CAPPERS, CHIARA CAVALLO,

OLIVIER NIEUWENHUYSE, BONNIE NILHAMN, AND IRIS N. OTTE

Abstract

The 2001–2003 excavations at Tell Sabi Abyad in northern Syria have provided important new information on the nature and development of the Pottery Neolithic settlement at the site in the seventh and sixth millennia B.C. The fieldwork has produced a long sequence of small and continually shifting occupations, in the order of 0.5–1.0 ha, each with rich assemblages of very early ceramics and other artifacts. There is proof for localized abandonment and the episodic contraction and expansion of occupation over the site. Living in small, dispersed groups, leaving extensive areas of the site uninhabited, was a basic practice of Neolithic settlers at Tell Sabi Abyad (and probably elsewhere as well). Of particular note was the discovery of well-preserved building levels belonging to the initial stage of the Pottery Neolithic, ca. 6600–6200 B.C., providing insight into the character of settlement and material culture of one of the poorest known periods in the history of Syria and the northern Levant. Single- and multiroomed houses came to light, often with white-plastered floors and walls. The ceramics from these buildings are among the earliest found in the Near East to date. Distinct changes in the organization of the communities and the material culture took place at ca. 6200 B.C. and were associated with, among other things, the appearance of circular buildings and clay sealings as indicators of controlled storage.*

INTRODUCTION

In recent decades there has been growing interest in the material and social dimensions of the many small but successful communities that emerged in Syria and adjacent regions in the Pottery (or Late)

Neolithic during the seventh and sixth millennia B.C.¹ Whereas only 25 years ago anyone interested in the archaeology of Syria in this period had to rely on often small exposures or chance discoveries at a handful of sites, today an ever-increasing wealth of data is at our disposal. Dozens of settlements have been located in surface reconnaissances, and excavation has been initiated at places such as Tell el-Kerkh in western Syria, the mounds of El Kowm in the central desert, Tell Halula on the Euphrates, Tell Sabi Abyad on the Balikh, Tell Boueid II on the Khabur, and Chagar Bazar in the upper Khabur triangle.²

While the particular ins-and-outs of community development in the Pottery Neolithic remain a matter of much debate, it is becoming increasingly clear that in this period Syria was the scene of considerable regional differentiation, varied site chronologies, and a diverse material culture. Evidence for a dispersed settlement system of small and often short-lived villages and seasonally occupied campsites has begun to accumulate.³ However, in each region there were also a few permanent settlements with occupation sustained over many centuries. The lengthy use of these localities, reflected in sometimes substantial visibility, may have added to a developing sense of place and descent, lending more weight to some sites rather than others, and creating preeminent landmarks full of history and memories existing since time immemorial in the minds of the local population. These sites

* We wish to express our gratitude to the Directorate-General of Antiquities and Museums in Damascus, Syria, for its continued assistance and encouragement concerning the research at Tell Sabi Abyad. Particular thanks go to Dr. Bassam Jamous, director-general, and Dr. Michel al-Maqdissi, director of excavations. We also thank Murhafal-Khalaf, Department of Antiquities, Raqqa, and our representative, Nauras al-Mohammed, for their much-valued help. Warm thanks are also due to Mikko Kriek for his preparation of the illustrations. The excavations were conducted under the auspices of the Netherlands National Museum of Antiquities and Leiden University, under the direction of Peter M.M.G. Akkermans. The 2001–2003 field seasons and the subsequent analysis of the excavation results were accomplished with the support of the National

Museum of Antiquities, Leiden University, Free University Amsterdam, State University Groningen, Syria Shell Petroleum Development BV, Foundation for Anthropology and Prehistory in the Netherlands, and the Netherlands Foundation for Scientific Research (dossier W-02–1347); we are extremely grateful for their help.

¹ All dates in this report are calibrated dates B.C., based on the radiocarbon calibration program Calib Rev.4.4 from the University of Washington.

² Dornemann 1986; Campbell 1992; Akkermans 1993, 1996; Wilkinson and Tucker 1995; Molist 1996; Lyonnet 2000; Stordeur 2000; Cruells 2001; Suleiman and Nieuwenhuys 2002; Iwasaki and Tsuneki 2003.

³ Akkermans and Schwartz (2003) and references therein.

may easily have become centers of social and economic engagement, providing food, shelter, security, and storage, as well as opportunities for marriages, festivities, rituals, and political decisions.

Tell Sabi Abyad in the upper Balikh valley of north-central Syria (fig. 1) is such a site with a very long, perhaps unbroken, sequence of occupation and serving as a central place in the local settlement system in the Pottery Neolithic. Made up of about 5 ha and rising up to 6 m above the surrounding plain, Tell Sabi Abyad is among the largest prehistoric sites in the region. Part of the mound as we see it today is deeply buried, and its earliest deposits occur at a depth of 2 to 4 m below the modern field level. Contrary to the impression created at first sight, Tell Sabi Abyad is not a single, coherent site; it consists of four low, contiguous mounds, each with its own history of settlement, that have merged over time (fig. 2). Substantial Bronze Age overburdens obscure the early deposits, fill the saddles between the mounds, and add to the illusion of a single site.

Seeking to investigate the Pottery Neolithic occupational remains in broad horizontal exposures, the site was selected for excavation because survey evidence suggested that layers of the seventh and sixth millennia B.C. were easily accessible under much of its surface. Since 1986 an extensive program of excavation in the relatively low southeastern part of the site (operation I) has revealed a long and continuous sequence of what seem to have been ordinary villages with all their usual connotations dating to the end of the seventh and the beginning of the sixth millennium (ca. 6200–5800 B.C.). Despite the large scale of the research, however, we were unable to answer the obvious question of how large these communities were. Was the entire 5 ha of Tell Sabi Abyad used for settlement in this period, or was occupation restricted to a certain part(s) of the site? What was the approximate size and structure of the population that had built and used the facilities at the mound? Should we consider the architecture and the organization of space, as it came to light in operation I, as typical for the period? Or, to the contrary, did we by mere coincidence expose a particular quarter of the settlement with its own functionally or socially defined layout?

To find answers to these questions, it was decided to interrupt the work on the southeastern mound after the completion of the 1999 season and to focus on other, hitherto unexplored, portions of the site. Four areas in different parts of Tell Sabi Abyad were

thus opened for excavation in August–October 2001, 2002, and 2003: operations II–V (see fig. 2). The newly opened trenches are relatively small (between 100 and 400 m²) when compared with the extensive horizontal exposure in operation I, but each has yielded stratified deposits assigned to the seventh and/or early sixth millennium B.C. immediately below the modern surface. The new data substantially expand the local stratigraphic record.

A significant find was the appearance of well-preserved occupation layers of the very early Pottery Neolithic immediately below the surface on the western half of Tell Sabi Abyad, currently radiocarbon dated to ca. 6600–6200 B.C., with still earlier deposits awaiting excavation. The abundant, widespread occurrence of these settlement remains was unexpected in view of the virtual absence of recognizable sherds and other cultural markers of this era on the mound's surface. This newly retrieved information on the early to mid seventh millennium is of considerable interest, given the paucity of data for the period associated with the appearance of the earliest ceramics in Syria and the northern Levant and the rise of an increasingly complex society of both farmers and pastoralists.

The main results of the excavation in the various operations are here discussed. Because most of the materials are still under study, the following must remain an interim evaluation; however, we believe that our research has progressed to the point where an extensive preliminary report is warranted.

CHRONOLOGY AND PREVIOUS WORK

Although the occupational history at Tell Sabi Abyad differs from operation to operation, we have succeeded in establishing a local chronology of cultural development in the Balikh region (summarized in table 1). It is based on the stratigraphic sequences from the various operations and the associated developments in the artifact assemblages (primarily ceramics), as well as on a series of radiocarbon dates.

The starting point for our insight into the chronology of Tell Sabi Abyad was the broad horizontal exposure on the relatively low and gently sloping southeastern portion of the site (operation I). An area measuring 1,400 m² was opened for excavation, and at least 11 main levels of settlement were identified. Some of these were identified in the extensive trenches high on the southeastern mound; others were in the deep but narrow sounding P15 on the slope.⁴ We have elaborated on the stratigraphy and

⁴The broad-scale excavation at Tell Sabi Abyad is primarily conducted in either 9 x 9 m or 4.5 x 9.0 m squares, designated from west to east with capital letters and from north to south with cardinal numbers (see fig. 2). After breaking the ground with picks, subse-

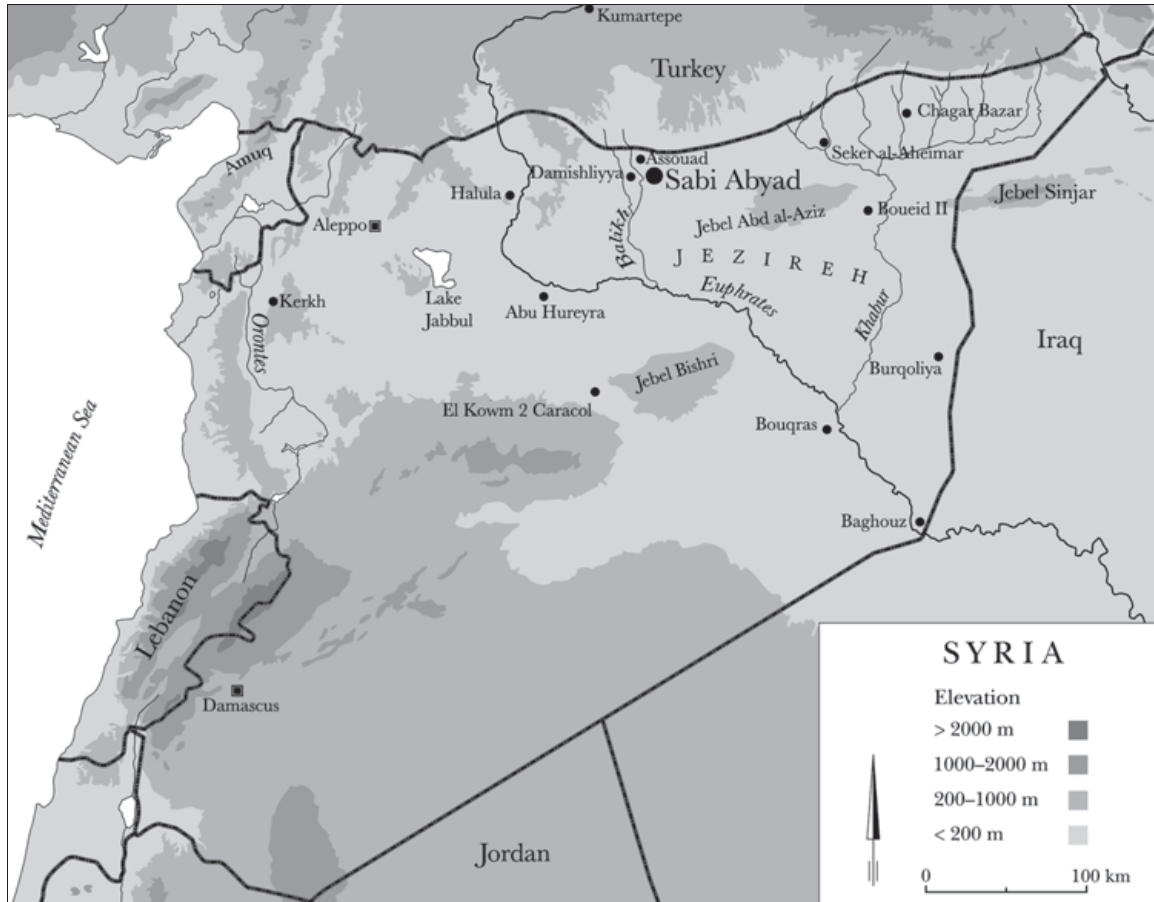


Fig. 1. Map of Syria, showing Tell Sabi Abyad and other main sites.

the radiocarbon-based chronology of operation I elsewhere.⁵ Table 2 presents a list of recently obtained radiocarbon dates from operation I and the newly opened operations II–V, which fully support the sequence of developments in settlement and material culture offered in the report at hand. These dates substantially advance our understanding of the seventh and early sixth millennia when taken into account that the chronology of this period is still listed among the least known in Syria in particular and the Near East in general.

For present purposes it is important to distinguish between an early and late period. The early period is termed Balikh IIA in the local sequence

quent planing and brooming, and the division of the area in spatial units (*loci*), all soil depositions and features are mapped and all artifacts, animal bone, etc., are collected for study. For practical reasons, including efficiency, not all of the soil removed by excavation is systematically screened. However, dozens of (primarily botanical) samples are retrieved by sieving and flotation of deposits from a selected number of rooms, floors, hearths, pits, etc.

and is primarily defined by the first occurrence of ceramics in the archaeological record; the late period (representing the developed stage of the Pottery Neolithic) is subdivided into several successive phases, termed Balikh IIC (also often referred to as Pre-Halaf), Balikh IIIA (Transitional), and Balikh IIIB (Early Halaf). On the basis of the samples from operations III and IV (see table 2), the early period has been radiocarbon dated to ca. 6600–6200 B.C.⁶ However, still earlier occupation levels await excavation and are expected to push back the start of this occupation phase by 200 or 300 years, into the very beginning of the seventh millennium. The late period, previously exposed in operation I and re-

⁵ Akkermans and Le Mière 1992, 4 and table 1; Akkermans 1993, 110–35 and table 4.1; 1996, ix–xii; Akkermans and Verhoeven 1995, 8, 9; Akkermans and Nieuwenhuys (forthcoming).

⁶ The current dates from Tell Sabi Abyad are in agreement with a number of radiocarbon dates from the previously excavated sites of Tell Assouad and Tell Damishliyya in the Balikh valley (see Akkermans 1993, 113–15).

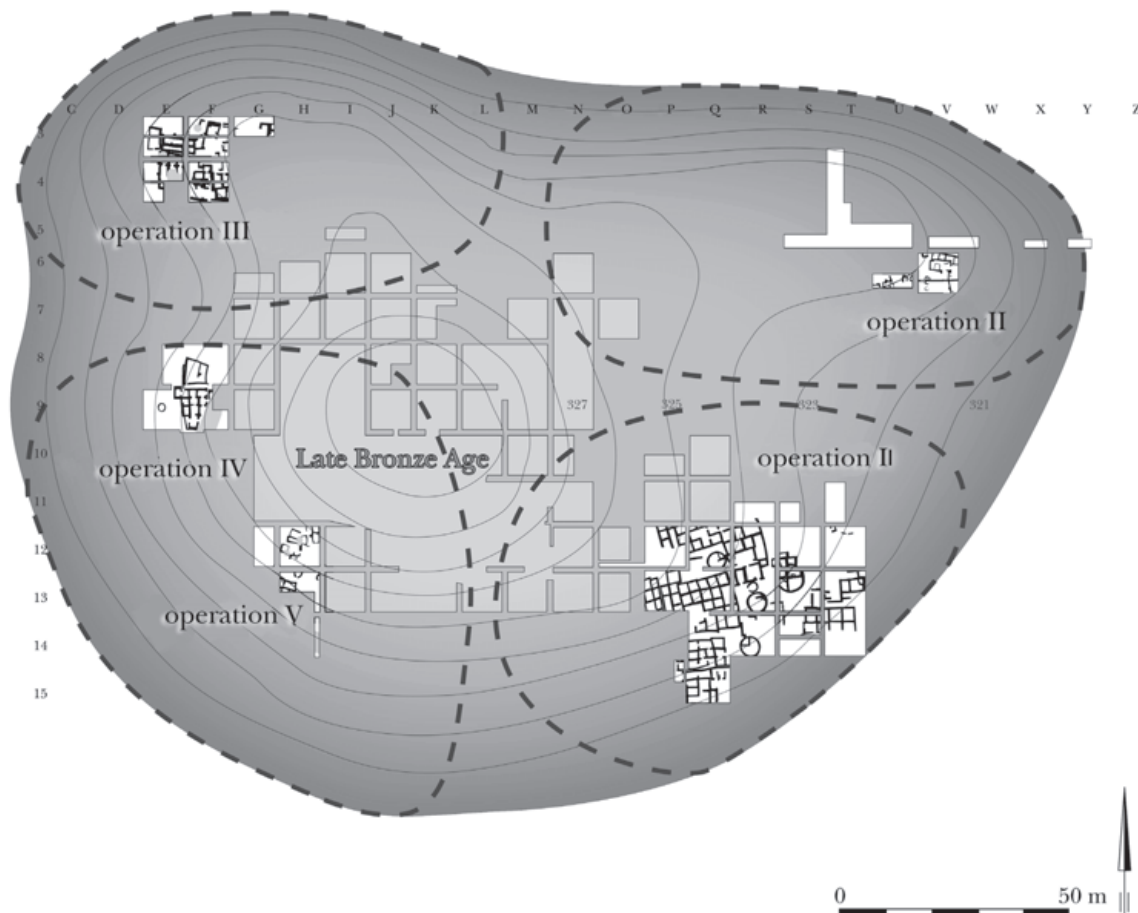


Fig. 2. Plan of Tell Sabi Abyad with the various operations. Dotted lines indicate the position of the small prehistoric mounds, which have merged over time.

cently in operations II and V, has been radiocarbon dated to ca. 6200–5700 B.C. The current dates suggest that the transition from the early to the late period was realized within a very short span of time, around 6200 B.C.⁷ The material distinction between both periods is astonishingly sharp, with the finds from the late phase more diverse and elaborate, and include, for example, circular architecture, finely decorated ceramics, and seals and sealings.

⁷ Defining the borderline between the early and late periods on the basis of the radiocarbon dates in table 2 is not without difficulties. Two samples (GrN-28851 and GrN-28855) allow us to set the end of the early period at ca. 6100 B.C. rather than 6200 B.C. However, their statistical probability distributions (based on the Calib Rev.4.4 program) strongly argue against a date later than 6210 B.C. (GrN-28851) and 6160 B.C. at the most (GrN-28855). Two samples from the late period (GrN-28237 and GrN-28239) allow the beginning of this phase to be set at ca. 6380 B.C. The probability distributions hardly support this early date and suggest that the dates of these samples are between 6270 and 6080 B.C. Contextual evidence should be considered as well. Sample GrN-28239 was taken from charcoal in building debris. Sample GrN-28237 comes from char-

The early (Balikh IIA) period is poorly understood. In the Balikh basin, remains of this phase have been uncovered in small exposures at Tell Assouad and Tell Damishliyya and in the deep sounding P15 at Tell Sabi Abyad. More recently, pottery typical of this period was found in a pit sunk into the lower, aceramic levels at the nearby mound of Sabi Abyad II.⁸ Although the research is still in a preliminary stage, current work on the western side

coal in one of several associated fireplaces in an open area in operation V. Three samples from the two other fireplaces in this area gave dates between 6220 and 6010 B.C. (GrN-28238, GrA-24245, and GrA-24246). In this respect, we believe that it is justified to date the transition from the early to the late period at ca. 6200 B.C. See Akkermans and van der Plicht (forthcoming) for full details on the newly obtained radiocarbon dates.

⁸ Cauvin 1972; Le Mière 1979; Akkermans 1988, 1996; Nieuwenhuys 2000a. The lowest level (11) in the deep sounding trench P15 at the foot of Tell Sabi Abyad revealed a homogeneous, waterlogged deposit; this includes highly worn Balikh IIA ceramics but lacks any clear-cut microstratigraphy or traces of architecture. In light of the new work on the western side of Tell Sabi Abyad, we believe that level 11 represents slope wash

Table 1. Stratigraphy and Chronology of Tell Sabi Abyad.

Date (B.C.)	Period	Balikh Sequence	Tell Sabi Abyad Operations						
			I	II	III	IV	V		
5700		IIIC							
5800	Early Halaf	IIIB	level 1						
5900			level 2	level 1					
	Transitional	IIIA	level 3						
6000			levels 4-7	levels 2, 3, 4?			phase III		
6100	Pre-Halaf	IIC	level 8						
6200			level 9				phase II		
6300		IIB?			level 1	level 1	phase I		
			level 11			level 2			
6400					level 2				
6500	Early Pottery Neolithic	IIA			level 3				
6600						level 4			
6700									
6800									
6900									
7000	Late PPNB	I							

of Tell Sabi Abyad (operations III, IV, and, partially, V) provides important new information that helps to expand our understanding of the site and region in the early seventh millennium. The Balikh IIA period has been thought to represent a relatively short interval at the shift from the aceramic to the ceramic Neolithic, but the new research indicates that it lasted for half a millennium or more, with its own trajectory of development and change.

Because of the large-scale investigation in operation I, we are much better informed about the development of culture and society in the late period, after ca. 6200 B.C.⁹ The unraveling of its complex sequence has considerably amplified and altered previous propositions and conclusions on the development of settlement and material culture in the late seventh to early sixth millennium B.C. Detailed information has been obtained on matters as diverse as the complexity of sealing practices and the roots of the Halaf, one of the most famous painted-pottery

cultures of the prehistoric Near East. Important developments in the ceramic assemblage occurred in this period, including an ever-increasing stylistic and technological diversity with the onset of the Balikh IIC phase. Major ceramic changes took place between ca. 6100 and 5900 B.C. (Balikh IIIA, or Transitional phase), when, among other things, finely executed painted wares in the Samarran style made their first appearance. The architecture from these Transitional layers consists of large, rectangular buildings with many tiny rooms surrounded by small circular structures (tholoi). The most spectacular finds came from the so-called Burnt Village (level 6), a well-established community destroyed by a violent fire ca. 6000 B.C. Rich inventories, including pottery, stone vessels, lithic implements, groundstone tools, figurines, personal ornaments, and hundreds of clay sealings with stamp-seal impressions, were recovered from the burnt buildings.¹⁰ Although Tell Sabi Abyad is the only site where well-stratified Transitional lay-

rather than constituting an occupation phase by itself.

⁹See, e.g., Akkermans 1989a, 1993, 1996; Verhoeven 1999; Akkermans and Nieuwenhuys (forthcoming).

¹⁰Akkermans and Verhoeven 1995; Akkermans 1996; Akkermans and Duistermaat 1997; Verhoeven 1999.

Table 2. New Radiocarbon Dates from the Various Operations at Tell Sabi Abyad.^a

Lab No.	Material	Operation	Date (b.p.)	2-Sigma Calibrated Date (B.C.)
GrN-28244	charred seeds	op. I, level 5, in fill of Oven BD	7190 ±60	6210–5920
GrN-19367	charred seeds	op. I, level 6, on floor of Building 2	7025 ±25	5980–5810
GrN-19368	charcoal	op. I, level 6, on floor of Building 2	7100 ±60	6080–5840
GrN-28240	charred seeds	op. I, level 7, in fill of pit	7190 ±55	6115–5980
GrA-24218	charcoal	op. I, level 7, on floor of circular building	7240 ±50	6220–6010
GrA-26924	charred seeds	op. II, level 2, on floor of Oven AN	6930 ±45	5895–5715
GrA-26925	charred seeds	op. II, level 2, in fill of hearth	7025 ±45	5990–5790
GrA-24248	charcoal	op. III, level 2, on floor in Oven AJ	7720 ±50	6640–6460
GrA-24219	charcoal	op. III, level 2, in fill of room of Building 4	7570 ±50	6480–6340
GrN-28851	charred seeds	op. III, level 2, slightly above floor in room of Building 2	7400 ±25	6380–6110
GrN-28855	charred seeds	op. III, level 2, slightly above floor in room of Building 2	7360 ±25	6330–6090
GrA-26927	charcoal	op. III, level 4, on floor in room of Building 1	7475 ±45	6420–6235
GrA-26928	charcoal	op. III, level 4, slightly above floor in room of Building 1	7525 ±45	6455–6250
GrA-24247	charcoal	op. IV, level 1, on floor in room in Building 1	7440 ±50	6420–6220
GrN-28239	charcoal	op. V, level 2, in fill of Building 3	7370 ±55	6380–6080
GrN-28237	charcoal	op. V, level 2, in fill of Fireplace CQ	7350 ±50	6380–6070
GrN-28238	charcoal	op. V, level 2, in fill of Fireplace BW	7250 ±50	6220–6020
GrA-24245	charcoal	op. V, level 2, in fill of Fireplace CP	7250 ±50	6220–6020
GrA-24246	charcoal	op. V, level 2, in fill of Fireplace CO	7240 ±50	6220–6010

^a Calibration based on the radiocarbon calibration program Calib Rev.4.4 from the University of Washington

ers have been extensively unearthed, the typical pottery has recently been attested to in the excavations at several other sites in Syria, including Tell Halula, Tell Boueid II, and Tell Chagar Bazar.¹¹

The final phase of settlement exposed in operation I had ceramics characteristic of the Early Halaf period (Balikh IIIB), dated in this area to ca. 5900–

5800 B.C. The ceramics were derived directly from their Transitional forebears, the result of gradual and continuous local change in the material culture.¹² A single rectangular building of monumental appearance, measuring approximately 18 x 10 m, stood prominently on the summit of the mound at this time, with a large stone-walled terrace next to it

¹¹ Cruells 1996, 2001, unpublished; Suleiman and Nieuwenhuys 2002.

¹² Akkermans and Le Mière 1992, 21; Le Mière and Nieuwenhuys 1996.

and many circular and other auxiliary structures low on the slope. It featured a white-plastered facade with niches and benches on stone foundations, and possibly an upper story.

EXCAVATION IN THE NORTHEASTERN AREA: OPERATION II

Work in the northeastern area—a relatively flat bulge rising approximately 5 m above the surrounding fields—began as a small sounding in 1986 to investigate the sixth-millennium occupation remains in an area characterized by a concentration of Halaf-period ceramics on the surface. However, traces of a Halaf settlement were scanty in the trenches and limited to the topmost strata, with many meters of Pre-Halaf deposits below.¹³ Containing what at that time were considered to be the earliest ceramics, the Pre-Halaf deposits were investigated over a more extensive area in trenches U5 to Y5 in 1988. Remnants of walls and floors were found in the test soundings on the slope but were absent in the central trench U5 high on the top of the mound. Excavated over a 9 x 5 m area and to a depth of 2.5 m, trench U5 revealed innumerable thin layers of ash and household refuse, as well as a few small fireplaces. Apparently the area was in use primarily for open-air activities related to fire and waste disposal.

The resumption of the research in 2002 and 2003 over an area of about 100 m² on the northeastern mound, including the opening of units U6 and V6 to the south of the trenches mentioned above, revealed a sequence of four occupation levels from the early sixth millennium, between ca. 6000 and 5800/5700 B.C. (see the radiocarbon dates in table 2). Remains of settlement below the topsoil (level 1) consisted of minimally preserved rectilinear architecture with passages indicated by large pivot stones, as well as a profusion of circular, oval, and rectangular ovens and hearths. Stratified below these remains was more substantial architecture in the form of a house built of mudbricks and thin, reddish orange pisé slabs joined by a gray mortar (level 2) (fig. 3). The structure (ascribed to the Late Transitional period on the basis of the pottery) had one large room measuring 4.5 x 2.0 m, the floor of which was renewed at least twice. Associated with the lowest floor was a semicircular hearth in one corner of the room and a large, rectangular storage bin or working area set against the wall (1.25

x 1.00 x 0.40 m; a flint core and several flakes thereof were found in it, suggestive of local tool production). Below the mud threshold in the southern doorway to the room was a concentration of animal bones, including an ovicaprid horn and shoulder blade, which could represent a foundation deposit.

Several small square cubicles, each no more than 1.25 x 1.25 m, were exposed on the north side of the main room. None of these rooms (with walls still standing to about 1 m) evidenced doorways, indicating that access to them was either through openings high in the wall or from the building's roof.¹⁴ Once the building went out of use, the remains of collapsed walls and other building debris accumulated in all but one of these rooms: the upper 50 cm of the westernmost cubicle was filled almost exclusively with gray-black ash containing hundreds of clay tokens and several figurines and sealings. There is good reason to assume that this small room was at first also filled with building debris, and that it was subsequently partially emptied of its original contents and refilled with the ash and other finds. Not only were some of the walls severely damaged by what may have been later digging, but the ash and tokens were found on top of and beyond the walls bounding the small room. The ruins of the building must still have been standing to some extent when people dug into it.

The architecture was surrounded by extensive open yards, occasionally divided into smaller areas by low partition walls. The yards contained circular *tannurs* (bread ovens) and large, sometimes sherdlined, fireplaces with well-laid, burnt-clay floors.¹⁵ An infant burial in a shallow pit was also exposed. The child was found lying on its back, with its legs in a crouching position. A pierced shell pendant was held in its hands, which were folded on its belly.

Before the construction of the architecture described above, another structure roughly in the same place and on the same alignment appears to have been almost wholly destroyed (level 3). Only part of its hard-plastered gray floor and low, flimsy traces of walls remained in some places. Below this surface was a layer rich in ash and what seemed to be burnt house debris, varying in color from gray-black to orange-red (level 4). Its appearance and consistency immediately recall the charred deposits associated with the Burnt Village in level 6 of operation I. Was the Burnt Village much larger than

¹³ Akkermans 1989b; Akkermans and Le Mière 1992; Nieuwenhuys 1997.

¹⁴ Similar passages are attested to in the so-called Burnt Village in the southeastern area of Tell Sabi Abyad (operation I)

(see Akkermans and Verhoeven 1995, 10–11).

¹⁵ Sometimes parts of large pottery vessels also appear to have been reused as bases for fireplaces.



Fig. 3. The well-preserved house remains from operation II, level 2, ca. 5900 B.C.

it seemed, covering not only the southeastern portion of Tell Sabi Abyad but also the northeastern part, totaling about 2 ha? This idea will be tested in future excavations.

The Pottery

The ceramics found in operation II during the 1986 and 1988 campaigns have been presented in detail elsewhere.¹⁶ In short, Early Halaf (Balikh IIIB) and Transitional (Balikh IIIA) pottery occurred in the strata immediately below the surface of the mound, whereas Pre-Halaf (Balikh IIC) ceramics were found in the deep sounding of trench U5. All in all, the ceramic sequence in operation II was broadly contemporary with that documented in operation I on the southeastern mound.¹⁷

Not surprisingly, when work was resumed at this location in 2002 and 2003, the uppermost stratum (level 1) revealed ceramics belonging to the earliest stage of the Halaf period, including some typical Early

Halaf “cream bowls.” The pottery from the lower building level 2 belongs to the final stage of the Transitional period, ca. 6000–5800 B.C. (comparable to levels 5 and 4 in operation I of the southeastern mound). Late Transitional indicators include a strongly reduced proportion of plant-tempered Standard Ware and, correspondingly, a high proportion of Standard Fine Ware. Other characteristic ceramics, such as Dark-Faced Burnished Ware, Gray-Black Ware, and Orange Fine Ware, occur in limited amounts.¹⁸ There is also a strong presence of carinated and S-shaped bowls (fig. 4a–c). These Samarra-style vessel shapes are part of a long-term development of increasing morphological complexity in the category of serving bowls, which eventually led to the Halaf cream bowl (cf. fig. 4d; see also fig. 24f–h). As is characteristic for the final stages of the Transitional period, the Standard Fine Ware decorative style shows a complex, highly differentiated design structure (fig. 4e). There is a high proportion of

¹⁶ Akkermans 1989b; Akkermans and Le Mière 1992; Nieuwenhuys 1996, 1997.

¹⁷ Halaf-period settlement on the northeastern mound was partly contemporaneous with the occupation on the southeastern mound and partly of a somewhat earlier date (see Nieu-

wenhuys 1997).

¹⁸ See Le Mière and Nieuwenhuys (1996) for definitions of the various prehistoric ceramic wares distinguished at Tell Sabi Abyad.

diagonal cross-hatching, which foreshadows the popularity of this motif in the Early Halaf period (fig. 4a–e). Another common Late Transitional design is the “birds-on-telegraph-wire” motif (fig. 4i–k).

In the newly retrieved assemblage, so far there has been no solid trace of ceramics typical of the early stage of the Transitional period (i.e., the time of the level 6 Burnt Village). However, there is little doubt that the northeastern mound was inhabited at this stage. Reviewing the published material from the 1986–1988 excavations with the benefit of hindsight (and keeping in mind the detailed operation I sequence established in later years), the early phase of the Transitional period is attested by typical markers such as bitumen-painted Standard Ware and so-called Fine Painted Ware.¹⁹ Strata corresponding to the Burnt Village of the southeastern mound are certainly present on the northeastern mound as well; they may turn up with continued excavation.

Selected Small Finds

The small finds repertoire consisted of what one would expect in “normal” domestic contexts: basalt grinding slabs, mortars, pestles, and other ground-stone tools; bone implements; spindle whorls; and so on. One elegant, pyramid-shaped stone stamp seal with crosshatched design (fig. 5a) found on the floor of a small, single-roomed structure probably belonged to the very end of the level 2 occupation. An extraordinary find was a hoard of clay tokens (almost 1,600 in total) deliberately deposited with large quantities of ash and several figurines and sealings in a receptacle dug into the ruins of the level 2 house, ca. 5900–5800 B.C. The sheer quantity of tokens from the same context is astonishing and surpasses any of the other token concentrations uncovered at Tell Sabi Abyad.²⁰ Forms range from spheres and hemispheres to discs, cones, cylinders, tetrahedrons, and triangles (fig. 6), and often they carry shallow marks, such as one or more fingernail imprints, cross-hatchings, or a combination of these. A number of miniature vessels may also have served as tokens.²¹

Four clay sealings, three of which carry the imprint of a stamp seal, were found in association with the tokens.²² One seal imprint has a rather complex motif

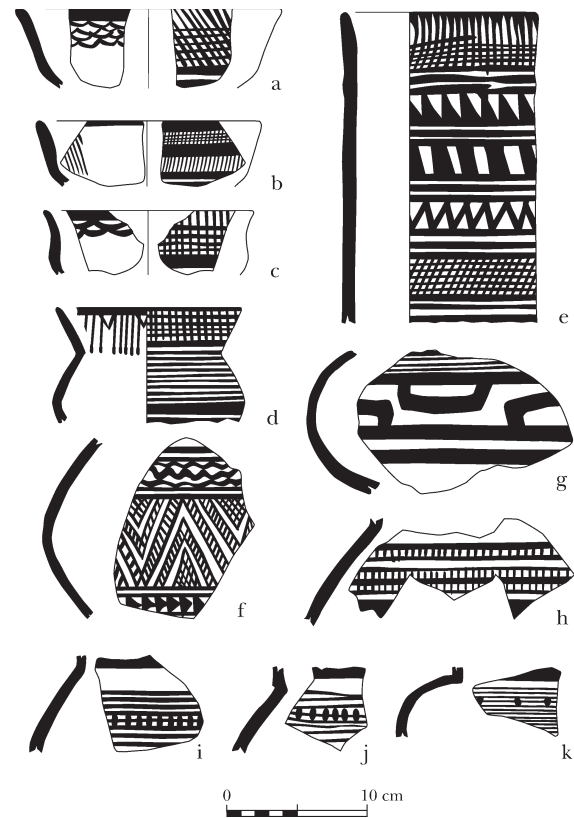


Fig. 4. Operation II, Late Transitional pottery (Balikh IIIA period), Standard Fine Ware (scale 1:6).

of what are perhaps plants or animals; another imprint shows a cross or star, with small oblique lines in each quarter; and the third is in the form of an eye (fig. 5b–d). Their reverses have imprints of thin cord. Several small, stylized anthropomorphic and zoomorphic clay figures are also present in the token concentration. One human figurine shows a crudely shaped female representation with a cylindrical body that is slightly widened at the base, and two protrusions indicating breasts (fig. 7a). The head is missing, but a small, tubular hole in the neck suggests that it would have been added separately and fitted onto the body with a dowel.²³ The zoomorphic figurines include what seems to have been a deer or ovicaprid with long horns and a tall, humpbacked animal (aurochs?) whose head and tail are missing (fig. 7b, c).

and Collet 1996).

²² Hundreds of clay sealings, as well as a number of stone stamp seals, have been found at Tell Sabi Abyad in earlier seasons of excavation (see Duistermaat 1996; Akkermans and Duistermaat 1997, 2004).

²³ The practice of adding the head separately to figurines is very common in the Transitional and Early Halaf phases of operation I at Tell Sabi Abyad (see Collet 1996).

¹⁹ See, e.g., Akkermans 1989b, 170, fig. IV.3, no. 15, fig. IV.7, nos. 56, 57.

²⁰ Tokens in association with sealings and other items were found before in operation I (see Akkermans and Le Mière 1992, 15; Akkermans and Verhoeven 1995, 21–5; Spoor and Collet 1996, 441–43).

²¹ Schmandt-Besserat 1992, 17, fig. 20.3. Similar miniatures were found in the token concentrations in operation I (see Spoor

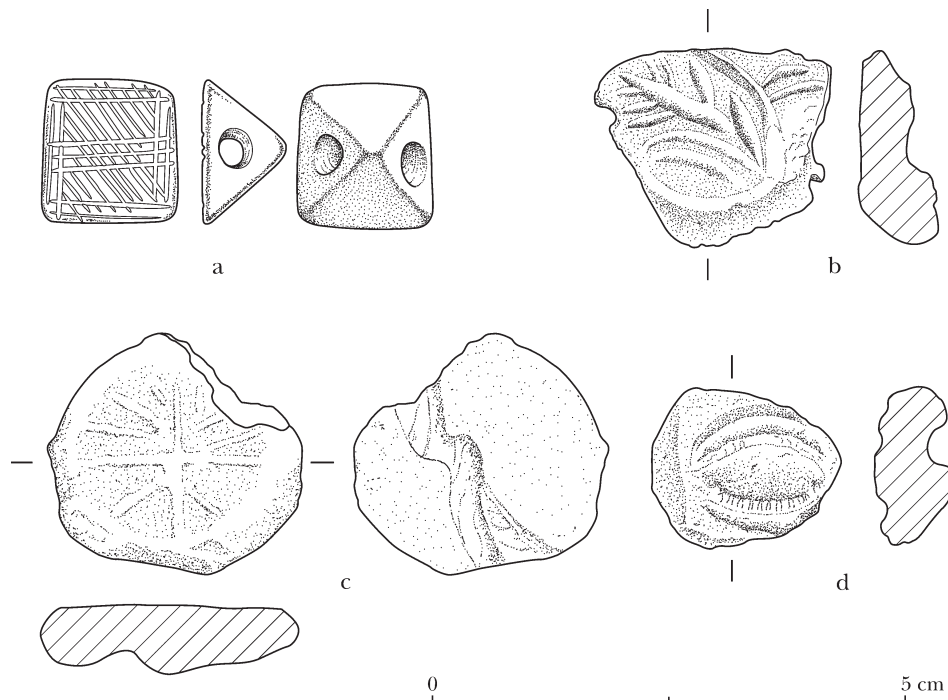


Fig. 5. Operation II: *a*, stone stamp seal; *b-d*, unbaked clay sealings.

The meaning of this cache of tokens and other items is still elusive. One explanation is that they were simple but efficient devices acting together in an early administrative system, transcending record-keeping by memory. Tokens in their role of *calculi* (counting devices), it is argued, expressed specific goods and quantities; sealings helped to define individual property and to secure products against unauthorized opening, which was very useful in the organization of controlled storage; and figurines stood for either goods (animal representations) or services (human statuettes).²⁴ In support of this interpretation are the finds in some of the storehouses of the Burnt Village in operation I, which might be viewed as archives, accounting for the contents of the buildings and the stored belongings of a large number of people.²⁵ But contrary to the in situ finds in the Burnt Village, those of operation II seem to represent artifacts that went out of use and were subsequently discarded in an abandoned part of the settlement. It may be suggested that they still had meaning and value, in light of their collective deposition in a receptacle dug for the occasion rather than simply being thrown away.²⁶

²⁴ See Matthews 1989, 94–5; Schmandt-Besserat 1992, 178; Akkermans and Duistermaat 1997.

²⁵ Akkermans and Duistermaat 1997.

²⁶ Cf. the finds in refuse deposits at fourth- and third-millen-

EXCAVATION IN THE NORTHWESTERN AREA: OPERATION III

In operation III, very early Pottery Neolithic building levels were exposed over an area almost 400 m² on the northwestern mound of Tell Sabi Abyad. This is one of the highest parts of the site, rising approximately 6 m above the level of the surrounding fields. Excavation to a depth of about 2 m in 2002 and 2003 revealed a complex and often localized sequence of at least four main levels of construction and reconstruction, radiocarbon dated to ca. 6600–6200 B.C. (Balikh IIA period) (see table 2). Several meters of still earlier Pottery Neolithic deposits awaiting investigation lie underneath this area.

Some buildings in this northeastern part of the site appear to have remained in use for an extended period of time with little or no modification, apart from the renewal of floors. Others seem to have had a much shorter lifetime, followed by almost wholesale leveling and the establishment of new structures. The yards around the larger, long-lived structures were often characterized by a warren of

nium sites like Arslantepe, Tepe Sharafabad, Nippur, and Abu Salabikh (see Wright et al. 1980; Zettler 1987, 208; Matthews 1989, 93–5; Frangipane 1994, 125).

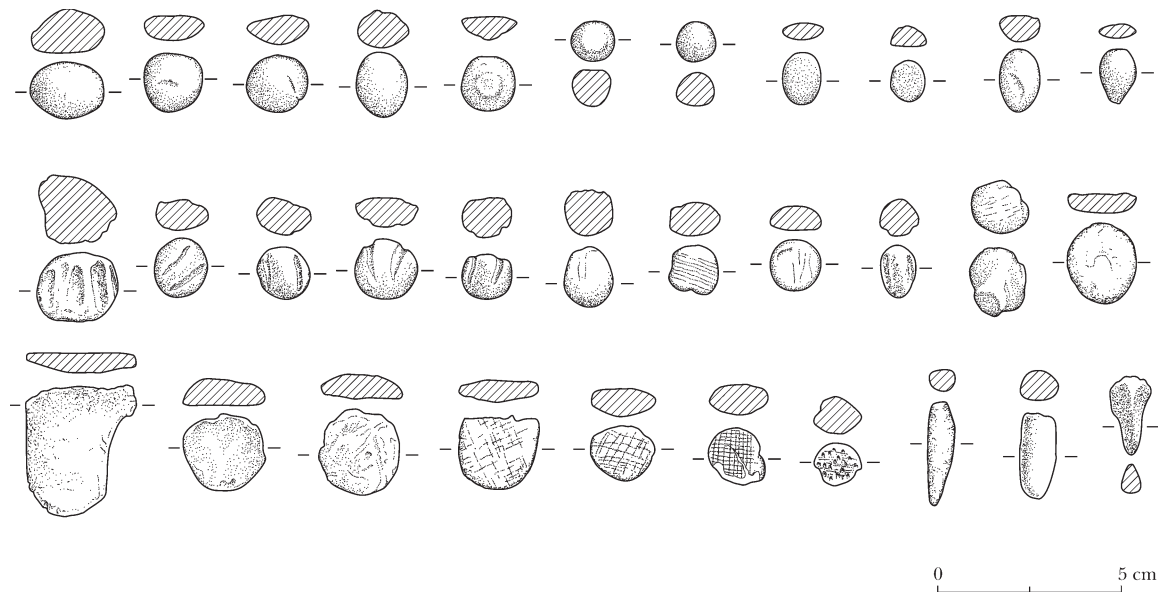


Fig. 6. Selection of unbaked clay tokens from operation II.

low, flimsy wall fragments, one above the other, with the original plan usually no longer extant. The earliest stratum of settlement (level 4) has been partially exposed in trenches E3 and E4 on the western slope of the mound, whereas the upper phases (levels 1–3) have been uncovered primarily in the neighboring, higher-situated squares G3, F3, and F4, with only flimsy remains in the form of pits and hearths of these periods in the other areas.

Level 4 yielded the remains of both relatively small, single-roomed buildings covering about 15 m² and large, multiroomed structures up to 64 m² in extent (fig. 8). Building 1, measuring approximately 8.5 x 7.5 m, consisted of three or four long rectangular rooms, each with a small square room at the back.²⁷ Its walls, still partly standing to a height of 1.8 m, were constructed of sizable reddish brown and irregularly shaped pisé slabs and what seem to have been small, handmade mudbricks joined by a distinct gray mortar. Different sources of clay, each with its own qualities, must have been exploited for building purposes. The walls had a thick orange-red mud plaster often covered by a thin coating of white plaster. The floors consisted of simple trodden earth or had a repeatedly renewed grayish white plaster that continued on the walls. In one room, imprints of several circular basketry containers were set along the wall (fig. 9). A similar row of large,

cylindrical hole-mouth pots made of unbaked clay stood in another room. In one of the building's corners was a large, twice-renewed hearth with a floor of smooth burnt clay on a foundation of small fire-cracked stones and sherds.

Two rectangular structures were situated immediately to the north of Building 1. One consisted of a single large room measuring 5 x 3 m (Building 3); the other (Building 2), measuring 7.5 x 3.5 m, had a more complex layout: it was made of heavy pisé and mudbrick walls measuring more than 50 cm wide, and the remains of a fallen wall in the open yard to the north suggest that it was at least 4.2 m high. It appears that Building 2 was constructed in two phases and consisted of two long, narrow rooms, each about 7 x 1 m, with entrances on the short side on the east. In the early phase, each long room was divided by interior buttresses and thresholds into two smaller compartments of unequal size. Their floors and walls were made of a thick, reddish brown mud plaster, which in some compartments was covered with a thin, twice-renewed coating of white plaster. In the second phase, a new interior buttress was placed in the northern long room in such a way that the resulting compartments were now equal in size to those in the southern long room. Moreover, a new hard-tamped floor was laid above the earlier one in the northern long room,

²⁷The layout resembles the architecture at contemporary Bouqras on the Euphrates in eastern Syria (see Akkermans et al. 1983, 343–49).

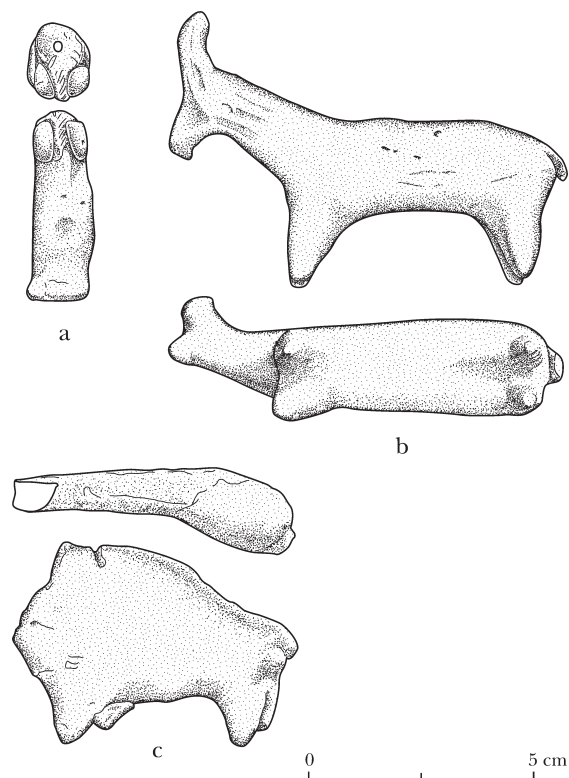


Fig. 7. Operation II: *a*, human figurine; *b*, *c*, animal figurines.

and a large horseshoe-shaped hearth was set at the far end of this room.

A striking discovery in Building 2 were the skeletons of three children of different ages on or slightly above the floor in the room with the fireplace (fig. 10). The oldest child was about 12 years old at the time of death; the second, six or seven years old; and the third, about two or three. Two of the children were lying next to and partly on top of each other, roughly parallel to the southern wall of the room; one was in a crouching position lying on its left side with the head to the west; the other was lying on its belly in a severely twisted position with the head toward the east. The youngest child seems to have been placed in a squatting position against the wall, resting on the outstretched left hand of the oldest of the other two individuals. On the floor below the skeletons, as well as on and amid the bones themselves, were fibrous material and silicate imprints of matting, suggesting that the bodies were originally wrapped in mats. It is tempting

to conclude that the children were not buried in a grave pit but were deliberately placed on the floor in the room, the more so because the entrances to both long rooms appeared to have been blocked by short pisé walls, assumably at about the time of interment.²⁸ Perhaps the building served as a repository for the dead. The precise meaning of the children's grave is difficult to assess in the absence of other burials found thus far in operation III. Most of the graves at Tell Sabi Abyad come from operation I at the very end of the seventh and the beginning of the sixth millennium B.C.; with very few exceptions (in the form of adult inhumations), they consist exclusively of children lying either on their backs or on their sides in simple shallow pits, with the legs in a crouching position. Some of these children are accompanied by grave goods.²⁹

Another remarkable feature in Building 2 was the large basin in the southern long room, gently sloping toward the end of this unit. Its roughly rounded base was covered with a thick (1.0–1.5 cm), irregular coat of white plaster that continued onto the walls. At the time of discovery, the basin was still intact over a length of about 2.25 m, but the occurrence of masses of fallen white plaster fragments in the remainder of the room suggests that it originally was at least 4 m long. Previous to the construction of the basin, a considerable number of wall fragments and other building debris, including pieces of clay with reed imprints (probably parts of the roof), appears to have accumulated on the floor in the southern long room. Rather than associating the basin with the proper habitation of the building in which it was found, we should probably conclude that it was sunk into the ruins of this structure at a later time. The area between the ramshackle but partially still-standing walls must have formed a kind of natural depression, ideal for the construction of the basin. The purpose of the basin remains unclear for the moment.

The abandonment and collapse of the level 4 structures led to a gradual rise of rubble and a shift of settlement a few dozen meters to the east. While the earlier, ruined structures must still have stood to some height at the beginning of the period, they were entirely buried by the end. The architecture of the new phase (level 3), while still poorly understood, includes parts of two rectilinear buildings, several fireplaces, and circular white-plastered basins.

²⁸ Despite an intensive search we were not able to detect any evidence of a burial trench in the long room filled with collapsed wall debris. One reason may be that the pit was back-filled with material identical to (and difficult to distinguish from)

the deposit in the remainder of the room; another explanation is that there simply was no such burial pit.

²⁹ Verhoeven and Kranendonk 1996, 52, 71, 114–18; Otte et al. (forthcoming).

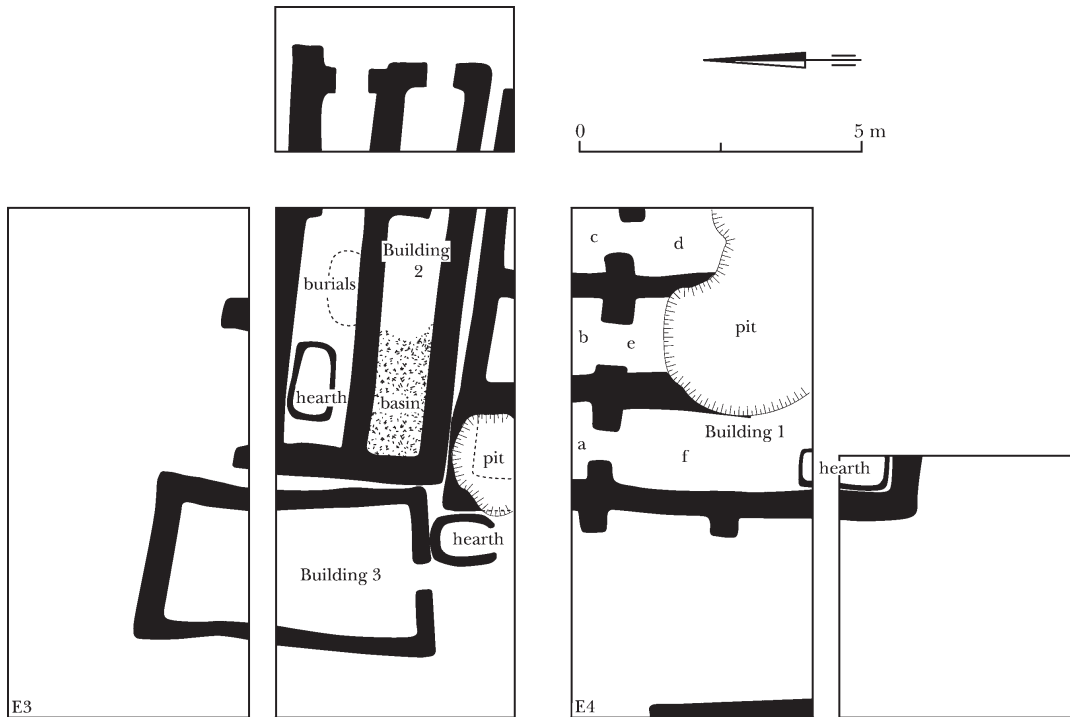


Fig. 8. Plan of level 4 architecture in operation III.

In trenches G3, F3, and F4, stratified above the level 3 features, the remains of several multiroomed buildings ascribed to level 2 were uncovered. The construction techniques largely replicated those of the previous occupations. The walls, usually white-coated on a mud plaster, were made of reddish orange pisé slabs and mudbricks in a gray mortar. Occasionally parts of the buildings were slightly sunk into the mound in order to create a level area, but more often they were simply set on the gently sloping surface without a foundation. New walls were also erected upon the remains of earlier structures in the same place and alignment. Circulation through the buildings was enhanced by a series of narrow doorways, although several rooms evidenced one or more curved portholes of such restricted size (ca. 50 cm diam.) that one would have to crawl through them on hands and knees. Similar portholes also appeared in the buildings in the neighboring operation IV, as well as in occupation strata of a much younger date, such as the Burnt Village in operation I, ca. 6000 B.C.³⁰

Level 2 in squares F3 and F4 included the remains of what we provisionally describe as three structures: Building 1, consisting of at least four white-plastered

rooms up to 3.00 x 1.35 m; Building 2, to the west, composed of a series of very small, contiguous rooms



Fig. 9. Base of white ware vessel with basketry impressions found on the floor of a level 4 house in operation III.

³⁰ Akkermans and Verhoeven 1995. Portholes were also found at sites such as Bouqras in eastern Syria and Umm Dabaghiyah in Iraq, in levels roughly contemporaneous with those exposed at Tell Sabi Abyad (see Akkermans et al. 1983).

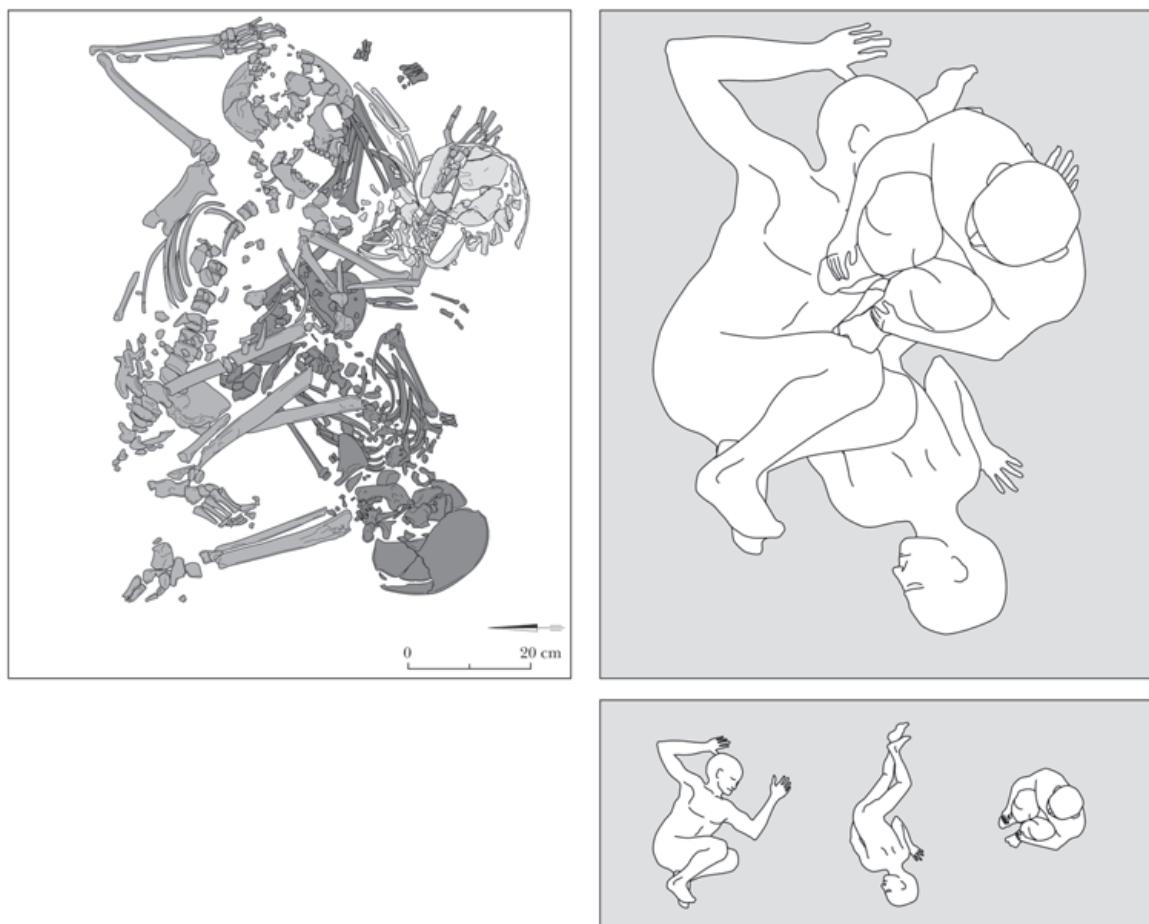


Fig. 10. The multiple child burial in operation III and a reconstruction of the position of the bodies at the time of interment.

each about 1.75 x 1.25 m and made of mud-plastered walls with no traces of a white coating; and Building 3, represented so far by part of a single white-plastered room (fig. 11). Building 1 seems to have been the earliest of the three and was constructed in two stages, although its basic layout remained intact through time. In the earlier phase, access to the building was from the west, with the rooms internally linked through low portholes. In the second phase the structure was seriously leveled but subsequently rebuilt, including new walls set atop the original ones and new floors laid in the rooms. The reconstruction also involved significant change in the pattern of passage: not only were the lower doorways all blocked and replaced by new entrances in different places, but continuous circulation through the building was no longer maintained. Each room was individually accessible from the outside rather than forming part of a chain of interconnected units.

To this later phase belong Buildings 2 and 3, the western parts of which were no longer extant due to slope erosion. Raised in front of the western facade of Building 1, Building 2 seems to have been organized in rows of tiny square or rectilinear rooms linked through narrow doorways (portholes?). It stood in a terraced fashion on the slope of a low rise, with the floors of the western rooms somewhat higher than those of the eastern rooms.³¹ Narrow openings in their walls, slightly above the floor, seem to have provided light and/or ventilation. Inside some of the rooms was a fill of burnt, reddish wall material and segments of clay imprints of reeds ostensibly from the fallen roof. The limited size of the cubicles and the artifacts on the floors (pottery vessels, groundstone tools, and heaps of carbonized cereals) suggest that the building was used primarily for storage.

Parts of Building 4, another rectangular building, was uncovered in trench G3. It had two very

³¹ The walls stood on the sloping surface of the mound, whereas the floors in the eastern rooms were slightly sunk into it, with the hollows subsequently covered by a mud plaster that continued onto the walls.

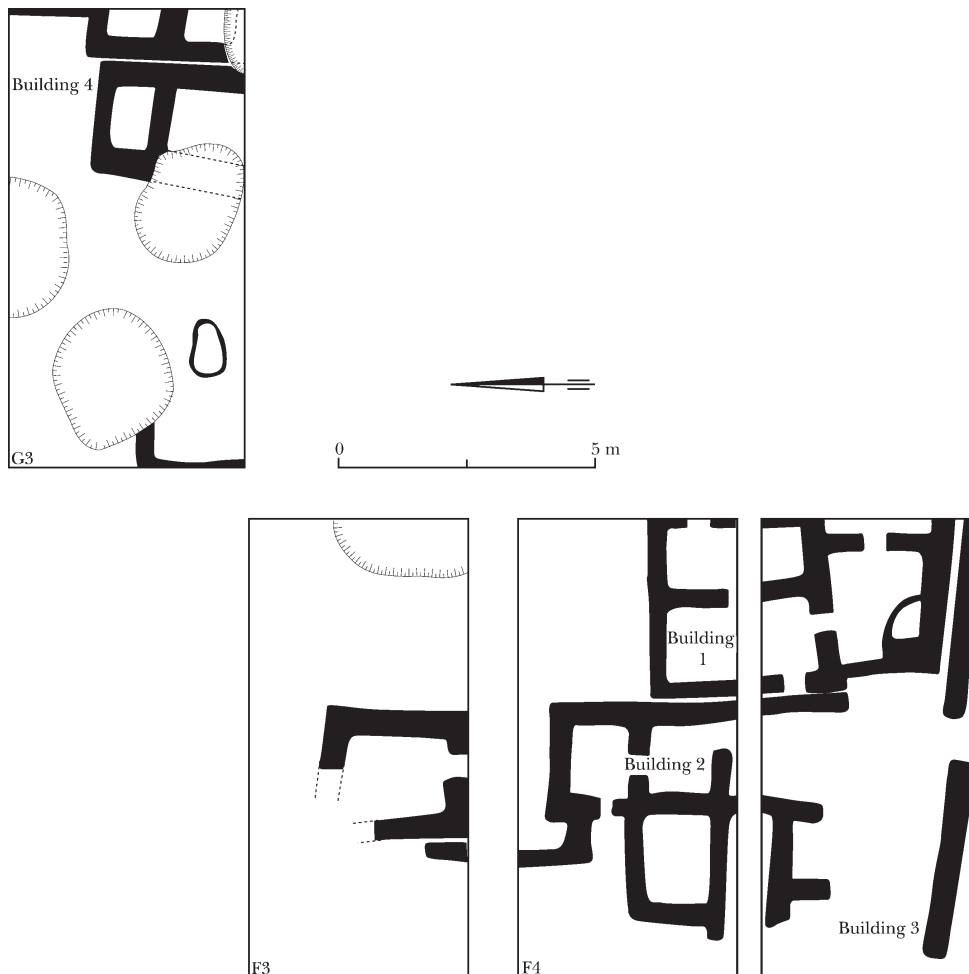


Fig. 11. Plan of level 2 architecture in operation III.

narrow rooms, each between 0.7 and 0.9 m wide, with repeatedly renewed floors, one of which was white-plastered. A large, beehive-shaped oven, approximately 1.60 m long x 1.35 m wide, stood in the yard to the west of the building. Its interior was heavily burnt, and its exterior was carefully smoothed and thinly white-plastered. At a later stage the oven was replaced by several small, white-plastered rooms appended to the west side of Building 4.

The architecture currently revealed stood on the outskirts of the level 2 settlement in the northwestern area, with large open yards rich in ash between the buildings and extending farther down the slope. The area remained in heavy use for disposal of ashes and other domestic waste, as well as for construction of hearths and pits in the final level 1, immediately below the mound's current surface. Large, and sometimes very deep, pits were sunk into the earlier strata; their fill consisted of several thin layers of dark gray and black ash and other domestic refuse (sherds, fragments of groundstone

tools, animal bones, charred plant remains, etc.), suggestive of a gradual deposition over an extended period of time. Occasionally, the remnants of shallow fireplaces were found in the depressions, indicating that fires were also lit in them. Associated with these pits were the flimsy remains of several walls, none of which has yet revealed a coherent plan.

The Pottery

The operation III ceramics form a coherent, homogeneous assemblage dominated by coarsely made, plant-tempered vessels (over 95% of the pottery bulk). There is considerable variation in the size and density of the plant inclusions. However, this variation does not yet appear to be systematically related to indicators of the "fineness" of the pottery, such as wall thickness or surface treatment. The lack of systematic differentiation shows a notable contrast with the more developed plant-tempered pottery from the later Pre-Halaf period when it supports a rough distinction between finer and coarser Stan-

dard Ware.³² There can be little doubt that the plant-tempered pottery from operation III represents a direct precursor of the later Standard Ware, but to apply similar terms may be misleading. For our purposes, we use the term “coarsely made, plant-tempered ware.”

A second characteristic is the complete absence of any form of decoration or morphological elaboration. This is a manifestly plain assemblage (fig. 12), as only the most basic shapes are represented. Carinated contours or shapes with a distinct neck are absent, and a somewhat S-shaped contour constitutes about the only morphological elaboration (fig. 12h). Convex-sided bowls, hole-mouth pots, and vertical pots with loop handles are typical vessel shapes (fig. 12a–m). Now and then a horizontally applied ridge (cordon) occurs just below the rim (fig. 12g). However, the distinction between these shapes appears to be gradual, and the various types may shade into one another imperceptibly. Standardization in form seems to be lacking at this early stage of pottery manufacture. The exception is the so-called husking tray (fig. 12n). It has been suggested that these low, oval trays with corrugated interiors were used to separate the grains from the husks or that they functioned as portable bread ovens.³³

Excellent parallels for the coarse ceramics from operation III come from a number of Pottery Neolithic sites earlier excavated in the Balikh valley, such as Tell Assouad, Tell Damishliyya, and Tell Sabi Abyad II.³⁴ Similar coarsely made, plant-tempered pottery occurs also at sites on the Euphrates, such as at Tell Halula in Syria and at Gritille, Kumartepe, and Sürük in Turkey. In northeastern Syria, early plant-tempered ceramics have been recovered at Tell Seker al-Aheir on the Khabur and at Tell Burqoliyah, situated close to the Syro-Iraqi border.³⁵

Interestingly, alongside the coarse plant-tempered pottery, a small proportion of fine mineral-tempered ware forms part of the ceramic assemblage, making up less than 5% of the bulk. In stark contrast to the plant-tempered vessels, the mineral-tempered examples have relatively thin walls, an even wall thickness, and usually show a well-smoothed or burnished surface (fig. 12o–s). Convex-sided bowls appear to be typical (fig. 12o–q). This particular ceramic group

has not been attested to at any other excavated Early Pottery Neolithic site in the Balikh region. Possibly its presence indicates a somewhat later date for the operation III pottery of Tell Sabi Abyad in comparison to these other Early Pottery Neolithic sites, but this preliminary suggestion deserves closer scrutiny. In terms of clay fabric, the Sabi Abyad pottery displays a close affiliation to the so-called series noire, a dark-colored, mineral-tempered ceramic ware found at Tell Halula and many other Pottery Neolithic sites on the Euphrates.³⁶ However, the earliest known examples of this series noire-like ware from Tell Sabi Abyad do not show a particularly black surface; rather, they have gray-brown to orange-brown surfaces, suggesting that on the whole an oxidizing firing process prevailed.

Lithics and Other Small Finds

In addition to the pottery, a rich and diverse artifact inventory was recovered from operation III. The chipped-stone industry (which awaits detailed analysis) primarily used brown flint as its raw material; grayish, transparent obsidian was widely employed as well, comprising about 35% of the total (fig. 13).³⁷ The presence of small cores and knapping debris suggests that obsidian was obtained in the form of nodules from the Turkish hinterland and subsequently chipped locally. The flint is dominated by flake tools (made on cores of local flint cobbles) in contrast to the obsidian assemblage, which largely consists of blades and bladelets. Retouched and unretouched flakes account for more than half of the flint industry, whereas retouched blades represent another 15% of the assemblage. Other tool types are scrapers, borers, burins, notches, and sickle elements with a lustered cutting edge and use retouch. Large- and medium-sized projectile points of the Byblos form were found in small but persistent numbers in various building levels (about 1%).

Basalt, limestone, sandstone, gypsum, alabaster, marble, and other stones were used for the manufacture of a wide range of objects for the preparation of food, as well as other domestic tasks such as grinding slabs, mortars, pestles, palettes, hammers, maceheads, chisels, and celts. Dozens of small, often exquisitely made, stone pots and bowls—some

³² Le Mière and Nieuwenhuys 1996; Le Mière 2001; Nieuwenhuys (forthcoming).

³³ Lloyd and Safar 1945; Voigt 1983, 159.

³⁴ Cauvin 1972; Le Mière 1979; Akkermans 1988, 1993; Nieuwenhuys 2000a.

³⁵ Voigt 1983; Le Mière 1989, 55, 60; Bernbeck 1993; Faura 1996a, 1996b; Le Mière and Picon 1999, 13.

³⁶ Cruells, pers. comm. 2005. See also Arimura et al. 2000.

³⁷ The quantity of obsidian tools in operation III is remarkably large. Obsidian formed only about 9% of the total chipped stone at contemporaneous Tell Damishliyya, located 5 km west of Tell Sabi Abyad. In the late seventh-millennium levels at Tell Sabi Abyad, obsidian made up about 22% of the lithic industry (see Akkermans 1988, 26; Copeland 1996, 291; Nishiaki 2000, 96).

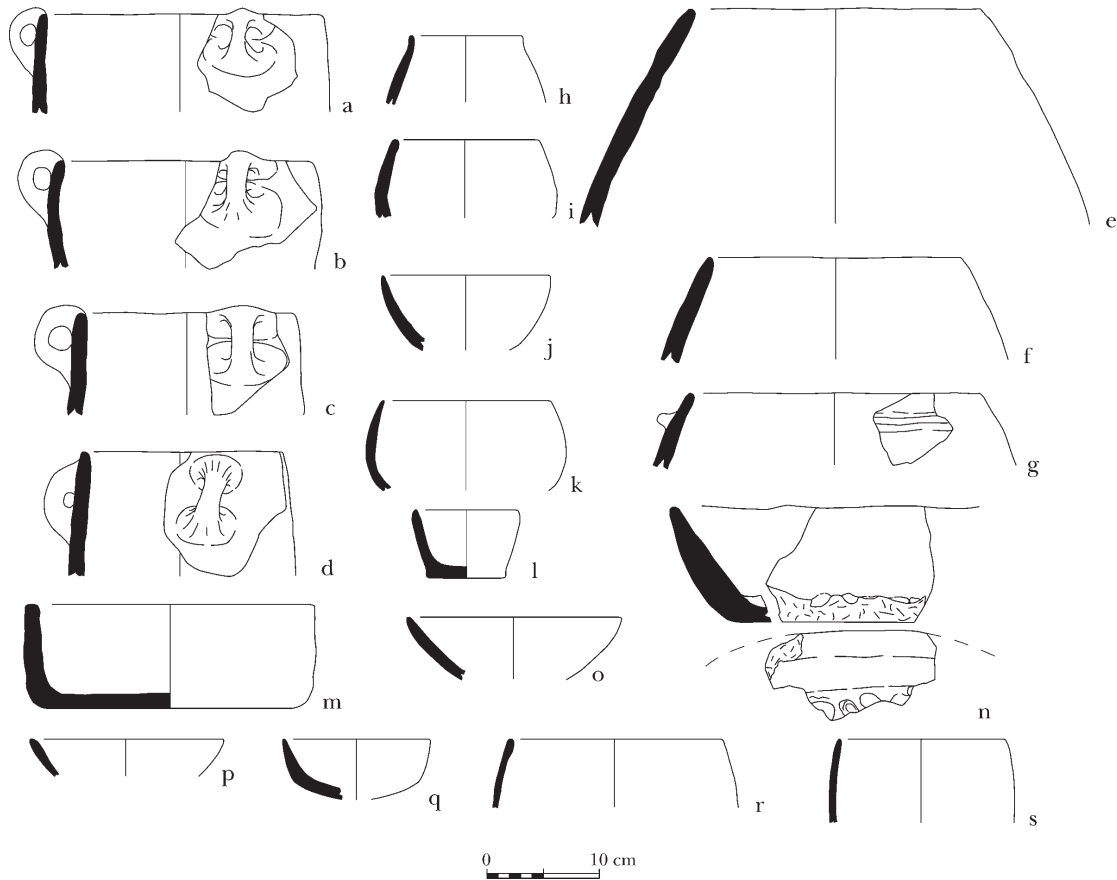


Fig. 12. Operation III, Early Pottery Neolithic ceramics (Balikh IIA period): *a–n*, coarsely made, plant-tempered ware (CMPT Ware); *o–s*, series noire (scale 1:6).

complete, but most of them fragmentary—were also recovered (fig. 14a–m). The natural banding and coloring of the raw material seem to have been sought particularly for their decorative effects.

Very common were containers made of “white ware” (*vaiselle blanche*), a composite of lime or gypsum and ash, which is initially soft enough to allow the manufacture of vessels by adding one layer after the other but that later hardens into a strong cement.³⁸ They usually occur in the form of large, straight-walled pots and open bowls, comparable to the earliest pottery shapes found together with the white ware. Ceramics are often thought to have grown out of the white ware,³⁹ but these are clearly two parallel manufacturing traditions at Tell Sabi Abyad. The occasional imprint of basketwork on the white ware vessels’ exterior suggests that at least some were shaped in large bas-

kets (see fig. 9).⁴⁰ A few vessels had decorations in the form of dotted impressions along the rim.

Personal ornaments consisting of small beads and pendants made of colorful stones (limestone, sandstone, dolorite, serpentinite) were recovered as stray finds in the fill in and around the houses. However, no fewer than 79 unbaked clay beads of many different types (from spherical to flattened round, oblong, and square) were found together in a small bowl of unbaked clay (14 cm diam., 8.2 cm ht.) on a floor of the level 2 building in trench G3 (fig. 15). Although the beads are very fragile, it is clear from their position in the bowl that they had originally been strung on a thin thread. In addition, two miniature, thimblelike vessels lay within the bowl.

Other finds from operation III include polished bone awls and spatulas and a variety of artifacts made

³⁸ Maréchal 1982.

³⁹ E.g., Dornemann 1986, 52–3.

⁴⁰ Basketry must have been very common at Neolithic Tell Sabi Abyad. Evidence for the presence of hundreds of baskets

was found in the Burnt Village in operation I, ca. 6000 B.C. Fragments of bitumen with the imprints of plaited basketry occurred at the nearby late eighth-millennium site of Sabi Abyad II (see Duistermaat 1996; Verhoeven 2000, 102–3).

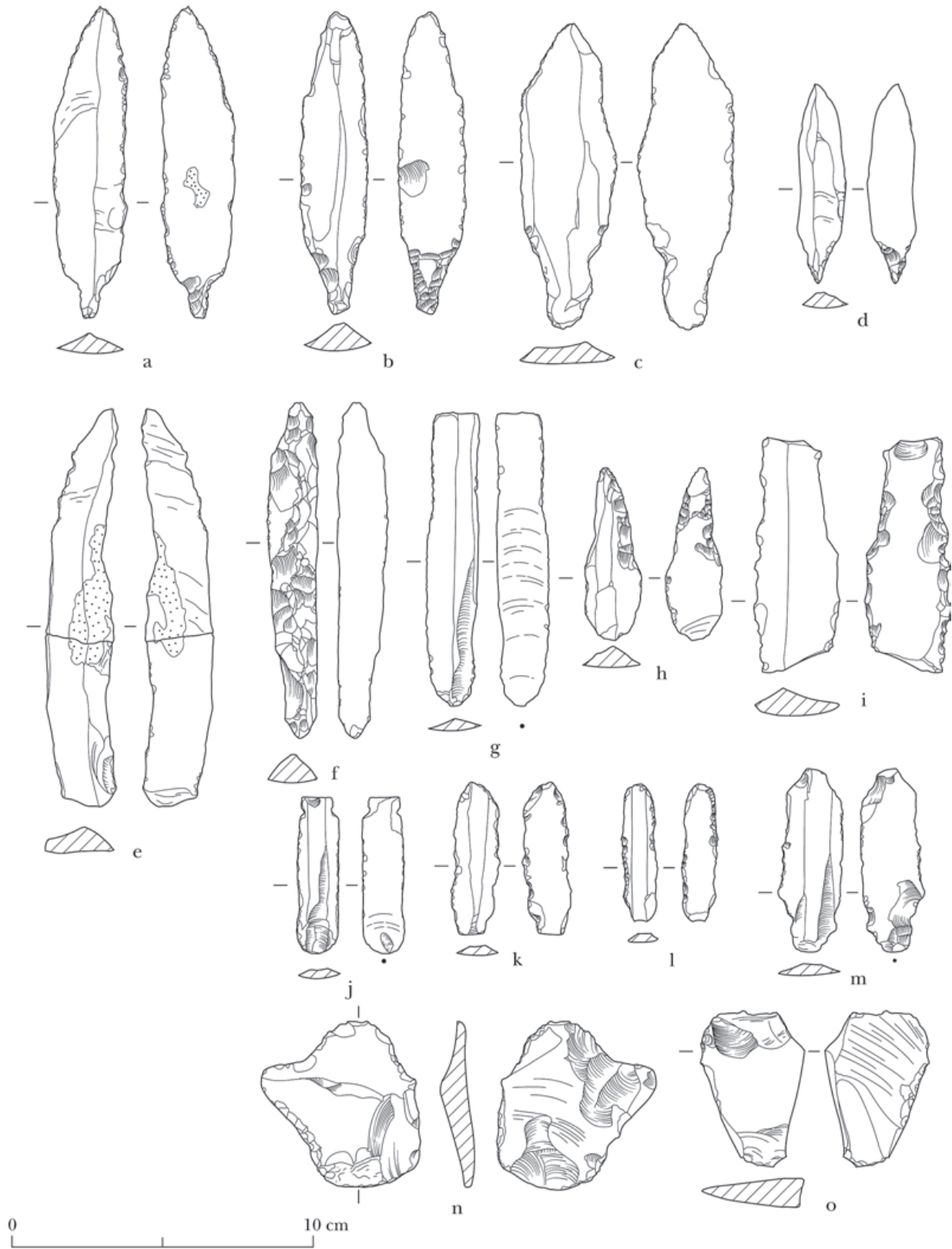


Fig. 13. Operation III: *a-i*, flint tools; *j-o*, obsidian tools.

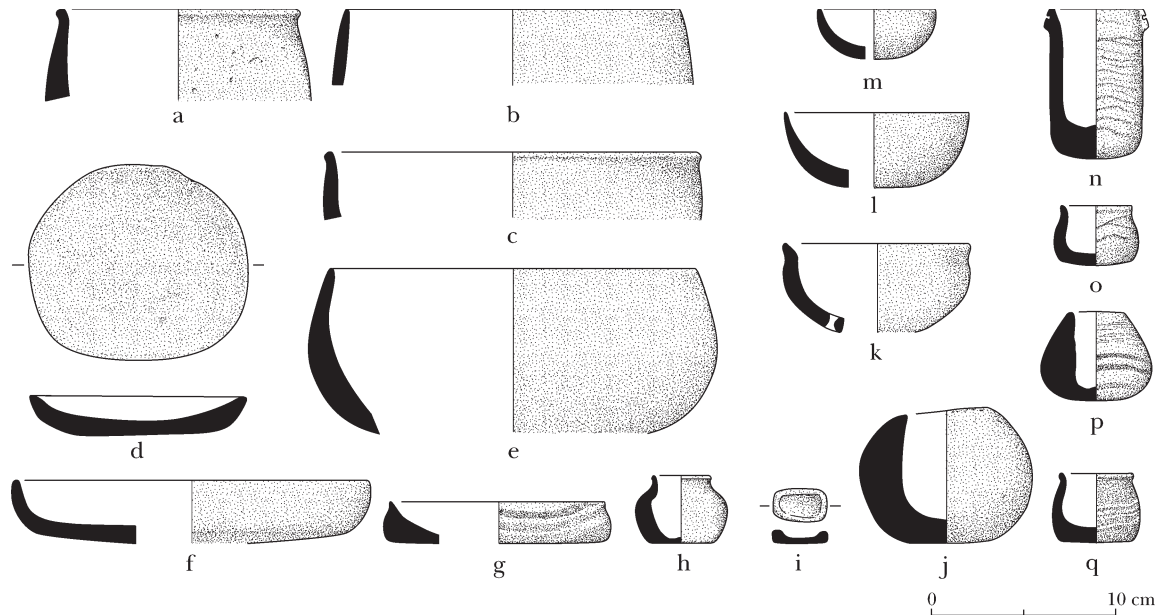


Fig. 14. Stone vessels: *a-m*, operation III; *n-q*, operation IV.

of unbaked clay, such as sling bolts, different types of small tokens, jar stoppers with impressions of what probably are rims of pots, a few spindle whorls, and fragments of figurines (at least some of which could be identified as animal representations).

Floral and Faunal Remains

Large quantities of animal bones and plant remains were recovered from the trenches of operation III that are still under investigation; the following is only a preliminary evaluation, based on the finds of trench G3 (2002 season). These materials provide a preliminary glimpse into the subsistence strategies of the local communities in the early seventh millennium and add to the earlier ecological research at Tell Sabi Abyad and elsewhere in the Balikh valley. Therefore, it is possible to construct a long and continuous local sequence of plant and animal exploitation ranging from the late eighth to the early sixth millennium B.C.⁴¹

Despite the large number of samples available for analysis, the botanical information from trench G3 is somewhat limited due to the low concentration of plant remains in most of the samples and their rather poor state.⁴² The badly preserved condition of seeds

and fruits especially hampered the study of the wild plant species, most of which could not be identified beyond the level of family or genus. The short account here, therefore, is confined to the cultivated plants that could be recognized.⁴³

The cereals are represented by hulled barley (*Hordeum vulgare*) and emmer wheat (*Triticum turgidum* ssp. *dicocon*), whereas pulses are represented by lentil (*Lens culinaris*) and chickpea (*Cicer arietinum*). These four domesticates were also found in samples from the nearby late eighth-millennium (Pre-Pottery Neolithic) site of Sabi Abyad II and in samples from the late seventh-millennium (Pottery Neolithic) occupations in operations I and II on the eastern side of Tell Sabi Abyad (table 3). Although grain kernels and rachis fragments did not allow identification at the subspecies level, it is likely that two-row barley was cultivated during the Early Pottery Neolithic, as in the later period. Linseeds (*Linum usitatissimum*) were also found in several samples.

Assuming that only the most dominant plant species were found in the relatively small sample under study, one might conclude that (two-row) hulled barley, emmer wheat, lentil, and flax were staple crops that remained predominant at Tell Sabi Abyad

⁴¹ In this article the discussion of the faunal and floral remains uncovered at Tell Sabi Abyad is restricted to operation III. Samples from operations II–V are currently in the course of investigation; no conclusions are yet available. For detailed information on the animal bones and plant remains from operation I, see Van Wijngaarden-Bakker 1989; Van Zeist and Waterbolk-Van Rooijen 1989, 1996; Cavallo 1995, 1996, 2000;

Cappers (forthcoming).

⁴² The samples were retrieved by sieving and flotation of deposits from a selected number of rooms, floors, hearths, pits, etc. (see *supra* n. 4).

⁴³ The samples have been analyzed by Y. Boekema as part of her master's degree at State University Groningen, under the supervision of R.T.J. Cappers.

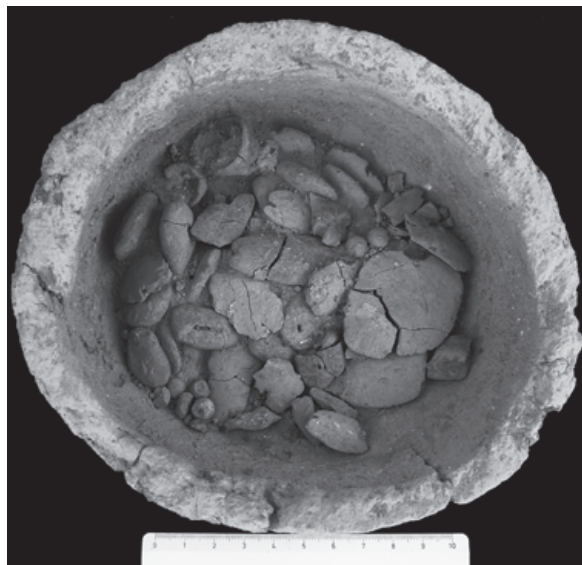


Fig. 15. Unbaked clay bowl containing dozens of unbaked clay beads. The bowl stood on the floor of a level 2 house in operation III.

from the late eighth to the early sixth millennium (see the comparison of operations in table 3). Some bias may have been introduced by differences in seed size between pulses. Certain lentil varieties have small seeds, and the smallest specimens might easily have been discarded in sieving prior to preparing the meal. In this way, the small lentil seeds may have been prone to end up in trash layers at the site. It is difficult to establish the contribution of free-threshing (naked) cereals to the diet. One reason is that, in contrast to hulled cereals (particularly barley), free-threshing grain is high-quality food, which would have been used primarily for human consumption, not to feed animals. Consequently, it was less often included in, for example, the ashes of burnt dung cakes. Another reason is that threshing is done preferably in or near the field, since the transport of free-threshing cereals would result in yield loss because ripe grains easily scatter. As a consequence, only threshed grain was brought to the site. Therefore, evidence of free-threshing cereals will depend in particular on the recovery of storage supplies and the small quantities of grain lost during food preparation.

The faunal sample from trench G3 is relatively small and highly fragmented ($n=1,106$, of which $n=276$ could be identified at species level), as shown, for example, by the large amount of loose teeth, particularly of ovicaprids. Nevertheless, the sample reveals a quite

diverse spectrum of animal species. Sheep (*Ovis aries*) and goat (*Capra hircus*) are predominant (58% of the identified sample), followed by suids (*Sus scrofa/domesticus*, 13%) and gazelle (*Gazella subgutturosa*, 11%). Bovid remains (*Bos primigenius/taurus*) are limited, and equids (*Equus onager*) occur only now and then. Dog (*Canis familiaris*), fox (*Vulpes vulpes*), cervid (*Dama/Cervus*), birds (unidentified), and mollusks (mainly *Unio* sp.) were also found.

Sheep and goats were all domesticated. Their size is similar to the ovicaprids of the later Pre-Halaf to Early Halaf levels of operation I at Tell Sabi Abyad.⁴⁴ No wild sheep or goats, as attested to in the later levels of operation I, have been noticed so far. The large size of some suid and bovid bones points to the presence of wild boar and aurochs, besides the possible presence of domestic pigs and cattle. The size of the bovids in general is rather large; they fall in the uppermost range of the animals of operation I and are similar to those from the late eighth-millennium levels of nearby Tell Sabi Abyad II.⁴⁵ The ovicaprid sample is characterized by both juveniles and young adults. The quantity of bone is too small for the other species to provide an indication of their age. The occurrence of pathologies on one phalanx of an ovicaprid and on one large phalanx of a bovid may indicate the maintenance of sick sheep and goats as well as the hunting of old or sick aurochs, respectively.

In sum, the fauna of operation III is characterized by the presence of both fully domesticated animals and a rich variety of wild species. The first evaluation suggests a community at Tell Sabi Abyad dependent on husbandry, mainly focused on ovicaprids but with a strong component of hunting concentrated on gazelle, less on boar and aurochs. The role of the onager in the hunt was minimal. The emphasis on the gazelle instead of the onager recalls the hunting practice at eighth-millennium Sabi Abyad II, where equid bones were not found. The pattern in the hunt seems to change in the late seventh millennium, after ca. 6200 B.C., when the onager is widely attested to in the faunal record at Tell Sabi Abyad, almost equaling the importance of the gazelle.⁴⁶

EXCAVATION IN THE WESTERN AREA: OPERATION IV

The excavation of nearly 250 m² in operation IV, high on the western slope of Tell Sabi Abyad, revealed habitation remains similar to those of operation III; however, developments in the ceramic as-

⁴⁴ Cavallo 2000.

⁴⁵ Van Wijngaarden-Bakker and Maliepaard 2000.

⁴⁶ Cavallo 2000. See also Helmer (1985) on the fauna of contemporary Tell Assouad in the Balikh valley.

Table 3. Archaeobotanical Evidence for Cultivated Plants at Tell Sabi Abyad, Late Eighth–Early Sixth Millennium B.C.

Cultivated Plants		Late PPNB	Early PN	Pre-Halaf	Transitional	Early Halaf			
		7500–6800	6600–6200	6200–6100	6100–5900	5900–5800			
		Sabi Abyad II			Tell Sabi Abyad Operations				
			III	I	II	I	I	II	
Cereals									
<i>Hordeum vulgare</i>	hulled 2-row barley	?	≤50	50+	50+	50+	50+	50+	
ssp. <i>distichum</i>	naked 2-row barley	–	–	–	–	≤50	–	–	
<i>Triticum turgidum</i>	emmer wheat	≤50	≤50	50+	50+	50+	50+	50+	
ssp. <i>dicoccon</i>									
<i>Triticum monococcum</i>	1-grained einkorn	≤50	–	≤50	50+	50+	≤50	50+	
	2-grained einkorn	–	–	–	–	50+	–	–	
<i>Triticum aestivum/ durum</i>	bread/hard wheat	≤50	–	≤50	≤50	≤50	–	≤50	
Pulses									
<i>Lens culinaris</i>	lentil	≤50	≤50	–	≤50	≤50	≤50	–	
<i>Pisum sativum</i>	pea	–	–	–	–	≤50	≤50	≤50	
<i>Vicia ervilia</i>	bitter vetch	–	–	–	–	–	≤50	≤50	
<i>Lathyrus sativus</i>	grass pea	–	–	–	≤50	–	≤50	–	
<i>Cicer arietinum</i>	chickpea	–	≤50	–	–	≤50	–	–	
Oil and fiber crops									
<i>Linum usitatissimum</i>	flax	50+	–	–	≤50	≤50	≤50	≤50	
Condiment									
<i>Coriandrum</i>	coriander	–	–	–	≤50	–	–	–	
Fruit trees									
<i>Crataegus</i>	hawthorne	–	–	–	≤50	–	–	–	
<i>Ficus</i>	fig	–	–	–	–	–	≤50	≤50	
<i>Pistacia</i>	pistachio	–	–	–	–	–	≤50	–	
<i>Amygdalus</i>	almond	–	–	–	–	–	≤50	–	

50+ = present in reasonable amounts (more than 50 seeds)

≤50 = present only in small amounts (1–50 seeds)

? = identification uncertain at (sub)species level (see Van Zeist and Waterbolk-Van Rooijen [1996] and Van Zeist and De Roller [2000] for details and absolute numbers)

semblage indicate a slightly younger age: at the very end of the Balikh IIA period, ca. 6300–6200 B.C.

A complex architecture built in two phases was exposed immediately below the present-day surface. The earlier of the two phases revealed the outline of a rectangular building measuring at least 9 x 6 m, with walls made of irregularly shaped, reddish orange mudbricks; traces of mud-plastered walls indicated an interior division. In the second phase, the building was intentionally dismantled and its interior entirely filled with the debris of the collapsed walls to create an extensive artificial terrace or platform approximately 80 cm high.⁴⁷ The platform served as a solid foundation for a large,

rectangular building (1), the southeastern segment of which was destroyed by a Bronze Age pit. The structure, with its mud-plastered pisé walls often widening at the base, had a regular layout and consisted of 12 small rooms. Each of these rooms was no more than 1.7 to 3.5 m² in extent, arranged in three rows oriented north–south (fig. 16). Interestingly, the L-shaped western wing did not seem to fit the area provided by the platform and required an expansion to the west; the walls were partly built on top of the platform and partly against its outer facade.

Building 1 was accessible from the outside through a number of narrow doorways, 50–75 cm wide on both long sides.⁴⁸ At least some of these

⁴⁷No debris of fallen walls was found beyond the outer walls of the building.

⁴⁸An exception is Room 9, accessible from the northern short side. The doorway between Room 9 and the lower-situated

Room 12 had a stepped clay threshold, probably the remains of a low staircase. In several cases, doorways remain conjectural due to poor wall preservation or Bronze Age disturbance.

entrances were blocked at the end of the second phase, when another rectilinear structure (Building 3) was raised in front of the eastern facade of Building 1. Narrow doorways, often provided with low, clay thresholds, facilitated circulation inside the building. At least two passages were identified as low, curved portholes less than 50 cm in diameter. The floors in the rooms consisted of simple surfaces of trodden clay, renewed at least three times. A shallow, circular fireplace, approximately 40 cm in diameter, its interior filled with ash and fire-cracked stones, was sunk into the floor in the center of Room 1. A circular clay bin stood next to the entrance in the southeastern corner of Room 6; in the neighboring Room 7 a large pottery vessel had been sunk, slightly off-center, into the floor. The floors and fill were relatively rich in artifacts: several complete ceramic pots and many objects made of stone, including grinding slabs, pestles, adzes, beads, and vessels.

North of Building 1 was another structure (Building 2), roughly trapezoid in plan with at least two rooms, although more units are expected to be found to the east. The mud-plastered pisé walls, leaning heavily forward to the west and partly disturbed by Bronze Age pits, measured between 35 and 40 cm wide, with the extant remains no higher than 30–60 cm. A narrow alley, approximately 60–80 cm wide and containing several small, oval fireplaces, lay between both edifices. A much larger hearth or kiln stood amid masses of ash in the extensive open yard on the slope west of Building 1. The circular installation was about 2 m in diameter and had a reddish orange, partly burnt pisé wall about 30 cm wide. Its floor consisted of a layer of smoothed burnt clay on a foundation of fire-cracked stones and sherds.

The Pottery

The rather homogeneous corpus of ceramics from operation IV closely resembles that from operation III and belongs to the same period, the Early Pottery Neolithic (fig. 17). Coarsely made, plant-tempered ware is predominant and shows the same simple vessel shapes that were found in operation III, including vertical pots (fig. 18a–d) and convex-sided bowls (fig. 18e). A number of complete vertical pots shows that they were sometimes made with a lug and sometimes without (e.g., fig. 18d). One complete pot had two loop handles, placed symmetrically at either side (fig. 18b).

However, there are several characteristics that point to a slightly later date for the operation IV ceramics than those found in operation III. The

assemblage appears to have become more diverse, both technologically and stylistically. Thus, pots and bowls with an S-shaped contour seem to be more common (fig. 18f–j). The S-shaped pots apparently represent an intermediate shape between the neckless vessels from operation III and those with distinct, clearly articulated necks from the later Pre-Halaf period of operations I–II. In addition, a small proportion of decorated ceramics is found for the first time, including some red-slipped vessels (fig. 18k) and a few sherds painted with chevrons.

As in operation III, there were a few series noire-like ceramics in the assemblage of operation IV (fig. 18l–p), constituting about 5% of the bulk. Some of these finely made, mineral-tempered vessels display a peculiar type of lug, having the shape of an “inverted nose” (fig. 18m, n). Some vessels are blackened throughout, suggesting that they were purposely fired in reducing conditions (fig. 18n–p). If so, this would be the earliest evidence for intentionally reduced firing at Tell Sabi Abyad. In this respect the vessels resemble the so-called Gray-Black Ware from the Pre-Halaf and Early Halaf periods, but they clearly differ from this ware in terms of clay preparation and range of vessel shapes. One dark-colored, reduced Early Fine Ware vessel was decorated with what appears to be a pattern burnish, showing parallel diagonal lines forming zigzags (fig. 18p).

Selected Small Finds

Other objects from operation IV were similar to those from operation III. Most common were groundstone tools (grinding slabs, mortars, pestles, etc.) and white ware, of which more than 1,000 fragments were found (primarily body sherds, with only a few rim and base sherds). Clay sling bolts were also common. A niche in Room 1 of Building 1 served as a repository for more than 50 such oval missiles. Other artifacts occur sporadically and consist of clay labrets, bone awls, and spatulas, and small beads made of clay, limestone, serpentinite, and obsidian.

Of particular note was the discovery of three complete alabaster vessels concealed together in the western wall of Building 2 (fig. 14n, o, q). No evidence was found of a niche or other opening in the wall, suggesting that the small pots were placed in the wall at the time of its construction. This intentional, invisible placement may have ritual significance; perhaps this group of vessels was a foundation or building offering.⁴⁹ In terms of shape and fabrication technique, the vessels resemble the finds at roughly con-

⁴⁹ See Gebel 2002.

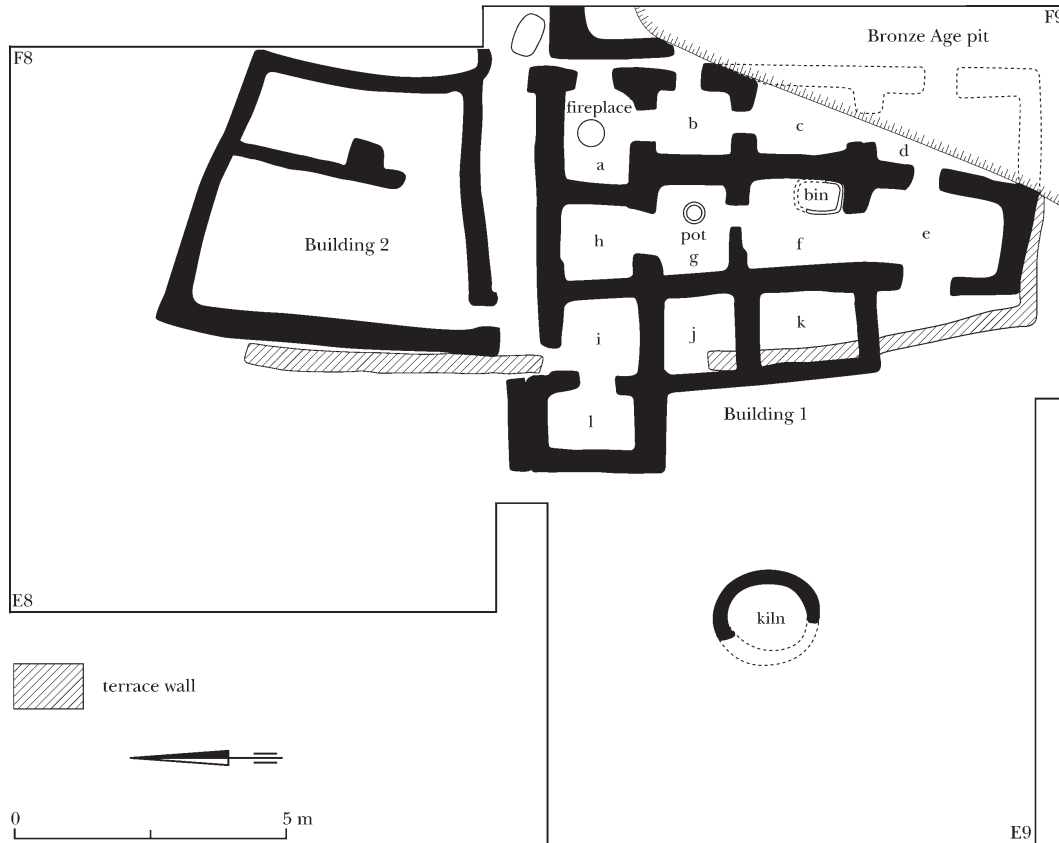


Fig. 16. Plan of architecture in operation IV, ca. 6300–6200 B.C.

temporary sites such as Tell Assouad and Bouqras,⁵⁰ except for the tall, slender pot with tiny ears (fig. 14n), which appears to be unique.

EXCAVATION IN THE SOUTHWESTERN AREA: OPERATION V

A 170 m² area was excavated in squares G12, H12, and H13 in the southwestern portion of Tell Sabi Abyad. Operation V was initially begun in 1999 to investigate the remains of the Late Bronze Age fortress with its impressive mudbrick architecture, numerous installations, and burials. Continued work there in 2001, below the Bronze Age remains, revealed deposits belonging to the late seventh and early sixth millennia, ca. 6300–5900 B.C.

In contrast to the other operations, each of which yielded remains from a single, discrete period, the exposure in operation V falls into three distinct occupational episodes separated by hiatuses lasting a century or longer. The earliest phase is found in trench G12 and consists exclusively of many thin

and sloping ash layers, so far without any evidence of architecture. The ceramics from these layers suggest a date in the early part of the Pottery Neolithic (Balikh IIA period), between ca. 6300 and 6200 B.C., roughly contemporaneous with the settlement uncovered in operation IV. The second phase consists of several building levels, each with house remains, fireplaces, ovens, and other installations set on the slope of the mound. Five radiocarbon samples from this phase suggest a general date in the late seventh millennium (see table 2), but the pottery from these strata allows for a more precise date in the Late Pre-Halaf period (Balikh IIC), ca. 6200–6100 B.C., contemporaneous with building levels 9 and 8 of operation I. The third and youngest phase is represented by heavily sloping debris layers covering the lower architectural remains; these layers were probably related to a settlement at the top of the site that is now virtually gone. Considerable leveling and the construction of terraces prior to the building of the Bronze Age fortress

⁵⁰ Cauvin 1972, 87, figs. 10, 11; Roodenberg 1986, 138–57, fig. 77, nos. 1–3, fig. 80, nos. 5, 6.



Fig. 17. Selection of pots and bowls from operations III and IV at Tell Sabi Abyad (ca. 6600–6200 B.C.), among the earliest pottery currently known from Syria. All are CMPT Ware, except the vessel on the right, which belongs to the series noire group. The tallest pot on the left measures 37.7 cm.

must have substantially changed the topography of the prehistoric mound in this area and involved the almost wholesale removal of the remains from the topmost prehistoric building levels. The pottery associated with this final phase belongs to the later stage of the Transitional period (Balikh IIIA), ca. 6000–5900 B.C. In this respect, the upper settlement of operation V must have been partially contemporaneous with the occupations uncovered in both operations I and II.

In the case of the second phase, at least three building levels were recognized during excavation. The earliest and the latest of the three are poorly known. The lowest level revealed part of a large, rectangular pisé structure (fig. 19[1]) oriented north-west–south-east and composed of at least five rooms, the largest one measuring 2.50 x 1.75 m and accessible through a low porthole, approximately 50 cm in diameter. The latest of the three building levels was badly damaged by Bronze Age construction and is almost completely gone, except for some fireplaces, wall stubs, and ceramic vessels sunk into the floor.

The middle level, which was much better preserved, included several small, rectangular and circular pisé buildings, with fireplaces and other installations in the corners of the rooms or in the

open yard between the structures (fig. 19). In the center of trench H12 stood an irregularly constructed building with one large room measuring approximately 4.0 x 2.3 m, with a square plastered bin in one corner and a large pot sunk into the floor in another corner. Two smaller rooms (2.5 x 0.8 m, 2.25 x 1.50 m) were to the north. One of these also had a pottery jar sunk into the floor (the part of this vessel rising above the floor had been thickly white-plastered, probably for protection) (fig. 20). Another room (1.60 x 1.25 m) was appended to the east side of the structure during a later stage. Access to this room was through a low, curved porthole flanked on either side by large boulders. Next to the doorway stood a bin with a thin clay wall. The remains of yet another rectangular structure consisting of several small rooms was to the northwest of the building. One of these rooms had a thickly white-plastered, circular basin, about 40–65 cm in diameter, sunk into the floor to a depth of 45 cm.

The open yard down the slope of the mound to the west and southwest contained many small fireplaces and ovens of different sizes and shapes; these seem to have been in use for only a brief time, one rapidly replacing the other. There were circular or oval *tannurs* between 0.5 and 1.0 m in diameter;

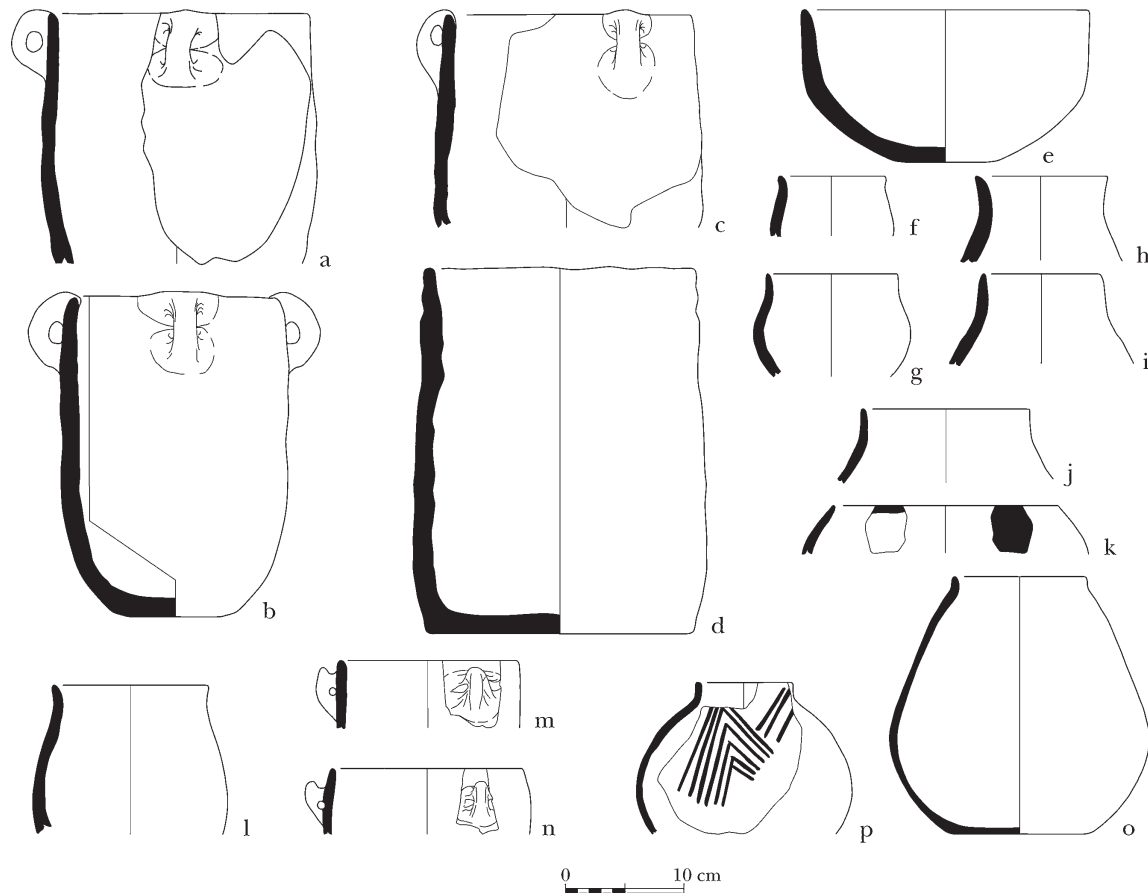


Fig. 18. Operation IV, Early Pottery Neolithic ceramics (Late Balikh IIA period): *a-k*, CMPT Ware; *l-p*, series noire (scale 1:6).

elongated ovens with rounded corners, up to 1.25 x 0.50 m; and oblong, slitlike trenches approximately 2.0 x 0.4 m, burnt along the interior (fig. 21). A large, oval pisé structure (probably a kiln), about 2 m in diameter, with a reddish, burnt clay floor, was also found. Another circular pisé building, approximately 1.75 in diameter, stood nearby, but this structure showed no evidence of burning and must have served other domestic purposes. The discarding of ashes and other waste from these installations resulted in the steady heightening and surface altering of the outdoor area, where food preparation must have been a main activity over a prolonged period of time. There can be little doubt that the trenches in operation V were at the very edge of the prehistoric settlement in this area.

The Pottery

Although the ceramics from the earliest phase in operation V closely resemble those found in opera-

tion IV, they are probably of a slightly younger date. Coarsely made, plant-tempered pots with hole-mouths, convex-sided bowls, and vertical pots with loop handles make up the majority (fig. 22a-i); S-shaped vessels are common as well (fig. 22j). A major difference within the operation IV pottery is the presence of vessels with a distinct low neck; these are the earliest genuine necks found at Tell Sabi Abyad (fig. 22k-q). Decoration occurs now and then, including some red-slipped, painted, and impressed Standard Ware (fig. 22r-v). As in operations III and IV, there were a few series noire ceramics (about 2% of the ceramic bulk).

The second main phase yielded pottery characteristic of the Late Pre-Halaf period (Balikh IIC), or levels 9 and 8 in terms of the operation I sequence (ca. 6200–6100 B.C.).⁵¹ The majority consists of plant-tempered Standard Ware. Although these ceramics represent an outgrowth of the earlier plant-tempered pottery, there are several important differ-

⁵¹ See Le Mière and Nieuwenhuys (1996) for a detailed account and definitions of the pottery of operation I.

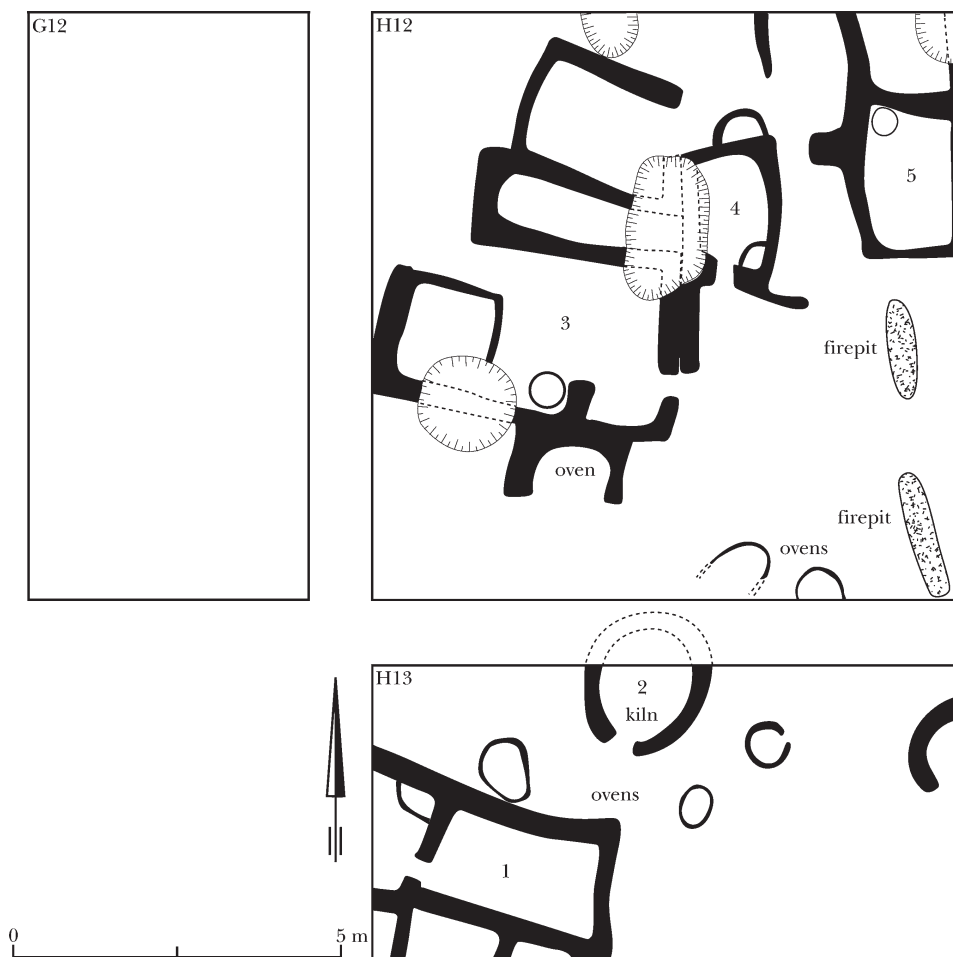


Fig. 19. Plan of the architecture in operation V (middle phase).

ences, including a more varied use of distinct types of plant material as a temper,⁵² a more diverse range of shapes, and a strong increase in the proportion of decorated vessels. Jars have distinctively articulated necks (fig. 23b, d), and husking trays are common (fig. 23a). Some of the vessels have a thick layer of lime or gypsum on their exterior surface, perhaps to make them less permeable to liquids (fig. 23b, c). Far from being a plain “coarse” ware, the Standard Ware at this time includes a whole suite of attractive and quite elaborate decorative styles, including appliqué, red-slipping, painting, impressing, and incising (fig. 23e–k). These styles differ not only in technique but also in order and choice of particular design motifs.⁵³ Typical for the period are the carefully made painted bowls that show diagonal lines or

rows of solid triangles (figs. 23j, k). This particular decorative style has a wide regional distribution, ranging from the Syrian Euphrates to the plains of northern Iraq, where it forms part of the Proto-Hassunan assemblages.⁵⁴ In addition to Standard Ware, other typical Late Pre-Halaf ceramic categories include Gray-Black Ware and Dark-Faced Burnished Ware.

The pottery from the third phase is dated to the later stage of the Transitional period (Balikh IIIA), or level 4 in terms of the operation I sequence. It also must have been at least partially contemporaneous with the ceramics found in operation II. A considerable amount of this pottery consists of Standard Fine Ware, showing typically Late Transitional shapes such as carinated bowls and short-collared bowls (fig. 24a–d, k–m), as well as characteristic designs such as the

⁵² Faura 1996a, 1996b; Le Mière and Nieuwenhuys 1996; Le Mière 2001; Nieuwenhuys (forthcoming).

⁵³ Nieuwenhuys (forthcoming).

⁵⁴ See Bader 1993, 58, fig. 4.4; Le Mière 2001, fig. 7.11, nos. 5–15.

birds-on-telegraph-wire motif (fig. 24l, m). A fenestrated pedestal base (fig. 24n) has a good parallel at the Samarra site of Tell Baghouz.⁵⁵ In one case the neck had been separated from a jar, and the broken edge was subsequently carefully ground into a flat rim punctuated by shallow, oval-shaped impressions (fig. 24n). This example of the reuse of Standard Fine Ware is unique thus far. Other ceramic groups consist of plant-tempered Standard Ware, Dark-Faced Burnished Ware, Gray-Black Ware, Mineral Coarse Ware, and Orange Fine Ware (fig. 24o).

Small Finds

The material distinction between the various phases is not restricted to the ceramics but also includes the repertoire of small finds. The earliest phase (Balikh IIA) in trench G12 primarily yielded fragments of groundstone tools and white ware, as well as a few objects made of unbaked clay. The finds from the later phases (Balikh IIC and IIIA) were much more diverse and included, in addition to the usual groundstone assemblage, white ware, limestone vessels, bone tools, pierced ceramic discs, and a variety of unbaked clay items such as spindle whorls, sling bolts, tokens, jar stoppers, and sealings with the imprints of cord. These objects are similar to those of operations I and II, with the exception of the white ware, which is much more abundant in operation V than in the other areas.

An interesting find was a necklace consisting of several shell pendants and more than 140 small beads made of nonindigenous stone like blue turquoise, red carnelian, and transparent rock crystal. The different stones, or perhaps the necklace itself, must have arrived at the site through exchange networks. Both the nonlocal origin and the overall aesthetic appearance must have contributed to the appreciation of this necklace as a highly valued personal ornament. In this respect, the circumstances of its discovery are remarkable: it was found in a lump of clay next to a wall, high in the fill of one of the phase 2 buildings. This necklace could be a stray find simply discarded in prehistory or an intentional (ritual?) deposition in the fill of the building.

DISCUSSION AND CONCLUSION

The results of the work in the various operations provide us with some important new insights into the nature and development of prehistoric community life at Tell Sabi Abyad in the seventh and early sixth millennia B.C. The trenches evidenced



Fig. 20. Pottery jar sunk into the floor of a building in operation V. The part of this vessel rising above the floor had been thickly white-plastered.

several phases of Late Neolithic settlement, some partly overlapping in space and time and others wholly differentiated, with distinct hiatuses in the local stratigraphic record.

From the very beginning, habitation at Tell Sabi Abyad was not in the form of a single, coherent site but consisted of several dispersed occupations, each of which resulted in the rise of a low but distinct mound. Four such small, contiguous settlement mounds arose in the seventh millennium, two of them in the early half of the period and another two mounds to the east of the original ones after 6200 B.C. Although intensive and contemporaneous use sometimes led to the merging of the separate occupations, they seem generally to have maintained a considerable degree of individuality and autonomy. Community segmentation was enhanced spatially by extensive open yards at the edges of the individual occupations and in the saddles between the mounds. Tell Sabi Abyad did not stand alone in this respect. Although many sites were isolated in the landscape, the occurrence of mounds in clusters, with each of the paired sites a short distance from the other (a few hundred meters at the most), is characteristic of settlement in northern Syria in the Neolithic. Living in small, separate groups, often within the frame of larger agglomerations, was probably a basic structuring principle at the foundation of local Neolithic society. It seems reasonable to assert that the occupations with a handful of houses in use for shorter or longer periods were built around one or more households primarily tied together along lines of kinship.⁵⁶

⁵⁵Nieuwenhuyse 1999.

⁵⁶Akkermans 1993, 163–65; unpublished. See also Bernbeck

and Pollock 2003.



Fig. 21. Neolithic building remains in operation V, with slitlike fireplaces (foreground).

The earliest occupations reached so far—Balikh IIA period—have been uncovered in operations III–V, high on the two small mounds constituting the western half of Tell Sabi Abyad. This portion of the site with its long succession of small villages one after the other was a primary focus of settlement in the early to mid seventh millennium, including perhaps 2 ha total. The lengthy sequence makes clear that some parts of the settlements were in use almost continuously, while others were simply left to their fate at a given moment, either for good or for reoccupation after often long periods of time. In short, people did not always remain in the same place but continually shifted in the course of generations from one area to another within their villages. This pattern of intrasite movement and localized abandonment of occupation was part of the natural developmental cycle of the prehistoric communities at Tell Sabi Abyad through time.

Between 6300 and 6200 B.C. the size of the area of settlement began to decline substantially. The excavations indicate that within a century the formerly densely occupied area on the western side of Tell Sabi Abyad was abandoned. On the basis of the

available radiocarbon dates and, particularly, the developments in the ceramic assemblages from operations III–V, we may suggest that the desertion first took place in the northwestern part of the site (operation III), shortly afterward in the western area (operation IV), and finally in the southwestern area (operation V).

The contraction and desertion did not, however, end in the total abandonment of the site. The long-lived pattern of constantly shifting settlement was maintained by the foundations of what appear to have been two separate occupations, partly on virgin soil, partly on slope wash at the foot of the original mounds at ca. 6200 B.C. (Balikh IIB–C period, as shown by operations I and II). Late seventh-millennium settlement also included parts of the original site's slope to the east and south, although not always permanently. There is proof of many, often short, local breaks in the sequence, with occupation episodically contracting and expanding over the area newly put to use. One example is the sequence of late phases with their intermediate hiatuses in operation V; another example is the Burnt Village in operation I, founded on an earlier aban-

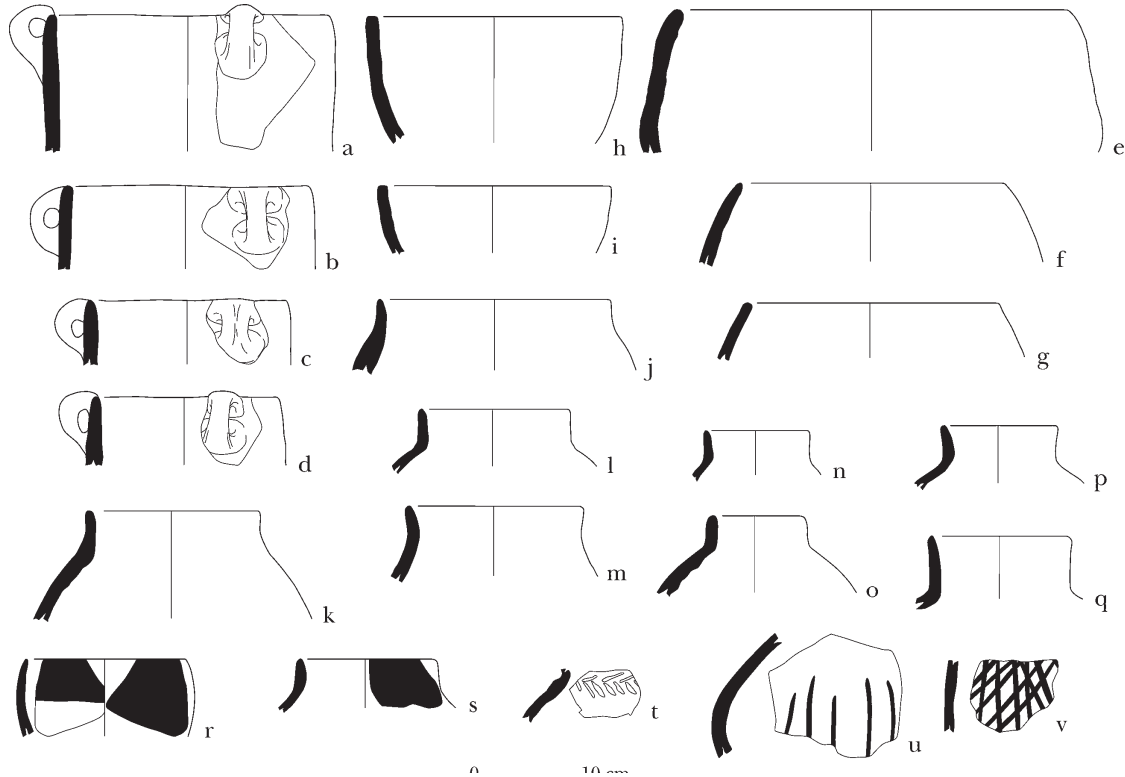


Fig. 22. Operation V, Early Pottery Neolithic to Early Pre-Halaf ceramics (Balikh IIA–IIC periods), Standard Ware (scale 1:6).

doned settlement, the ruins of which must have stood to some height and which were used as a burial ground for children.⁵⁷

Although Tell Sabi Abyad with its 5 ha was one of the largest prehistoric sites in the Balikh valley, it never was the large settlement that it seemed to have been at first sight in the seventh and early sixth millennium. Both the segmented nature of the community and the constant shift in the area of occupation that left large parts of the site unused suggest that the individual occupations were usually small, approximately 0.5–1.0 ha, with the number of inhabitants restricted to a few dozen rather than a few hundred. Our best evidence in this respect comes from the late phases in the large exposure of operation I and, to a lesser extent, from the upper building levels in operation II; it is hoped that the new trenches on the western half of Tell Sabi Abyad will yield detailed insights in future seasons of fieldwork.

We are now in a significantly better position than before to estimate the extent of inhabitation at the site in its various stages of occupation. For instance,

the level 6 Burnt Village of operation I is primarily confined to an area of 1 ha at most on the southeastern mound, although another, much smaller, contemporaneous occupation of one or two houses is probably present on the northeastern mound (level 4 in operation II). Subsequent level 5 settlement in operation I seems to have been limited to a kind of ribbon-building, about 0.5 ha in extent, along the southern slope of the southeastern mound; the next level 4 village stretched over a larger area on the eastern and southern portion of the site, although its precise outline is still uncertain. The upper levels 3–1 or Early Halaf occupations, ca. 5900–5800 B.C., appear to have been restricted to the summits of both the southeastern and northeastern mounds, altogether less than 1.0 ha in size. It is evident that site size is not the same as settlement size, let alone population size. In this respect, we may call into question the existence of the “megasettlements” often said to be so characteristic of the Neolithic. It is all too easy to assume that sites with sizes sometimes up to 10–15 ha ever were settlements inhabited by many hundreds or even thousands of people,

⁵⁷ Akkermans and Nieuwenhuyse (forthcoming). The people carrying out those child inhumations must have lived elsewhere at the site, perhaps in the northeastern area (operation II).

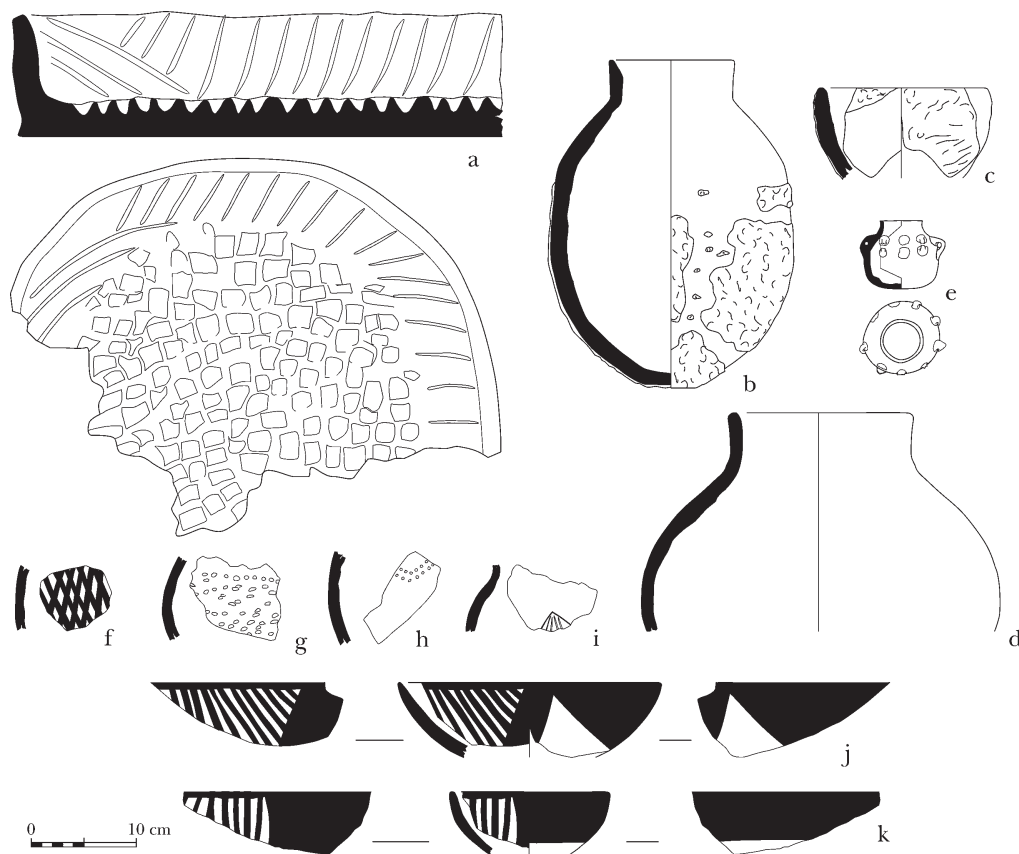


Fig. 23. Operation V, Late Pre-Halaf ceramics (Balikh IIC period), Standard Ware (scale 1:6).

displaying the significant degree of social complexity that would be in keeping with their population. Many of what we consider to be large communities probably were in fact either the outcome of continuously shifting occupation over a restricted area or simply extended, aggregated versions of the many small villages and hamlets rather than prehistoric urban centers.⁵⁸

There is still much to be learned about the development of the material culture in the seventh millennium. The exploration of the earliest phases of Pottery Neolithic settlement at Tell Sabi Abyad is still in its infancy. In the future we hope to expand our sequence into the crucial levels at the transition from the Pre-Pottery Neolithic to the Pottery Neolithic, ca. 6900–6800 B.C. The first occurrence of ceramics in the early seventh millennium is often understood as a watershed in the prehistory of Syria and the Levant, ushering in a fundamental change of the Neolithic way of life. It remains to be seen, however, whether the invention of pottery initially made much

difference in the Neolithic communities. It is important to realize that the manufacture and use of pottery probably did not follow a simple or unilateral trajectory: while some communities remained fully aceramic, others may have used ceramics on a modest scale or adopted pottery at a much later date, in its advanced rather than incipient form. In the beginning, pottery was probably little more than a useful type of container (in addition to vessels made of white ware, basketry, etc.). It was not until seven or eight centuries after its first appearance, with the rise of the elaborate painted-pottery styles at the very end of the seventh millennium, that ceramics may have received a wider significance and served in social networks as gifts or as emblems of local identity and allegiance.

Evidence begins to accumulate for considerable continuity from the Pre-Pottery to the Pottery Neolithic in other aspects of the material culture, such as the production of lithics (Byblos-type arrowheads characteristic of the eighth millennium remained part of the

⁵⁸ Akkermans 1993, 199; unpublished; Hole 2000; Nieuwenhuyse 2000b, 183.

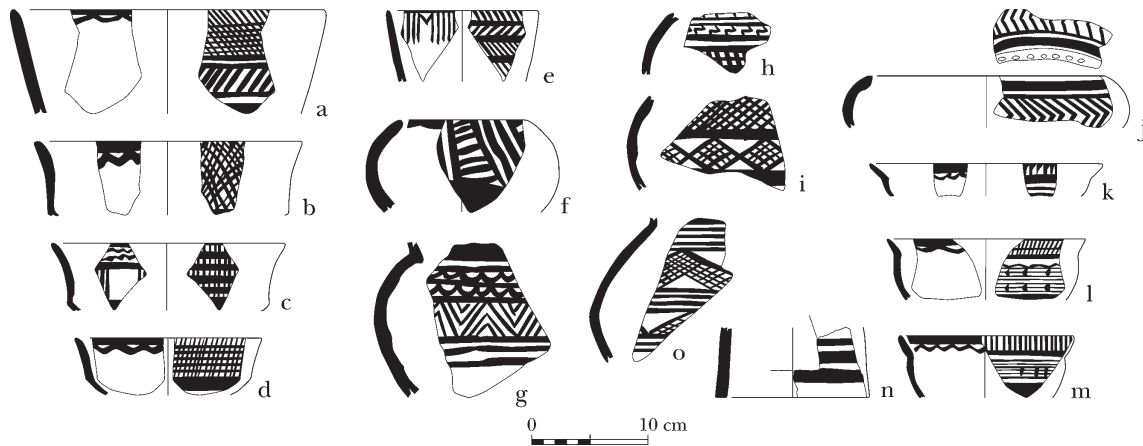


Fig. 24. Operation V, Late Transitional ceramics (Balikh IIIA period): *a-n*, Standard Fine Ware; *o*, Orange Fine Ware (scale 1:6).

assemblage in the early to mid seventh millennium) and the abundant use of stone vessels. The size and distribution of the Early Pottery Neolithic settlements in the plains of northern Syria display close similarities with the previous era. Both excavation and survey indicate that most of the sites with early pottery (Sabi Abyad, Assouad, Damishliyya, Bouqras, Abu Hureyra, etc.) were founded on top of aceramic occupations, suggestive of continuity of place and use; new foundations on virgin soil were rare. The architecture at these sites is often characterized by the application of white plaster on the floors and walls, another early trait that persisted in the seventh millennium.

Although the change at the transition from the Pre-Pottery to the Pottery Neolithic in the beginning of the seventh millennium may have been much less profound than is often believed, there is good evidence for a series of major alterations in the material culture and the nature of settlement at the end of the millennium, ca. 6200 B.C. At Tell Sabi Abyad, this moment of renewal coincided with the abandonment of the western half of the site (as shown in operations III–V) and the foundation of a new settlement to the east (operations I and II). It involved innovations such as the appearance of new types of architecture, including extensive multiroomed storehouses and tholoi; the development of pottery into a mass product, in many complex shapes and wares different from the earlier products; the use of a new set of weaponry, including small, transverse arrowheads and short-tanged points; the abundant

occurrence of clay spindle whorls, suggestive of changes in textile manufacture; and the introduction of seals and sealings as indicators of property and the organization of controlled storage.⁵⁹ The use of stone vessels and white ware substantially decreased at Tell Sabi Abyad after 6200 B.C. If we include evidence from other sites and regions, we may add shifts in ritual and burial and changes in the subsistence strategies, involving an increase of pastoralism and mobility.⁶⁰

The change that occurred in ca. 6200 B.C. was crucial and distinctive and led to the transformation of Neolithic society in the following centuries.⁶¹ Viewed from the regional perspective, a diverse cultural mosaic was in the making in northern Syria and the Levant, with considerable differentiation in the material culture and the organization of settlement. For example, there were many regional ceramic traditions, but their pattern of distribution was far less consistent and uniform than is often assumed. Even the major painted-pottery styles of the end of the seventh and the beginning of the sixth millennia, such as the Samarra and Halaf, distributed over regions sometimes larger than modern states, display a growing amount of evidence for stylistic and technological diversity at both the site level and the regional level. While similarities indicate inter relationships between the communities, the differences point to autonomy and independence of the local groups. The dual process was enhanced by the increasing reliance on mobility so characteristic of the sixth

⁵⁹ It is probably not a coincidence that sealings at Tell Sabi Abyad primarily occur in association with large storehouses (as in operation I) (see Duistermaat 1996; Akkermans and Duistermaat 1997).

⁶⁰ E.g., Verhoeven 2002; Akkermans and Schwartz 2003, 99.

⁶¹ It is tempting to associate the substantial cultural change at ca. 6200 B.C. with the evidence for abrupt climate change at this time ("8k2 calBP climate event") (see, e.g., Alley et al. 1997; Von Grafenstein et al. 1998; Alley 2000). Further research is planned to test this idea.

millennium B.C. There was a growing number of very small sites (less than 0.5 ha in size) with short occupations and breaks in their sequences, allied with a continuously shifting pattern of settlement over the landscape.⁶² Whereas people at the start of the Pottery Neolithic primarily continued the life of their ancestors in the same place, those at the end of the epoch began to exploit an ever more extensive area in a flexible and varied way. The mobility must have facilitated easy communication and the exchange of people, goods, and ideas among the groups, but living in small and dispersed parties also offered ample opportunities for highly local trajectories of cultural development and change.

PETER M.M.G. AKKERMANS
OLIVIER NIEUWENHUYSE
BONNIE NILHAMN
IRIS N. OTTE
NETHERLANDS NATIONAL MUSEUM OF
ANTIQUITIES
P.O. BOX 11114
LEIDEN 2301 EC
THE NETHERLANDS
P.AKKERMANS@RMO.NL
ONIEUW@XS4ALL.NL
BONNIENI@M6.STUD.KU.DK
IRISOTTE@HOTMAIL.COM

CHIARA CAVALLO
FACULTY OF ARCHAEOLOGY
UNIVERSITY OF LEIDEN
P.O. BOX 9515
LEIDEN 2300 RA
THE NETHERLANDS
C.CAVALLO@ARCH.LEIDENUNIV.NL

RENÉ CAPPERS
GRONINGEN INSTITUTE OF ARCHAEOLOGY
STATE UNIVERSITY GRONINGEN
POSTSTRAAT 6
GRONINGEN 9712 ER
THE NETHERLANDS
R.T.J.CAPPERS@LET.RUG.NL

Works Cited

- Akkermans, P.A., J. Boerma, A. Clason, S. Hill, E. Lohof, M. Le Mière, C. Meiklejohn, G. Molgat, J. Roodenberg, W. Waterbolk-van Rooijen, and W. van Zeist. 1983. "Bouqras Revisited: Preliminary Report on a Project in Eastern Syria." *PPS* 49:335–72.
- Akkermans, P.M.M.G. 1988. "The Soundings at Tell Damishliyya." In *Hammam et-Turkman*, edited by M.N. van Loon, 19–67. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- . 1989a. *Excavations at Tell Sabi Abyad: Prehistoric Investigations in the Balikh Valley, Northern Syria*. BAR-IS 468. Oxford: Archaeopress.
- . 1989b. "The Prehistoric Pottery of Tell Sabi Abyad." In *Excavations at Tell Sabi Abyad: Prehistoric Investigations in the Balikh Valley, Northern Syria*, edited by P.M.M.G. Akkermans, 77–214. BAR-IS 468. Oxford: Archaeopress.
- . 1993. *Villages in the Steppe: Late Neolithic Settlement and Subsistence in the Balikh Valley, Northern Syria*. Ann Arbor: International Monographs in Prehistory.
- , ed. 1996. *Tell Sabi Abyad: The Late Neolithic Settlement*. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- . Unpublished. "Clustered Mounds, Segmented Communities: Interpreting Neolithic Settlement." In *The Fifth Millennium B.C. in the Near East*, edited by S. Campbell and D. Baird.
- Akkermans, P.M.M.G., and K. Duistermaat. 1997. "Of Storage and Nomads: The Sealings from Late Neolithic Sabi Abyad, Syria." *Paléorient* 22:17–44.
- . 2004. "More Seals and Sealings from Neolithic Tell Sabi Abyad, Syria." *Levant* 36:1–12.
- Akkermans, P.M.M.G., and M. Le Mière. 1992. "The 1988 Excavations at Tell Sabi Abyad: A Later Neolithic Village in Northern Syria." *AJA* 96(1):1–22.
- Akkermans, P.M.M.G., and O.P. Nieuwenhuys, eds. Forthcoming. *Late Neolithic Tell Sabi Abyad. The 1996–1999 Seasons of Excavation*. Turnhout: Brepols.
- Akkermans, P.M.M.G., and G.M. Schwartz. 2003. *The Archaeology of Syria: From Complex Hunter-Gatherers to Early Urban Societies (c. 16,000–300 B.C.)*. Cambridge: Cambridge University Press.
- Akkermans, P.M.M.G., and J. van der Plicht. Forthcoming. "Dating the Late Neolithic in Syria: ¹⁴C Dates and Trajectories of Cultural Development at Tell Sabi Abyad." *Antiquity*.
- Akkermans, P.M.M.G., and M. Verhoeven. 1995. "An Image of Complexity: The Burnt Village at Late Neolithic Sabi Abyad, Syria." *AJA* 99(1):5–32.
- Alley, R.B. 2000. *The Two-Mile Time Machine: Ice Cores, Abrupt Climate Change, and Our Future*. Princeton: Princeton University Press.
- Alley, R.B., P.A. Mayewski, T. Sowers, M. Stuiver, K.C. Taylor, and P.U. Clark. 1997. "Holocene Climatic Instability: A Prominent, Widespread Event 8,200 Years Ago." *Geology* 25:483–86.
- Arimura, M., N. Balkan-Atli, F. Borrell, W. Cruells, G. Duru, A. Erim-Özdoğan, J. Ibañez, O. Maede, Y. Miyake, M. Molist, and M. Özbasaran. 2000. "A New Neolithic Settlement in the Urfa Region: Akarçay Tepe, 1999." *Anatolia Antiqua* 8:227–55.
- Bader, N.O. 1993. "Results of the Excavations at Kültepe." In *Early Stages in the Evolution of Mesopotamian Civilization: Soviet Excavations in Northern Iraq*, edited by N. Yoffee and J.J. Clark, 55–61. Tucson: University of Arizona Press.

⁶² Akkermans and Schwartz 2003, 126–31, 150–53.

- Bernbeck, R. 1993. *Steppe als Kulturlandschaft. Das Agig-Gebiet Ostsyriens vom Neolithikum bis zur Islamischen Zeit*. Berlin: Dietrich Reimer Verlag.
- Bernbeck, R., and S. Pollock. 2003. "The Biography of an Early Halaf Village: Fistikli Höyük 1999–2000." *IstMitt* 53:9–77.
- Campbell, S. 1992. "Culture, Chronology and Change in the Later Neolithic of North Mesopotamia." Ph.D. diss., University of Edinburgh.
- Cappers, R. Forthcoming. "The Plant Remains." In *Late Neolithic Tell Sabi Abyad. The 1996–1999 Seasons of Excavation*, edited by P.M.M.G. Akkermans and O.P. Nieuwenhuys. Turnhout: Brepols.
- Cauvin, J. 1972. "Sondage à Tell Assouad (Djézireh, Syrie)." *AAS* 22:85–8.
- Cavallo, C. 1995. "Some Observations on the Animal Remains from the Pre-Halaf Levels of Tell Sabi Abyad, Northern Syria." In *Archaeozoology of the Near East II*, edited by H. Buitenhuis and H.-P. Uerpmann, 45–51. Leiden: Backhuys Publishers.
- . 1996. "The Animal Remains: A Preliminary Account." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 475–520. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- . 2000. *Animals in the Steppe. A Zooarchaeological Analysis of Later Neolithic Tell Sabi Abyad, Syria*. BAR-IS 891. Oxford: Archaeopress.
- Collet, P. 1996. "The Figurines." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 403–14. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Copeland, L. 1996. "The Flint and Obsidian Industries." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 285–338. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Cruells, W. 1996. "La cerámica pintada Halaf." In *Tell Halula (Siria). Un yacimiento Neolítico del valle medio del Éufrates, campañas de 1991 y 1992*, edited by M. Molist, 99–114. Madrid: Ministerio de Educación y Cultura, Dirección General de Bellas Artes y Bienes Culturales, Instituto del Patrimonio Histórico Español.
- . 2001. "Nuevas aportaciones a la cultura Halaf en Siria." In *Actas del I Congreso de Arqueología e Historia Antigua del Oriente Próximo*, edited by J.L. Montero, J. Vidal, and F. Masó, 135–57. Barcelona: Monografies Eridu.
- . Unpublished. "Chagar Bazar 1999–2000. Rapport sur les sondages préhistoriques." In *Chagar Bazar (Syria). Progress Reports I*, edited by O. Tunca O., A.E.M. Bagdo, and A. McMahon, 1–21. Louvain and Paris: Peeters.
- Dornemann, R.H. 1986. *A Neolithic Village at Tell el Kowm in the Syrian Desert*. Chicago: The Oriental Institute of the University of Chicago.
- Duistermaat, K. 1996. "The Seals and Sealings." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 339–401. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Faura, J.M. 1996a. "La cerámica 'Pre-Halaf.'" In *Tell Halula (Siria). Un yacimiento Neolítico del valle medio del Éufrates, campañas de 1991 y 1992*, edited by M. Molist, 91–8. Madrid: Ministerio de Educación y Cultura, Dirección General de Bellas Artes y Bienes Culturales, Instituto del Patrimonio Histórico Español.
- . 1996b. *Un Conjunt Ceramic del VIII mil·lenni B.P. a la vall de l'Eufrates: Les produccions de Tell Haloula*. Barcelona: Universitat Autònoma de Barcelona.
- Frangipane, M. 1994. "The Record Function of Clay Sealings in Early Administrative Systems as Seen from Arslantepe-Malatya." In *Archives Before Writing*, edited by P. Ferioli, E. Fiandra, G. Fissore, and M. Frangipane, 125–36. Turin: Scriptorium.
- Gebel, H.-G. 2002. "Walls. Loci of Forces." In *Magic Practices and Ritual in the Near Eastern Neolithic*, edited by H.-G. Gebel, B. Dahl Hermansen, and C. Hoffman Jensen, 119–32. Berlin: Ex oriente.
- Helmer, D. 1985. "Étude de la faune de Tell Assouad (Djézireh-Syrie). Sondage J. Cauvin." *Cahiers de l'Euphrate* 4:275–85.
- Hole, F. 2000. "Is Size Important? Function and Hierarchy in Neolithic Settlements." In *Life in Neolithic Farming Communities: Social Organization, Identity, and Differentiation*, edited by I. Kuijt, 191–209. New York: Kluwer Academic/Plenum Publishers.
- Iwasaki, T., and A. Tsuneki, eds. 2003. *Archaeology of the Rouj Basin. A Regional Study of the Transition from Village to City in Northwest Syria*. Tsukuba: University of Tsukuba.
- Le Mière, M. 1979. "La Céramique préhistorique de Tell Assouad, Djézireh, Syrie." *Cahiers de l'Euphrate* 2:4–76.
- . 1989. "Les Débuts de la céramique sur le Moyen-Euphrate (6500–5500 B.C.)." In *To the Euphrates and Beyond: Archaeological Studies in Honour of Maurits N. van Loon*, edited by O.M.C. Haex, H.H. Curvers, and P.M.M.G. Akkermans, 53–64. Rotterdam: Balkema.
- . 2001. "The Neolithic Pottery from Tell Kosak Shamali." In *Tell Kosak Shamali*. Vol. 1, *The Archaeological Investigations on the Upper Euphrates, Syria. Chalcolithic Architecture and the Earlier Prehistoric Remains*, edited by Y. Nishiaki and T. Matsutani, 179–211. Tokyo: The University Museum Press.
- Le Mière, M., and O.P. Nieuwenhuys. 1996. "The Prehistoric Pottery." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 119–284. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Le Mière, M., and M. Picon. 1999. "Les Débuts de la céramique au Proche Orient." *Paléorient* 24(2):5–26.
- Lloyd, S., and F. Safar. 1945. "Tell Hassuna: Excavations by the Iraq Government General of Antiquities in 1943 and 1944." *JNES* 4:255–89.
- Lyonnet, B., ed. 2000. *Prospection Archéologique du Haut-Khabur Occidental (Syrie du N.E.)*. Beyrouth: Institut Français d'Archéologie du Proche-Orient.
- Maréchal, C. 1982. "Vaiselles blanches du Proche-Orient: El Kowm (Syrie) et l'usage du plâtre au néolithique." *Cahiers de l'Euphrate* 3:217–51.
- Matthews, R.J. 1989. *Clay Sealings in Early Dynastic Mesopotamia: A Functional and Contextual Approach*. Cambridge: University of Cambridge.
- Molist, M., ed. 1996. *Tell Halula (Siria). Un yacimiento Neolítico del valle medio del Éufrates, campañas de 1991 y 1992*. Madrid: Ministerio de Educación y Cultura, Dirección General de Bellas Artes y Bienes Culturales, Instituto del Patrimonio Histórico Español.
- Nieuwenhuys, O.P. 1996. "The Later Halaf Period (Balikh IIIC) on Tell Sabi Abyad, Syria." *Orient Express* 2:52–3.
- . 1997. "Following the Earliest Halaf: Some Later

- Halaf Pottery from Tell Sabi Abyad, Syria." *Anatolica* 23:227–42.
- . 1999. "Tell Baghouz Reconsidered: A Collection of 'Classic' Samarra Sherds from the Louvre." *Syria* 76:1–18.
- . 2000a. "Early Pottery: The Ceramics from Level 1." In *Tell Sabi Abyad II: The Pre-Pottery Neolithic B Settlement*, edited by M. Verhoeven and P.M.M.G. Akkermans, 123–35. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- . 2000b. "Halaf Settlement in the Khabur Headwaters." In *Prospection Archéologique du Haut-Khabur Occidental (Syrie du N.E.)*, edited by B. Lyonnet, 151–260. Beyrouth: Institut Français d'Archéologie du Proche-Orient.
- . Forthcoming. *From Plain to Painted. The Rise of Regional Styles on the Syrian and Northern Mesopotamian Plains*. Turnhout: Brepols.
- Nishiaki, Y. 2000. *Lithic Technology of Neolithic Syria*. BAR-IS 840. Oxford: Archaeopress.
- Otte, I.N., L. Smits, and N. Aten. Forthcoming. "Human Skeletal Remains and Mortuary Practices." In *Late Neolithic Tell Sabi Abyad. The 1996–1999 Seasons of Excavation*, edited by P.M.M.G. Akkermans and O.P. Nieuwenhuys. Turnhout: Brepols.
- Roodenberg, J.J. 1986. *Le mobilier en pierre de Bougras*. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Schmandt-Besserat, D. 1992. *Before Writing: From Counting to Cuneiform*. Austin: University of Texas Press.
- Spoor, R.H., and P. Collet. 1996. "The Other Small Finds." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 439–73. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Stordeur, D., ed. 2000. *El Kowm*. Vol. 2, *Une île dans le désert*. Paris: CNRS Éditions.
- Suleiman, A., and O. Nieuwenhuys, eds. 2002. *Tell Boueid II: A Late Neolithic Village on the Middle Khabur (Syria)*. Turnhout: Brepols.
- Van Wijngaarden-Bakker, L.H. 1989. "The Animal Remains from Tell Sabi Abyad: Square P14." In *Excavations at Tell Sabi Abyad*, edited by P.M.M.G. Akkermans, 301–23. BAR-IS 468. Oxford: Archaeopress.
- Van Wijngaarden-Bakker, L.H., and R. Maliepaard. 2000. "The Animal Remains." In *Tell Sabi Abyad II: The Pre-Pottery Neolithic B Settlement*, edited by M. Verhoeven and P.M.M.G. Akkermans, 147–71. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Van Zeist, W., and G.J. De Roller. 2000. "The Plant Remains." In *Tell Sabi Abyad II: The Pre-Pottery Neolithic B Settlement*, edited by M. Verhoeven and P.M.M.G. Akkermans, 137–46. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Van Zeist, W., and W. Waterbolk-Van Rooijen. 1989. "Plant Remains from Tell Sabi Abyad." In *Excavations at Tell Sabi Abyad*, edited by P.M.M.G. Akkermans, 325–35. BAR-IS 468. Oxford: Archaeopress.
- . 1996. "The Cultivated and Wild Plants." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 521–50. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Verhoeven, M. 1999. *An Archaeological Ethnography of a Neolithic Community: Space, Place and Social Relations in the Burnt Village at Tell Sabi Abyad, Syria*. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- . 2000. "The Small Finds." In *Tell Sabi Abyad II: The Pre-Pottery Neolithic B Settlement*, edited by M. Verhoeven and P.M.M.G. Akkermans, 91–122. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- . 2002. "Transformations of Society: The Changing Role of Ritual and Symbolism in the PPNB and the PN in the Levant, Syria and South-East Anatolia." *Paléorient* 28:5–14.
- Verhoeven, M., and P. Kranendonk. 1996. "The Excavations: Stratigraphy and Architecture." In *Tell Sabi Abyad: The Late Neolithic Settlement*, edited by P.M.M.G. Akkermans, 25–118. Leiden and Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Voigt, M.M. 1983. *Hajji Firuz Tepe, Iran: The Neolithic Settlement*. Philadelphia: University of Pennsylvania.
- Von Grafenstein, U., H. Erlenkeuser, J. Müller, J. Jouzel, and S. Johnsen. 1998. "The Cold Event 8,200 Years Ago Documented in Oxygen Isotope Records of Precipitation in Europe and Greenland." *Climate Dynamics* 14:73–81.
- Wilkinson, T.J., and D.J. Tucker. 1995. *Settlement Development in the North Jazira, Iraq: A Study of the Archaeological Landscape*. Warminster: Aris and Phillips.
- Wright H.T., N. Miller, and R. Redding. 1980. "Time and Process in an Uruk Rural Center." In *L'archéologie de l'Iraq du début de l'époque néolithique à 333 avant notre ère*, edited by M.T. Barrelet, 265–82. Paris: CNRS Éditions.
- Zettler, R.L. 1987. "Sealings as Artifacts of Institutional Administration in Ancient Mesopotamia." *JCS* 39:197–240.