STYLE AND SOCIETY
IN THE PREHISTORY OF WEST ASIA

Essays in Honour of Olivier P. Nieuwenhuyse

edited by
Bleda S. Düring and Peter M.M.G. Akkermans

PALMA 29
PAPERS ON ARCHAEOLOGY OF THE LEIDEN MUSEUM OF ANTIQUITIES

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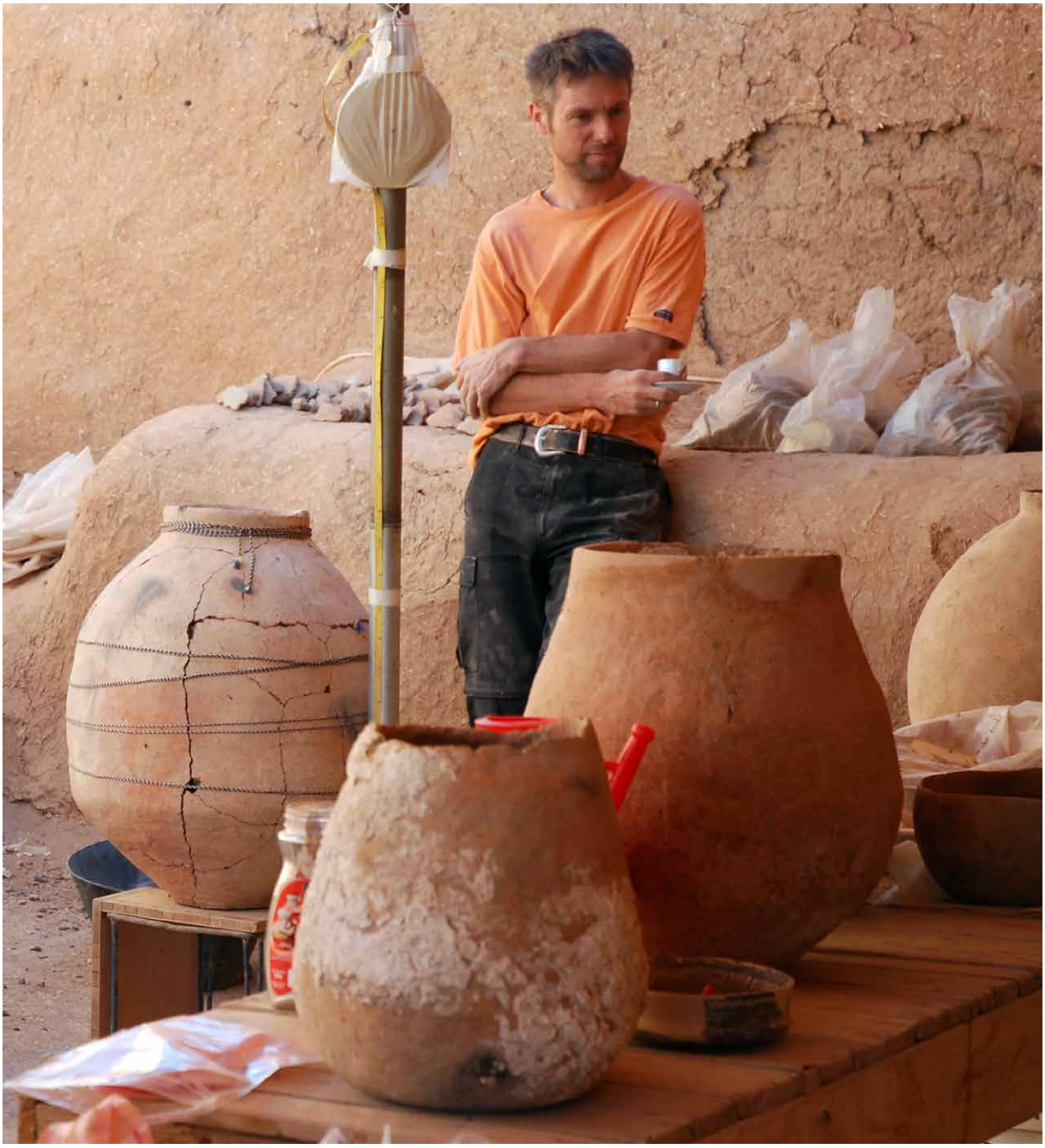

Olivier Nieuwenhuyse taking a well-deserved coffee break during his work in the pottery yard at Tell Hammam et-Turkman, at the excavation house of the Tell Sabi Abyad project. Photo taken by Peter M.M.G. Akkermans.

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Richard H. Spoor (MA) studied Archaeology of South and Southwest Asia at Leiden University (The Netherlands) and obtained his MA with a thesis on the 5th and 4th millennium BCE in the Arabian Gulf region. He conducted fieldwork in United Arab Emirates, Jordan, Syria, Lebanon, Turkey and Bahrain. From 1991 until 1996, he participated in the excavations at Tell Sabi Abyad in Syria, primarily focusing on the Late Bronze Age *dunnu* and its stratigraphy.

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Chapter 1

Introduction

Peter M.M.G. Akkermans and Bleda S. Düring

Olivier Nieuwenhuyse had a spark of magic. He could breathe life and excitement into things and assemblages that most of us would have dismissed as drab and monotonous, cheerfully making his records of tens of thousands of dull plain ware sherds, and miraculously transforming the results into exciting research results. He could bring alive material culture to archaeology students and get them fired up about studying the pottery he loved so much himself. Olivier also had humor and could make fun of himself and of the field of archaeology without embarrassing anyone. He had style, moving effortlessly at social meetings of any sort with a joke here and a little anecdote there.

As colleagues and friends, we feel his absence acutely. For so many years we have walked together on various paths in archaeology and life and it all felt very 'logical' and 'natural'. In the last years of his career Olivier had shifted in part to Berlin, where he worked with new colleagues at the Freie Üniversität, but he was still in Leiden with his family for much of the time, and for us he was still part of our community. The news of his disease hit hard, and we were deeply involved with the various stages of Olivier's illness, the surgeries and their aftermath, until the final sad and premature end of his life on January 15, 2020, leaving two young daughters, a wife, and a wealth of archaeological ideas and agendas.

We were, of course, also left behind, mourning and struggling with the loss of someone we had known and cherished for so long. It occurred to us then that we could, and indeed should, honour Olivier's many archaeological achievements in both a workshop and a commemorative volume emanating from Leiden University, where Olivier transformed into the remarkable and celebrated academic he became. We have little doubt that Olivier would have jokingly concurred with us that he is a typical Leiden archaeologist, even though as an Amsterdam born person he was, of course, too cool for parochial Leiden.

Therefore, we invited some of the people who have most closely worked with Olivier over the years to contribute to the present volume. The contributors and topics covered in this volume are but a selection of the many colleagues and topics upon which Olivier touched in his archaeological research and career.

The book starts with a chapter outlining Olivier's academic career that was written by his close friend Richard Spoor, who has also tried to put together a complete inventory of all the publications of Olivier.

Subsequently, there are three chapters that deal with topics relating to Tell Sabi Abyad, a site that was formative for Olivier's development as a pottery specialist and in which he was deeply interested. There are chapters on a particular type of three-room buildings, mortuary practices, and the use of bitumen at the site.

Following that, there are four chapters on various types of 'small finds' of the Late Neolithic and Chalcolithic. There is a chapter on tokens, one on ornaments, and two on figurines. All of these bear on social practices and symbolic behaviors that were of great interest to Olivier.

The third section of the book deals with pottery and how it was part of various social practices. There are two studies that deal with the introduction of pottery and how it was valued socially, and there is one on the meaning and function of husking trays, and one on decorative schemes applied to Late Neolithic pottery in various sites and regions.

Finally, the book is wrapped up with a study of legacy data pertaining to the prehistory of Palmyra, by colleagues from Syria, and this is befitting as Olivier was always very interested in working with Syrian colleagues on archaeological and heritage projects.

We think Olivier would have cherished the contents of this volume. It has been a privilege to have known him well and we fondly remember our times together.

Chapter 2

A Man Feasting. Olivier's Journey through Archaeology

Richard H. Spoor

Too young, still full of ideas and ambition, Olivier Peter Nieuwenhuyse passed away at the age of 53 on 15 January 2020 at home in Leiden, after a year of illness. Following his diagnosis, he tried his utmost to stay at home with his family as much as he could. He also set himself the goal of finishing as many of the articles and publications that he was working on as possible.

Olivier was a prolific writer, eager to share ideas and stimulate debate on the pottery Neolithic of Upper Mesopotamia. I shall never forget visiting him at his Amsterdam home in the Dapperstraat, near 't IJ Brewery. There were always piles and piles of papers and drawings everywhere. Each pile corresponded to a different article or a chapter he was working on. It was probably not a coincidence that his apartment was near the brewery, for feasting with friends, students and colleagues not only formed a regular part of his life but it was also one of the key topics in his research.

Olivier's academic journey clearly displays the development of his research, and perspectives on Late Neolithic societies in Western Asia. I purposefully use the term *development* here as opposed to the words 'evolution' and 'progression', which would suggest something of the automatic or of an obvious mechanism.

Such notions, however, would not do justice to Olivier's constant push to actively stimulate debate, to bring specialists from different domains together and tempt them to jointly rethink the past through academic discourse in an open and diverse environment. Olivier was one of the initiators of platforms that quickly proved critical in sharing perspectives and developing a greater contextual understanding of how and why pottery was used during its formative phases in the Near East.[1]

Laying the Foundations: The Start of Life-Long Passions

Olivier's interest in archaeology started at a young age, digging up sherds, pieces of tiles and animal skulls in his hometown of Hoorn in the northwest of the Netherlands. The archaeology bug remained and after following in his father's footsteps with a Bachelor in social psychology, Olivier turned to the study of archaeology at the University of Amsterdam.

1 See, for example, the central role of Olivier described in Özbal, R., Erdalkiran, M., and Tonoike, Y. 2021. *Neolithic Pottery from the Near East. Production, Distribution and Use.* Antalya: Akmed.

Figure 2.1: Olivier at work documenting pottery in the yard at the excavation house of the Tell Sabi Abyad mission (Photo by Peter M.M.G. Akkermans).

There, in the late 1980s, he first encountered the then poorly-known Halaf ceramics during the courses on Syrian prehistory with Prof. M.N. van Loon and his graduate student Peter M.M.G. Akkermans. His imagination was immediately fired up.

During fieldwork at the 1990 Tell Raqa'i excavation in the Middle Khabur, a joint Johns Hopkins University and University of Amsterdam expedition led by Dr. H.H. Curvers and Prof. G.M. Schwartz, he had the opportunity to see Halaf pottery from Tell Sabi Abyad and Khirbet esh-Shenef for the first time. It was the start of a life-long fascination with Near Eastern prehistoric pottery, Syria and northern Mesopotamia. His 1992 MA thesis on the Early Bronze Age pottery from Tell Raqa'i (Nieuwenhuyse 1992) was an early manifestation of this growing interest in pottery.

It was at Tell Sabi Abyad in northern Syria, directed by Prof. Peter M.M.G. Akkermans, that Olivier became enthralled by pottery (Figure 2.1). Here was a vast body of pottery in well-preserved and well-documented stratigraphic sequences and broad horizontal exposures. Olivier first joined as a trench supervisor in 1991 and soon afterwards developed into a Neolithic pottery expert when he was asked by Peter Akkermans to study the Early Halaf and part of the Transitional pottery together with Dr. Marie Le Mière.

Jointly, they analysed the immense corpus of pottery dug up between 1988 and 1993. In the courtyard of the excavation house they went through thousands of bags of sherds, all of which Olivier meticulously recorded, measured, drew, weighed and documented. This work formed the basis for subsequent statistical analyses to identify trends and differences between stratigraphic layers and the associated horizontal contexts and – of course – contextual assessments (Le Mière and Nieuwenhuyse 1996).

Describing the pottery based on its stylistic and technical characteristics, they found as yet unknown pottery wares in the process (Nieuwenhuyse 1995; 1996b; Van As *et al.* 1996). In a thorough and systematic way, which would become one of his trademarks, Olivier

started to collect and compare data from other sites in northern Mesopotamia (Nieuwenhuyse 1996a), laying the foundations of his encyclopedic knowledge which would help him to see and make not-yet identified connections.

Tell Sabi Abyad proved to be a rich source that kept providing information on the Pottery Neolithic in Upper Mesopotamia, with each season stimulating new ideas (Nieuwenhuyse 1997c; 2000a; Akkermans *et al.* 2012; 2014; Nieuwenhuyse 2014a; Nieuwenhuyse (ed.) 2018).

Pottery Manufacture, Style and Decoration: From Regional Interactions to Symbolism and Social Practices

From early on in his research, Olivier enriched his ceramics studies by including studies into the manufacture of pottery. He worked closely with ceramic archaeometrists and potters from the Department of Pottery Technology at Leiden University.

Experimental archaeological reconstruction, firing temperature measurements, petrographic analyses, chemical composition studies, vitrification tests and pigment analyses all helped Olivier to understand and distinguish between ceramic tempers of the various wares, as well as differences in production and shaping technologies (Nieuwenhuyse *et al.* 2001; 2003; Connan *et al.* 2004, Van As *et al.* 2004).

Whereas initially such data served to better understand regional relationships and interaction patterns, shapes and decoration, later on they became key markers of use, function, and practices, adding contextual insights into the societies and people that created and used these objects. Through his findings, Olivier teased out the understanding that the acquisition of raw materials as well as the preparation and shaping of vessels all shed light on past symbolism and social practices such as feasting and communalism.

This applies not just to the manufacture of objects, but also to their repair. Together with his wife and professional conservator Renske Dooijes, Olivier suggested that, because of the effort and skills required, reparing ceramic vessels actually increased the value and prestige residing in these objects, maintaining or enhancing social standing of the people using these objects (Dooijes and Nieuwenhuyse 2007; Nieuwenhuyse and Dooijes 2008; Dooijes and Nieuwenhuyse 2009a; 2009b; Nieuwenhuyse 2009a; Nieuwenhuyse and Dooijes 2018; Nieuwenhuyse 2022, 179-81).

A similar process of looking at material culture as constitutive of social institutions and practices that created these objects is recognizable in Olivier's perspectives on decoration and style.

In Olivier's early work, changes in the design structure and stylistic complexity of pottery were used primarily to date and determine its 'culture' and establish inter-regional links. More recently, he suggested that such changes, noted in Fine Ware pottery during the Transitional and Early Halaf periods, are better explained as the result of social processes. One such process was emulation, in which wider social status groups adopt fashionable material expression previously used by a more exclusive community, thereby triggering the latter group to find new stylistic means to differentiate themselves (Nieuwenhuyse 2007a; 2009c).

These new stylistic differentiations are not just evident in the decoration or morphological shape of the vessel and complexity therein, but can be found in more subtle details such as the paint or the gloss of the finished product, achieved through new firing techniques. Together with the increase in proportion of vessels suitable for serving and consuming food and drink in the overall pottery assemblage (e.g., the evolution of the so-called 'cream bowl'), it appears that decorated Fine Ware vessels played an important role in communal eating and drinking in an increasingly mobile society, providing a setting for emulation and continuous innovation (Nieuwenhuyse 2009c, 88-9; 2013b, 143).

Digging Around: Local Communities in a 'Global' Landscape

Alongside his ongoing investigations into the Late Neolithic pottery, like many other young Dutch archaeologists in the second half of the 1990s, Olivier worked as a trench supervisor on a wide variety of archaeological projects in the Netherlands (Nieuwenhuyse and Pavlovic 1996), Oylum Hüyük in Turkey (Özgen *et al.* 1999; Helwing and Nieuwenhuyse 2001a; 2001b; Nieuwenhuyse 2001a), Tell Beydar in Syria (Suleiman and Nieuwenhuyse 2002a; 2003; Nieuwenhuyse and Wilkinson 2008), and Beirut, Lebanon (Nieuwenhuyse 1997a; 1998b), all the while publishing excavation reports for many of these projects.

Within the context of his research into Late Neolithic pottery in northern Mesopotamia, it is important to mention the salvage excavations in 1997 and 1998 with Dr. A. Suleiman, on Tell Boueid II in the Middle Khabur. This was a small settlement dating from the end of the Pre-Halaf and the beginning of the Transitional stage between pre-Halaf and Early Halaf which produced ceramics and obsidian tools associated with Hassuna and Samarra traditions known from Iraq (Suleiman and Nieuwenhuyse 1999a; 1999b; Nieuwenhuyse and Suleiman (eds.) 2002a, 315).

Olivier's fieldwork, combined with his statistical and analytical approaches, helped him to become aware of the impact of taphonomic processes and their influences on the fragmentation and residuality of pottery assemblages, especially when trying to understand Late Neolithic

households with generally small quantities of pottery remains (Nieuwenhuyse 2009b; 2018d).

Through parameters often used by pottery specialists, he made a first attempt to explain the spatial distributions and ceramic fragmentation of pottery observed at the sites of Shir in the Northern Levant, where he worked from 2005 onwards on the invitation of Dr. K. Bartl, and Tell Sabi Abyad. Olivier interpreted these to be the result of natural site formation processes rather than intentional human practices (Nieuwenhuyse *et al.* 2020, 12).

Olivier gained further formative insights into Halaf and Chalcolithic occupations through his participation in the Shahrizor Survey Project and subsequent work at Tell Begum in Iraqi Kurdistan, from 2011 onwards, working in close cooperation with Dr. S. Mühl from the University of Munich and Dr. M. Altaweel from University College London's Institute of Archaeology (Nieuwenhuyse *et al.* 2012; Altaweel *et al.* 2013; 2015; Nieuwenhuyse *et al.* 2015; 2016; Mühl and Nieuwenhuyse 2016; Nieuwenhuyse 2018c; Okada 2019; Nieuwenhuyse and Robert 2020; D'Anna, *et al.*. 2022; Odaka and Nieuwenhuyse 2022).

Although the finds formed part of the Halaf cultural tradition, they showed distinctive local components. Combining these with the data from sites like Tell Sabi Abyad and his earlier work in the Khabur in other Halaf 'regions', Olivier suggested that the observed (supra)regional patterns might be local responses in an environment or landscape where groups, communities, localities, *etc.* could accept, adopt, reject, reinterpret and/or adjust cultural practices from others they interacted with, within a 'global' setting. Olivier regarded the 'Halafian' as a social arena in which local communities were networking across a culturally and ecologically diverse 'global' landscape: A world in which communities had shared, though not identical, sets of practices. These regional groups became more and more interdependent as a result of such 'globalization', and expressions of localness became combined with homogenization and cultural standardization (Nieuwenhuyse, 2013b; 2017b; 2018c; 2022).

Back to the Beginning: Containers and Their Changing Role in Societies

Olivier continued to investigate changes and continuities in the functional, social and symbolic uses of material culture between c. 6800-5800 BCE. This work ultimately culminated in his PhD thesis at Leiden University on the rise of Late Neolithic ceramic styles on the Syrian and Northern Mesopotamian plains, which he successfully defended in 2006 (Nieuwenhuyse 2006b; 2007a).

For him, Late Neolithic containers were the result of, and maybe even better participants in, a continuous and dynamic interaction of local and supra-regional groups and their social, economic and ideological values, on the one hand, and creativity and resourcefulness of these groups, on the other hand (Figure 2.2). Olivier's studies were not restricted to ceramics *per se.* He also addressed similarities and differences in containers made of other materials, such as white ware, basketry and stone. Additionally, he worked on the varying uses of ceramic pieces – storage, transport, food preparation and consumption, this latter becoming a constant theme in his later research (Nieuwenhuyse 2018d; 2020).

In addition to Tell Sabi Abyad, the Neolithic site of Shir in Western Syria provided crucial data with which he could develop his ideas. Both here and at Tell Sabi Abyad, the earliest pottery layers produced generally small and – almost always – mineral-tempered containers (Bartl *et al.* 2006; 2008, also Bartl, this volume). These were decorated in a variety of ways (Nieuwenhuyse 2006d; 2007b; Bartl and Nieuwenhuyse 2008; Nieuwenhuyse 2009b; Nieuwenhuyse *et al.* 2012; Nieuwenhuyse 2019a). How different from the expected technologically simple, coarse and crude vessels!

Olivier came to the conclusion that the ceramics in the earliest pottery layers on these sites, dating to around 7000 BCE, were not necessarily the result of experiments that took place at older, yet-to-be discovered sites in the region. Rather, they represented adoptions from communities where pottery manufacturing was already well established (Nieuwenhuyse *et al.* 2010b, 80-83; Nieuwenhuyse 2017d, 76-80; Nieuwenhuyse *et al.* 2020, 16).

The size and volume of the average vessel – as well as the absence of necks – led him further to suggest that Neolithic groups used containers made of other materials for long-term bulk storage. The small quantity of early pottery remains seemed to hint that it was a special category of small containers that was created in addition to the existing container range, and which may initially have been restricted in use for special occasions (Nieuwenhuyse 2006c; 2018d; 2020; Nieuwenhuyse *et al.* 2020; Nieuwenhuyse 2022, also Özbal, this volume).

Larger amounts of pottery appeared only later in time, with pottery containers becoming more common, suggesting an increasingly important role in meaningful social, economic and ritual activities. This development was associated with significant technological, morphological and stylistic innovations. Pottery turned into largely plain 'coarse ware' with a particular emphasis on utilitarian roles that included the storage and preparation of food and drink. The availability and adoption of pot-cooked food paved the way for the processing of dairy products with the use of efficient heating (Nieuwenhuyse 2018d; 2022), as evidenced by milk residue on Late Neolithic pottery sherds at Tell Sabi Abyad (Evershed *et al.* 2008; Nieuwenhuyse *et al.* 2015).

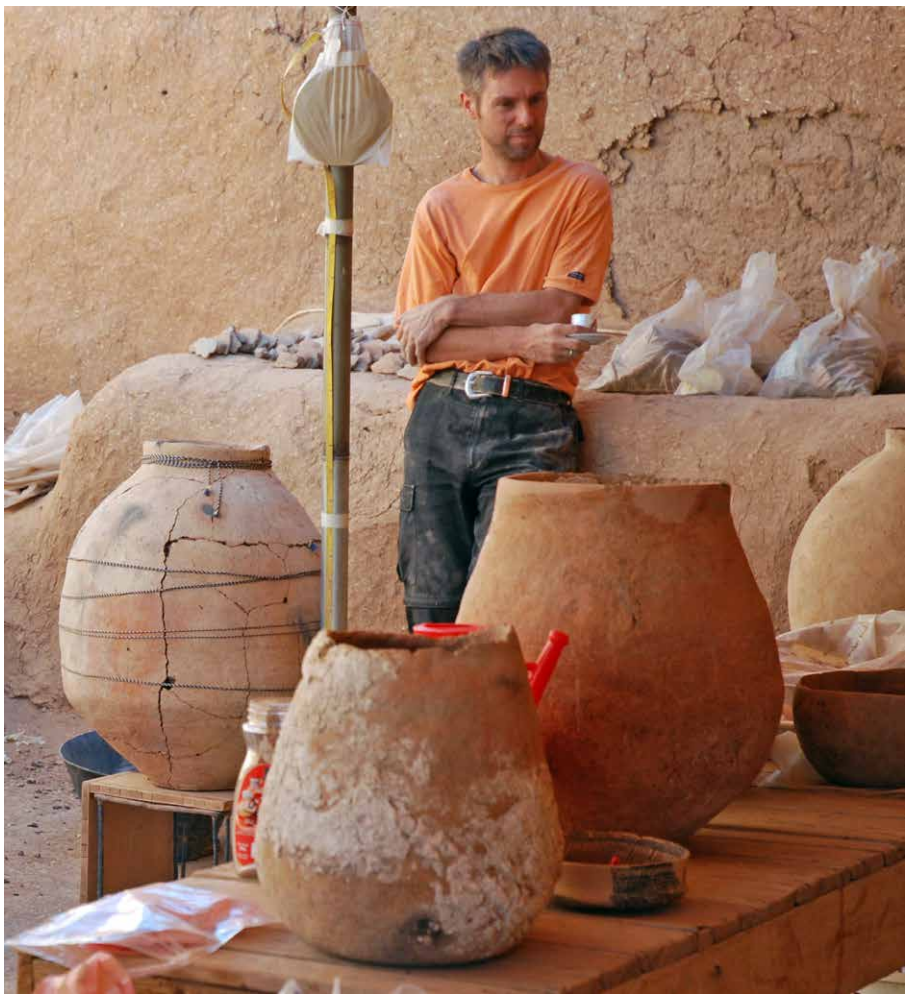

Figure 2.2: Olivier and some containers form Tell Sabi Abyad during a moment of rest (Photo by Peter M.M.G. Akkermans).

Pottery was also used to send symbolic messages. For example, applied anthropomorphic or 'humanoid' imagery on voluminous containers may have had an apotropaic function in protecting specially-designed communal storage spaces and buildings and their contents (Nieuwenhuyse 2019b).

The increased diversity and variability of ceramics containers, combined with an increased accessibility and availability of (pottery) storage containers in daily life, contributed to changes in existing administrative systems associated with storage. It is thought that new concepts of private and collective storage required the monitoring of access to goods in what were becoming increasingly mobile societies (Nieuwenhuyse 2020, 181-82).

What caused or triggered these changes to the importance of pottery containers, and their role in communities, continues to be discussed. Olivier suggested that the development seen in the Late Neolithic started with the development of craft knowledge that included how to work with the raw materials, how raw materials were transformed during the manufacturing process and the resulting end product. Through time, people 'learned' to apply their growing knowledge and experience in order to enable and transform communal activities and messaging through the medium of containers (Nieuwenhuyse *et al.* 2010b, 80-83; 2020, 174-5).

The so-called 8.2 ka climate event, a cold period observed in the Greenland ice sheet and other paleoclimate records, could have played a contributing and accelerating role in these changes in pottery use, with an emphasis on 'contributing', as some of the transformations appear to have already been in motion, starting centuries before the 8.2 ka event (Akkermans *et al.* 2010; Nieuwenhuyse *et al.* 2016; Nieuwenhuyse and Akkermans 2019). This climate event appears to have happened at around the same time that communities started to transform from being autonomous households with a subsistence based on agriculture and domesticated ovicaprids and pigs, to a much more diversified economic model in which communities included both mobile pastoralists and sedentary agriculturalists. These communities kept sheep and goats for their secondary products like milk,

and introduced new cooking ware types, and developed advanced ceramic storage containers. This transformation seems to be an adoption or readjustment of pre-existing practices in the face of – and perhaps hastened by – new climatic and environmental challenges, leveraging the skills gained in pottery manufacturing. The newly-emerging networks of sharing and exchanging goods and ideas may have provided a safety net, and such group interactions may even have been stimulated and strengthened in situations of social, economic and environmental stress (Nieuwenhuyse 2008; Van der Plicht *et al.* 2011; Nieuwenhuyse 2022).

Giving Back

The Near East and its people were always close to Olivier's heart. He found creative and inclusive ways to share his passion for the region and its history and culture with a wide range of audiences.

Between 1998 and 2006, he collaborated with the Vrije Universiteit Amsterdam's HOVO (Hoger Onderwijs voor Ouderen) adult education programme, teaching about the prehistory and early history of the Near East. From 2004 onwards, as one of the founding members of the Friends of Sabi Abyad, Olivier helped organise annual information days and regular newsletters with the goal not only of keeping donors up to date with the latest and greatest developments at Tell Sabi Abyad (*e.g.*, Nieuwenhuyse (ed.) 2005a; Nieuwenhuyse (ed.) 2010b), but also to reach a wider audience and stimulate greater interest in the archaeology of the prehistory of northern Syria.

Nor did Olivier limit himself to a Dutch audience. He was equally, if not more, passionate about training Syrian students. He regularly gave ceramic workshops in Damascus, not only teaching students how to register and document finds, but also – in close collaboration with Leiden University's Department of Pottery Technology – how to analyse these ceramic finds by looking at different aspects of the manufacturing process, to interpret their observations from multiple angles (Nieuwenhuyse *et al.* 2000). Additionally, he trained and mentored Syrian and international pottery students on the processing of finds in the courtyard of Tell Sabi Abyad's excavation house, often giving them their first hands-on experience of Near Eastern prehistoric pottery, similar to his own in 1991.

Olivier's interest in heritage and people is further exemplified by his collaboration with the Centre for Global Heritage and Development, a multidisciplinary centre formed between Leiden University, Delft University of Technology and Erasmus University Rotterdam in The Netherlands.

The Syrian civil war made it impossible to continue his work in that country. Olivier tried nonetheless to remain involved and engaged, especially when the Raqqa Museum and its archaeological depots, which contained finds from excavations across the Raqqa Governorate, including those of the National Museum of Antiquities in Leiden and Leiden University (Tell Sabi Abyad), were plundered after the fall of Raqqa to ISIS. Fortunately, the Tell Sabi Abyad excavation records, pictures and drawings, as well as moulds from objects like cuneiform tablets, were all available in Leiden. In 2017, with this data set, and with the help of Syrian archaeologists both in the Netherlands and still in Syria, Olivier piloted an innovative project called 'Focus Raqqa', in which the entire inventory of the Raqqa Museum was digitally reconstructed. The results included a data set which helps law enforcement agencies to identify looted and subsequently illegally traded cultural artefacts (Nieuwenhuyse *et al.* 2019; 2021).

Unfortunately, the silicon moulds of cuneiform tablets made in the field during the excavations at Tell Sabi Abyad started to decompose in the course of time. To combat the loss of the information contained in the moulds, Olivier initiated the 'Scanning for Syria' project together with Dominique Ngan-Tillard, a geo-scientist from Delft University of Technology in the Netherlands. In this project, Middle Assyrian cuneiform tablets from Tell Sabi Abyad were digitally recreated using advanced imaging technologies, capturing the precious texts hidden within the concavities of the moulds. This allowed for the production of 3D-printed copies of now-lost objects. Copies were also reproduced in chocolate for sale at the National Museum of Antiquities in Leiden and proved very popular! The replicable nature of the method used and its suitability to digitally analyse and document other small objects incorporated or sealed into other material won Scanning for Syria the 2020 European Heritage Award/ Europa Nostra Award in the research category.

Concluding Remarks

In Olivier's work we can see a shift in focus from pottery technology and typology towards how people created and expressed meaning in their daily practices, enabling them to form new identities. The rise of elaborately decorated pottery styles, stimulated by the process of emulation identified by Olivier, and an increase in fragile containers requiring 'personal' care to prevent them from breaking, seem to have been linked to a heightened awareness of a personal self. Maybe the ancient repairs that caught Olivier's interest earlier can be related to the latter.

All these continuously evolving impressions, notions and ideas about the roles of containers, triggered by new data and stimulating debates among Near Eastern archaeologists and ceramic specialists should have

come together in the research project on the northern Mesopotamian container cultures of the late Neolithic that Olivier was conducting as a Humboldt Research Fellow at the Freie Universität Berlin but which was so sadly cut short. His work in Berlin was set to be his *magnum opus*, distilling all that Olivier had gathered over the course of his journey into the world of Near Eastern Late Neolithic containers. To this end, he had started to organise a conference, which went ahead shortly after he died. The contributions to the conference were edited by Koen Berghuijs and Reinhard Bernbeck and integrated with the notes Olivier had left for the introduction of the book (Nieuwenhuyse 2023, Nieuwenhuyse *et al.* 2023). Olivier's fascinating and promising research laid the foundations upon which others must now continue to build.

Olivier Nieuwenhuyse was still full of ideas on an extremely broad range of topics related to the Neolithic pottery and societies of upper Mesopotamia and the Levant, while constantly evolving his perspectives and lines of thought, and starting new investigations, triggered by interactions with peers and students and by his openness to others' views and arguments.

I sincerely hope to have done justice to Olivier's impressive body of work. Most probably I have missed items that some readers find interesting, or by which they remember him based on their own lively interactions, most likely accompanied by a glass of good beer. Remembering those interactions with friends, colleagues and students that Olivier so cherished, I would like to end with the words I have spoken to Olivier so often: 'Cheers, my Friend'.

Figure 2.3: Olivier and the author in the dighouse of the Tell Sabi Abyad team (Photo by Richard Spoor).

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Chapter 3

Dwellings with Three Rooms

A New Type of Architecture at Late Seventh Millennium BCE Tell Sabi Abyad, Syria

Peter M.M.G. Akkermans and Merel L. Brüning

Abstract

Tell Sabi Abyad in Syria has yielded a long and continuous sequence of a seventh-millennium BCE settlement, exposed over large areas in excavations that took place between 1986 and 2010. Each settlement layer contains a number of single-generational houses of different shapes and sizes. This paper will delve into a new type of dwellings found at Tell Sabi Abyad in layers dated to 6400-6300 BCE – the so-called 'three-room buildings'. The buildings' characteristics as well as their development through time are discussed, with special attention given to the fiercely burnt three-room building in the upper settlement level A2.

Introduction

This paper is offered in fond memory of our colleague and dear friend Olivier Nieuwenhuyse, who was sadly taken from his family and countless friends on January 15, 2020. It is self-evident that the current chapter in his remembrance concerns Neolithic Tell Sabi Abyad in Syria, as this site was always very close to Olivier's heart and central to his outstanding research. Olivier was a most dedicated member of the Tell Sabi Abyad team from the very beginning in the 1980s (see chapter 2, this volume). His importance for the Tell Sabi Abyad project and for everyone involved in it cannot be overstated. Olivier was a very productive researcher, always full of ideas and plans, and throughout the years he has been an inspiration to all of us. We miss him.

Tell Sabi Abyad

Tell Sabi Abyad is a five-hectare site in north-eastern Syria, about 80 km north of the city of Raqqa and close to the Syro-Turkish border (Figure 3.1). Extensive annual excavations at the site took place between 1986 and 2010 and have yielded a long and continuous sequence of Neolithic settlement, from the late eight millennium until the mid-sixth millennium BCE. The investigations took place in broad areal exposures – termed Operations I to V – in different parts of the mound. For the present purpose, the work in Operation III, located in the north-western part of Tell Sabi Abyad is relevant, where an area of altogether 2000 m^2 was opened up for excavations (Akkermans *et al.* 2006; 2014; Akkermans 2013) (Figure 3.2).

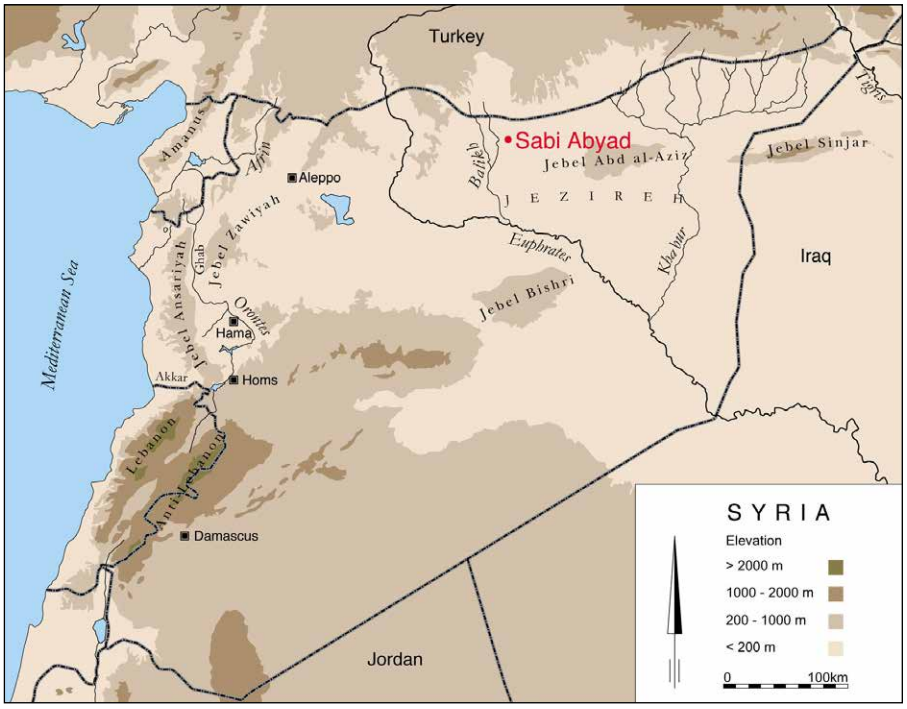

Figure 3.1: Map of Syria and the location of Tell Sabi Abyad (Image: Tell Sabi Abyad Archive).

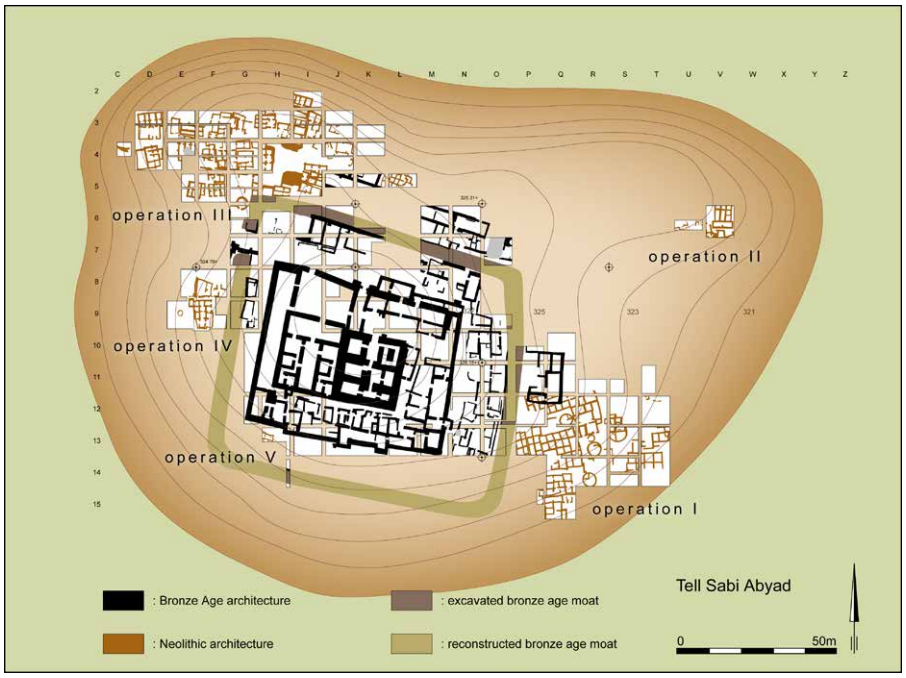

Figure 3.2: Plan of Tell Sabi Abyad, with the main areas of excavation (Image: Tell Sabi Abyad Archive).

Twelve main levels of settlement were identified in Operation III, some of them in the large trenches located high on the north-western mound, and others in deep but narrow soundings on the western slope. The long sequence in Operation III has been radiocarbon-dated to ca. 6865-6225 BCE (see van der Plicht *et al.* 2011 for a radiocarbon chronology and associated Bayesian analysis).[1] Earlier occupation phases have been extensively excavated at the nearby sites of Tell Sabi Abyad II and, in particular, Tell Sabi Abyad III (Verhoeven and Akkermans 2000; Akkermans and Brüning 2019).

1 All dates in this paper are calibrated dates BCE.

A New Building Type

For the present paper, we will focus on a specific type of architecture, here simply referred to as 'three-room building'. The three-room buildings were oriented roughly east-west and comprised of a more or less square main room on the west side, complemented by two narrow rooms to the east of the main room (Figure 3.3). Only in the topmost level A1, the orientation appears to have changed from east-west to north-south.

The rectangular, or occasionally somewhat L-shaped, buildings varied in size, with the smallest structure measuring about 5 by 3 m and the largest 7 by 3.5 m. The main room in each structure was large enough to accommodate a small group of, say 5-6, people, perhaps united by ties of partnership and parenthood. The two smaller rooms may have served for storage and domestic purposes. In most cases, one of the side-rooms had a white lime-plaster floor, while the other side-room was mud-plastered. The recovered artefactual content from each building is, however, too limited to allow for a more detailed differentiation of the uses of these rooms.

These three-room buildings represent a late seventh-millennium form of dwellings: they first appeared shortly after 6400 BCE in level A3 at Tell Sabi Abyad, and remained in use for roughly 100 years, up to early part of level A1, ca. 6300 BCE at the latest (van der Plicht *et al.* 2011). The three-room buildings were relatively rare, and stood isolated amidst other (and much more common) forms of architecture at the site, such as the large, tripartite, multi-roomed structures (Akkermans 2013). The lower layers A3A-B each had a single three-room building in the centre of the Neolithic hamlet, while the next layer A2 had three such structures, standing next to each other. In the upper level A1D two of these buildings appeared, not adjacent to each other but in different parts of the settlement.

Good parallels for the three-room buildings at other sites are rare. Somewhat comparable structures may occur at Hakemi Use in south-eastern Anatolia, although these are a few centuries younger, dating to around 6100 BCE (Tekin 2013; 2020).

Before discussing the three-room buildings into more detail, it is useful to briefly summarise their stratigraphic developments, and to look at the structures in a stratigraphic order, from the oldest to the youngest layer.

Figure 3.3: The typical three-room buildings 1 to 3 in level A2, with their main room to the west and their side-rooms to the east. View to the west (Photo: Tell Sabi Abyad Archive).

The Stratigraphic Sequence and Building Developments

Settlement level A3, ca. 6395-6375 BCE

Level A3 in Operation III on the north-western mound of Tell Sabi Abyad comprised of a small, short-lived hamlet, about 0.2 hectare in areal extent and used for a mere 20 years, between 6395 and 6375 BCE according to the radiocarbon dates. Despite this restricted duration of level A3 as a whole, the local stratigraphy suggests two building phases (levels A3B and A3A), each represented by a typical three-room edifice, amidst other types of architecture. Clearly, each of these three-room buildings was used for a very brief time period only – a decade or so.

The lower level A3B yielded the earliest example of a three-room building at Tell Sabi Abyad, measuring 6.9 by 3.5 m and set against an earlier but still standing platform (Figure 3.4 and Table 3.1). The building had two doorways, one on either short side. To the west of the level A3B three-room building, there was a group of three large, multi-roomed, tripartite structures, which abutted each other. To the east, there was another cluster of structures, with varied layouts. One of them had a room entirely filled with plastered storage bins, while another had on the floor in one of its corners the horn of an aurochs. These buildings were connected to each other by portholes that allowed for movement from one building to the next from the interior. Initially, they seem to have been separate, free-standing structures, because their outer walls abutted each other. In a somewhat later phase, the portholes were made through these double walls, thus creating internal passage ways. The outside doorways (probably also portholes) remained in place.

After some time, the original, level A3B, three-room building was abandoned and levelled to its very foundation. Subsequently, it was rebuilt on the same place and alignment, representing level A3A. When compared with its predecessor, the new building had a single doorway only, which, moreover, had shifted to the south, opening to the platform in front of it. After what was probably a brief use life, this renewed level A3A structure was intentionally levelled and filled-in with toppled wall parts and other building debris. Later, a fire place was sunk into the remains of the levelled structure and ashes were dumped around and on top of it.

The platform itself consisted of an earlier building that was levelled to its foundation and subsequently filled-in with layers of clay slabs. This practice of transforming buildings into platforms (on top of which usually new structures were raised) has repeatedly been observed at Tell Sabi Abyad (Akkermans *et al.* 2011; see also Plug *et al*., in press, for a discussion about the conversion of houses into platforms as part of closure rituals).

Settlement Level A2, ca. 6385-6325 BCE

The most detailed insights into the construction and use of the buildings of our concern stem from settlement level A2, radiocarbon-dated to ca. 6385-6325 BCE. Level A2 begins with the construction of the small Building 1, measuring about 5.3 by 4.4 m (representing level A2C). This structure was set amidst the partly still-standing ruins of earlier, level A3A, architecture, atop of an abandoned platform (Figure 3.4). The small building had a main room measuring 2.4 by 2 m, accessible from the south. The main room in its turn gave access to two narrow rooms to the east, each measuring about 1.9 by 1.1 m (interior).

At a given time (level A2B), the next Building 2 was made, which was largely identical in layout to, but much larger than, Building 1 (Figure 3.4). It measured about 7.1 by 3.7 m, with a main room to the west and two side-rooms to the east, one of which was white-plastered. This Building 2 was placed directly against the north facade of Building 1. Remarkably enough, the only way to enter the new Building 2 was through the neighbouring Building 1 by means of a small porthole in one of its side-rooms (Figure 3.4). Although both structures were free-standing, they were intimately integrated through their shared passage in the walls.

To the north, yet another dwelling (Building 3) of similar layout and orientation was made, measuring 5 by 3 m (Figure 3.5). Its principal entrance was from the south to the main room, which in its turn gave access through portholes to the side-rooms. In addition, the northernmost side-room had its own passage to the outside. The building's interior appears to have been repeatedly renewed, by replastering of the walls and floors in the rooms and by narrowing and finally blocking some of the portholes in the building. Interestingly, one of the interior facades carried remnants of a wall painting (see below).

To the east of Buildings 2 and 3, auxiliary architecture was raised, comprising of at least seven small rooms, the interiors of some of which were carefully white-plastered. The rooms stood in two rows and ranged between 1.6-1.8 m in length and between 0.8-1.6 m in width. Later, another room was added to the south, measuring about 2.25 by 1.6 m. In two rooms, the white-plastered floor was covered with a reddish mud plaster, applied after the original white lime plaster had undergone considerable damage for unknown reason(s). The rooms were filled with building debris, including phytoliths of reed matting or roof cover. The floors in the rooms yielded no finds but artefacts did occur higher up in the fill, including pottery sherds, fragments of basalt grinding tools, and two unworked stones with holes (weights?). These finds probably represent discarded waste.

While a series of radiocarbon dates showed that level A2 lasted altogether for about 60 years, between ca. 6385 and 6325 BCE, it is clear that none of the level

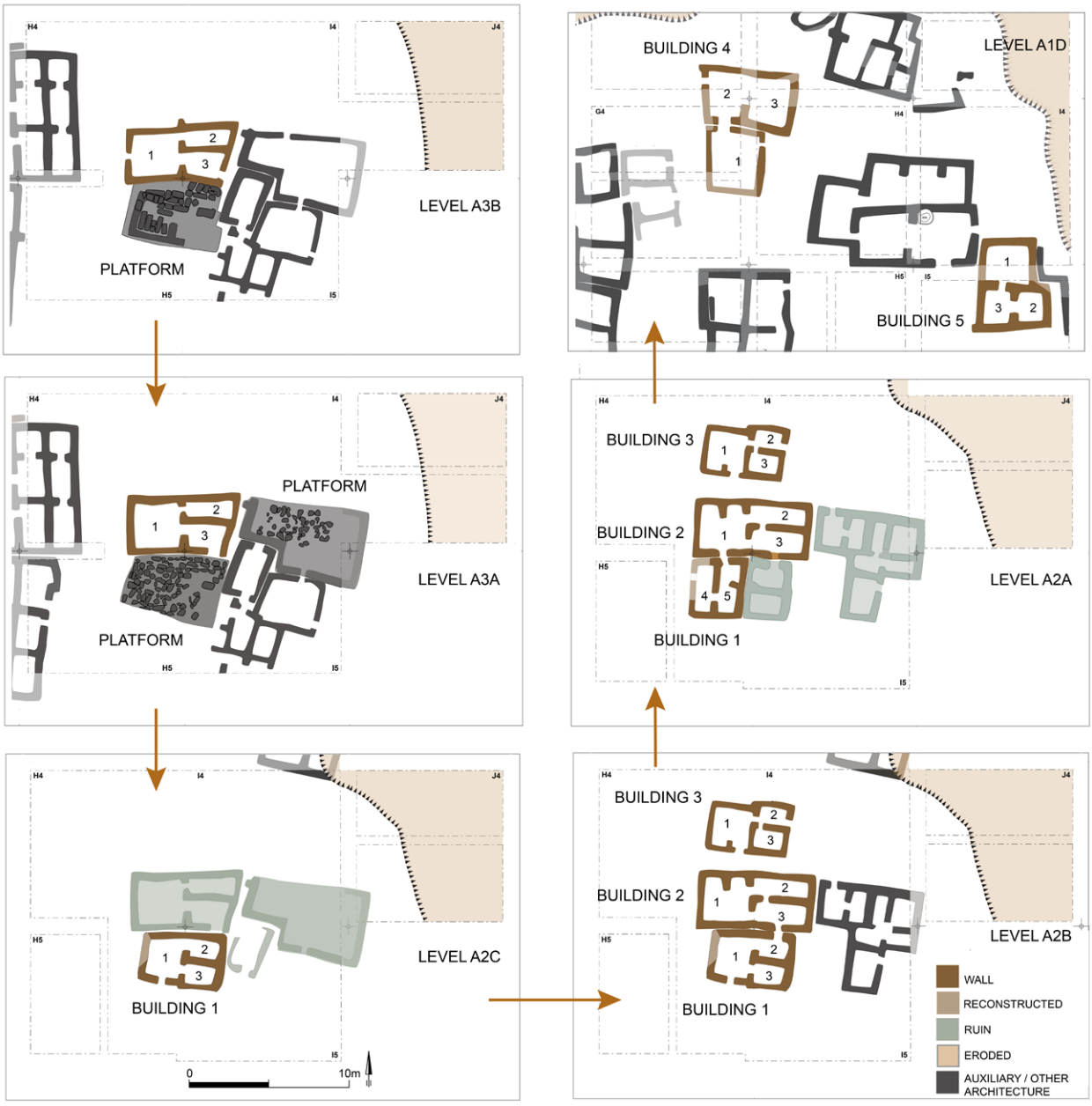

Figure 3.4: Stratigraphic sequence and the development of the three-room buildings (shown in brown colour), from the lower level A3B to the upper level A1D (Image: Tell Sabi Abyad Archive).

A2 buildings were continuously in use during this entire six-decades period. Instead, the architecture gives evidence of much shorter, localised sequences of construction, abandonment and re-construction. The small settlement at Tell Sabi Abyad, it appears, underwent dynamic change through time.[2] Each three-room house was in use for a relatively short time period, in the order of a single generation of, say, 15-25 years, after which it was either abandoned or renewed (comparable to the level A3 buildings; see above).

2 In this respect, the division of level A2 into three sublevels (A2C to A2A) is highly arbitrary, with separate buildings and their surroundings continuously changing, often independently from other, contemporaneous, features.

LEVEL	BUILDING No.	BUILDING AND ROOM SIZES (in metres)					
		Building	Room 1	Room 2	Room 3	Room 4	Room 5
A3B	1	6.85 × 5.00	2.80 × 2.60	2.70 × 0.95	2.05 × 1.50		
A3A	2	7.30 × 4.25	2.85 × 2.65	3.40 × 1.15	3.05 × 1.40		
A2C / A2B	1	5.25 × 4.40	2.35 × 1.90	1.90 × 1.10	1.85 × 1.15		
	2	7.10 × 3.65	2.55 × 2.80	3.40 × 1.10	3.10 × 1.35		
	3	5.00 × 3.00	2.25 × 2.15	1.60 × 1.05	1.85 × 1.15		
A2A (after the fire)	1	3.90 × 3.65	-	-	-	2.55 × 0.90	2.80 × 1.05
	2	7.10 × 3.65	2.55 × 2.80	3.40 × 1.10	3.10 × 1.35		
	3	5.00 × 3.00	2.25 × 2.15	1.60 × 1.05	1.85 × 1.15		
A1D	4	6.50 × 5.00	3.00 × 3.50	2.50 × 1.50	2.50 × 2.00		
	5	6.50 × 4.50	2.85 × 2.25	2.00 × 1.50	2.00 × 1.60		

Table 3.1: Sizes of the three-room buildings and their rooms per level.

Figure 3.5: The small three-room building 3 during excavation (level A2). The square main room gave evidence of a wall painting (Photo: Tell Sabi Abyad Archive).

Settlement Level A1, ca. 6330-6225 BCE

The topmost settlement Level A1 in Operation III is divided into four subphases: A1D (the earliest) to A1A (the youngest). Two three-room buildings (Buildings 4 and 5; see Figure 3.4) were identified in the lower phase A1D, roughly 6330-6300 BCE, while none were found in the upper phases A1C-A1A.

The northernmost three-room building (Building 4) was 6.5 m long and 5 m wide. It basically consisted of two separate structures, the earliest of which comprised

a single large room. Subsequently, the building was extended by adding two rooms to the west, connected to the original room by portholes, thus resulting in a three-room building with an L-shape (Figure 3.4). In one of the rooms and close to the interior façade, a pottery vessel was sunk into the floor, fixed in place by lime plaster. Two basalt grinders lay on its rim; they probably served as a lid. Similar stationary containers were a recurrent find at Tell Sabi Abyad (see below). Nearby, half of a large, ceramic Coarse-Ware jar (about 70 cm long and 50 cm wide) lay on its side, embedded in a solid clay layer. Most likely, the vessel fragment had been re-used as the base of a fire place (see for comparisons, Akkermans *et al.* 2014, 36-7, 43; Nieuwenhuyse 2018, 331).

The other three-room building (Building 5) was oriented north-south and about 5.7 m long and 4.3 m wide, with its walls preserved to a height of maximally 0.75 m. The structure was filled from top to bottom with wall debris, probably the result of intentional levelling. Originally, the main entrance to the building seems through one of the small side-rooms, while additional portholes gave access to the other rooms. While the main room was void of artefacts, the two side-rooms yielded a small stone vessel, a hammer and several partially preserved, basalt grinding slabs.

Building Characteristics

The three-room buildings of our concern clearly differed from the other architecture at seventh-millennium Tell Sabi Abyad in terms of layout. However, they were largely identical to this other architecture with regard to building materials and techniques. The dwellings were all made of sizeable, often irregularly shaped, sun-dried clay slabs, the largest ones of which were over 1 m long and 0.4 m wide, joined by a thick clay mortar. Actually, these large slabs were the predominant building material at seventh-millennium Tell Sabi Abyad (Akkermans *et al.* 2014, 32). One three-room structure (Building 3 in level A2) gave evidence of the re-use of slabs and fragments thereof from an earlier, demolished, building. While the walls and floors usually carried a simple mud plaster (which in some cases had been renewed up to six times), most three-room buildings in addition had one of the smaller rooms covered with a white gypsum plaster about 0.5-1 cm thick on the floor and walls. These white-plastered rooms may have served a specific purpose (storage?), although further evidence into this direction is absent so far.

Usually, the white plaster was restricted to one of the small side-rooms, with the exception of the level A2 Building 3, where the plaster was also found on the walls of the square main room. Highly interestingly, the white plaster in this Building 3 also carried *in-situ* traces of a wall painting, in the form of faint and tiny, fragmentarily preserved black dots and lines (Figure 3.6). No specific design was recognisable. This is the only wall painting ever found at Neolithic Tell Sabi Abyad.

Access to (and circulation in) the three-room buildings was through narrow and low portholes: passages of such restricted size (diameter ca. 50-65 cm) that one had to crawl through them on hands and knees. These small portholes had a squarish or curved appearance and were made low in the walls, just above floor level (Figure 3.7). No traces of wooden jambs have been found, which suggests that these doorways were simply modelled out of clay during construction or made in the walls at a slightly later stage. Portholes were not unique to the three-room buildings: rather, they have been found in each and every building layer at Neolithic Tell Sabi Abyad. Portholes were, it appears, the usual means of passage in the buildings at the site throughout the seventh and sixth millennia BCE (see, *e.g.*, Akkermans and Verhoeven 1995; Verhoeven and Kranendonk 1996; Akkermans *et al.* 2006, 2014). Portholes occur at many sites throughout the Near East; they have been reported already decades ago from sites such as Bouqras and Abu Hureyra in Syria, Umm Dabaghiyah and Tell Sotto in Iraq, Beidha in Jordan, and Ganj Dareh in Iran (Kirkbride 1975, 5; Merpert *et al.* 1977, 96; P.A. Akkermans *et al.* 1983; Smith 1990; Moore *et al.* 2000, 199).

In several three-room buildings, a large pottery vessel was sunk, up to its rim, into the floor next to the porthole giving access to the building's main room from the outside. The ceramics comprised of large hole-mouth pots, up to 55 cm in height and 45 cm in diameter. Such stationary pottery vessels lowered into floors next to doorways were a relatively common find in other types of buildings of the late seventh millennium at Tell Sabi Abyad as well (Nieuwenhuyse 2007; 2018). Occasionally, these vessels had a thick white gypsum plaster inside, making them water-tight. Probably, the hole-mouth pots contained water and were for drinking, washing and/or refreshment, for those who entered and used the buildings.

Remarkably, other than the sunken pottery vessels, there were no installations in the three-room buildings. Fire places in particular were conspicuously absent, although we hasten to add that this, too, applies to most seventh-millennium buildings at Tell Sabi Abyad. Fire-related activities (cooking, roasting, *etc.*), it appears, took mainly place in the extensive open yards surrounding the buildings, where we found many shallow fire pits of different sizes and shapes, entirely filled with dark ashes on top of a basal layer of burnt, fire-cracked stones (see, *e.g.*, Akkermans *et al.* 2014, 63). The concentration of fire places in the yards suggests that food preparation was a shared activity that took place in public areas, which integrated both interior and exterior spaces and helped to intimately connect the local groups. Such a joint undertaking is perhaps not unsurprising in the case of

Figure 3.6: Tiny black traces of a wall painting on white plaster. Found on the western wall in the square main room of the three-room building 3 (level A2) (Photo: Tell Sabi Abyad Archive).

small-scale communities such as Tell Sabi Abyad, with population sizes in order of, perhaps, a few dozen people (Akkermans 2013; Plug *et al.* 2021).

A Burnt Three-Room House

Significantly, the three-room Building 1 in layer A2 ended in a severe conflagration at about 6350 BCE, with traces of serious burning in all rooms. The heat had deeply penetrated the clay walls, colouring them orange-red, and had entirely blackened the room interiors. On the floors were burnt deposits up to 60 cm thick, comprising of black and white ashes; crumbly, reddish-burnt wall fragments; charred wood branches and twigs; and collapsed roofing residues in the form of hard-burnt clay pieces with imprints of reed mats. The latter suggests that the building had its roof still intact when the fire began. Subsequently the building's superstructure collapsed, with its support walls preserved to a height of about 1 m at most.

The fire was highly localised, in the sense that it only had an effect on the *interior* of Building 1. The dwelling's outer facades remained unaltered. The adjoining architecture also appears to have been unaffected by the fire.[3] However, the adjacent Building 2 indirectly felt the burden of destruction, since it was no longer accessible: its only porthole to the outside was blocked by its ravaged neighbouring structure.

The burnt Building 1 yielded several *in-situ* finds on its floors, particularly in the small side-room 2. The artefacts were covered by ashes and other burnt material, indicating that they must have been placed on the floor prior to the fire, at a time when the building was still in domestic use. The finds in room 2 included four large basalt grinding slabs, one of which still had its original grinder lying on top (Figure 3.8). Further finds were a sizeable, pierced basalt grinding tool, a basalt pestle, a small stone bowl, and a Coarse-Ware pottery vessel. The neighbouring room 1 had considerable quantities of charred emmer wheat on the floor, possibly part of a stored food supply.

After some time, renovation started in the burnt three-room Building 1 (= level A2A). The burnt ruins were literally split in two halves. The western half of the burnt structure, comprising the former main room, was levelled

3 The highly localised nature of the conflagration is mirrored by other burnt buildings at Tell Sabi Abyad, most notably the burnt house V6 in Operation II, ca. 6050 BCE (Akkermans *et al.* 2012).

Figure 3.7: The porthole between the main room (room 1) and one of the side-rooms (room 3) in the three-room building 1 (level A2) (Photo: Tell Sabi Abyad Archive).

almost to floor level. On top of the levelled wall remains, an entirely new structure was built, oriented north-south and comprising two long but narrow rooms. Access to the building must have been through the western wall, part of which was unfortunately removed by an impressive Late Bronze Age pit sunk from the surface of the mound.

An exciting find was the discovery of a complete necklace made of red and black ceramic beads, the colour patterning of which suggested the sequence in which they had originally been strung. The necklace was concealed in the newly raised western wall of the renovated burnt building. No evidence was found of a niche or other opening in the wall, suggesting that the necklace was purposefully placed in the wall at the time of its construction. This intentional deposit may have had ritual significance as a foundation deposit. Evidence for foundation deposits has repeatedly been found at Neolithic Tell Sabi Abyad. For example, excavations in Operation II yielded a cache of animal remains underneath the clay threshold of a doorway, while a building in Operation IV had three complete alabaster vessels in one of its walls (Akkermans *et al*. 2006, 129, 144; see also Garfinkel 1994; Gebel 2002).

Remarkably, the eastern half of the burnt house, comprising the two parallel long rooms, was excluded from renovation and instead remained as a ruin filled in with ashes, the ramshackle walls of which stood to a height of about 1 m. The original portholes to these long rooms were all blocked by the newly erected buildings. In addition, it appears that the group of auxiliary structures immediately to the east of Buildings 2 and 3 also went out of use at about this time.

The partial renovation of Building 1 also entailed the re-establishment of access to the neighbouring Building 2, by creating new, rounded portholes (each about 50 cm across) opposite each other in the walls between both structures 1 and 2. Clearly, the focus entirely switched to Building 2, which now, as it were, had received a second 'side-wing' to the south, connected to the central main room (Figure 3.9).

Concentrated on the floor in front of the newly made porthole in Building 2 was an *in-situ* deposit,[4] comprising of fragments of a large but incomplete storage vessel, five

4 With regard to its location in front of the newly made passage, this deposit clearly post-dates the fire in the neighbouring Building 1.

Figure 3.8: *In-situ* finds on the floor in side-room 2 of the burnt three-room building 1. Below: fragmentarily preserved basalt grinding slab with its original grinder on top. Above: large basalt ground stone, flat on one side and rounded on the other, pierced, side (Photo: Tell Sabi Abyad Archive).

unworked pebbles, seven fragments of basalt grinding tools, some flint implements, and an oval clay sling bullet (Figure 3.10). Among the finds were also several large animal-bone fragments, including a long bone, a rib and half of an ovicaprid jaw, as well as four ovicaprid horns. Underneath the find concentration were phytolith remains, possibly the remnants of straw matting. While the find deposit was rather eclectic and partly fragmentary in composition, we hesitate to consider it as waste. The finds were located directly on the, otherwise clean, floor, and included several complete and useful tools – items we would not expect in a refuse context. Perhaps we should interpret this deposit as a mixture of tools, utensils for curation, and raw materials awaiting further processing.

Conclusions

The three-room buildings were persistent yet rare late seventh-millennium features at Tell Sabi Abyad, which, in addition to their typical layout, shared a number of

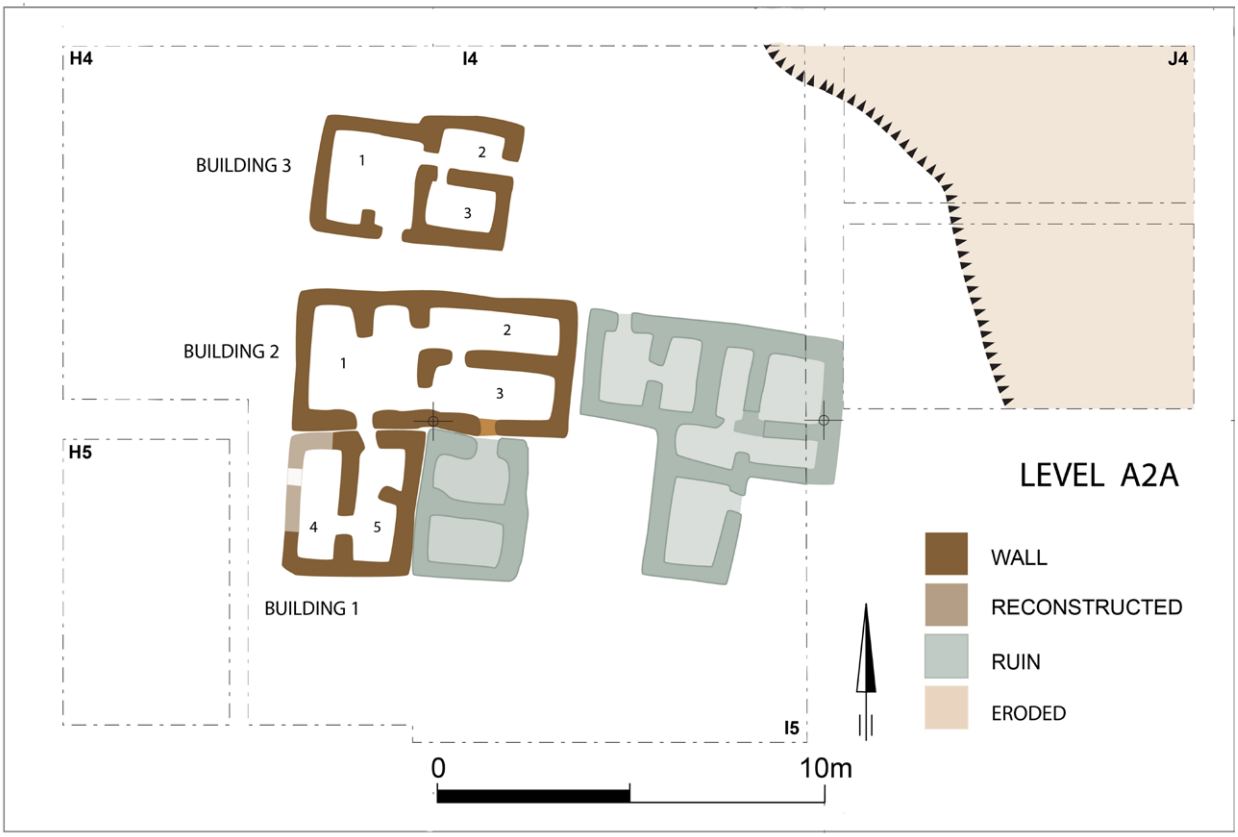

Figure 3.9: The level A2A three-room buildings after the fire. Building 1 was partly renovated and partly left in ruins. The renovated structure was closely integrated with the neighbouring building 2. Access to building 2 was through the renovated building 1 (Image: Tell Sabi Abyad Archive).

characteristics. A most striking trait is their overall paucity: the three-room buildings stood either as single occurrences or as small clusters of two or three buildings in each of the settlement layers A3 to A1D, ca. 6395-6300 BCE, amidst a range of other (mainly tripartite) structures. The recurrent construction of the three-room buildings over several generations underlines their long-lasting relevance to (some members of) the local community at Tell Sabi Abyad. Their unique presence per building level may also suggest that the structures were imbued with special meaning, although we are still in the dark about the precise nature of their significance. The three-room dwellings were identical to other local forms of architecture in terms of building materials and building techniques. They also did not substantially differ from other structures in terms of size, content or finish, although the wall painting in one of the three-room houses remains exceptional. Elsewhere it has been argued that architecture at Neolithic Tell Sabi Abyad, in addition to its use for shelter and other domestic needs, inherently had ideological or ritual meanings, which were principally incarnated in the buildings' planning and conception, and not in their final, material manifestation. Once the buildings were completed, they literally concealed their internal design, so consistent through time, from further appraisal (the finished structures were, at least in their exterior appearance, simple rectangular installations) (Plug *et al.*, in press). It is not unlikely that similar considerations should be applied to the three-room buildings: their Neolithic inhabitants may very well have experienced 'meaning' not only in the buildings themselves but also through fundamental concepts underlying their continual construction (the distinction between concept and praxis may have been minimal) (*ibid.*).

Attachment to place was another facet of paramount importance to their construction, since the three-room houses remained mostly in more or less the same location through time, often on the same alignment. Although the buildings differed somewhat in size, they remained remarkably consistent in shape and orientation from one layer to the next, with nearly all of them oriented roughly east-west, with the main room on the west side and the side-rooms on the east side. Construction relentlessly adhered to earlier building practices and conventions in the same place.

Figure 3.10: The *in-situ* deposit on the floor in front of the newly made porthole in Building 2, during excavation (Photo: Tell Sabi Abyad Archive).

In addition to their infrequent appearance and fixed location, the three-room buildings had a short use life. While the buildings as a whole retained their typical layout and specific location from one generation to the next for about a century, each three-room dwelling by itself stood for little more than one or two decades, after which it was either dismantled or wholly renewed on the spot. The three-room buildings shared their brief use life with the other types of buildings at Neolithic Tell Sabi Abyad, all of which appeared to have been single-generational houses as well, probably intimately related to the lifecycle of their inhabitants (Akkermans 2013; Akkermans and Brüning 2019; Plug *et al.* 2021). The use of buildings for a single generation (or even less), it appears, was customary practice at Neolithic Tell Sabi Abyad (and probably elsewhere, as well), regardless of types and sizes.

Occasionally, the generational house abandonments were rather spectacular performances, enabled through the intentional burning of buildings. Examples of such practice at Tell Sabi Abyad are the so-called 'Burnt Village' in Operation I, ca. 6000 BCE, and the burnt house V6 in Operation II, ca. 6050 BCE (see, *e.g.*, Akkermans and Verhoeven 1995; Verhoeven 1999; Akkermans 2008; Akkermans *et al.* 2012, 2014). Yet another but earlier example may have been the burnt three-room Building 1 in Operation III, level A2 (see above). While we cannot exclude an accidental fire in this case, the highly localised extent of the fire may point to a carefully managed act of burning (it is recalled that the burning only had an effect on the *interior* of Building 1; the structure's outer facades, as well as the assemblage of closely neighbouring buildings, remained entirely untouched by the fire). In this respect, the three-room building's destruction by fire may very well mirror the other burnt structures at Tell Sabi Abyad, in the sense that the conflagration was intentional and ritual in essence. However, the other burnt structures at Tell Sabi Abyad were clearly associated with practices surrounding death and burial (see Plug *et al.* 2021 for a recent discussion), while any evidence in this regard is lacking in the case of the burnt three-room house at the site.

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Chapter 4

Greater than the Sum of Parts

Mortuary Practice and Community Integration at Late Neolithic Tell Sabi Abyad

Jo-Hannah Plug

Abstract

The Late Neolithic habitation at Tell Sabi Abyad is characterised by a limited population size and a spatially segmented settlement layout, as is the case at many contemporaneous sites in both the direct vicinity and the wider region. Despite the apparent importance of smaller social groups, various lines of evidence at the site – among which the mortuary record – indicate interdependencies, cooperative behaviour, and emphases on the wider community. Although ritual practice in the Late Neolithic has been portrayed as primarily domestic and private in nature, it will be argued in this paper that there is ample evidence for a more public and community-wide relevance of death rituals at Tell Sabi Abyad. It appears that primarily through household-transcending mortuary events, the placement of the dead in shared cemetery areas, and the performance of elaborate interactions with human remains, rituals were used to create, maintain and display social bonds. Although the mortuary evidence throughout much of the site's history points to a slow progression of increasingly public-oriented ritual behaviour, towards the later phases of occupation the mortuary record is marked by a more abrupt and significant change in both the handing and spatial placement of the dead, perhaps indicative of a shift in focus from the wider community towards smaller social groups.

Introduction

The Neolithic habitation at Tell Sabi Abyad, located in the Balikh Valley of modern-day northern Syria, has been the subject of intensive investigation since the mid-1980s. The Late Neolithic in this region, also referred to as the Pottery Neolithic, is generally accepted to span the period from the introduction of pottery until the transition from the Halaf to the Ubaid (Akkermans and Schwartz 2003, 99; Bernbeck and Nieuwenhuyse 2013, 18). This period, dating to about 7000-5300 BCE (Bernbeck and Nieuwenhuyse 2013; Brereton 2016; Nieuwenhuyse and Akkermans 2019), can in many aspects be seen as both a continuation of the preceding Pre-Pottery Neolithic (Bartl 2012; Akkermans 2014; 2020; Nieuwenhuyse and Akkermans 2019) as well as a period of change and innovation (Akkermans and Schwartz 2003; Campbell 2012; Nieuwenhuyse 2019; Nieuwenhuyse

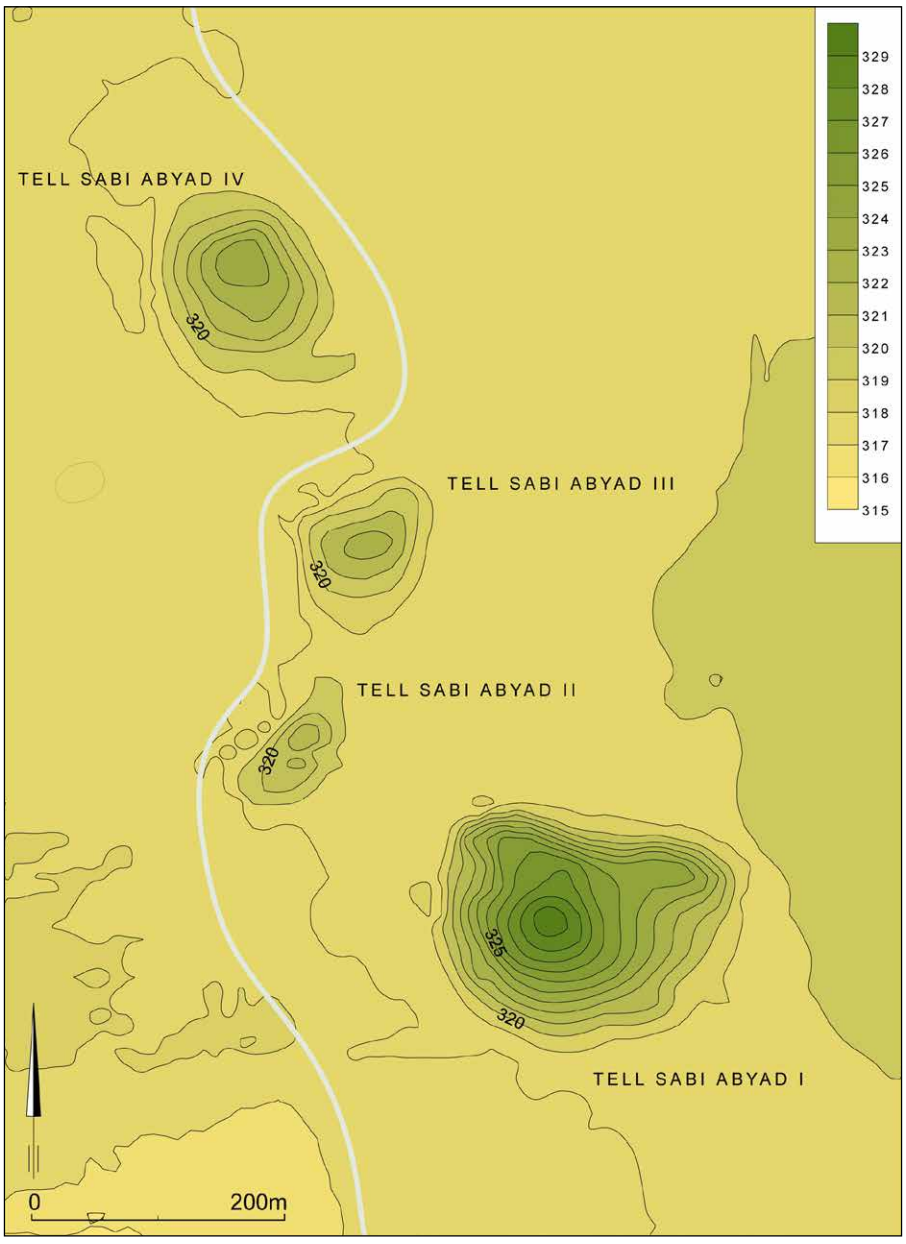

Figure 4.1: The four mounds of Tell Sabi Abyad. From south to north: Tell Sabi Abyad I-IV (Illustration: Tell Sabi Abyad archive).

and Akkermans 2019).[1] Over the past decades it has become abundantly clear that researching this dynamic and heterogeneous period offers valuable insights into a wide range of expressions of human behaviour, including subsistence practices, technologies, artistic and symbolic expression, and social organization (Bernbeck and Nieuwenhuyse 2013, 18).

The site of Tell Sabi Abyad (comprising four mounds referred to as Tell Sabi Abyad I-IV; see Figure 4.1) can be considered a particularly important Upper Mesopotamian Late Neolithic site. Not only has it been excavated extensively, but the excavations have also yielded a long and continuous settlement history (Table 4.1) spanning the period from the late eighth millennium (the late Pre-Pottery Neolithic B) through the early sixth millennium (the Halaf), as well as large numbers of human burials. Covering much of the Late Neolithic period, the evidence of human life and death at the site enables the in-depth investigation of local trajectories of wider developments occurring throughout this long timespan. Indeed, in the past decades, various scholars have utilised this potential to investigate several pivotal innovations in settlement layout, material culture, and subsistence practices from a site-based perspective. To name but a few examples, important insights were gained through ceramic analysis, showing a

1 All dates in this chapter are calibrated dates BCE.

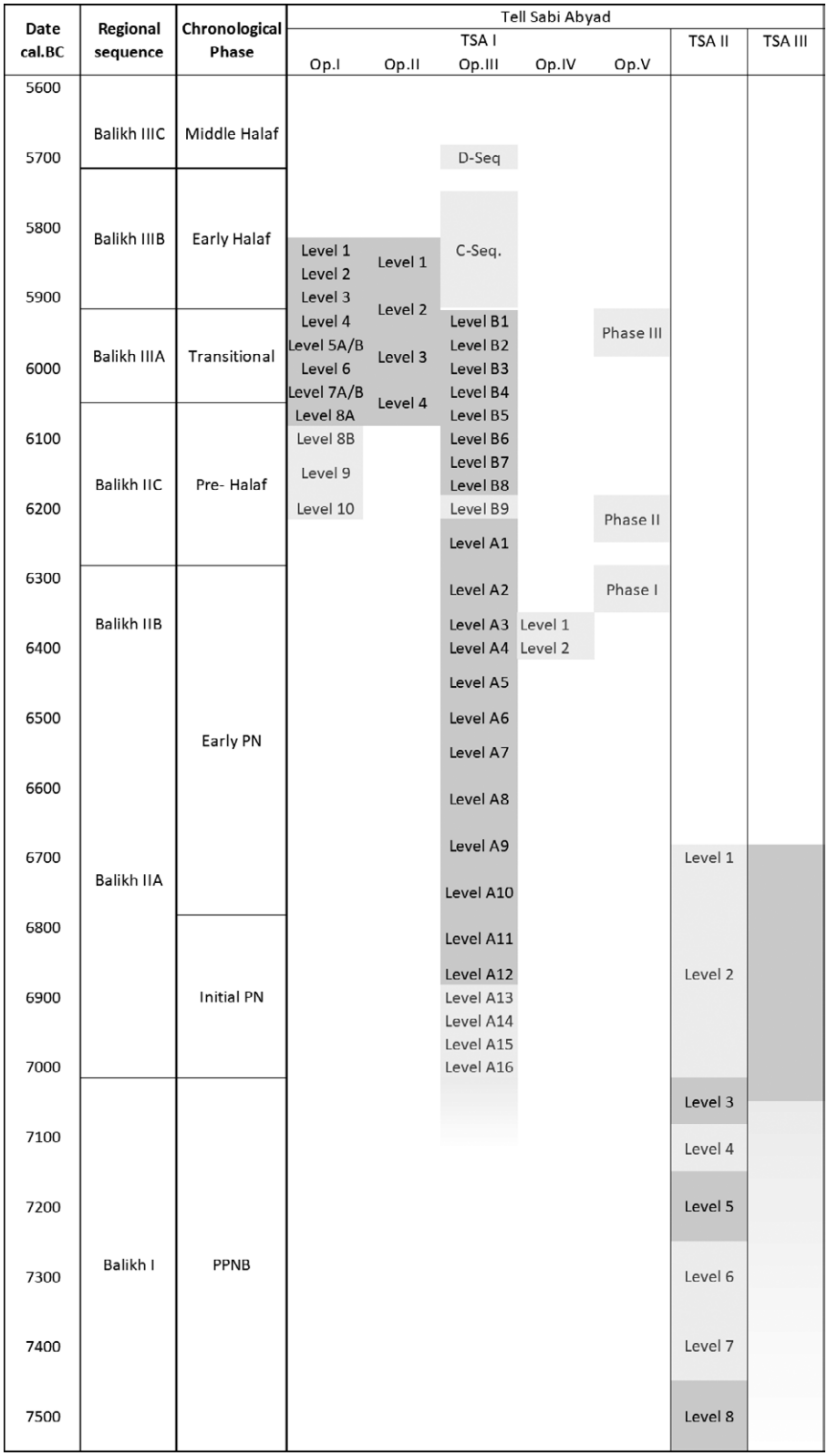

Table 4.1: The site chronology of Tell Sabi Abyad. The settlement phases (levels) indicated in dark grey have been dated by radiocarbon, those in light grey through relative dating methods (including stratigraphic relationships and material culture).

gradual and local establishment and further development of pottery styles and technologies (Nieuwenhuyse 2007; 2018; Nieuwenhuyse *et al.* 2010). Studies of various other forms of material culture, such as architecture, container technology and administrative tools, revealed a growing emphasis on storage and administration (Akkermans and Verhoeven 1995; Akkermans and Duistermaat 1997; 2004; Duistermaat 1996; 2013; Verhoeven 1999; Nieuwenhuyse 2018; Bennison-Chapman 2023). Zooarchaeological studies yielded evidence for the development of an animal economy increasingly reliant on secondary products and the increased importance of more mobile forms of pastoralism (Cavallo 2000; Russell 2010; Nieuwenhuyse *et al.* 2015; Roffet-Salque *et al.* 2018).

Social configurations of this period, both locally and in the wider region, have likewise been an important focus of study. At Tell Sabi Abyad this subject has mainly been approached through studies of settlement structure, architecture and material culture (*e.g.*, Akkermans and Duistermaat 1997; Verhoeven 1999; Akkermans 2013a; 2014; Akkermans and Brüning 2019). As will be discussed in further detail below, particularly the dispersed nature of habitation at the site, as well as in the wider region, has been taken to indicate the importance of smaller social units. As put forward by Akkermans (2013a, 69):

> *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.*

However, as will be discussed below, various lines of evidence, among which the mortuary record (Plug *et al.* 2021, in press), indicate close relations between these groups. Despite the potential of mortuary evidence to shed light on many aspects of social life in the past, until recently this line of evidence was understudied at Tell Sabi Abyad. Exploring the social role of death rituals, it will be argued in this paper that throughout much of the site's history funerals and other events related to the dead were central in the communication and reinforcement of social bonds between the different groups at the site and perhaps those in the direct vicinity.

Social Relationships at Tell Sabi Abyad and the Wider Region

As touched upon above, the settlement at Tell Sabi Abyad comprised several small, contemporaneous occupations in close proximity to each other (Akkermans 2013a; Nieuwenhuyse and Akkermans 2019). The separation of habitation into smaller, but clustered units, is also seen elsewhere in the Balikh area and at other seventh and sixth millennium sites in the wider region, including Tell el-Kerkh, el-Kowm, Kashkashok and Seker al-Aheimar (Akkermans and van der Plicht 2014). Some have argued that such arrangements are connected with the carrying capacities of the landscape (*e.g.*, Frangipane 2007, 160-1) and others with mobility as a habitual, socially constructed way of life (*e.g.*, Bernbeck 2008). Whatever the main factors behind the settlement pattern of this period are, there appears to be a juxtaposition between segmentation and grouping, suggesting independencies and dependencies, autonomy and cooperation, between groups at various levels. Such an emphasis on the wider community rather than smaller groups has also been argued for more broadly (Frangipane 2007; Pollock 2012).

Importantly, at most sites in the region during this period population sizes appear to have been limited. Tell Sabi Abyad, for example, most likely housed only a few dozen to at most a few hundred permanent inhabitants at any given moment in time. Rather than a large local population, the substantial size of the site (the largest of the four mounds being five hectare) is mostly the product of the combined processes of a spacious layout, settlement drift and longlasting habitation (Akkermans 2013a; Plug *et al.* 2021). The limited population of Tell Sabi Abyad, and indeed most sites in the Balikh region, has been taken as evidence against the need for any formalised form of hierarchy structuring the social relationships within this society (Akkermans 2013a, 72). Rather, it has been suggested that they most likely were:

> *…organised on family or kin relationships, age and sex will have been the main social determinants, with decision-making primarily based upon consensus rather than upon the exercise of power by any sort of formally sanctioned authority* (Akkermans and Wittmann 1993, 165).

Indeed, the architecture at the site shows little evidence for differentiation between and within the different clusters of buildings in terms of size or access to resources (Akkermans 2013a, 71; Nieuwenhuyse 2007).

It has been argued by Akkermans (2013a, 68) that the clusters of houses at the site represented relatively autonomous and self-sufficient households. Nonetheless, considering their small size and close proximity to one another, it is likely that these groups were in close contact and together formed a single, larger community. Indeed, economic dependencies between the various social groups present at the site are obvious through many lines of evidence. For example, despite the clear separation between the different clusters of buildings, it appears that much cooking took place in the intermediate open areas (Plug *et al.* 2021). Furthermore, at least in the later phases of the site's history there are large storage facilities which appear to supersede the needs of the cluster of habitation in

which they were located. Although these storage buildings have been interpreted as giving evidence for a symbiotic relationship between a sedentary population and nomads who seasonally frequented the site (Akkermans and Duistermaat 1997; Verhoeven 1999), it is equally possible that they represent facilities used by the wider community at the site to store belongings and perhaps multi-year buffers of various resources (Frangipane 2007, 157-9; Plug 2021, 58-60).

Economic interdependencies between the various social groups at Tell Sabi Abyad are also supported by stable isotope evidence of plant, animal and human remains (Plug 2021). Although based on a limited sample size, stable carbon and nitrogen isotope analyses of barley and wheat show that, regardless in which areas of the site these were found, each crop was grown under very specific conditions, perhaps suggesting the use of the same fields (*ibid.*, 132). A more representative sample set of stable carbon and nitrogen isotope data of caprine bone collagen, on the other hand, shows a gradual narrowing of the isotopic variability throughout time (*ibid.*, 147). This suggests that the animals were increasingly herded in areas with isotopically similar food sources towards the later phases of the site's occupation, perhaps indicating the pooled herding of animals. Similarly, the human carbon and nitrogen stable isotope data from adults found in the main, communal cemetery of the site are also characterised by limited variability, with the vast majority falling within a one *permille* range (*ibid.*, 168). Despite the potential of isotope studies to recognise intrapopulation social groupings, as is the case at various Southwest Asian Neolithic sites (*e.g.,* Pearson *et al.* 2013; Itahashi 2018), no clear groups could be recognised at Tell Sabi Abyad. Therefore, when looking at the combined evidence it appears that people not only produced, stored and prepared their food together, but that people likely also ate together.

As touched upon above, the limited population size and spatial separation of social groups observed at Tell Sabi Abyad appears to have extended to the wider Balikh area. The habitation in the Balikh is characterised by occupation along the river and its tributaries, concentrated in the northern, rain-fed half of the basin, and a rather small number of permanently inhabited sites per period, most of which are clustered together and restricted in settlement size (Akkermans 1993, 147). Akkermans has estimated that the total, average (settled) Late Neolithic population of the Balikh varied between 260 and 1120 people (*ibid.*, 187). However, somewhat higher estimates can be envisaged for at least certain phases, based on the large size of the site of Mounbatah in the Halaf period and the evidence of multiple contemporaneous clusters of habitation existing at Tell Sabi Abyad. Also on a regional level, it is clear that despite their dispersal people chose to search out each other's proximity. The clustering of Late Neolithic sites observed in the Balikh area may have been related in part to the beneficial environmental characteristics of specific locations, but it is likely that social, economic, and cultural considerations also played a role (Akkermans 1999, 524).

Considering the small numbers of inhabitants per site and their close proximity, these groups of people must have been in constant interaction for all kinds of daily, and presumably ritual, activities. Indeed, based on evidence for trade, shared traditions in material culture, and arguably a degree of specialisation amongst sites, it appears that the sites were part of a well-connected network extending to far-off areas (Nieuwenhuyse and Akkermans 2019, 120). Furthermore, it is likely that the mobile forms of subsistence engaged in by the inhabitants of the region, including the utilisation of more distant pastures alongside village-based herding and farming, would have resulted in regular encounters between different social groups. Not only would such encounters have been coincidental, but perhaps regularly scheduled to coordinate the use of natural resources such as access to prime pasture lands and well-watered areas for the cultivation of crops. Furthermore, close relationships between the various groups inhabiting the landscape would have been advantageous in terms of resilience in the, sometimes, challenging semi-arid climate of this part of the region. Moreover, assuming a genetically healthy population, the small communities inhabiting the Balikh would have been part of the same networks for reproduction. It can therefore be suggested that the clusters of sites in the region formed *…coherent socio-economic units interacting at all levels* (Akkermans 1999, 524), which likely shared history, kin links, common territory, and resources (Astruc and Russell 2013, 341; van Zeist *et al.* 2000).

Sociologists have long stressed the importance of social gatherings and ritual events in the maintenance of social cohesion (see, *e.g.*, Whitehouse and Lanman 2014 and references). Various scholars have discussed the social importance of such gatherings, feasts in particular, in the prehistoric societies of Southwest Asia (Rosenberg and Redding 2000; Helwing 2003; Benz 2006; Twiss 2008; Munro and Grossman 2010; Balossi Restelli 2012; Goring-Morris and Horwitz 2007; Dietrich *et al.* 2012; Dietrich and Dietrich 2020). For the later Neolithic of Upper Mesopotamia specifically, Olivier Nieuwenhuyse (2007; 2008), among others, has argued that feasts were important social events. He notes that, from the later seventh millennium onwards, the pottery assemblages at Tell Sabi Abyad provide convincing evidence that feasting (which may have included gift-giving and conspicuous consumption) played an increasingly important role in the integration of society. Specifically, the pattern of growing standardisation of styles (interpreted by Nieuwenhuyse as providing evidence for competitive

emulation), morphological and decorative complexity, as well as a marked increase in vessels suitable for serving and consumption (Nieuwenhuyse 2008, 698-9), suggest that painted pottery styles may have played an important role in competitive feasting and were a medium for the structuring, negotiation, and reproduction of social identities. As will be illustrated below, the most obvious evidence for community-wide events encountered at the site of Tell Sabi Abyad concerns various forms of ritual behaviour, in particular engagements with the dead. Although mortuary and wider ritual practices in the Late Neolithic have been argued to be primarily domestic and private in nature (Verhoeven 2002; 2011), in this paper the evidence for a household-transcending relevance of such behaviour will be explored. In particular, the role of funerals to create strong bonds between the various social groups present at Tell Sabi Abyad and the near vicinity will be considered.

Communal Role of Mortuary Practices

Mortuary rituals occur in all societies and are believed to meet common needs. Not in the least the need to deal with a decaying corpse, but also various social and emotional concerns, such as dealing with grief, the renegotiation of social roles and the reconceptualization of the deceased person and its relationships (Gire 2014, 14; Robben 2005; 2018). Crucially, mortuary rituals can play an important role in the restructuring of society following the loss of a community member: not only the dead are transformed, but the bereaved, likewise, gain new roles, responsibilities, and identities (Giles 2012, 124). In addition to the significant personal impact of loss on the bereaved, on a communal scale the death of individuals who are central to the social group can cause significant upheaval (Giblin and Hug 2006, 13). Death rituals are argued to bring order to this chaos through the performance of familiar, shared acts, thus drawing people together (Romanoff and Terenzio 1998; Robben 2005; Hoy 2013). Indeed, funerals are important moments in which groups of people come together to find support in each other, honour the deceased, engage in shared ideologies and beliefs, and contribute to their perception of common identity and belonging (Laneri 2007, 4-5; Hoy 2013). In order to cope with the reality of death, social groups develop systems of meaning, in the form of a shared vision of the world, the body, and identity, which have their impact on the treatment of the dead. In such communications symbols are frequently utilised to create a coherent language, and to enable meaning-making in the often diverse and contradictory experiences accompanying death (Hoy 2013). The performative use of such symbols enables mourners to communicate emotions, memorialise the deceased, and connect themselves with the wider social group and sometimes disparate communities (*ibid.*, 43). As argued by Reimers (1999, 148):

> *In and through rituals the deceased and the bereaved become anchored in a specific common culture, in a specific value system and world-view, which is expected to persist, regardless of the demise of its singular constituents.*

As a result, the identification of symbolic behaviour in funerary settings has the potential to inform us not only of the ideological worlds but also of the social connectivity of the groups in question.

In the past decades, the important social role of mortuary behaviour within the Neolithic societies of Southwest Asia has been widely acknowledged and explored, setting in motion a shift from viewing such practices as passively reflecting, to actively constructing social orders (*e.g.*, Kuijt 2001; 2008; Kuijt *et al.* 2011, 508; Hodder 2010; Jammo and Tsuneki 2020; Pilloud *et al.* 2020; Maher *et al.* 2021). For example, with specific regard to the Pre-Pottery Neolithic periods, Kuijt (2001) has argued that death provided these early agricultural communities with key opportunities to create social memory, and to define, display and reinforce social order. The creation of common identities, shared memories, and ties to specific places through mortuary practices are widely argued to have been crucial in the integration and consolidation of communities, the alleviation of scalar stress, and the promotion of greater collaboration between segments of the community in the delayed-return economies of the Neolithic of Southwest Asia (Cauvin 2000; Goring-Morris 2000; Kuijt 2001; Verhoeven 2002; Watkins 2004; Hodder 2005; Kuijt 2008; Kuijt *et al.* 2011; Garfinkel 2019).

In contrast, for the later stages of the Neolithic mortuary behaviour is sometimes typified as being focused primarily on the household rather than the wider community. In his influential discussion of changing expressions of ritual and symbolism from the Pre-Pottery Neolithic B to Late Neolithic in the Levant, Syria and southeast Anatolia, Verhoeven (2002; see also 2011) suggested that a supposed dominance of single, primary burials within buildings and a decrease in secondary mortuary practices during the Late Neolithic was linked with broader changes in ritual practice and symbolism. He argued that during this period domesticity (expressed in the domestic, secluded and private nature of ritual behaviours) became the main structuring principle in ritual, in contrast to the Pre-Pottery Neolithic during which there was an emphasis on communality (public display, ritual buildings), dominant symbolism (statues, masks, plastered skulls), vitality (fecundity, domestication, life-force/ skull treatment), and people-animal linkage (physical/ symbolic links between animals and humans). Verhoeven argues that such

changes between the Pre-Pottery Neolithic and the Late Neolithic can be explained by changes in the mechanisms used in the organisation of society. Whereas during the Pre-Pottery Neolithic B communal ritual and symbolic systems were necessary to regulate society, during the Late Neolithic this regulatory and binding function was taken over by shared, decorated pottery styles. In contrast to its communal role during the Pre-Pottery Neolithic, during the Late Neolithic mortuary practice would have primarily become a *…means of stressing continuity of single household* (Verhoeven 2002, 8).

However, it is debatable whether this image of only domestic ritual behaviour and a reduction in ritual complexity during the Late Neolithic really fits the archaeological record. It is important to stress that the rich and diverse mortuary repertoire of the Late Neolithic (which has been pointed out frequently, *e.g.*, Akkermans 1989; 1993; 2008; 2013b; Akkermans and Schwartz 2003; Campbell 1992; 2007-8, 2012; Merpert and Munchaev 1993; Frangipane 2007; 2013; Pollock 2012; Croucher 2013; Fletcher 2016; Brereton 2016) is difficult to align with these models, suggesting a more complex picture. The evidence at Tell Sabi Abyad, discussed below, will underscore this point.

The Dead and the Living at Tell Sabi Abyad

Compared to the intensive and wide-ranging investigations of architecture, subsistence practices, and material culture at Tell Sabi Abyad, limited attention has focused on the ritual dimensions of life, particularly those surrounding death (but see Akkermans and Verhoeven 1995; Verhoeven 2000; 2007; Akkermans 2008; Verhoeven 2010; Akkermans *et al.* 2012). In part, the underexposure of death rituals at Tell Sabi Abyad should be attributed to the scarcity of graves excavated until the later years of excavation. In the first two decades of archaeological investigation, the Neolithic burial record was restricted. Despite the extensive excavation of Neolithic deposits, uncovering long-lived sequences of habitation in various areas of the site, only a few dozen graves were found interspersed throughout the settlement areas (Aten 1996; Otte *et al.* 2014). Notably, these graves comprised mainly infants and young children buried in and amongst houses; adolescents and adults were largely absent.

The existence of separate burial grounds was already hypothesised in the early days of excavation at the site. Based on the low numbers of (often very young) individuals found in the settlement areas of many Late Neolithic sites in the region, Akkermans postulated that during the later stages of the Neolithic such *…graveyards* [would] *have served to inhume most of the dead of a community* (Akkermans 1989, 83; see also Akkermans 1993, 307). It was only during the fieldwork campaign of 2005 that the suspicion of the existence of formal burial grounds at Tell Sabi Abyad was confirmed archaeologically, when the first graves of a large Neolithic cemetery were found on the north-east slopes of the summit of the main mound (Operation III, Tell Sabi Abyad I) (Akkermans 2008). In the subsequent years, the remains of just under 200 individuals were uncovered in this location (Plug *et al.* 2014). The mortuary record of the site was expanded further in the final fieldwork campaign of 2010, when the remains of another 85 individuals were found on one of the smaller mounds of the site, Tell Sabi Abyad III (Plug 2021; Plug *et al*; in press).

To date, the remains of more than 300 Neolithic individuals have been found at the site of Tell Sabi Abyad, representing one of the largest mortuary datasets of the Late Neolithic of Southwest Asia (Plug 2021). In contrast to the strong underrepresentation of adults in the settlement areas of the site, all age groups are well represented in the current data set. Importantly, the burial record gives evidence of complex and wide-ranging mortuary practices, with significant variability in burial location, grave construction, burial goods, body placement, and post-mortem manipulation of the remains. Notably, the norm appears to be a near-immediate separation of the dead from the living through single-stage individual burial, and a fully contracted placement in simple untreated pits in moderately distinct cemetery areas. However, this full set of norms only occurs in roughly one in five cases, with most mortuary sequences showing divergence from the norm in one or more aspects (in other words: fully normative burials were *not* the norm). Thus, while people apparently largely conformed to standardised mortuary practices, these were not non-negotiable, with most sequences allowing for the inclusion of alternative acts at different stages.

Importantly, as will be discussed below, much of the observed variation from the norm relates to extended interactions with the deceased. Although examples of such mortuary behaviour have been touched upon in past discussions (Akkermans and Verhoeven 1995; Verhoeven 2000; 2007; Akkermans 2008; Verhoeven 2010; Akkermans *et al.* 2012), only more recently has their social relevance been discussed more explicitly (Plug 2021; Plug *et al.* 2021; in press). As noted in these discussions, there is ample evidence that the practices surrounding death formed an important social arena for the local community. It appears that primarily through household-transcending mortuary events, the spatial placement of the dead, and the performance of high-intensity interactions with human remains, death rituals were used to create, maintain and display bonds between community members, both alive and deceased.

Funerals as Community-Wide Events

As noted above, Nieuwenhuyse (2007; 2008) has suggested that communal events may have played an increasingly important social role at Tell Sabi Abyad from the later seventh millennium onward. Although he has based this on the increased numbers and elaboration of decorated serving vessels at the site (which he interprets as having featured in commensal activities), clear feasting deposits (*e.g.*, those comprising large quantities of animal bone) have not been found at the site (P. Akkermans, pers. comm.). Furthermore, no buildings capable of accommodating the whole community were encountered, although the stone-lined *pisé* platform on Pre-Pottery Neolithic Tell Sabi Abyad II (Verhoeven and Akkermans 2000, 176), the open areas with platforms in Early Pottery Neolithic Operation III (Akkermans *et al.* 2011, 5; Akkermans 2014, 1462), and the Early Halaf plaza in Operation I (Akkermans 1996) may have been used for social gatherings.

Despite the lack of evidence for communal buildings or large-scale commensality, other evidence for community-wide events has been encountered at the site. The most obvious examples are the two instances of the burning of buildings, both found on Tell Sabi Abyad I in the layers dating to the Transitional period – roughly around the turn of the seventh to sixth millennium. In the most well-known case, referred to in the literature as the 'Burnt Village' of Operation I, several storehouses and associated structures were destroyed by an extensive fire, believed to have been lit intentionally (Akkermans and Verhoeven 1995; Verhoeven 1999; 2000; 2010). In the fills of the rooms of these buildings burnt grain and huge quantities of cultural material (such as pottery, flint and stone tools, personal ornaments, figurines, tokens, and clay sealings) were found, prompting an interpretation of their use as related to controlled storage (Akkermans and Duistermaat 1997; Verhoeven 1999). Similarly, in Operation II a completely burnt T-shaped building was found (Akkermans *et al.* 2012, 309). The contents of this building included finds such as heavy stone working platforms, stone tools, pottery discs, bone tools, tokens, and clay sealings. It appears that this building and its contents were also intentionally burnt by a very intense fire, which was perhaps kept burning for days (*ibid.*, 321).

Most importantly, perhaps, both contexts are associated with human remains (Akkermans and Verhoeven 1995; Verhoeven 1999; Akkermans *et al.* 2012). In Operation I the remains of two adult individuals (a male and a female; cf. Figure 4.2) were found amongst the burnt remains of one of the structures

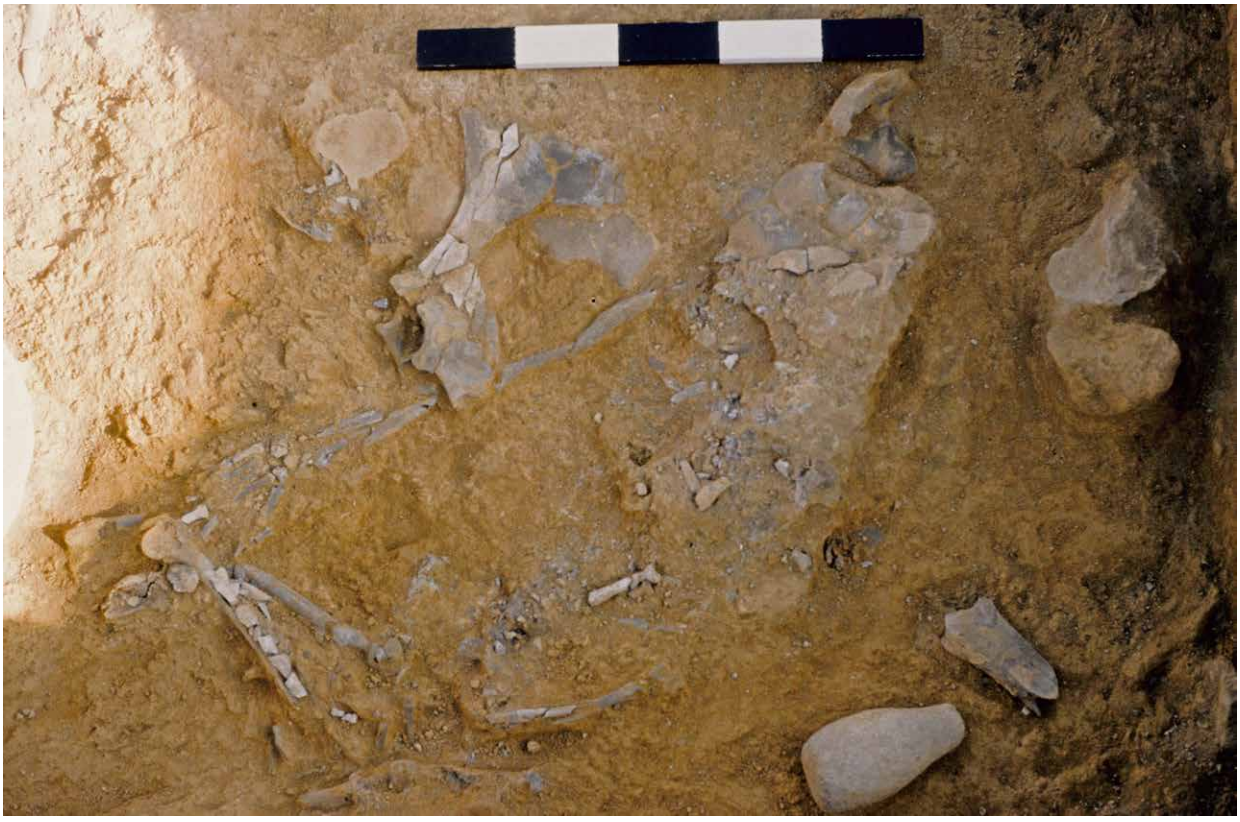

Figure 4.2: The adult male (BN92-004B) found in the 'Burnt Village' of Operation I, Tell Sabi Abyad I (Photo: Tell Sabi Abyad archive).

(Aten 1996), surrounded by large, enigmatic, clay ovals in which animal bones were embedded (Cavallo 1997; Verhoeven 2000). In one of the rooms of the burnt structure in Operation II the remains of an adolescent female were located on the floor, accompanied by half a mace head, yellow pigment, a large animal bone, and several pottery sherds (Akkermans *et al.* 2012). Considering the extent of the conflagrations and the vast quantities of objects deposited, these events would have likely involved large parts of the community (*ibid.*). Furthermore, the heat and flames would have been impressive to those witnessing the event, and the smoke produced by such fires would have perhaps been seen and smelt by nearby communities. It may not be coincidental that this only clear evidence for large-scale events at Tell Sabi Abyad is connected with funerary activity. Importantly, broader evidence at the site, specifically the spatial placement of the dead and the intensity of mortuary treatment of the corpse, also suggests that interactions with the dead may have had an important communal relevance.

The Spatial Placement of the Dead as a Social Statement

Patterns have emerged in the placement of the dead relative to each other, emphasising a collective component to their disposal. Although most individuals are interred in simple, single pit graves, the majority of these graves are located in long-lived, shared cemetery areas. Particularly the continuous use of the main cemetery of Operation III on Tell Sabi Abyad I throughout at least the second half of the seventh and early sixth millennium (Plug *et al.* 2014; Plug 2021) can be seen in this light and suggests that shared places of memory and foci for ancestry were created and reinforced across many generations, providing strong anchors to a communal past. In contrast, during the (at least) 600 years in which the cemetery was in use, the settlement shifted around continuously and relocated several times (Plug *et al.* 2021). Within this cemetery only very little internal clustering of graves is seen, suggesting an emphasis on the wider community rather than smaller subsections of the population, such as households. It is furthermore of interest that in at least one phase a large

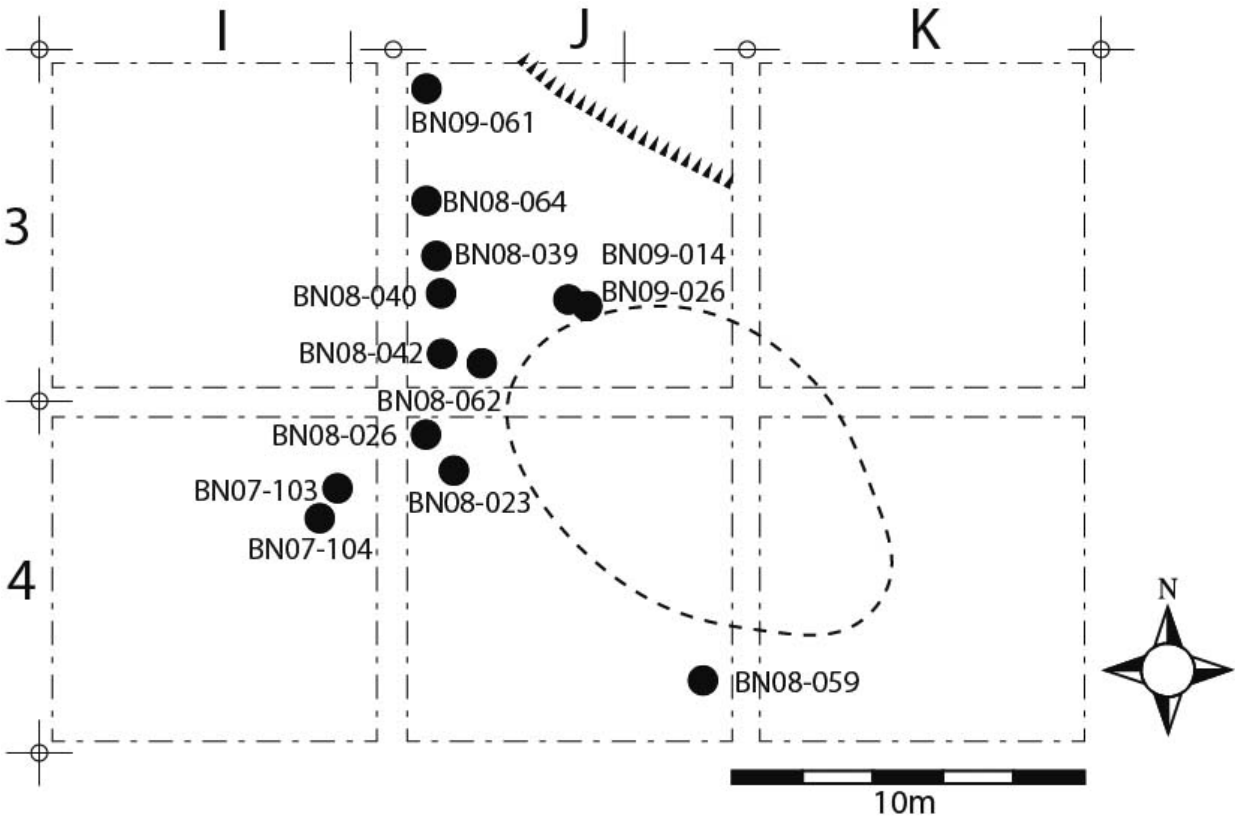

Figure 4.3: During Level B7C a red terrace (outlined with a stippled line) was built in the cemetery of Operation III, Tell Sabi Abyad I. Burials are indicated with black dots. (Image by D.J.H. Halbertsma).

terrace was located in the heart of the cemetery. This terrace was cut into the slope of the mound, measured approximately 11 × 7.5m in plan, and was paved with red slabs, around 10 cm thick (Figure 4.3). It did not relate to any structures but appears to have been freestanding within the cemetery area. Several graves were found to be directly associated with this feature. Although the precise purpose of this feature is unknown, its size and location suggest a larger-scale funerary use. If this interpretation is correct, it appears that the cemeteries were not only used to refer to collective ideals through the burial of the dead in a shared location, but also to host communal events.

In the early sixth millennium, during the Early Halaf, the main burial location shifted to the mound of Tell Sabi Abyad III, when a number of highly intriguing, collective mortuary features came into use (Plug *et al.*, in press). These features, of which six were found in the final season of excavation in 2010, comprise sizeable pits measuring several metres in diameter (Figure 4.4). The layered fill of these pits consisted of thick deposits of ashes and layers of clay containing human remains. Although the precise location of the fires producing these ashes is not known, the copious amounts found in these so-called 'death pits' suggest burning on a larger scale. Substantial bonfires taking place during events connected to these large, collective mortuary features may again imply participation of larger groups of individuals. Within the ashy fills, the remains of individuals of all ages were found, evidently interred in multiple stages. Whereas the skeletal remains of some individuals were found in articulation, many others were found in a highly disarticulated state throughout the pits. It can be proposed that, through the reworking of skeletal remains during subsequent burial activities, the multi-staged incorporation of the deceased may have symbolically facilitated a shift of focus from the deceased individual to the wider social unit (*e.g.*, Boric 2010, 65; Croucher 2012, 209). Nonetheless, the numbers (a couple dozen maximum) and the composition (all ages from infants to adults) of the human remains in each of these pits may point towards a use by a single household, opposed to the more communal use of the cemetery on Tell Sabi Abyad I throughout the preceding periods.

Performance of High-Intensity Mortuary Practices

Physical interactions with deceased bodies may also provide insights into the communal *vs.* private nature of death rituals. At Tell Sabi Abyad, the skeletal remains of a significant minority of the population yield striking evidence of highly intensive, formalised, performative

Figure 4.4: Early Halaf Death pit J7-S, Tell Sabi Abyad III (Photo: Tell Sabi Abyad archive).

mortuary behaviour through the manipulation of corpses at various stages. For example, an ongoing relevance of the physical remains of the dead (crosscutting age and sex boundaries) appears to have applied to isolated body parts, as certain bodies were revisited for the retrieval of skeletal elements, including (but not limited to) crania. The partibility and symbolic treatment of such fragments suggests that they held a certain meaning and power, even (or maybe especially) when separated from the whole (*e.g.*, Croucher 2010a; 2010b). Although there is no direct evidence, it is possible that these retrieved bones were in circulation amongst the living, as ultimate 'inalienable goods' linking the dead to the living (*e.g.*, Chapman 2000). At Tell Sabi Abyad, the final disposal of the skeletal elements was also often met with care. In several cases, isolated human bones were deposited within single primary or group burials, perhaps emphasising interpersonal relationships or adding to the ritual significance of the context. In other cases, they were buried separately in their own pit, or became parts of structured deposits holding fragments of other people, animals and material culture. This attention for the 'proper' burial of these isolated human bones may imply that they were still imbued with personal qualities. However, it can also be suggested that these remains had lost most personal associations and were primarily considered symbolically powerful material which should be disposed of appropriately.

Arguably most remarkably, however, several skeletons at Tell Sabi Abyad show tangible evidence of manipulation prior to burial, in some cases apparently involving delayed burial (Plug 2021). For example, several individuals show forms of (partial) skeletal disarticulation consistent with significant delays in burial of the corpse (*ibid.*, 269-75). Furthermore, various skeletal remains give evidence for the insertion of burning materials into the chest cavity in the form of discoloration of the inner surfaces of the ribs and anterior of the vertebrae, as well as the presence of ashes and charcoal fragments (*ibid.*, 257-68) (Figure 4.5). Another group of individuals show the intentional dislocation and hyperextension of the lower limbs prior to burial, likely achieved once the bodies had undergone partial decomposition (*ibid.*, 250-256) (Figure 4.6). These latter two extended ritual treatments of the body have been encountered in respectively fifteen and eleven cases, both occurring relatively spaced over hundreds of years, indicative of their repeated performance over several generations. Although the former practice – which is encountered

Figure 4.5: Localised, black and brown discolorations and a deposit of small charcoal and lime spots in the thoracic cavity of an adult individual found in the cemetery on Tell Sabi Abyad III (Photo: Tell Sabi Abyad archive).

Figure 4.6: The dislocated and hyperextended lower limbs of an adult male found in Operation III of Tell Sabi Abyad I (Photo: Tell Sabi Abyad archive).

not only in the cemetery of Tell Sabi Abyad I but also on the smaller mound of Tell Sabi Abyad III – occurs repeatedly between 6445 and 5915 BCE, it appears that this practice became particularly established site-wide following ca. 6245 BCE, in the Pre-Halaf and Transitional periods. The latter practice occurs almost exclusively in the Early Halaf period, between 6050 and 5730 BCE, in the by then dwindling cemetery of Operation III. Due the overlap between certain graves in which this practice is witnessed even belonging to the same broad stratigraphic phase, it can be inferred that they were constructed successively. Considering the ritual investment and intensity apparent through these extended mortuary behaviours, as well as their rare but repeated occurrence through long timespans and at different locations of the site, it is highly likely that their performance would have represented key moments for the community. It can be proposed that memories of, and stories referring to, such commemorative events provided the local community with a sense of time-depth, continuity, and shared identity.

Discussion

Social Relevance of Mortuary Behaviour at Tell Sabi Abyad

Based on the current evidence, it appears that at Late Neolithic Tell Sabi Abyad mortuary practices offered important opportunities for community integration. For example, it appears that group cohesion was emphasised spatially in the burial of the dead. Although the evidence at certain sites (*e.g.*, Tell el-Kerkh; Itahashi *et al.* 2018) indicates that in some communities sub-groups, such as households, were emphasised in death through co-burial, the lack of any clear clustering in the use of the cemeteries at Tell Sabi Abyad from the Early Pottery Neolithic through the Transitional period rather points to an emphasis on the wider community. Furthermore, the evidence also suggests that funerals provided important ritual settings for community events. Although most mortuary contexts indicate only small-scale ritual action in the form of simple, single-stage pit inhumation, others show evidence for large-scale, performative ritual behaviour. On occasion, these interactions appear to have been multi-sensory, involving the elaborate manipulation of decaying corpses, and the destruction and ritualised deposition of architecture and material culture, associated with animal and human remains.

Remarkably, through the repeated occurrence in various contexts over a long time-span, it appears that fire was an especially important ritual medium in the mortuary sphere. Many scholars have remarked upon the ritual potential of fire and its highly symbolic connotations in many, if not all cultures. A main symbolic association with fire is its capacity to make a lasting impression. Nilsson-Stutz and Kuijt (2014, 143), for example, remark that the use of fire in mortuary ritual is a *…highly visual, sensual, and powerful process.* The relevance of this characteristic has also been argued in relation to the Burnt Village'. Verhoeven (2010, 39) suggests that the main motivation for using fire in this context was '*…its capacity for making a total and dramatic impact on the human experience by means of a particularly important ritual act.* Indeed, certain mortuary gestures at Tell Sabi Abyad involving fire would have been sensory and emotionally impactful activities – in particular the combustion of houses and even large parts of the village, but likely also the insertion of burning substances into the deceased but (largely) fleshed bodies of certain community members. Not only would the performance of such rituals involving fire have created strong memories shared by those attending, their repeated occurrence throughout time and at different locations at the site suggests it comprised one of the familiar, shared symbols used by the local community to draw people together (*e.g.*, Romanoff and Terenzio 1998; Robben 2005; Hoy 2013).

The evidence for larger-scale, impactful mortuary behaviour at Tell Sabi Abyad discussed in this paper is in opposition to the suggestion by Verhoeven (2002) that mortuary behaviour during the Late Neolithic was primarily private in nature and focussed on the household rather than the wider community. As already discussed above, it appears that at the site the only obvious evidence for supra-household social events is related to the mortuary sphere. Further references made to communal values are inferred through the evidence for high-impact and/or large-scale death rituals, and through the use of shared cemetery areas. The archaeological record of other sites belonging to the Late Neolithic also provides us with numerous examples of household-transcending mortuary (and wider ritual) behaviour. Obvious examples include mass cremations, visually evocative events such as the burning of buildings, and large-scale feasts (*e.g.*, Merpert and Munchaev 1993; Buckley and Kansa 2011; Campbell *et al.* 2014). For example, similar to the 'Burnt Village' of Tell Sabi Abyad, the so-called 'Death pit' at Domuztepe (Kansa and Campbell 2002; Campbell 2007-8; Kansa *et al.* 2009; Carter 2012; Gauld *et al.* 2012) represents evidence for community-wide ritual participation as well as human-animal linkages. Similarly, the use of cemeteries at various sites (Bartl and Ramadan 2008; Bartl *et al.* 2008; 2009; 2010; Tsuneki 2011; 2013; Tsuneki *et al.* 2011; Bartl 2013; Jammo 2018; Jammo and Tsuneki 2020) can be seen as referring to collective, rather than purely domestic or private, ideals. Finally, the wider archaeological record indicates that the prolonged and intensive manipulation of the corpse did not cease following the Pre-Pottery Neolithic, but continued into the very latest stages of the Late Neolithic. For example, caches of human crania are found at later Halaf sites such as Tell Arpachiyah (Hijara 1978) and Yarim Tepe II (Merpert and Munchaev 1993), and in his review of the burial record of the greater Mesopotamian region, Brereton (2016, 195-6) even observes that fragmentation of human bodies is seen to intensify in occurrence in the course of the seventh to sixth millennium BCE. Similarly, at Tell Sabi Abyad, rather than diminishing though time, the latest phase of the site shows an intensification of the handling of human bodies at different stages after death.

Changing Conceptions on Death and Community at Tell Sabi Abyad

Indeed, it is clear that both lifestyles and death ways at Tell Sabi Abyad are marked by change through time. From the Early Pottery Neolithic onward, symbolic and social activities appear to have centred on the open areas between the houses and, most importantly, the cemetery, where evidence of internal spatial grouping was largely absent. Similarly, other lines of evidence suggest that much of daily life was centred on the community as a

whole (Plug *et al.* 2021). Although death rituals across this period show overall continuity, certain mortuary practices are seen to fluctuate. To summarise, there appears to be a slow progression to increasingly public-oriented funerary practices throughout the history of the site, as shown by a shift from ritual action away from the house into the cemetery in the Early Pottery Neolithic (Plug 2021; Plug *et al.* 2021; in press), the introduction of pre-burial application of fire to the human corpse in the Pre-Halaf (Plug 2021), followed by the large-scale burning of buildings in the Transitional period (Verhoeven 2000; Akkermans *et al.* 2012).

Although much change in mortuary behaviour is continuous and gradual, there are a number of key turning points in mortuary practice. The clearest turning point occurs at the onset of the Early Halaf. Not only does the primary burial location shift from Tell Sabi Abyad I to Tell Sabi Abyad III during this period, the treatment of the body is also marked by significant and intensive handling of the remains at different stages following death, including the manipulation of the lower limbs and the disarticulation and intermingling of individuals in the death pits. It is possible that the increasingly mobile lifestyles of the later seventh and early sixth millennium contributed to these changes. Although it is clear that the community of Tell Sabi Abyad was in contact with other regions from the earliest occupations at the site (as evidenced by the presence of imported goods from the wider region; Akkermans and Verhoeven 1995, 178), the increased use of distant pastures inferred for the later phases of the site may have resulted in more, or at least different, encounters with other communities (Akkermans 2013b; 2013c), and perhaps for the exchange of ideas regarding death and burial. It may not be coincidental that particularly from the late seventh millennium onwards new mortuary practices were introduced at the site, culminating in the early sixth millennium, the Early Halaf.

Although the shift in the place of the dead and changes in types of ritual actions witnessed during the Early Halaf indicate significant breaks with what went before, it appears that throughout the history of the site, people repeatedly returned to specific (and generally shared) locations to add to and interact with the dead. It can be hypothesised that both the use of communal cemeteries and the practice of collective deposition in the Early Halaf death pits, deliberately achieved throughout extended periods of time, may have served to display and reinforce social bonds. However, the scale of the social group primarily referred to may have fluctuated somewhat, with an emphasis on separate households or other types of smaller factions perhaps becoming more pronounced in the Early Halaf period. Mortuary deposition during this period shows increased segmentation, with both Tell Sabi Abyad I and III being used for the disposal of the dead. Importantly, there are marked contrasts in treatment of the body between these two burial locations: the hyperextension of the lower limbs occurs almost exclusively on Tell Sabi Abyad I (only one possible example is found on Tell Sabi Abyad III, in contrast to the 11 clear examples found on Tell Sabi Abyad I), whereas the use of large, collective mortuary features (the death pits) is restricted to Tell Sabi Abyad III. Such discrepancies may imply pronounced intra-communal differences in the understandings of death and dying during the Halaf phases at the site.

Moreover, the cemetery on Tell Sabi Abyad III comprised not one, but several death pits. Although it is unclear whether these pits were used simultaneously or successively, this spatial separation into distinct, collective mortuary features may be relevant for how we should conceptualise social structure during the Early Halaf at the site. Indeed, the highly segmented nature of habitation at Early Halaf Tell Sabi Abyad also appears to point to an increased emphasis on smaller groups within the wider community. The various spatially separated Early Halaf occupations at the site comprised collections of small buildings, interpreted as each accommodating a small household at most (Akkermans and Schwartz 2003, 151). Nonetheless, a continued importance of communal values and interdependencies between groups during this period may be implied by the use of a large storage building with a plaza (Akkermans 1996), as well as through the evidence for the ongoing use of cemeteries, the performance of high-impact mortuary treatments, and the burning of large-scale fires related to the death pits.

Conclusion

In conclusion, despite the spatially segmented settlement layout, the community at Tell Sabi Abyad appears to have engaged in cooperative practices in various ways, as suggested by the emphases on the wider community in both settlement and mortuary evidence. Large storage structures may point to communally managed storage practices at the site, and the isotope evidence of plants and animals may point to the use of shared fields and pooled flocks. Furthermore, much food production and consumption appear to have taken place in the open areas between the various clusters of habitation, and the limited isotopic range of the adult human population testifies against pronounced intercommunal differentiation in eating practices. Importantly, as discussed in detail above, it appears that the groups making use of the site also used ritual to promote social cohesion. Within this ritual repertoire interactions with deceased community members played a central role.

Although there is no direct evidence for feasts at Tell Sabi Abyad, there is evidence for supra-household

social and ritual activities. The large-scale burning of structures and deposition of material culture witnessed in Operations I and II of Tell Sabi Abyad I may imply that mortuary events could have involved larger groups of people, as do the vast quantities of ashes found within the death pits of Tell Sabi Abyad III and the large, freestanding platform found in the Operation III cemetery of Tell Sabi Abyad I. Although such household-transcending events stand in apparent contrast to the image of private and domestic ritual behaviour which has been proposed for the Late Neolithic of the wider region, at Tell Sabi Abyad there is ample evidence for a more public and community-wide relevance of mortuary rituals. At the site, the vast majority of the dead are buried within cemetery areas, providing the community with shared and enduring locations for their dead. Furthermore, the physical treatment of the human body in death appears to have been much more elaborate and performative than often assumed. The dead frequently underwent elaborate, multi-stage mortuary treatments which were passed on from generation to generation.

Based on the evidence for the public-oriented nature of various mortuary contexts, it is likely that at Late Neolithic Tell Sabi Abyad funerals provided important occasions for social gatherings, involving the local community, and perhaps even those in the wider area. Consequently, it appears that mortuary events were employed as a means of integration and consolidation of the wider community through the creation of shared stories, memories, identities, traditions, and places of ancestry and history. Nonetheless, towards the later phases of occupation at the site, the mortuary record is marked by significant change in both the handing and spatial placement of the dead, perhaps indicative of a shift in social values from a focus on the wider community towards smaller segments of the population.

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Chapter 5

Chemical Study of Bitumens from Tell Sabi Abyad (Syria) from 7000 BCE to 1150 BCE

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Abstract

Sixty bitumen samples from Tell Sabi Abyad, dating between 7200 and 1150 BCE, were submitted for GC-MS analyses of steranes and terpanes and stable carbon isotopic analyses of chromatographic fractions. The numerous and diverse samples include lumps of bitumen, bitumen applied to repair pots, bitumen used as paint, and beige plates containing bitumen mixed with other substances. The results show that the bitumen used at Tell Sabi Abyad was derived from various sources. In the Middle Assyrian period, a single source was used that is likely located in southeastern Turkey. Between 7200 and 5700 BCE, various sources of bitumen are in evidence, including one well-identified source: the oil-stained sands of the Jebel Bishri (central Syria). An unknown source, enriched in C27 diasteranes never observed so far in oil seeps in Turkey and Iraq, has also been identified in samples dated between 6700 and 5700 BCE.

Introduction

Tell Sabi Abyad comprises of four prehistoric mounds (Tell Sabi Abyad I-IV), measuring between one and five ha in size. Tell Sabi Abyad I, II and III have been systematically excavated by Prof. P. Akkermans (Leiden University) between 1986 and 2010. The mounds were intermittently inhabited from the eighth until the mid-sixth millennium BCE. Occupation shifted back- and forth from one mound to another. Settlement concentrated on the main mound of Tell Sabi Abyad I after *c.* 6700 BCE, until its abandonment in the mid-sixth millennium. In the late 13th century BCE (Late Bronze Age), the site was resettled again.

The excavations on the largest mound, Tell Sabi Abyad I, were divided into several operations. Between 1986 and 1999, work focused on Operation I in the southeastern part of the site, where occupation levels of the late seventh and early sixth millennium, ca. 6200-5850 BCE, were exposed (Akkermans and Le Mière 1992; Akkermans 1996;

2013; Akkermans *et al.* 2014). Excavation in Operation II took place in 2003 and 2004 in the northeastern area, with levels dated to ca. 6100-5800/5700 BCE (Akkermans *et al.* 2006; 2012). The northwest slope was excavated as operation III between 2002 and 2009 (Akkermans *et al.* 2006; Nieuwenhuyse *et al.* 2010; Nieuwenhuyse 2018). Operation IV was excavated in 2002 and 2003 and is located on the western side of mound I.

Tell Sabi Abyad II is a low oval mound of less than 0.5 ha in size and was excavated between 1993 and 2001 (Verhoeven and Akkermans 2000; Verhoeven 2004). The lowest levels belong to the Pre-Pottery Neolithic, while the upper levels have been dated to the Initial Pottery Neolithic, the very early seventh millennium (7050-6700 BCE, Akkermans 2013).

Tell Sabi Abyad III, a low one-hectare mound, was investigated in 2005 and 2010. It has been dated to the late eighth and seventh millennia, ca. 7200-6700 BCE (Nieuwenhuyse *et al.* 2010; Akkermans and Brüning 2019).

The present study aims to document the composition of the bitumen samples and, in particular, to try to trace their origin by comparison to oil seeps analysed in southeastern Turkey, western Iraq and Kurdistan. To aid the identification, data on bitumen from some other archaeological sites in Syria (Umm el Tlel, Qreiye-Ayyash, Tell Beydar, Tell Raqa'i, Tell Gudeda and Tell Atij) and western Iraq (Arpachiyah, Telul Eth-Thalathat II, Assur, Nineveh, Khorsabad) are also considered.

Bitumen at Tell Sabi Abyad I

The samples that have been analysed were found in various areas and periods at Tell Sabi Abyad and indicate its use over time. The samples have been divided by period:[1]

1. 16 Late Bronze Age samples, from the (Middle Assyrian) fortress and dated to about 1230-1150 BCE.
2. 10 samples from levels dated to ca. 6100-5700 BCE (Pre-Halaf/Transitional-Early Halaf periods), which derive from Operations I and II at Tell Sabi Abyad I.
3. 12 samples dated to about 6700-6400 BCE (Early Pottery Neolithic period), from Operations I and III at Tell Sabi Abyad I.
4. 22 samples dated to ca. 7200-6700 BCE (Late PPNB-Initial Pottery Neolithic periods), from Tell Sabi Abyad II and III.

1 Two samples have been transferred from one group to another based on the results of the chemical analysis; see the discussion below.

Group 1

The first group dates to the Late Bronze Age, ca. 1230-1150 BCE. The Middle Assyrian fortress yielded 56 objects with bitumen (Table 5.4). This fortified farmstead (*dunnu*) located at the western frontier of Assyria, was a minor administrative centre, as attested by the numerous cuneiform tablets found (Wiggermann 2010). Unfortunately, no text has been discovered at Tell Sabi Abyad mentioning bitumen or tar. However, there are numerous texts elsewhere describing the use and trade of bitumen. One of the most essential sources of bitumen was at Ḫīt. Bitumen was called *iṭṭû*. Dry bitumen was also called *kupru*. As a liquid, it was called *qīru* or *qīrtu* (especially in the northern Assyrian dialect) (Stol 2012).

The samples from the Middle Assyrian fortress are mostly found in room context at floor level. Some were still attached to or mixed with architectural features such as mortar, plaster and bricks. In one room specifically, the bitumen was found between the bricks, perhaps to make the floor and lower walls impermeable. It may suggest that the room had the function of a bathroom. Bitumen was also found in the potter's workshop. Here bitumen was found both on a jar stopper (No.1787, Table 5.1) and the lower part of a pottery wheel pivot stone (No.1973, Table 5.1).

Bitumen is well-known as a product for making vessels impermeable. As in previous (Neolithic) periods, basketry at the Assyrian fortress was smeared with bitumen to make it more waterproof (No.1783, Table 5.1). Bitumen was also found in a large jar dug into the floor (No.1972, Table 5.1). Another pottery vessel (P99-339) is worth mentioning in this context, even though it was never sampled, as it was completely covered in a thick bitumen on the inside. The vessel bore the sign 'A', possibly 'water'. However, Wiggermann (2008) mentions that the spelling 'A' instead of A.MEŠ is unusual. Another explanation is that the vessel was intended for storing bitumen.

Samples of group 1 (Table 5.1) are characterised by lumps of brown mixtures (No.1972; 1973). Some of them clearly show mortar aspects (No.1785;1786;1790), and several very black lumps with a conchoidal fracture are undoubtedly pure bitumen and, therefore, references to the pristine oil seeps (Nos. 1784; 1788; 1789; 1791; 1794; 1802; 1803).

Group 2

Five samples belonging to group 2 come from Operation II. Operation II was a small-scale excavation area with only a few structures. As it dates to the period Transitional into the Halaf period (ca. 6100-5700 BCE), the samples were combined with material from Operation I dating to the same period. Below the Early Halaf remains in Operation II, there was the Burnt Building. A series of radiocarbon samples from this building, dating to

Group	Data bank number	Company and lab number	Archaeological reference	Square	Locus -Lot	Description	Period
	1783	Humble Aug 03-Fev 04	Sabi Abyad Fortress-Sample No.1. SN93-90	M13	2-30	Lumps of bituminous mixtures from a mat or a basket. On floor level of room 2, between sherds and complete pottery shapes	1230-1150 BCE
	1784-H	Humble Aug 03-Fev 04	Sabi Abyad Fortress-Sample No.22. SN96-35	H11	25-42	Very black lumps, hard, with the aspect of pure bitumen. No visible minerals. In roomfill of area with bins (coffre, huche, bac in stable), ovens, etc. Adjacent to LBA palace.	1230-1150 BCE
	1784-GMR	JCSY004-GeoMark Research	Sabi Abyad Fortress-Sample No.22. SN96-35	H11	25-42	Very black lumps, hard, with the aspect of pure bitumen. No visible minerals. In roomfill of area with bins (coffre, huche, bac in stable), ovens, etc. Adjacent to LBA palace.	1230-1150 BCE
	1785	Humble Aug 03-Fev 04	Sabi Abyad Fortress-Sample No.9.SN96-117	J11	32-39	Burnt bitumen. Bituminous mixture,hard and black. Mortar aspect with vegetal debris when freshly broken. Typical altered aspect at surface. Found between baked mudbricks on bathroom/toilet floor and row of these bricks against the wall. Bitumen still fix to the bricks	1230-1150 BCE
	1786	Humble Aug 03-Fev 04	Sabi Abyad Fortress-Sample No.6. SN96-123	J11	29-28	Mortar aspect. Vegetal debris and minerals visible on freshly broken sample. In roomfill. Reddish brown / beigemuddrick debris, lumps of charcoal, remains of baked tile with traces of bitumen.	1230-1150 BCE
	1787	Humble Aug 03-Fev 04	Sabi Abyad fortress-Sample No.8. SN96-133	M11	33-16	Fairly hard lump with minerals but without vegetal debris. Found on floor level of potter's workshop. Room filled with lot of pottery. Possibly bitumen jar stopper.	1230-1150 BCE
	1788-H	Humble Aug 03-Fev 04	Sabi Abyad Fortress-Sample No.1. SN96-136	N10	2-10	Very black matrix with a lot of small minerals with the aspect of a pure bitumen. Some micro-vegetal debris at surface. In fill of area west of outer fortress wall (on inside). Same level as top of outer wall.	1230-1150 BCE
	1788-GMR	JCSY005-GeoMark Research	Sabi Abyad Fortress-Sample No.1. SN96-136	N10	2-10	Very black black matrix with a lot of small minerals with the aspect of a pure bitumen. Some micro-vegetal debris at surface. In fill of area west of outer fortress wall (on inside). Same level as top of outer wall.	1230-1150 BCE
1	1789	Humble March 04	Sabi Abyad Fortress-Sample No.13. SN97-74	48	13--153	Sample with a pure bitumen aspect. No visible minerals or vegetal debris. Found in area G which is covered with mudbrick pavement. Molten bitumen covering grain/ vegetal remains.	1230-1150 BCE
	1790	JCSY006-GeoMark Research	Sabi Abyad Fortress-Sample No.55. SN97-78	M8	79-137	Typical mortar with white minerals and some vegetal debris. Under collapse wall (AO), directly on the floor (AP). Bitumen attached to white plaster.	1230-1150 BCE
	1791	Humble Fev 04	Sabi Abyad Fortress-Sample No.4. SN97-86	N9	7-51	Aspect of pure bitumen- conchoidal fracture, shiny. No mineral in the mass. In roomfill. Found in SE corner of room 7, to the North of doorway F.	1230-1150 BCE
	1794	Humble Mars 04	Sabi Abyad Fortess-Sample No.11. SN98-101	J8	70-279	Pure bitumen with conchoidal fracture. Found near the floor level (floor AZ). The floor was filled with small stones alongside the walls.	1230-1150 BCE
	1795	Humble March 04	Sabi Abyad Fortress-Sample No.3. No.SN98-500	H8	43-293	Sample with a mortar aspect, large vegetal debris as imprints (0,4-0,5 cm) . In fill of doorway, which also contained tablets.	1230-1150 BCE
	1802	Humble March 04	Sabi Abyad Fortress-Sample No.9. SN01-124	G9	37-74	Pure bitumen with conchoidal fracture. In highest LBA level. Directly underneath topsoil.	1230-1150 BCE
	1803	Humble March 04	Sabi Abyad Fortress-Sample No. 18. SN01-133	M7	25-161	Pure bitumen with conchoidal fracture. Found in brownish sand with debris in outside area.	1230-1150 BCE
	1804	JCSY007-Geomark Research	Sabi Abyad Fortress- Sample No.9. SN01-146	N8	43-95	Black lump, hard with numerous minerals. No vegetal debris. Altered surface with typical aspect of weathered bitumen. Brown colour when freshly broken. Found on floor (R).	1230-1150 BCE
	1972	JCIS009- GeoMark Research	Sabi Abyad-Sample No.2. SN03-142	L8	67-176	Grey sample, unclear if bitumen. Found in jar which was dug into mud-brick tile floor. Dark-brown ashly deposition, almost the same as found inside the jar.	1230-1150 BCE
	1973	JCIS010- GeoMark Research	Sabi Abyad. No.3. SN03-117	O12	31-131	Numerous lumps of brown mixture. Lump of bitumen found on an object (pottery wheel of stone).	1230-1150 BCE

Table 5.1: Tell Sabi Abyad samples: group 1-4, and Umm el Tlel and Qreiye-Ayyash samples. (Tell Sabi Abyad: Akkermans and Verhoeven 2000; Van der Plicht *et al.* 2011; Akkermans 2014a; b; Akkermans and Verhoeven 2014; Nieuwenhuyse 2018. Umm el Tlel: Boëda 2009. Qreiye-Ayyash: Gschwind 2015).

Group	Data bank number	Company and lab number	Archaeological reference	Square	Locus -Lot	Description	Period
2	2316A	SY0086-GeoMark Research	Sabi Abyad No. SN05-341	V6	94-214:5	Bitumen repair on pottery sherd. Mass of bitumen on the interior of potsherd and his slice.	6050-6020 BCE
	2316B	SY0087-GeoMark Research	Sabi Abyad No.SN05-341	V6	94-214:5	Bitumen painting scraped from the exterior face of potsherd	6050-6020 BCE
	1971	JCIS008-GeoMark Research	Sabi Abyad No. SN03-122	V6	106-263	Lumps of brown bitumen	6100-5800-5700 BCE
	1981a	JCIS013-GeoMark Research	Sabi Abyad No. SN03-100	V6	2-3:20	Bitumen repair on painted pottery sherd	6100-5800/5700 BCE
	1981b	JCIS014-GeoMark Research	Sabi Abyad No. SN03-100	V6	2-3:20	Bitumen repair on painted pottery sherd	6100-5800/5700 BCE
	1985	JCIS015-GeoMark	Sabi Abyad No. SN02-98	V6	3-1	Lumps of black bitumious mixture	6100-5800/5700 BCE
	1986a	JCIS016-GeoMark Research	Sabi Abyad No. SN02-98	V6	1-2:2	Bitumen used as repair on a painted sherd, no bitumen inside	6100-5800/5700 BCE
	1986b	JCIS017-GeoMark Research	Sabi Abyad No. SN02-98	V6	1-2:2	Scraped paint from the outside face of the potsherd	6100-5800/5700 BCE
	1988	JCIS018-GeoMark Research	Sabi Abyad No. SN02-98	Q13	139-380:4	Coat of bitumen on a part of the potsherd	6095-6040 BCE
	1992	JCIS019-GeoMark Research	Sabi Abyad No. SN92-36	Q14	75-173	Lump with reed impressions	6095-6040 BCE
3	2318	Humble fev 07	Sabi Abyad No. SN05-303	E3	242-547	Plate with quartz grains and bitumen. Oil-stained sand of Bichri? Some vegetal debris in the mass with rare imprints at surface	6825-6740BCE
	2323	Humble sept 06	Sabi Abyad No. SN05-379	E4	109-331	Imprints of mats or baskets. Two types of imprints	6750-6675 BCE
	2325	Humble sept 06	Sabi Abyad No. SN05-88	E4	109-333	Looks like an oil-stained sand with vegetal imprints at surface only	6750-6675 BCE
	2326-H	Humble sept 06	Sabi Abyad No. SN05-387	E4	127-375	Beige plates.When freshly broken, black mixture with numerous vegetal debris and some mineral grains	6750-6675 BCE
	2326-GMR	Sy0088-GeoMark Research	Sabi Abyad No. SN05-387	E4	127-375	Beige plates.When freshly broken, black mixture with numerous vegetal debris and some mineral grains	6750-6675 BCE
	2327	Humble fev 07	Sabi Abyad No. SN05-109	E4	110-335	Beige plate with a smooth surface but when broken mixture of quartz grains-bitumen and vegetal debris	6750-6675 BCE
	2329	Humble sept 06	Sabi Abyad No. SN05-108	E4	109-333	Plates with imprints of mats or baskets on some samples. Freshly broken, mixture wit an oil-stained sand aspect : quartz with bitumen	6750-6675 BCE
	1974	JCIS011- GeoMark Research	Sabi Abyad. No. SN03-100	F8	11-39	Hard black lump-Standard coarse ware pottery with bitumen	6455-6375 BCE
	1976	JCIS012-GeoMark Research	Sabi Abyad. No. SN03-100	E9	2-2	Hard black lump-Standard coarse ware pottery with bitumen	6455-6375 BCE
	1978	JCSY007-GeoMark Research	Sabi Abyad No. SN03-100	E3	22-43	One Standard Coarse ware sherd with bitumen residue	6455-6375 BCE
	1979	JCSY008-GeoMark Research	Sabi Abyad No. SN03-100	F8	518-541	Standard coarse ware pottery with bitumen	6455-6375 BCE
	2320	Humble feb 07	Sabi Abyad No. SN05-354	E4	160-1001	Lumps with imprints of plant stems but no quartz grains. Hard mixture, black and homogenous	7025-6815 BCE
	2331	Humble feb 07	Sabi Abyad No. SN05-306	E4	165-488	Black mixture with a mortar aspect. The sample is full of vegetal debris. No quartz grains are visible.	6865-6770 BCE
4	744	B74903-Elf Aquitaine	Sabi Abyad II- H5-17-22	II/H5	17-22	1,6 mg scraped from the sickle	7050-6690 BCE
	745	B74904-Elf Aquitaine	Sabi Abyad II- H6-5-7	II/H6	5-7	1,7 mg scraped from the sickle	7050-6690 BCE
	746	B74905-Elf Aquitaine	Sabi Abyad II-H6-10-13	II/H6	10-13	1,6 mg scraped from the sickle	7050-6690 BCE
	747	B74906-Elf Aquitaine	Sabi Abyad II-H6-20-33	II/H6	20-33	1,1 mg scraped from the sickle	7050-6690 BCE
	748	B74907-Elf Aquitaine	Sabi Abyad II- H7-8-11	II/H7	8-11	3,3 mg scraped from the sickle	7050-6690 BCE

Table 5.1: continued.

Group	Data bank number	Company and lab number	Archaeological reference	Square	Locus -Lot	Description	Period
4	749	B74908-Elf Aquitaine	Sabi Abyad II-H7-10-14	II/H7	10-14	2,1 mg scraped from the sickle	7050-6690 BCE
	750	B74909-Elf Aquitaine	Sabi Abyad II-H7-11-15	II/H7	11-15	2,9 mg scraped from the sickle	7050-6690 BCE
	751	B74910-Elf Aquitaine	Sabi Abyad II-H7-12-16	II/H7	12-16	75,9 mg scraped from the sickle	7200-7050 BCE
	752	B74911-Elf Aquitaine	Sabi Abyad II- H7-12-17	II/H7	12-17	7,5 mg scraped from the sickle	7200-7050 BCE
	753	B74912-Elf Aquitaine	Sabi Abyad II-SN93-4	II/H6	22-43	Bitumen coating basketry, imprints visible.	7050-6690 BCE
	754	B74913-Elf Aquitaine	Sabi Abyad II-SN93-12	II/H6	22-43 (?)	Bitumen coating basketry, imprints visible.	7050-6690 BCE
	755	B74914-Elf Aquitaine	Sabi Abyad II-H7-12	II/H7	12-21	2,1 mg scraped from the sickle	7200-7050 BCE
	2334	Humble	Sabi Abyad III. No.SN05-418	III/H7	102-228	Pottery sherd with bitumen	7000-6700 BCE
	2336	SY0098- GeoMark Research	Sabi Abyad III. No.SN05-396	III/H8	68-181	Sample with a typical aspect of oil-stained sand from Bichri. Quartz grains with bitumen	7000-6700 BCE
	2337	Humble Jan 07	Sabi Abyad III. No.SN05-395	III/H8	76-195	Selected pieces show imprints of mat or basket. The mixture is very black and composed of quartz grains + bitumen . Imprints only at surface.	7000-6700 BCE
	2338	SY0099-GeoMark Research	Sabi Abyad III. No.SN05-393	III/H8	32-90	Mixture of bitumen with quartz grains and straw debris. Basket coating?	7000-6700 BCE
	2339	Humble feb 07	Sabi Abyad III. No.SN05-394	III/H8	76-210	Mixture with basket imprints at surface. Typical oil-stained sand from the Jebel Bichri.	7000-6700 BCE
	2340	Humble sept 06	Sabi Abyad III. No. SN05-015	III/H8	9-15	Plate with quartz grains and bitumen. Oil-stained sand of Bichri?	7000-6700 BCE
	2342	SY0100- GeoMark Research	Sabi Abyad III. SN05-314	III/H8	76-208	Aspect of oil-stained sand from Jebel Bichri on lump likely to come from baskets.	7000-6700 BCE
	2345	SY0089-GeoMark Research	Sabi Abyad III. No.SN05-319	III/H8	94-207	Black mixture with quartz grains which likley come from basket coatings	7000-6700 BCE
	2347	Humble feb 07	Sabi Abyad III. SN05-47	III/H8	23-44	Aspect of oil-stained sand from the Jebel bichri with vegetal imprints at surface	7000-6700 BCE
	2352	Humble sept 06	Sabi Abyad III. No. SN05-318	III/H8	52-206	Mixture of quartz grains and bitumen: oil-stained sand of the Jebel Bichri with imprits of baskets or mats	7000-6700 BCE
Roman military site of Qreiye-Ayyash	2290	SY0083-GeoMark Research	SY0083-GeoMark Research	Q05	245-02	Hard black mixture with quartz, degasing features + rare vegetal debris. Hit?	200-275 CE
	2291	SY0084-GeoMark Research	SY0084-GeoMark Research	Q05	270-01	Aspect of oil-stained tar sand. Numerous quartz grains-Jebel Bichri tar sands? Bichri	200-275 CE
	2292	SY 0085-GeoMark Research	SY 0085-GeoMark Research	Q05	302-01 V060	Fine coat ofhomogenous bitumen lining the interior of a potsherd. Hit?	200-275 CE
Umm El Tlel	1780	Humble -02-1853-54150	Humble -02-1853-54150	UM01 VI 3d' AL	157-60	Composite sample with a white background, quartz grains and numerous black grains selected for analysis. From a Levallois point at the proper place. Bichri	70.000 BCE
	1781	Humble -02-1853-54151	Humble -02-1853-54151	UM01-VI3d'-AJ	158-5	Black material from a Levallois point at the proper place. Bichri	70.000 BCE
	1782	Humble -02-1853-54151	Humble -02-1853-54151	UM01 VI 3d'1-AL	159-518	Black plates with nmerous quartz grains. Bituminous sand form the jebel Bichri?Same layer as 1780 and 1781. Bichri	70.000 BCE

Table 5.1: continued.

ca. 6050-6020 BCE, put it in the Transitional period (Akkermans *et al.* 2012).

Five of the samples were attached to pottery. One sample came from an oval coarse ware vessel with bitumen as residue. An additional bitumen sample (No. 1992) was a lump with a reed impression. Three pottery sherds have been analysed twice as bitumen had been used for both repair and painting.

Previously, nine bitumen samples from the Burnt Village were analysed (Connan *et al.* 2004). The present

analyses correspond well with the previous results. These nine samples previously analysed came from occupation contexts destroyed by fire at around 6000 BCE. Six of these were bitumen-painted plant-tempered Standard Coarse ware (SW).[2] The study also included three repair sherds (one Orange Fine Ware and two Standard Fine Ware) (Connan *et al.* 2004; Nieuwenhuyse *et al.* 2003).

Bitumen paint was a relatively rare phenomenon. The pottery of Operation I included 177 sherds with bitumen paint. Operation II only had ten bitumen-painted sherds (Table 5.5). Considering Operation I and II's total amount of sherds combined, only 0,4% had bitumen (the total amount of sherds, including all wares, was 49.974 for Operation I and 1812 operation II). However, sherd counts may be misleading. Nieuwenhuyse estimated that, in fact, 3,5% of all *complete* Standard Ware vessels in levels 7 and 6 of Operation I had bitumen paint. 59 sherds come from bowls, four from goblets, 90 from jars and three from pots. The rest are uncertain (Nieuwenhuyse 2007). Nieuwenhuyse (2007) noted that the bitumen-painted ware is a homogeneous group consisting of coarse plant-tempered ware and thick-walled vessels. Most vessels are relatively small, open portable containers. Twenty of the 116 vessels were medium-sized jars, and 18 were small jars. Many of the bowls have straight walls. Bitumen occurs on the exterior surface along the rim and the shoulder. There are only three examples of bitumen applied to the interior. Only ten different motifs are seen, with the motif of the pending vertical lines being the most common (over 80%) (Nieuwenhuyse 2007, 77, 177).

Samples of group 2 (Table 5.1) contain bitumen-painted potsherds (No.1981 and No.1986, Figure 5.1, No.2316 and No. 1988) and repairs using bitumen. A special protocol has been adopted to analyse the bitumen used to repair or paint potsherds (Nieuwenhuyse *et al.* 2003; Connan *et al.* 2004). Figure 5.1 shows the potsherds before and after scraping the bitumen. In addition to these potsherds, a hard black lump with typical reed imprints (No.1992) has also been analysed. Belanová-Štolcová (2010) describes a similar sample at the Bronze Age site of Al-Khidr on Failaka Island.

Group 3

Group 3 contained twelve samples. One Standard Coarse ware sherd with bitumen residue (No. 1978) came from operation III, Level A4/3 (ca. 6455-6375 BCE). Three additional samples (Nos. 1974, 1976, 1979) belong to Standard Coarse ware pottery excavated in Operation IV, dated to Early Pottery Neolithic and corresponding with levels A3-A4 of Operation III. They were the only three sherds of the pottery assembly of Operation IV that showed traces of bitumen out of a total of 9205 Neolithic sherds (Late Bronze Age and Halaf Fine ware omitted) that were registered.

Five samples are from Tell Sabi Abyad I, operation III, level A10 (6750-6675 BCE / Early Pottery Neolithic) and are unidentified lumps with vegetal debris or imprints or pieces with a clear impression of basketry.

Three additional bitumen lumps, Nos. 2318, 2320 and 2331, also from Tell Sabi Abyad I, Operation III, have been grouped here with group 3. Even though the contexts of layers in levels A11 (6825-6740 BCE) (No. 2318) and A12 (6865-6770 BCE) (Nos. 2320, 2331) would suggest that the samples should belong to group 4, our chemical results indicate that they belong to group 3. All contain plant inclusions and show imprints of vegetal products.

In total, from this period, there are only 33 finds of bitumen, of which the majority consists of residues on pottery and unidentified lumps (Table 5.5). It is worth mentioning that the earliest use of bitumen for a repair found at Tell Sabi Abyad was on a Standard Ware Bowl belonging to level A8 (ca. 6630-6590 BCE).

Operation V dates to the Early Pottery Neolithic / Pre-Halaf period (6300-6200 BCE) and yielded 4737 sherds (Late Bronze Age and Halaf Fine ware omitted). None of these was bitumen painted or had bitumen repair. However, two sherds from H12 (SN01-105 and SN-144) had traces of bitumen, possibly as residues. These samples were not analysed and are therefore not included in the present study.

Samples of group 3 (Table 5.1) exhibit two main types: brown-black fairly hard lumps (No.1974 and No.1976) and beige plates with numerous quartz grains, which show the typical aspect of oil-stained sand from the Jebel Bishri (No.2326). Two samples (No.2323 and No.2329) present imprints of baskets or mats.

Group 4

The samples in group 4 derive from the mounds of Tell Sabi Abyad II and Tell Sabi Abyad III. All bitumen from Tell Sabi Abyad II came from chipped stone or from basketry coated with bitumen. Six individual baskets have been identified (Verhoeven and Akkermans 2000). All the objects have been dated to belong to PPNB / Initial Pottery Neolithic, hence our group 4. The earliest of our samples from Tell Sabi Abyad II is dated to Period Balikh ID, ca. 7550-6850 BCE. In total, 12 samples were submitted for analysis. Ten samples were retrieved from chipped stone, and two samples were bitumen with basketry impression.

Bitumen was rare among the finds from Tell Sabi Abyad II. Only six baskets, ten chipped stones and a

2 For the definitions of the different wares, see Le Mière and Nieuwenhuyse 1996; Nieuwenhuyse 2018.

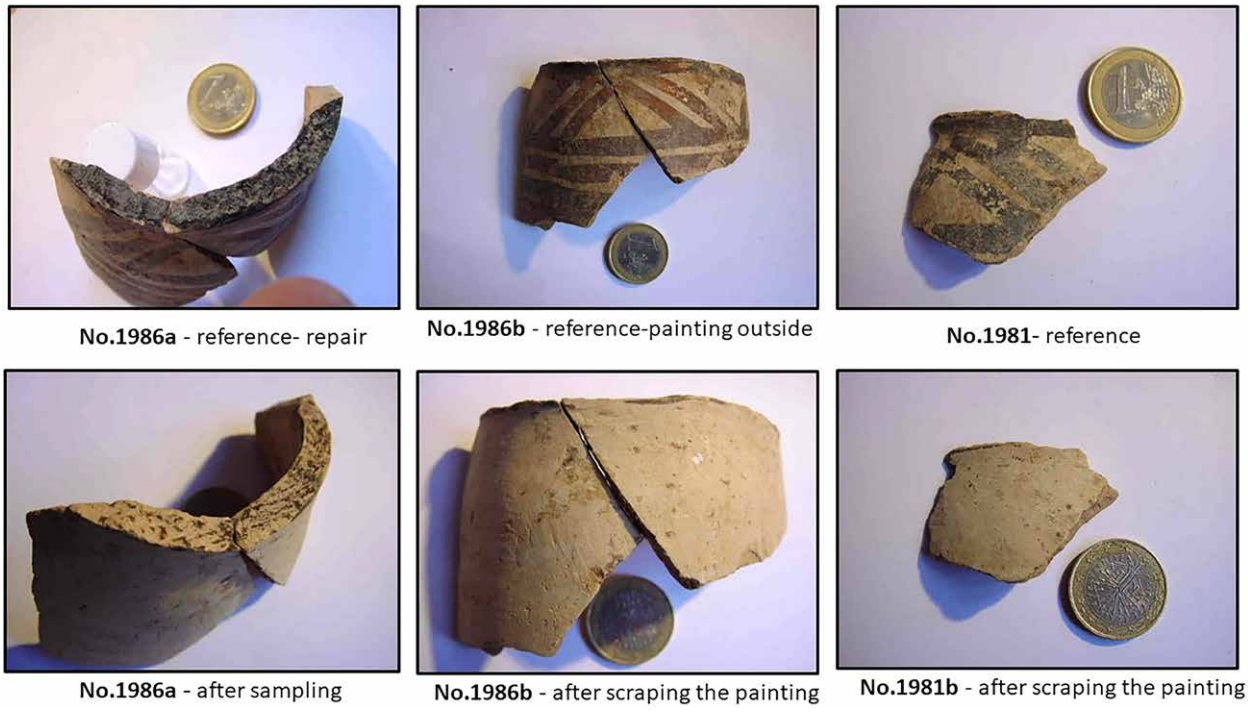

Figure 5.1: Photographs of samples No.1981 and No.1986 of Group 2 (photos by Jacques Connan).

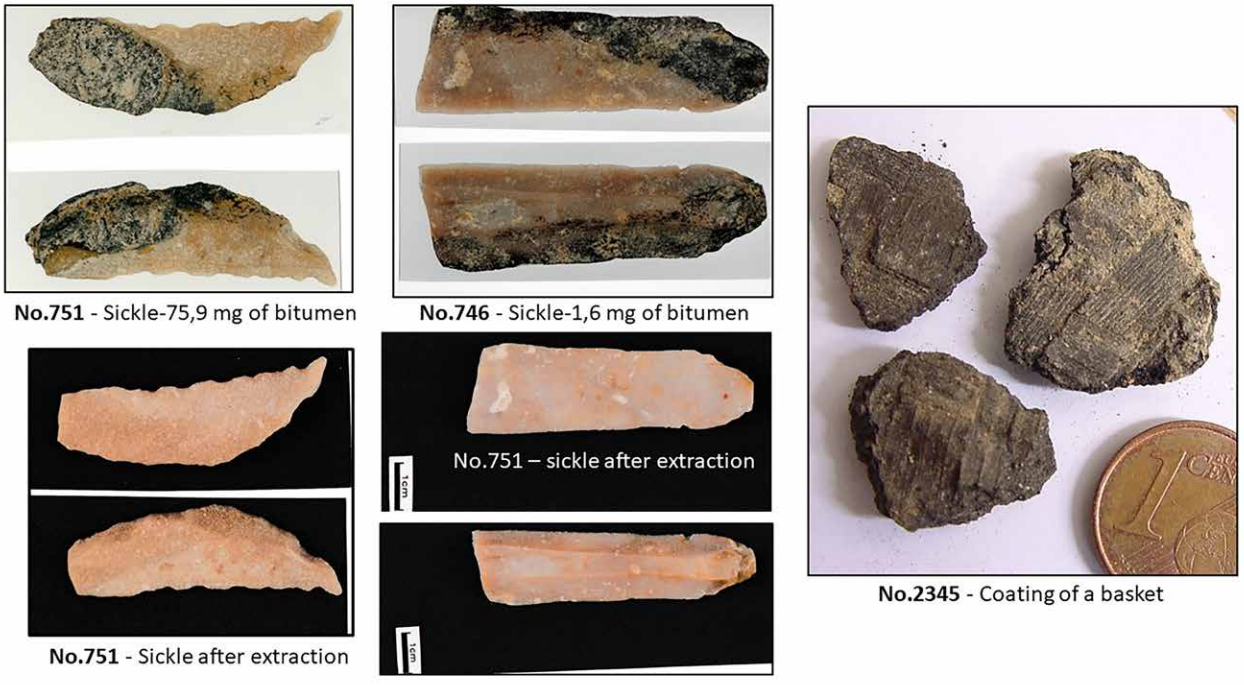

Figure 5.2: Photographs of samples No.746, No.751 and No.2345 of Group 4. (photos by Jacques Connan).

piece of plaster (white ware) carried traces of bitumen (Table 5.5). A total of 282 objects (chipped stone and basketry not counted) were found at Tell Sabi Abyad II. In addition, 137 sherds were retrieved. None of these objects or the sherds had traces of bitumen (Verhoeven and Akkermans 2000; Van As *et al.* 2004).

Also belonging to Group 4 are the samples collected at Tell Sabi Abyad III. In total, this site yielded 213 finds of bitumen (Table 5.5). A total of 155 of these were registered as individual objects. The majority (n= 121) were bitumen remains with basketry impressions, of which 70 show clear plaited basketry (Berghuijs 2013). Four objects are White Ware sherds with attached bitumen. Two of these White Ware-bitumen combinations show plaited basketry impressions. Only two ceramic sherds displayed bitumen residue (of which one was analysed as lab number No. 2334). One chipped stone object was discovered with bitumen residue. Additionally, non-identified lumps were collected.

Only two squares of SAB III (H09 and H08) have been securely dated. They seem to correspond to Levels A12-A9 of Operation III at Tell Sabi Abyad I (Nieuwenhuyse *et al.* 2010). Therefore, in this study, we have only included ten samples (six bitumen pieces with basketry impression, one sherd with residue and three of the unidentified lumps) that were chosen for further analysis in 2005. Our analysed samples are all from area H08, and the context has an analysed radiocarbon sample dated to ca. 7040-6690 BCE (Van der Plicht *et al.* 2011).

None of the samples collected during the 2010 campaign at Tell Sabi Abyad III have been analysed. The investigation yielded very early ceramics ascribed to the so-called Initial Pottery Neolithic. The levels are comparable to those found in the lowest levels at the main mound of Tell Sabi Abyad I, ca. 7000-6700 BCE. The earliest pottery-bearing layers were immediately above deposits entirely devoid of ceramics. Only 187 sherds were registered in 2005 (Halaf and Late Bronze Age sherds omitted; further, the exact amount of sherds from the 2010 campaign is unknown).

A two-roomed building occurred to the north of the sequence of structures. This north-south building was divided by a wall with a doorway in the middle into two rooms, each covering approximately 1.2 square metres. The southern room had a fireplace in one of its corners. In the southwest corner of the room, there was a concentration of basalt grinders and hammerstones on the floor, together with bitumen fragments carrying basketry impressions. It suggests tools stored together in a bitumen-covered basket. Interestingly, a similar find occurs in a roughly contemporary layer at the nearby mound of Tell Sabi Abyad II (Verhoeven and Akkermans 2000).

Samples of Group 4 (Table 5.1) comprise of two main types: bitumen used as hafting glue to fix flint implements on sickles (Nos. 744 to 752, No. 755; Figure 5.2) and plates with or without baskets imprints which have the typical aspect of oil-stained sand of the Jebel Bishri, *i.e.* samples with numerous quartz grains (Nos. 753; 754; 2336; 2337; 2339; 2340; 2342; 2345; 2347; 2352, Figure 5.2).

Analytical Procedures

Humble Laboratory Protocols

The asphaltene-free pentane soluble fraction, *i.e.*, maltenes, is separated into saturate, aromatic, and resin fractions by liquid chromatography. This process requires meticulous and consistent preparation of adsorbents, packing of columns, solvent elution volumes, solvent elution speeds, maximum sample amounts, and cut points. As well as other factors. Testing the liquid chromatographic separation by GC-MS confirms the separation of these compound classes. Additional care is crucial when high molecular weight waxes are present.

Silica gel is activated by heating at 130 °C for a minimum of two hours. The base of the column is plugged with extracted glass wood with approximately 5 mm of extracted laboratory-grade sand. The silica gel is packed as a slurry resulting in a translucent appearance to the column. Any appearance of 'cracks' in the translucent appearance of the packed column will cause retention of C_{30+} n-alkanes and, therefore, requires repacking of the column prior to separation.

The concentrated maltene fraction is passed through the liquid chromatographic column with three different solvents: pentane for the saturate fraction, toluene for the aromatic fraction, and methanol for the resin fraction. After loading the concentrated maltene fraction, the top of the column is covered with about 5 mm of extracted laboratory-grade sand. The saturate fraction is eluted by the addition of precise amounts of pentane. The addition of solvent to elute the aromatic fraction immediately follows the pentane cut without letting the column start to dry out. The cut point between the saturate fraction, and the aromatic fraction is critical to avoid elution of the monoaromatics in the saturate fraction. This is determined by loading precise volumes of solvent and monitoring the cut for aromatic bonds. The resin fraction is eluted with methanol. Any remaining material, *e.g.*, non-precipitated asphaltenes, can be rinsed from the column with chloroform-methanol.

The fractions are recovered into weighed flasks. After solvent evaporation, the yield of each fraction is measured. The fractions are transferred to laboratory vials for additional analysis or storage. The monoaromatic steranes elute 99% in the aromatic fraction following this precise procedure.

GeoMark Procedures

All archaeological and geological samples were subjected to the same analytical procedure. The procedure was conducted at GeoMark Research Ltd (Houston, TX). Extractions were performed via Soxhlet. Samples were crushed to a fine powder with a mortar and pestle and weighed. Extraction thimbles (Whatman cellulose, 43 by 123 mm) were loaded in the Soxhlet and extracted for 24 hours with methylene chloride to clean them prior to adding the samples. Next, the samples were loaded into the individual thimbles and extracted for 48 hours with a mixture of 372 millilitre methylene chloride and 28 millilitre methanol (DCM: MeOH, 93: 7 v: v). Mantles were heated to the minimum temperature necessary for boiling the solvent mixture. The extracts were evaporated to dryness using a rotoevaporator, transferred to clean glass vials, and weighed.

The resulting extract was deasphaltened using n-hexane. The deasphaltened fraction was separated into saturated hydrocarbons, aromatic hydrocarbons, and resins using gravity flow column chromatography employing a 100-200 mesh silica gel support activated at 400 °C prior to use. Hexane was used to elute saturates, dichloromethane to elute the aromatic hydrocarbons, and dichloromethane/methanol (50:50 v: v) to elute the resin (NSO) fraction. Each fraction was eluted with 2 column volumes of solvent. The solvent evaporation step was performed by immersion in a hot sand bath (80 °C) and assisted by N_2 blowdown. The recovered fractions were quantified gravimetrically. The C_{15+}saturated hydrocarbon fraction was subjected to molecular sieve filtration (Union Carbide S-115 powder) after the technique described by West *et al.* (1990). An aliquot of the total alkane fraction was not fractionated by silicalite in order to preserve access to the n-alkanes.

GC-MS of the C_{15+}branched and cyclic hydrocarbon fractions was performed using an Agilent 7890A (split injection) interfaced to an Agilent 5975C mass spectrometer. The HP-2 column (50 m x 0.2 mm, 0.11 µm film thickness) was temperature programmed from 150 °C to 325 °C at 2 °C/minute and held for 10 minutes. The mass spectrometer was run in the selected ion mode (SIM), monitoring ions *m/z* 177, 191, 205, 217, 218 and 231 amu for branched and cyclic alkanes. The quantitative data were produced using peak areas.

To determine the absolute concentration of individual biomarkers, a deuterated internal standard (d4-$C_{29\alpha\alpha\alpha}$20Rsterane, Chiron lab, Norway) was added to the C_{15+}branched/cyclic hydrocarbon fraction. Response factor (RF) at *m/z* 221 for the deuterated standard to hopane (*m/z* 191) and sterane (*m/z* 217) authentic standards were found to be 1.4 for terpanes and 1.0 for steranes. The concentration of individual biomarkers was determined using the following equation: Conc. (in ppm) = (Ht biomarker) (ng standard)/ (Ht standard) (RF) (mg B/C fraction).

The C_{15+}saturates, C_{15+}aromatics, asphaltenes and resins were analysed for their respective carbon isotope ($\delta^{13}C$, VPDB) compositions. Approximately 200-300 µg of each sample was loaded and sealed in a tin cup (Costech, Valencia, CA). Samples were placed in sequence in an autosampler mounted on a Costech elemental analyser interfaced through a Conflo III valve with a Thermo Delta V Plus isotope ratio mass spectrometer (Thermo Fisher Scientific, West Palm Beach, FL). The $\delta^{13}C$ values are reported in per mil (‰) relative to the Vienna Pee Dee belemnite (VPDB standard, uncertainty ± 0.1 ‰). The procedure for the stable hydrogen isotope analysis of the resin and asphaltene fractions is identical to that recently reported by Connan *et al.* 2021.

Elf Aquitaine Protocol

The samples were analysed by various geochemical techniques (dichloromethane extraction, MPLC fractionation, asphaltene precipitation, isotopes, GC and GC-MS analyses) in order to identify bitumen. All bitumen was analysed using combined HPLC-GC. This automatic instrument provides a good record of the molecular spectrum of both saturated and aromatic hydrocarbons from C_6 to C_{40} (Dessort *et al.* 1995). GC-MS analysis of C_{15+}alkanes was carried out to elucidate the distributions of steranes and terpanes in these bitumens. GC-MS was performed using a Hewlett-Packard 6890/5973 GC/MSD. The mass spectrometer was operated at 70 eV with a mass range of *m/z* 50-600. The gas chromatograph was equipped with a DB5 column (J&W, 60 m, 0.25 mm, film thickness= 0.1 m) with a deactivated pre-column of 5 m-0.32 mm between the injector and the chromatographic column to improve the chromatographic resolution. The oven temperature was programmed from 40 to 300 °C at 2 °C/min and held at 300 °C for 66 min.

Comparative data

Known Oil Seeps

In an attempt to find the origin of bitumens used at Tell Sabi Abyad, their geochemical characteristics were compared to data obtained on oil seeps from Iraq (Figure 5.3, Alkhafaji *et al.* 2020; 2021; 2022), west of Mosul, eastern province of Kurdistan (Figure 5.3) and Hit-Abu Jir area, from Syria with oil-stained sands from Jebel Bishri, from Turkey in the southeastern provinces (Connan *et al.* 2006; 2013; 2022)

Other Archaeological Sites

Our data about bitumen from several archaeological sites in Syria, mostly unpublished, were used as proxies to trace the origin of bitumen. These sites are: Umm el Tlel in Jebel Bishri and Qreiye-Ayyash along the Euphrates

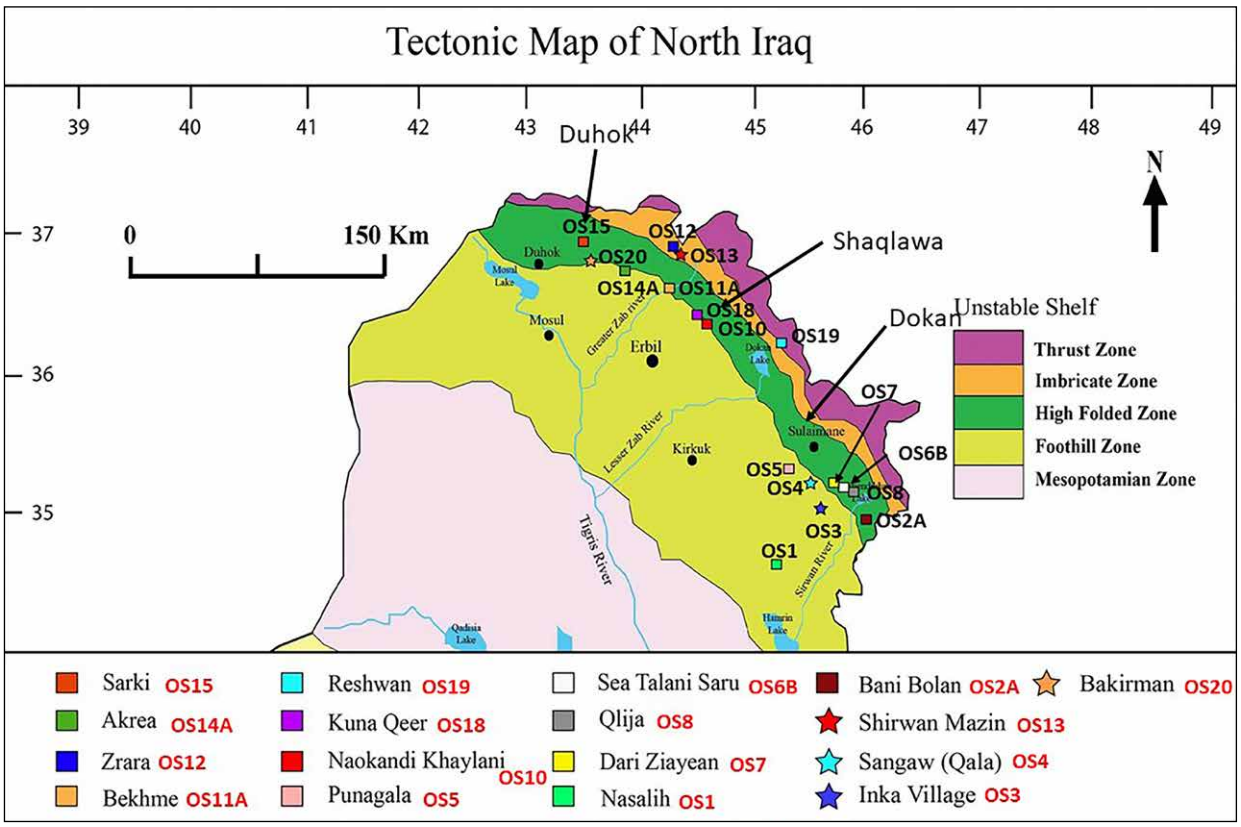

Figure 5.3: Map giving the location of oil seeps in Kurdistan (Eastern Iraq). (map made by Rzger A. Abdula).

(Table 5.1), Tell Brak and Tell Beydar near the northern border of Syria, and Mashnaqa, Tell Raqa'i, Tell Gudeda and Tell Atij in the Khabur valley. In addition, bitumen from archaeological sites from western Iraq, namely Arpachiyah, Telul eth-Thalathat II, Assur, Nineveh and Khorsabad were also included.

Results

Gross composition

Gross composition data are listed in Table 5.2. One should notice that these data were acquired by three different laboratories over time and are therefore not entirely comparable, for the separation techniques used to isolate the chromatographic fractions were not exactly identical.

To avoid any potential confusion with respect to data interpretation, only data from the Humble Laboratory in Houston were compared in Figure 5.4. A plot of these data in two ternary diagrams: % Saturates *vs.* % Aromatics. *vs.* % Polars (Resins + Asphaltenes) and % Hydrocarbons (Saturates + Aromatics) *vs.* % Resins *vs.* % Asphaltenes (Figure 5.4) show that most samples fall within the range of well-known archaeological bitumens (Forbes 1964; Marschner and Wright 1978; Connan *et al.* 2013; Brown *et al.* 2014; Faraco *et al.* 2016; Connan and Oates 2018; Daneels *et al.* 2018; Connan *et al.* 2022) with high amounts of polars especially asphaltenes in groups 3, 4 and at Umm el Tlel (70.000 BCE). Sample No. 2334 has a different composition with 43% hydrocarbons (Figure 5.4) and a low amount of extractable organic matter (0.17% EO / sample). This sample contained a clay mineral aspect, and therefore, the occurrence of bitumen in it was questionable. The results confirmed these expectations. Sample No. 2320 has fewer asphaltenes and more resins (Figure 5.4).

Group 1 is also distinct with more hydrocarbons, especially saturates (10-30% / EO, Table 5.2, Figure 5.4). This group contains lumps of hard, black bitumen (for instance, Nos. 1791 and 1794), of pure bitumen with a conchoidal fracture. Noticeably, this group includes material from pristine oil seeps that were not previously detected in other archaeological samples.

Group 2 samples were examined on the basis of the GeoMark results. A plot of these data in two ternary diagrams: % Saturates *vs.* % Aromatics. *vs.* % Polars (Resins + Asphaltenes) and % Hydrocarbons (Saturates + Aromatics) *vs.* % Resins *vs.* % Asphaltenes (Figure 5.5) show significant differences between bitumen used for pottery repair and bitumen used for painting on the pottery. Bitumen used to

Group	Data bank number	HC %= sat +aro %	EO%	Sat%	Aro%	Resins%	Asp%	Pol % = ¨%resin +%asp	δ^{13}Csat (‰ / VPDB)	δ^{13}Caro (‰ / VPDB)	δ^{13}Cresins (‰ / VPDB)	δ^{13}Casp (‰ / VPDB)	δDasp (‰ / SMOW)	Pol %
1	1783	17.4	43.5	11.8	5.6	11	71.6	82.6				-27.4		
	1784-H	16.1	44.7	12	4.1	15.5	68.4	83.9				-27.5		
	1784-GMR	5.5	67.7	3	2.5	8.3	86.2	94.5	-28.2	-27.2		-27.5		
	1785	20.1	37.4	12.9	7.2	13	66.9	79.9				-27.6		
	1786	29.7	35.6	22.2	7.5	8.3	62	70.3				-27.5		
	1787	40.8	19.5	30.9	9.9	39.5	19.7	59.2				-27.6		
	1788-H	16.4	53.6	12.5	3.9	9.3	74.3	83.6				-27.5		
	1788-GMR	3.8	40	2.4	1.4	6.1	90.1	96.2	-27.5	-27.3		-27.5		
	1789	14.3	55.7	10.7	3.6	15.6	70.1	85.7				-27.6		
	1790	5.7	29.9	3	2.7	8.5	85.8	94.3	-28.5	-27.3				
	1791	16.5	42.4	12.4	4.1	11.7	71.8	83.5				-27.6		
	1794	22.7	58.8	17.6	5.1	14.5	62.8	77.3				-27.6		
	1795	22.1	29.5	15.6	6.5	19	58.9	77.9				-27.6		
	1802	24.3	48.9	19.1	5.2	24.7	51	75.7				-27.6		
	1803	15.5	85.1	10.8	4.7	13.9	70.6	84.5				-27.6		
	1804	5.3	25.6	2.4	2.9	9.5	85.2	94.7	-28.7	-27.5				
	1972	6.6	7.6	2.5	4.1	13.4	80	93.4	-28.5	-27.8		-27.7		
	1973	4.6	22.9	2.4	2.2	7.5	87.9	95.4	-28.5	-27.6	-25.7	-27.4		
2	2316A	6.8	3.7	2.7	4.1	18.9	74.3	93.2				-28.4		
	2316B	50	0.45	33.3	16.7	33.3	16.7	50				-28.4		
	1971	22.2	0.045	11.1	11.1	22.2	55.6	77.8				-28.7		
	1981a	5.2	7.8	2.6	2.6	19.2	75.6	94.8		-27.4		-27.3		
	1981b	30	1	20	10	30	40	70				-30.4		
	1985	4	23.8	2.5	1.5	7.9	88.2	96.1	-28.3	-27.6	-25.9	-27.5		
	1986a	4.4	15.9	1.9	2.5	13.2	82.4	95.6	-28.4	-27.8		-27.7		
	1986b	41.2	0.425	17.7	23.5	29.4	29.4	58.8				-30.1		
	1988	3.7	13.5	2.1	1.6	11.1	85.2	96.3	-29.6	-29.1		-28.9		
	1992	5.4	10.7	3.9	1.5	8.6	86	94,6	-29.1	-28.4		-28.4		
3	2318	4.1	12.8	2.8	1.3	21.4	74.5	95.9			-28.6	-28.4		
	2323	6.6	29.1	5.1	1.5	26.7	66.7	93.4			-27.6	-27.7		
	2326-H	7.7	11.5	4.9	2.8	38.6	53.7	92.3			-27.6			
	2326-GMR	5	20	3.1	1.9	7	88	95	-28.6	-27.9		-27.9		
	2327	9.3	14.9	5.6	3.7	38.8	51.9	90.7			-27.6	-27.7		
	2329	8.3	11.6	4.5	3.8	30.9	60.8	91.7			-28.4	-28.3		
	2325	9.6	16.2	5.2	4.4	23.9	66.5	90.4			-25.5	-27.9		
	1974	5.6	13.4	4.2	1.4	9.9	84.5	94.4	-29.1	-28.3		-28.2		
	1976	6.1	13	4.7	1.4	9.7	84.2	93.9	-29.1	-28.2		-28.2		
	2320	7.7	19.8	6.7	1	49.5	42.8	92.3			-27.6	-27.6		
	2331	5.7	23.6	4.3	1.4	29.4	64.9	94.3			-27.5	-27.6		

Table 5.2: Gross composition and carbon isotope data on chromatographic fractions of samples from Group 1-4. Significance of abbreviations: EO % = % extractable organic matter with dichloromethane, Sat% = % saturates, Aro% = % aromatics, Resins % = % resins, Asp% = % asphaltenes, Pol% = % resins + % asphaltenes.

Group	Data bank number	HC %= sat +aro %	EO%	Sat%	Aro%	Resins%	Asp%	Pol % = ¨%resin +%asp	δ^{13}Csat (‰ / VPDB)	δ^{13}Caro (‰ / VPDB)	δ^{13}Cresins (‰ / VPDB)	δ^{13}Casp (‰ / VPDB)	δDasp (‰ / SMOW)	Pol %
4	744	3	1.9	3										95.1
	745	2.9	1.7	2.9										95.3
	746	2	1.6	2										96.4
	747	2.4	3.3	2.4										94.3
	748	3.1	2.6	3.1										94.3
	749	3.6	2.4	3.6										94
	750	3.3	2.2	3.3										94.5
	751	0.6	2.3	0.6		73.5		73.5				-28.3	-85	97.1
	752	1.6	2.4	1.6										96
	753	0.9	6.1	0.9								-29.7	-85	93.1
	754	0.7	5	0.7										94.3
	755	2.1	3	2.1										94.9
	2334	42.9	0.17	25	17.9	50	7.1	57.1						
	2336	3.9	11.7	1.8	2.1	8.1	88	96.1	-29.6	-29.1		-28.8		
	2337	6.8	8	5	1.8	36.7	56.5	93.2			-28.5	-28.3		
	2338	2.8	28.8	1.8	1	3.3	93.9	97.2	-28.9	-28		-28.1		
	2339	5.7	8.2	4	1.7	26.4	67.9	94.3			-28.4	-28.4		
	2340	5.9	7.7	4.6	1.3	31.1	63	94.1			-28.6	-28.2		
	2342	3.6	11.3	1.8	1.8	7.4	89	96.4	-29.6	-28.8		-28.8		
	2345	4.2	20.5	2.5	1.7	7.6	88.2	95.8	-29.1	-28		-28		
	2347	5.8	13	4.2	1.6	23.4	70.8	94.2			-28.1	-28.1		
	2352	5.9	5.4	4.6	1.3	31.1	63	94.1			-28.4	-28.4		

Table 5.2: continued.

repair potsherds (2316A; 1986a; 1981a, Figure 5.1) exhibits a well-known composition of archaeological bitumen samples with a high amount of polars and especially asphaltenes (Figure 5.5). By contrast, bitumen isolated from the scraping of potsherds (2316B; 1986b; 1981b, Figure 5.5) are significantly enriched in saturates (17 to 33%) and aromatics (10 to 23%) and depleted in asphaltenes (16 to 40%). One sample (No. 1971), described as a lump of brown bitumen, is similar to the bitumen of painting (Figure 5.5). As paint, this sample is also characterised by a very low amount of bitumen (0.04% EO / sample). The occurrence of true bitumen in this sample is also questionable.

Isotopic data

Isotopic data acquired by the School of Geosciences, University of Oklahoma, are listed in Table 5.2. Plots of δ^{13}C (‰ / VPDB) of the chromatographic fractions (saturates, aromatics and asphaltenes) are presented in Figures 5.6 and 5.7. The data show a broad spread of values and, therefore, indicate several sources of bitumen. To anticipate and use the diagnostic information that will be collected from the biomarker data, one may already distinguish some well-known sources.

First of all, the Jebel Bishri oil-stained sands are mainly found in the oldest samples (Group 4, 7200-6700 BCE). It often occurs in samples with mat or basket imprints. This source has also been identified in the Roman fortress of Qreiye-Ayyash along the Euphrates.

Secondly, a bitumen source is mainly found in Group 3 (6700-6400 BCE), which is characterised by abundant C27 diasteranes. One sample from group 2 (No. 1992) also belongs to this source.

Thirdly, the famous Hit-Abu Jir oil seeps (Figure 5.7) are likely present in a few samples (No. 2326 at Tell Sabi Abyad and No. 2290 and No. 2292 at Qreiya-Ayyash).

Fourthly, the bitumen samples from the Assyrian fortress can be identified as pure pristine bitumen with a conchoidal fracture. These samples derive from a geological source not previously detected in any archaeological artefacts.

To compare the archaeological samples of Tell Sabi Abyad to oil seeps and bitumen samples of other archaeological sites, the available data are presented in Figure 5.7 (oil seeps mainly from Iraq and Turkey). The results confirm that many potential sources may be considered. However, some Iraqi (OS6B, 2A, 5, Zakho,

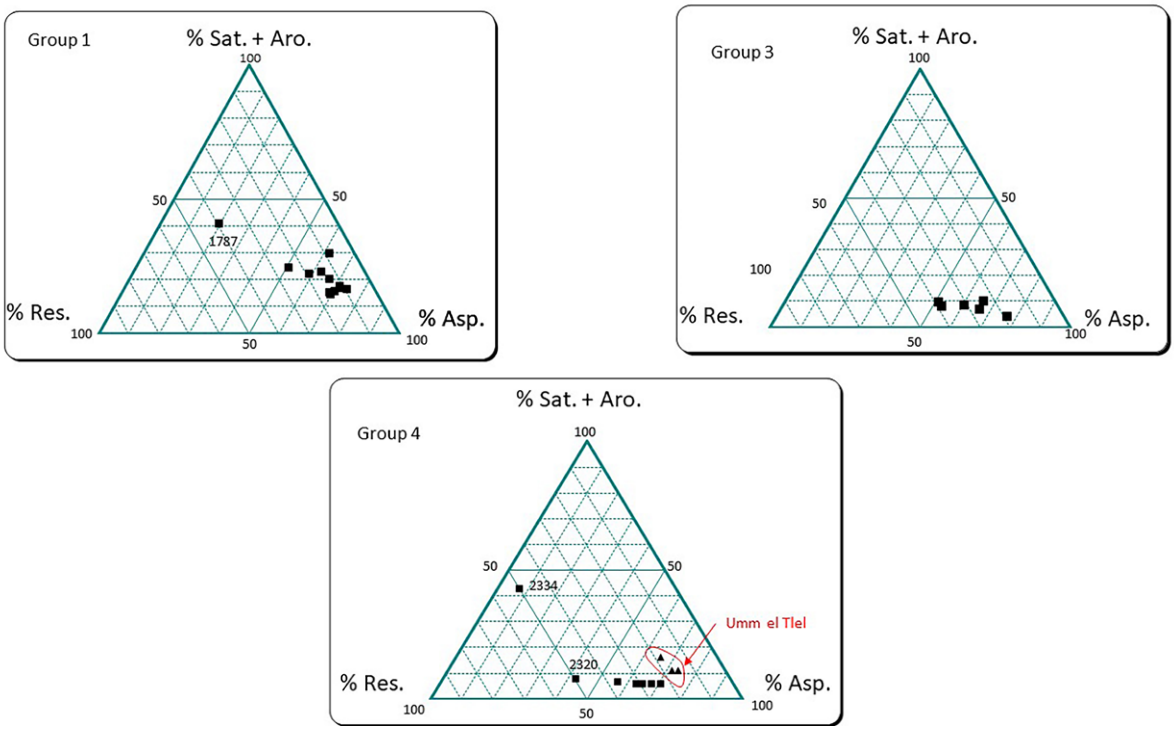

Figure 5.4: Plot of Hydrocarbons (% Saturates + Aromatics) *vs.* Resins (%) *vs.* Asphaltenes (%) in a ternary diagram: results from Humble laboratories for Groups 1, 3 and 4. (produced by Jacques Connan).

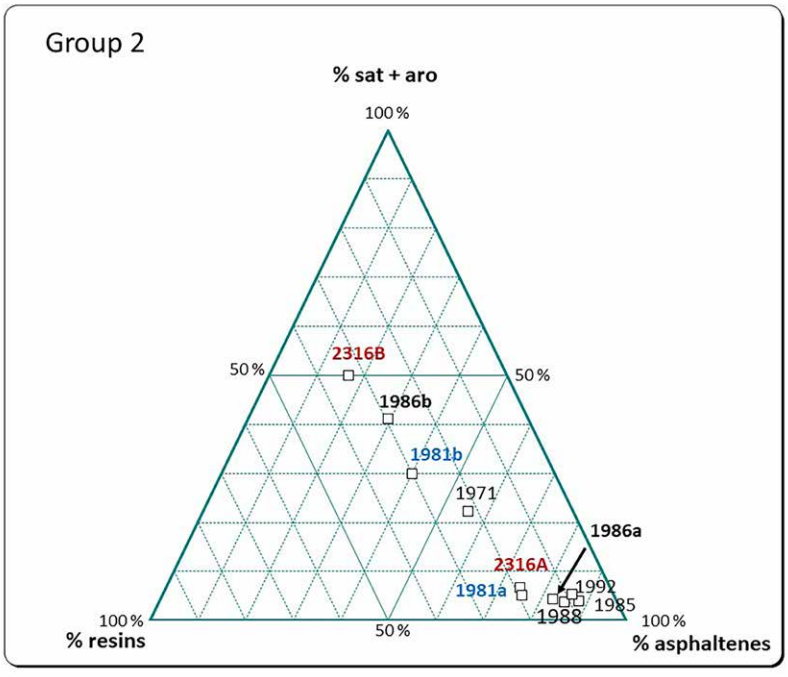

Figure 5.5: Plot of Hydrocarbons (% Saturates + Aromatics) vs. Resins (%) vs. Asphaltenes (%) in a ternary diagram: results from GeoMark laboratories for Group 2. (produced by Jacques Connan).

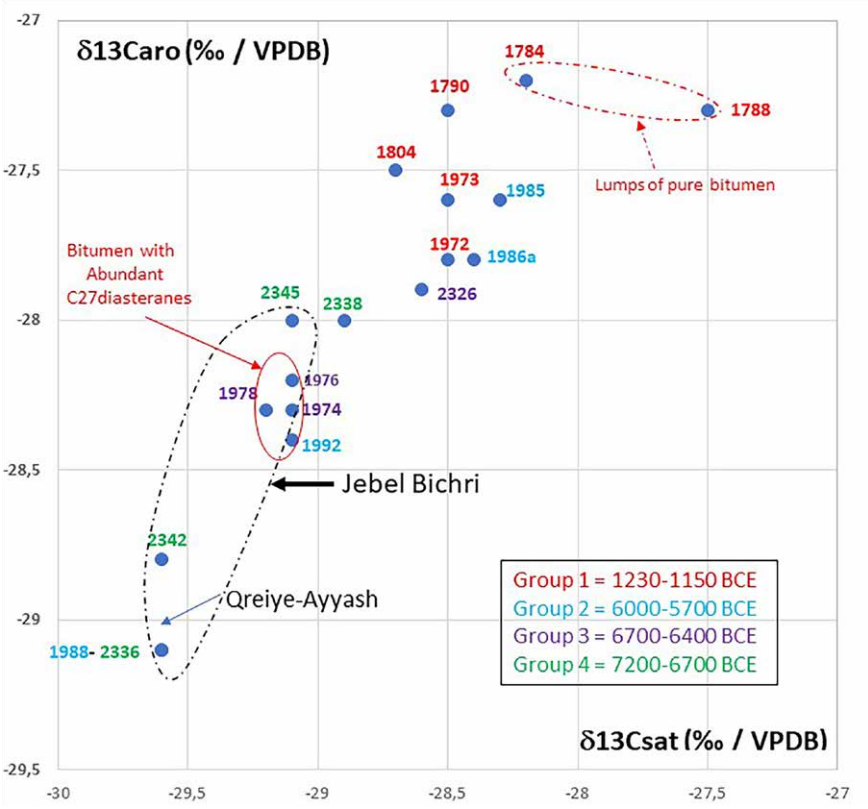

Figure 5.6: Plot of δ^{13}Csat (‰ / VPDB) *vs.* δ^{13}Caro (‰ / VPDB) for data from Sabi Abyad. (produced by Jacques Connan).

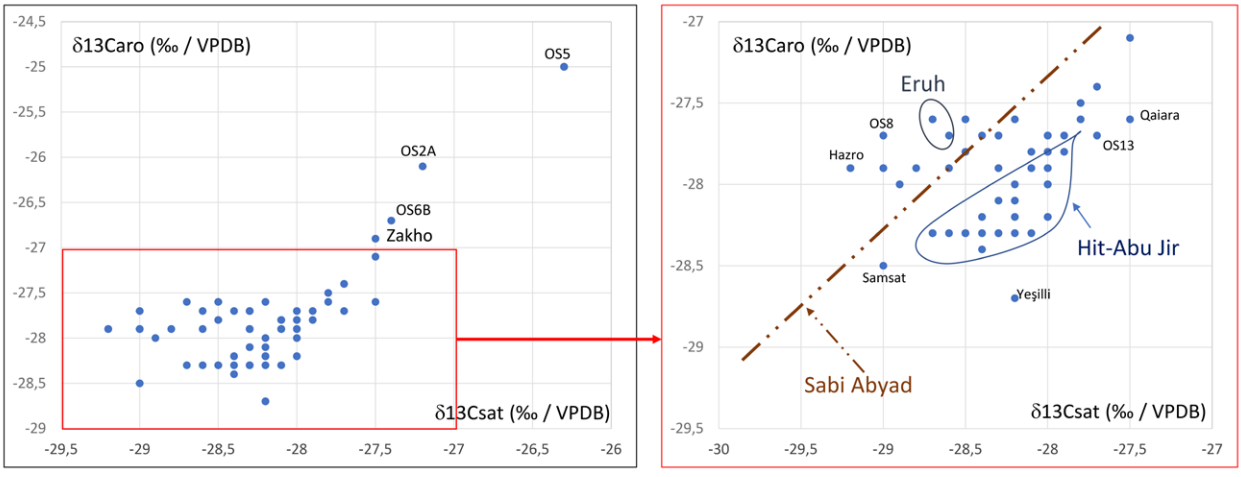

Figure 5.7: Plot of δ^{13}Csat (‰ / VPDB) *vs.* δ^{13}Caro (‰ / VPDB) for data from oil seeps from Iraq and Turkey. (produced by Jacques Connan).

Figure 5.7), Turkish (Zengen, Kerbent, Kumçati, Silip), and Syrian sources can already be excluded. On the basis of the δ^{13}Cresin *vs.* δ^{13}Casp (not shown), we can confirm that samples Nos. 2318 and 2329 (Group 3) and Nos. 2337, 2339, 2340, 2347 and 2352 (Group 4) belong to the Jebel Bishri oil seeps.

Biomarker data

Biomarker data are listed in Table 5.3. Selected mass fragmentograms of steranes and terpanes for each group are reproduced in Figures 5.8-12.

Group 1 is relatively homogenous with an obvious unique source (Figure 5.8). No. 1788 is a pure bitumen, representing a geological reference with preserved patterns of steranes and terpanes. Terpanes are characterised by a high Tm/Ts ratio and a moderate gammacerane content. Steranes have a V pattern (C28<C27 and C29) with abundant short-chain steranes (C21 and C22) and a C29ααα*R*/C29ααα*S* ratio higher than one. Sample No.1790 is slightly biodegraded: the C30αβH has been reduced from 1018 ppm to 289 ppm, short-chain steranes have disappeared, and C27ααα*R* and C29ααα*R*, which have the biological configuration, are selectively degraded. This selective biodegradation of the biological configuration has been observed in crude oils at depth (Rullkötter and Wendish 1982; Seifert *et al.* 1984), in environmental case histories (Mille *et al.* 1998; Wang *et al.* 2001) and has been reproduced in 15 days under laboratory simulated conditions using gram-positive strains belonging to *Nocardia* and *Arthrobacter genera* (Chosson *et al.* 1991a; b).

Group 2 has been split into two subgroups: lumps of bitumen (Figure 5.9) and potsherds (Figure 5.10). Sample No. 1992 shows well-preserved patterns of steranes and terpanes. Terpanes have a high Tm/Ts ratio, a high content of gammacerane and abundant tricyclic terpanes (23/3 to 29/3). Steranes are characterised by abundant C27 diasteranes with C21 and C22 steranes and a C29ααα*R*/C29ααα*S* ratio higher than 1.0. This subgroup comprises four samples: Nos. 1976, 1974, 1978 and 1992. Sample No. 1988 is entirely different and shows the typical pattern of tar sands of the Jebel Bishri, south of the Euphrates in central Syria (Boëda *et al.* 1998; 2008; 2009; Hauck *et al.* 2013). Terpanes are slightly degraded, showing an extremely high amount of gammacerane and C35αβH+S hopane. Obviously, C34αβH+S hopanes have been preferentially biodegraded, as Peters *et al.* (1996) previously documented. A comparison of mass fragmentograms of the bitumen repair and the bitumen used as painting (Figure 5.10) shows similar patterns of biodegradation in samples No. 1981 and No. 1986. Terpanes are rather well preserved in bitumen used to repair potsherd (C30αβH = 795 and 382 ppm), whereas steranes are degraded (C27steranes almost absent, Figure 5.10). In the paint sample (*e.g.*, No.1986b, Figure 5.10), terpanes are degraded (C30αβH=67 and 14 ppm in No.1986b and 1981b), and steranes are characterised by a significant amount of C27 diasteranes. These contrasting patterns suggest that bitumen used for painting and repairing potsherds are not identical. This feature was already noted in previous papers (Nieuwenhuyse *et al.* 2003; Connan *et al.* 2004) and is supported by the quantitative data from No. 1986 sample (Figure 5.13B). However, data on sample No. 2316 (Figure 5.13B) suggests that bitumen may also have the same origin for both uses.

Group 3 is represented by two samples, No.1978 and No. 2326 (Figure 5.11). No. 1978 possesses the molecular characteristics of sample No. 1992 from Group 2 and belongs to the same family as Nos. 1976; 1974 and 1978 (Figure 5.6). These samples are characterised by a high Tm/Ts ratio, a high amount of gammacerane and abundant C27 diasteranes. Sample No. 2326 is also rich in gammacerane with a high Tm/Ts ratio but much less C27 diasteranes which are still detectable.

Group 4 comprises two types of fingerprints exemplified by samples Nos. 2336 and 2342 (Figure 5.12). Sample No. 2336 has further a high Tm/Ts ratio with a high gammacerane, but C27 diasteranes are very low. Sample No. 2342 again shows the distinctive fingerprint of the oil-stained sands of Jebel Bishri (see No.1988, Figure 5.9).

The plot of Ts/Tm *vs.* δ^{13}Casp (‰ VPDB) in Figure 5.13 indicates that the samples of Group 1 (Figure 5.13A) belong to a unique family with a unique source represented by the geological samples referred to as lumps of pure bitumen. The same bitumen occurs in archaeological samples, mortars with vegetal debris (Nos. 1786, 1790), and mixtures with mat or basket imprints (No. 1783).

Group 2 (Figure 5.13B) samples are diverse, with one cluster (Nos.1988 and 1992) associated with the samples rich in C27 diasteranes.

Samples of Group 3 (Figure 5.13C) allowed us to identify two clusters, one with samples from Jebel Bishri and one with samples rich in C27 diasteranes (Nos. 1974 and 1976).

The Group 4 samples originate from Jebel Bishri and are mainly associated with mixtures with quartz grains and imprints of baskets or mats. One sample (No. 2338) is likely to be imported from Hit (Figure 5.14C). Comparison of data from Figure 5.13 to data collected on tar sands of Jebel Bishri in various places (Figure 5.14D) favours an origin from the area named Bishri-Seyve and the Bishri wadi bed, where a great quarry is presently open to mine the tar sands. References to oil seeps from Iraq (Figure 5.14A and 5.14C) and to bitumen from the archaeological sites (not shown) of northern Syria (Tell Brak, Tell Gudeda, Tell Atij, Tell Raqa'i, Tell Mashnaqa), central Syria (Umm el Tlel, Qreiye-Ayyash, Figure 5.14D) and western Iraq (Telul Eth-Thalathat II, Arpachiyah, Assur, Khorsabad and Nineveh, not shown) indicate that many oil seeps may be potential

Table 5.3: Molecular data on samples from Groups 1-4 of Tell Sabi Abyad and samples from Umm el Tlel and Qreiye-Ayyash. Significance of abbreviations:

C30Hopane = 17α,21β-hopane, Tet/C23 = de-E-Hopane/C23-tricyclopolyprenane, OL/H = Oleanane/17α,21β-hopane, C31R/H = 17α,21β,22R-30-homohopane/17α,21β-hopane, GA/C31R = gammacerane/17α,21β,22R-30-homohopane, Ster/Terp= steranes/terpanes, Rearr/Reg = rearranged steranes / regular steranes, %C27bbst= % C27abbsterane, %C28bbst= % C28abbsterane, %C29bbst= % C29abbsterane, Ts/Tm = 18α-22,29,30-trisnorneohopane/ 17α-22,29,30-trisnorhopane. Ts/Tm = 18α,21β,22-29-30-trisnorneohopane / 17α,21β-22,29-30-trisnorhopane, GA/C_{31}αβH = gammacerane/17α,21β-30-homohopane (22R), C_{29}αβH/C30αβH = 17α,21β-30-norhopane / 17α, 21β-hopane, C_{30}αβH (ppm) = 17α,21β-hopane (ppm / branched and cyclic alkanes). Blue dots = lumps of pure bitumen. White dots = bitumen on potsherds.

Group	lab number	C30 hopane (ppm)	Tet/C23	C29/H	OI/H	C31R/H	GA/ C31R	C35S/C34S	ster/terp	rear/reg	%C27	%C28	%C29	C2920S/20R	Ts/Tm	tricyclic	terpanes	steranes	diasteranes
	1783	1694	0,67	1,15	0	0,33	0,51	1,07	0,16		24,5	24,4	51	0,93	0,24	Abundant	preserved	preserved	present low
	1783		0,8	1,21	0			1,4	0,13		19	28	53	1,34	0,3				
	1784	4580	0,92	1,17	0	0,34	0,46	0,93	0,06		33,6	23	43,4	0,35	0,17	Abundant	preserved	preserved	present low
	1784-H	1103	0,95	1,19	0	0,39	0,47	0,99	0,08	0,15	31,6	25	43,5	0,6	0,19				
	1784-GMR		1,04	1,5	0						26	25	48		0,21				
	1785	1544	0,69	1,21	0,01	0,36	0,46	1,01	0,16		20,1	25,1	54,9	0,99	0,24	Abundant	preserved	preserved	present low
	1785		0,99	1,25	0			1,72	0,03		15	30	55	1,47	0,37				
	1786	605	0,44	1,15	0,02	0,43	0,46	1,24	0,16		25,2	24,6	50,2	1,18	0,29	Abundant	preserved	preserved	present low
	1787	1113	0,38	1,24	0,01	0,36	0,5	1,09	0,12		33,2	24,9	41,8	0,66	0,27	Abundant	preserved	preserved	present low
	1788-H	4131	0,91	1,22	0	0,38	0,43	0,92	0,07		32,9	24	43,1	0,34	0,17	abundant	preserved	preserved	presnt low
	1788-GMR	1018	0,97	1,14	0	0,42	0,5	1	0,09	0,14	32,1	25,1	42,8	0,6	0,2	present low	preserved	preserved	absent
	1789	4433	0,88	1,27	0,01	0,42	0,41	0,94	0,06		33,4	24,1	42,5	0,39	0,2	abundant	preserved	preserved	low
1	1789		0,95	1,26	0			1,05	0,03		25	26	49	0,75	0,18				
	1790	289	0,23	1,18	0,01	0,34	0,52	1,21	0,37	1,17	25,9	26,4	47,7	1,81	0,23	present	preserved	slightly biodegraded	very low
	1791	3405	0,9	1,15	0,01	0,35	0,44	0,87	0,08		34	23,7	42,4	0,38	0,18	Abundant	preserved	preserved	low
	1791		0,98	1,27	0			0,85			28	24	47	0,85	0,2				
	1794	2766	0,83	1,16	0	0,38	0,42	0,91	0,06		32,1	24,4	43,5	0,37	0,18	Abundant	preserved	preserved	low
	1795	1787	1,18	1,16	0,01	0,35	0,51	0,95	0,12		26,1	24,4	49,5	0,71	0,21	Abundant	preserved	preserved	low
	1802	2624	0,91	1,2	0	0,34	0,44	0,91	0,07		33,4	24,3	42,3	0,33	0,17	Abundant	preserved	preserved	low
	1803	3580	0,75	1,19	0	0,39	0,41	1	0,06		27,6	25,8	46,6	0,42	0,2	abundant	preserved	preserved	low
	1804	507	0,44	1,26	0	0,35	0,55	1,27	0,22	0,12	6,2	29,5	64,3	1,4	0,32	pressent	preserved	biodegradd	low
	1807	2623	1,63	1,16	0	0,49	0,21	0,87	0,08		13,8	26,6	59,6	0,56	0,46	Abundant	preserved	biodegraded	low
	1807		1,78	1,27	0			1,19	0,09		10	28	61	0,86	0,46				
	1972	754	1,79	1,07	0	0,38	0,56	1,1	0,17	0,12	11,1	28,1	60,7	0,95	0,24	present -low	preserved	biodegraded	absent
	1973	520	0,77	1,01	0	0,46	0,41	1,04	0,13	0,3	15,5	29,3	55,2	1,98	0,28	presnt low	preserved	slightly biodegraded	absent

Group	lab number	C30 hopane (ppm)	Tet/C23	C29/H	OI/H	C31R/H	GA/ C31R	C35S/C34S	ster/terp	rear/reg	%C27	%C28	%C29	C2920S/20R	Ts/Tm	tricyclic	terpanes	steranes	diasteranes
2	2316A	65	0,37	1,63	0,02	0,52	1,46	1,52			16,7	30,2	53,2	0,76	0,49	almost absent	preserved	sligtly biodegraded	low detected
	2316B	5	0,25	0,83	0,06	0,39	0,63			0,74				0,71	0,67	almost absent	preserved low	preserved low	abundant
	1971	76	0,42	0,71	0,09	0,21	0,77			1,08	33,3	31,5	35,1	0,95	0,67	present	preserved -low	preserved	abundant
	1981a	382	0,63	1,06	0,01	0,45	0,55	1,09	0,04	0,57	11,6	20,6	67,8	1,07	0,22	absent	preserved	biodegraded	absent
	1981b	14	0,52	0,88	0,11??	0,4										absent	preserved low	preserved low	well detected
	1985	235	0,44	1,09	0,01	0,46	0,51	1,13	0,25	0,51	13	24,4	62,6	3,73	0,31	low	preserved	biodegraded	absent
	1986a	795	1,2	1,07	0	0,45	0,5	1,08			8	20,7	71,3	1,11	0,21	absent	preserved	biodegraded	absent
	1986b	67	0,47	1,06	0,03	0,42	0,47	1,08		0,2	26,4	25,5	48,1	1,32	0,43	absent	preserved	preserved	well present
	1988	296	0,1	2,52	0,02	0,4	3,53	2,66	0,16	0,3	20,1	32,6	47,3	0,32	0,25	present	biodegrad-ed	biodegraded	present low
	1992	378	0,3	0,97	0,02	0,4	1,53	1,21	0,2	1,4	31,1	29,4	39,5	0,67	0,22	present abundant	preserved	preserved	abundant
3	2318		0,02	3,5	0,09	0,52	4,4	5,75						0,7	0,28				
	2323		0,6	1,03	0	0,37	0,37	0,93			32	20	48	1,05	0,08				
	2325		0,04	1,45	0	0,47	2,1	2						0,25	0,25				
	2326-H		0,63	1,17	0	0,37	0,61	1,07			28	25	47	0,8	0,18				
	2326-GMR	675	0,57	1,09	0	0,44	0,78	1,07	0,15	0,31	28,9	28,4	42,6	0,82	0,23				
	2327		0,25	1,19	0	0,42	0,65	0,9			30,5	24,6	44,9	1,02	0,17				
	2329		0,09	1,46	0	0,41	2,18	1,12						0,52	0,37				
	1974	391	0,32	0,98	0,01	0,41	1,3	1,14	0,21	1,61	30,2	27	42	0,8	0,19	present abundant	preserved	preserved	abundant
	1976	427	0,33	0,96	0,01	0,4	1,29	1,1	0,22	1,45	32,6	26,3	41,1	0,72	0,19	present abundant	preserved	preserved	abundant
	1978	642	0,27	0,94	0,01	0,38	1,1	1,12	0,15	1,27	25,5	27,6	46,9	0,88	0,15	present abundant	preserved	preserved	abundant
	1979	56	0,15	1,04	0,01	0,38	0,26			1,18	33,3	29,5	37,2	0,64	0,3	very abundant	preserved?	preserved	abundant
	2320		0,36	1,02	0	0,43	0,44	1,1						0,94	0,14				
	2331		1,2	1,09	0	0,35	0,39	1,1			32,6	24,4	43	0,61	0,08				

Table 5.3: continued.

Group	lab number	C30 hopane (ppm)	Tet/C23	C29/H	OI/H	C31R/H	GA/C31R	C35S/C34S	ster/terp	rear/reg	%C27	%C28	%C29	C2920S/20R	Ts/Tm	tricyclic	terpanes	steranes	diasteranes
4	2334		0,62	1,02	0	0,33	0,43	1			29,8	24,3	45,9	1,85	0,14				
	744																		
	745																		
	746																		
	747																		
	748		0,68	1,02	0			1,03	0,13		34,5	25,5	40	0,72	0,54				
	749		0,44	1,3	0			0,97	0,32		27,9	29,3	42,9	0,57	0,27				
	750		0,61	0,97	0			0,97	0,07		24,1	25,3	50,6	0,62	0,18				
	751		0,11	1,86	0			1,06	0,36		19,4	28,6	52,1	0,71	0,17				
	752		0,31	1,05	0			1,03	0,13		24,8	28	47,2	0,56	0,18				
	753		0,37	0,58	0			0,98	0,13		14,1	23,6	62,3	1,82	0,75				
	754		0,24	0,53	0			0,98	0,25		8,6	21,9	69,5	3,54	0,82				
	755		0,7	0,99	0			1	0,15		27,5	33,2	39,3	0,46	0,41				
	2336	467	0,08	1,12	0,01	0,43	1,63	1,76	0,2	0,34	15,8	37,7	46,4	0,58	0,27				
	2337		0,12	1,76	0	0,49	1,04	1,41						0,6	0,55				
4	2338	1039	0,36	0,99	0	0,45	0,73	1,1	0,1	0,31	28,2	30,8	41	1,18	0,19				
	2339		0,125	2,9	0	0,62	2,46	2,22						0,46	0,2				
	2340		0,04	7,49	0	0,5	2,96	2,5						0,34	0,3				
	2342	389	0,13	1,58	0,02	0,46	2,1	1,92	0,11	0,41	19,3	30,7	49,9	1,24	0,26				
	2345	448	0,44	1,06	0,01	0,43	0,82	1,17	0,21	1,02	18,6	35,4	45,9	1,68	0,28	present	preserved	preserved	present-low
	2347		0,17	1,37	0	0,53	0,9	1,08							0,23				
	2352		0,14	1,29	0	0,43	0,86	1,3			25,5	25,4	39,1	0,76	0,35				
Umm el Tlel	1780		0,27	6,16	0,2	0,92	4,07	2,58	0,16		37,3	26,5	36,3	0,42	0,33	abundant	altered?	altered	abundant
	1780		0,1	7,4	0			2,8	0,17		19	24	58	0,46	0,5				
	1781		0,39	7,21	0,89	0,89	4,08	2,34	0,11		20,2	13,4	66,4	0,18	0,22	abundant	altered?	altered	present low
	1782		0,08	10,1	0,15	1,03	5,57	3,48	0,09		14,8	13,8	71,4	0,31	0,24	Abundant	altered?	altered	present
Qreiye	2290	714	1,77	0,95	0	0,34	0,64	1,28		0,09	20,2	24	55,8	2,87	0,1	almost absent	preserved	slightly biodegraded	very low
	2291	161	0,28	2,73	0,04	0,53	3,41	2,49		0,39	21,6	19	59,4	0,11	0,24	present low	altered?	biodegraded	pressent
	2292	1145	2,41	1,04	0	0,31	0,51	0,95		0,12	27,4	22,5	50,1	1,1	0,12	almost absent	preserved	preserved	low

Table 5.3: continued.

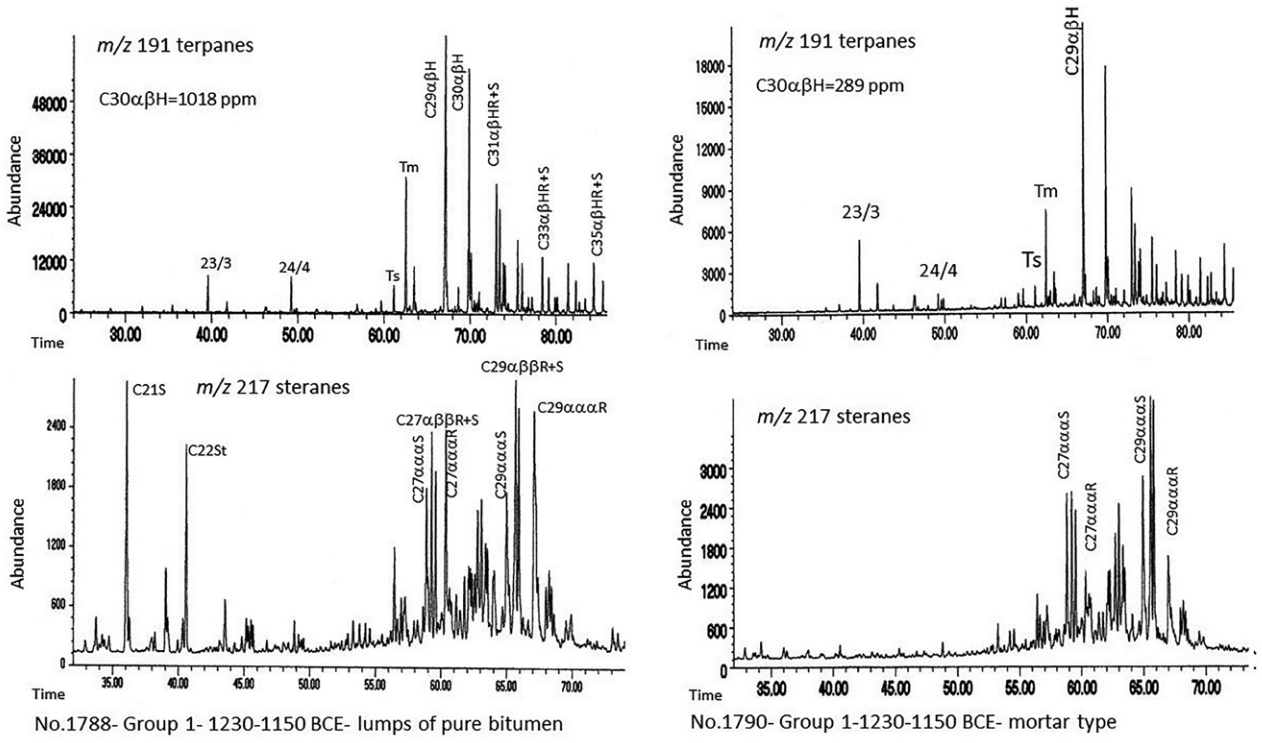

Figure 5.8: Mass fragmentograms of steranes (*m/z* 217) and terpanes (*m/z* 191) from samples No.1788 and 1790 of Group 1. (produced by Jacques Connan).

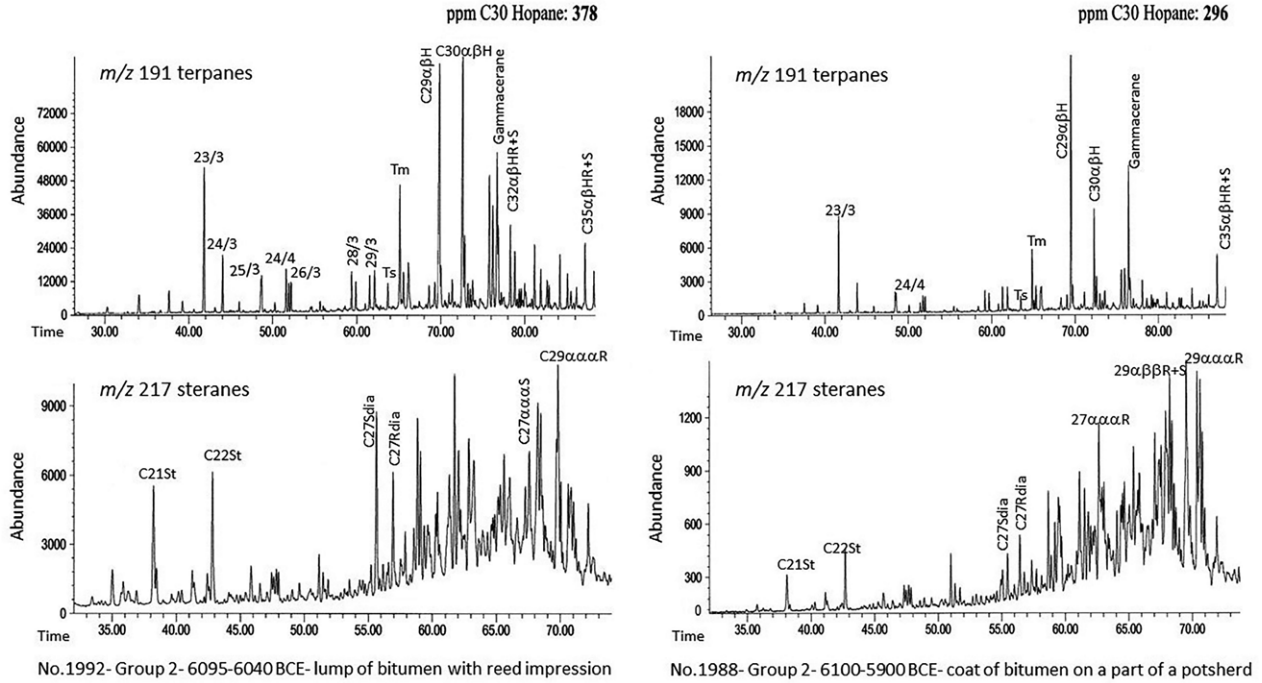

Figure 5.9: Mass fragmentograms of steranes (*m/z* 217) and terpanes (*m/z* 191) from samples No.1988 and No.1992 of Group 2. (produced by Jacques Connan).

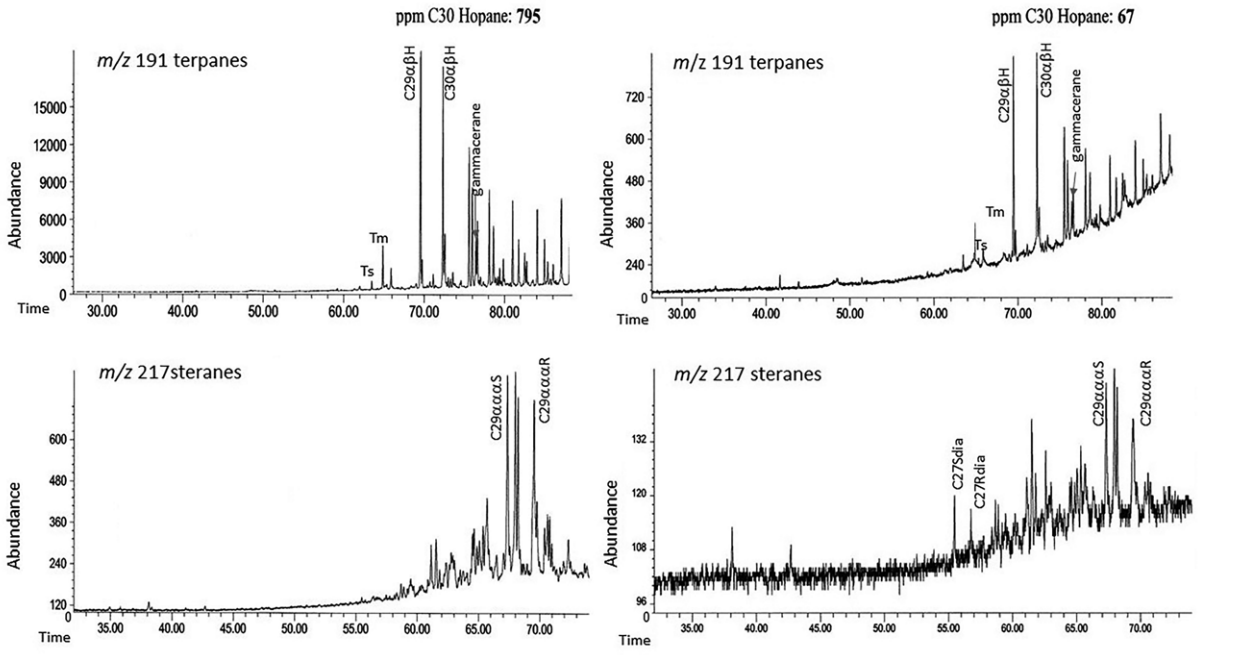

Figure 5.10: Mass fragmentograms of steranes (*m/z* 217) and terpanes (*m/z* 191) from samples No.1986a and No.1986b of Group 2. (produced by Jacques Connan).

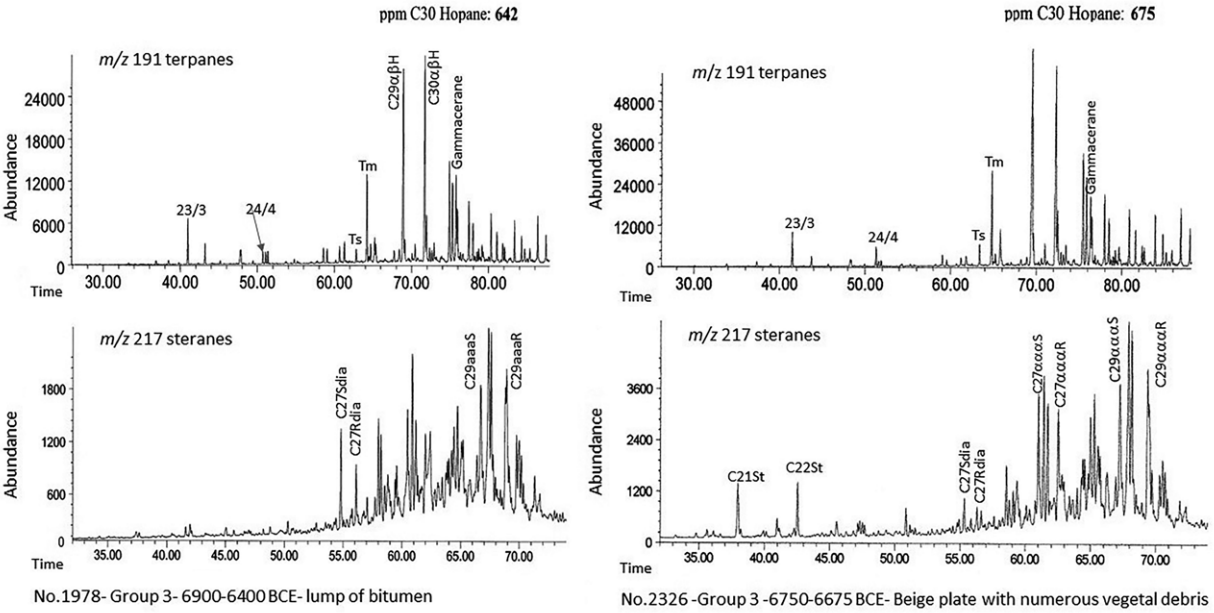

Figure 5.11: Mass fragmentograms of steranes (*m/z* 217) and terpanes (*m/z* 191) from samples No.1978 and 2326 of Group 3. (produced by Jacques Connan).

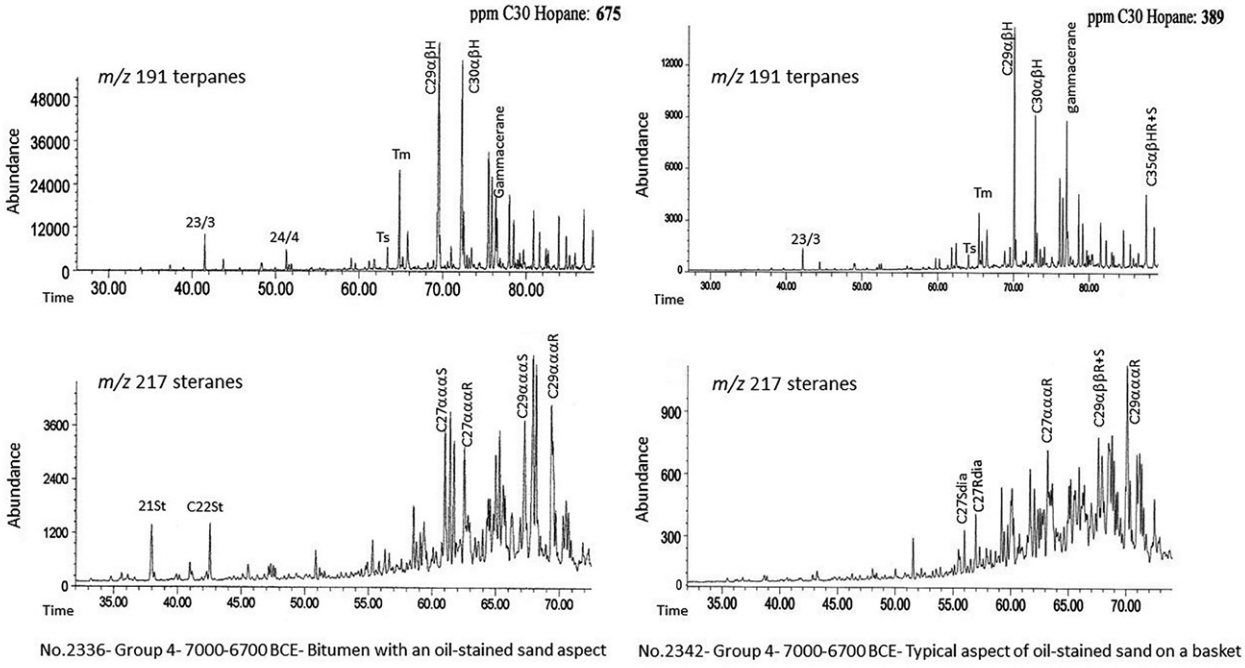

Figure 5.12: Mass fragmentograms of steranes (*m/z* 217) and terpanes (*m/z* 191) from samples No.2336 and No.2342 of Group 4. (produced by Jacques Connan).

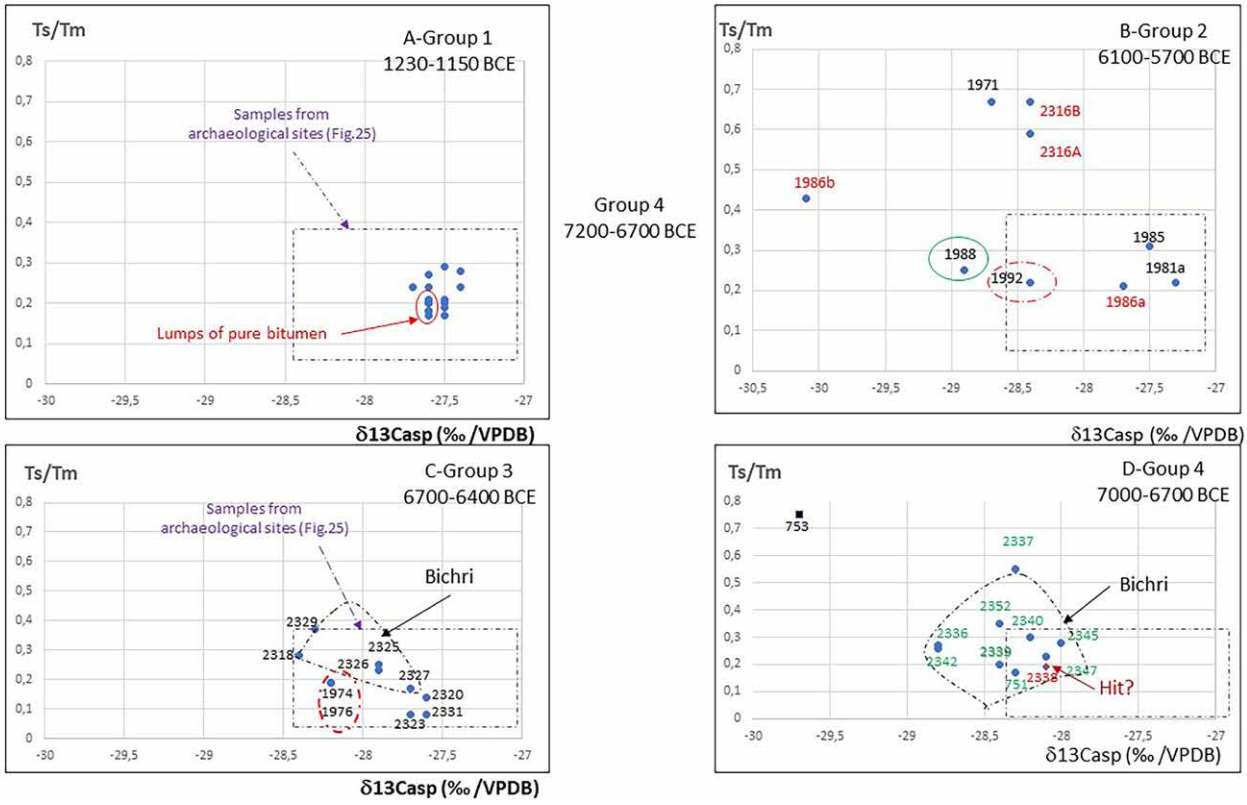

Figure 5.13: Plot of Ts/Tm *vs.* δ^{13}Casp (‰ / VPDB): data of Tell Sabi Abyad samples. (produced by Jacques Connan).

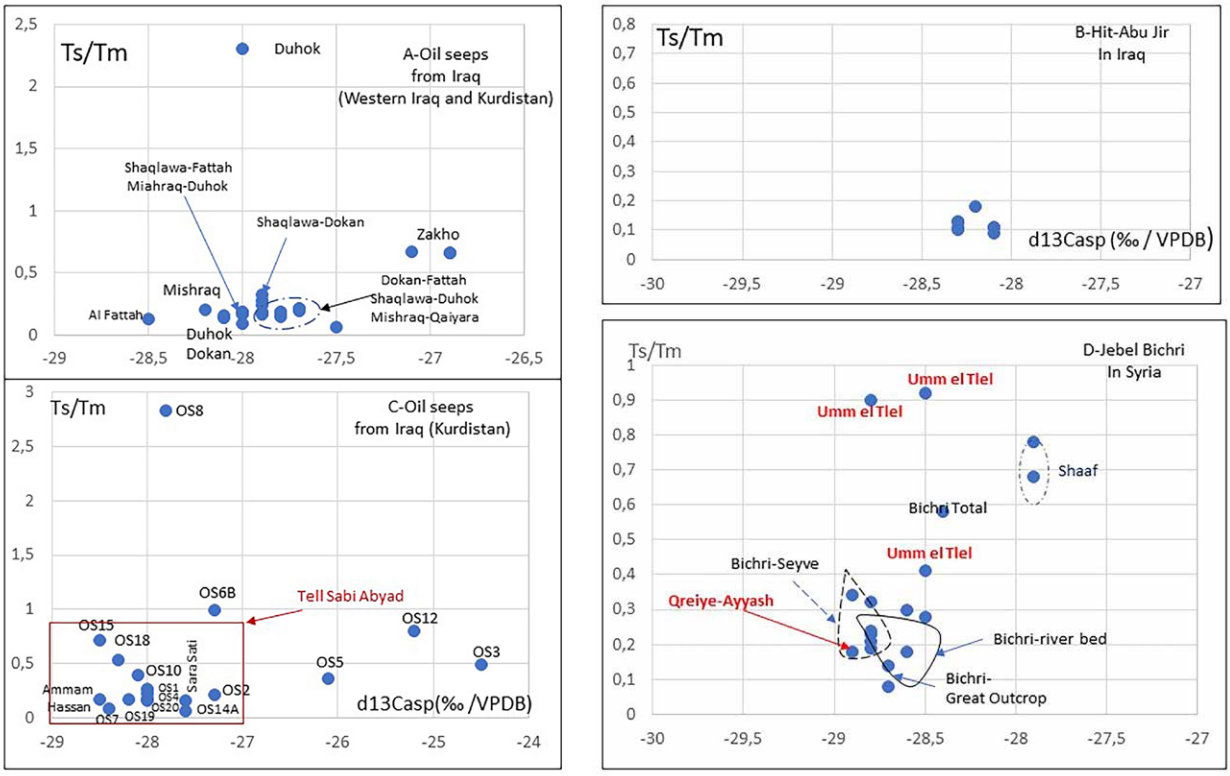

Figure 5.14: Plot of Ts/Tm *vs.* δ^{13}Casp (‰ / VPDB): data on oil seeps from Iraq and Syria. (produced by Jacques Connan).

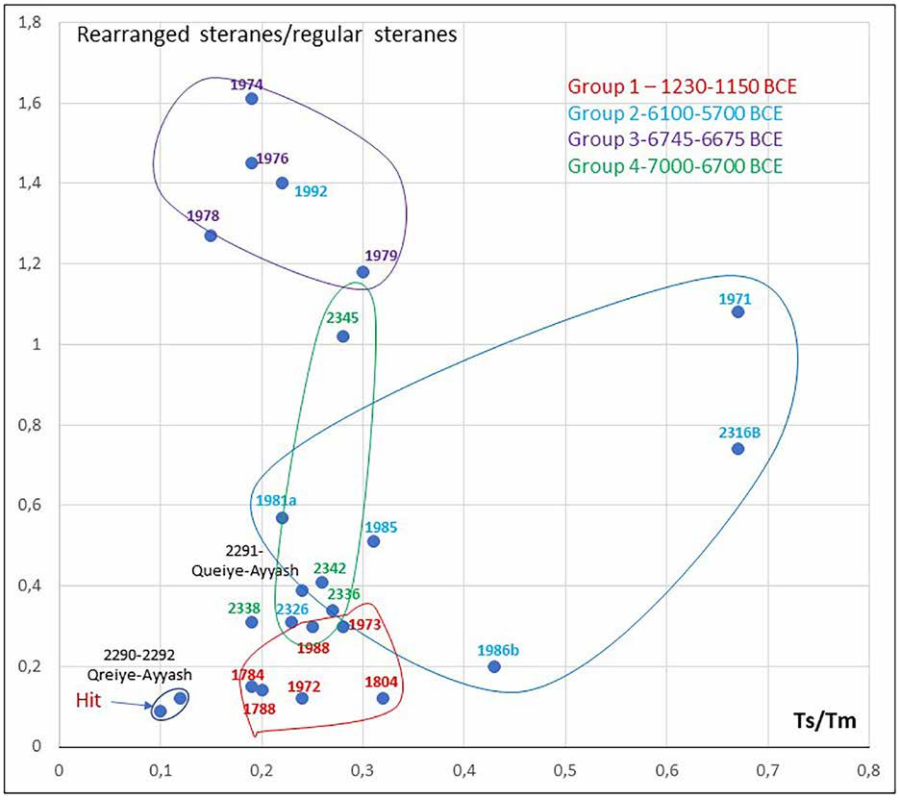

Figure 5.15: Plot of Rearranged steranes / Regular steranes *vs.* Ts/Tm: data on Tell Sabi Abyad samples. (produced by Jacques Connan).

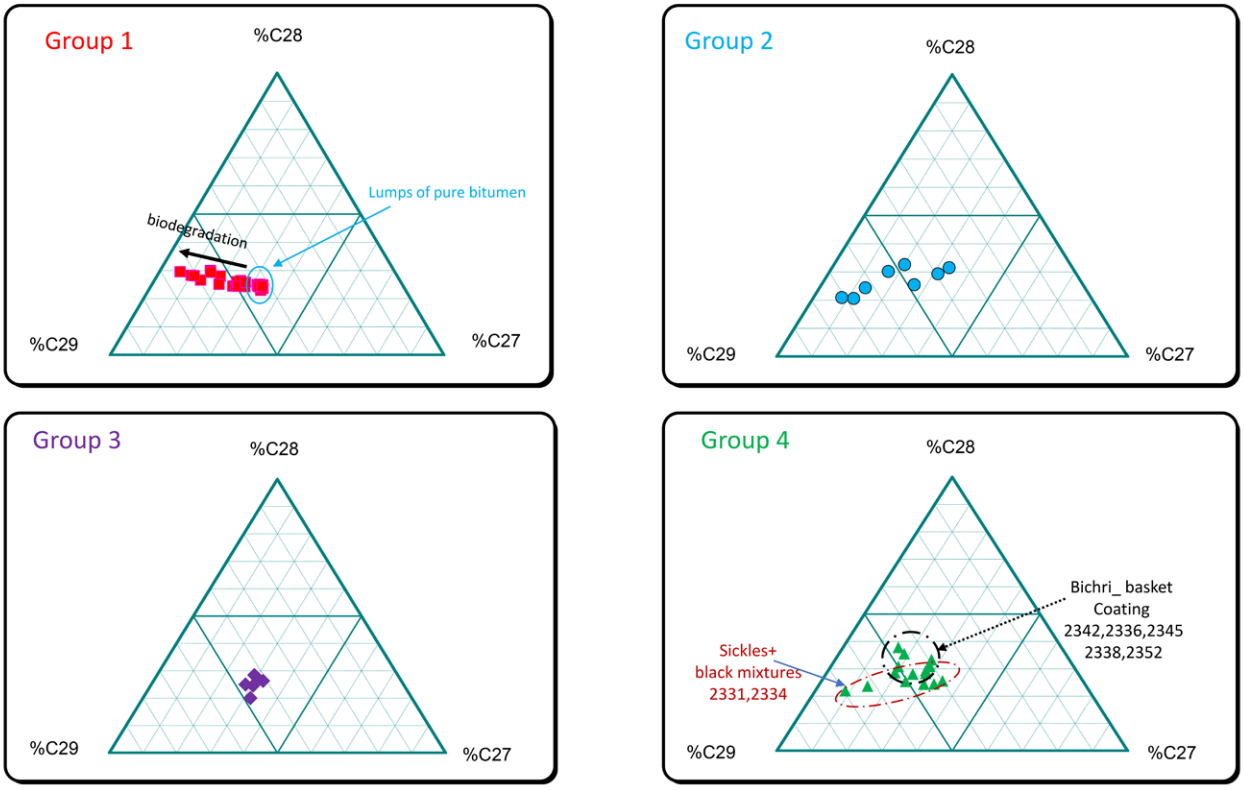

Figure 5.16: Plot of C27abbR+S *vs.* C28abbR+S *vs.* C29abbR+S steranes in a ternary diagram: data on Sabi Abyad samples. (produced by Jacques Connan).

candidates as sources. When comparing the material, we see that the archaeological sites from northern Syria and western Iraq use bitumen with comparable properties to those found at Tell Sabi Abyad. Some oil seeps from Kurdistan (OS8; OS5; OS12, etc., Figure 5.14C) could be dismissed as potential sources.

A plot of rearranged steranes/regular steranes *vs.* Ts/Tm (18α,21β,22-29-30-trisnorneohopane / 17α,21β-22-29-30-trisnorhopane, Figure 5.15) shows diversified groups of samples: Group 1 from the Sabi Abyad fortress, Group 3 comprising the samples with a high amount of C27 rearranged steranes (C27 diasteranes), Group 4 corresponding to bitumen from Jebel Bishri and Group 2 with some particular samples (Nos. 1971 and 2316B).

The comparison with data collected on samples from Tell Beydar, Tell Brak, and Arpachiyah shows a more diversified situation at Sabi Abyad. References to oil seeps from Turkey and different areas of Iraq indicate that no oil seep analysed today matches the properties of samples from Group 2 and 3 from Sabi Abyad, which are characterised by a high C27 diasterane content (*e.g.*, No.1978, Figure 5.11). Comparing Tell Sabi Abyad and Qreiye-Ayyash data (Figure 5.15) to data collected on Hit-Abu Jir oil seeps revealed that bitumen for Qreiyye-Ayyash is the only one to be originating from Hit-Abu Jir. Sample No. 2338, which was expected to come from Hit, is not originating from that famous location. At this stage of the comparison, numerous sources may be possible in Kurdistan, western Iraq or eastern Turkey.

The plot of αββsteranes compositions (Table 5.3) in a ternary diagram %C27 *vs.* %C28 *vs.* %C29 shows a diversified situation through time (Figure 5.16). One should consider that sterane compositions reflect various degrees of biodegradation of bitumen among samples. For instance, reference samples with lumps of pure bitumen in group 1 exhibit preserved sterane distributions, whereas biodegraded samples are depleted in C27 and C28 steranes in other samples. Group 2 show a different evolution profile with C27 and C29 biodegraded steranes. Group 3 does not show a biodegraded profile. Group 4 delineates two subgroups: samples with an origin in Jebel Bishri and other samples (bitumen on sickles and two black mixtures not coming from Jebel Bishri). Reference data on bitumens from archaeological sites in northern Syria and western Iraq show a similar situation; steranes may be either preserved or biodegraded. A plot of the data collected on oil seeps from Iraq, southeastern Turkey and western Syria reveals that many oil seeps have the

requested composition of preserved steranes of Sabi Abyad bitumens. Some oil seeps from Turkey (Selmo, Narlik, Kilis, Samsat, Adiyaman, Adiyaman Alisar and Adiyaman-Icmeler) may, however, be discarded.

Discussion

Since the earliest time, bitumen has been used as a means to make basketry impermeable. The oldest samples in our study also come from lumps with clear basketry impressions. The many small bitumen fragments with imprints of coiled and plaited suggest that basketry must have been quite common in the various settlements at Tell Sabi Abyad (Akkermans and Verhoeven 1995; Duistermaat 1996; Verhoeven and Akkermans 2000). Most bitumen samples associated with basketry are in Groups 4 and 3 and originate from Jebel Bishri, the most likely place being Wadi Bishri and the presently mined quarry.

Bitumen could also be used as paint. As earlier stated, bitumen-painted pottery is rare. Only 188 Standard Ware sherds were detected with bitumen paint (Nieuwenhuyse 2007, table 6.10; Nieuwenhuyse and Dooijes 2018, table 8.1). All but one was discovered in level B2-B8 (6200-5700 BCE), which corresponds with our group 2. The rareness becomes even more apparent if we add the result of Operation III. Nieuwenhuyse (2018) noted that only two sherds (from small standard ware jars) were decorated with bitumen. These two sherds are from the period 6050-5900 BCE. An additional base fragment of a bitumen-painted goblet or bowl came from a disturbed LBA burial deposit (Nieuwenhuyse 2018, 94, 103).

All our samples with painted pottery, and pottery repairs also belong to group 2 Transitional-Early Halaf (6200-5800 BCE). One explanation why bitumen is scarce as paint, is that the material is fugitive and does not survive wear and tear on objects that have been regularly used, like domestic pottery. However, the paint samples we have analysed do not appear to have a fugitive character.

Bitumen was further used as an adhesive glue for repairs. We see this already in the earliest period when bitumen was used for hafting flints (sickles). Also, vessels were sometimes mended with bitumen. The oldest (however, Nieuwenhuyse and Dooijes (2018) mark it as questionable) bitumen-repaired sherd was found in level A8 (6630-6590 BCE), which corresponds with our group 3. Four Halaf sherds, six Standard Fine Ware (including Orange Fine ware) and one Standard coarse ware had a bitumen repair. Two additional sherds (one Standard Coarse Ware and one Standard Fine Ware) had been repaired with tightening attachment through holes in combination with bitumen. Two Fine Ware sherds were seen with both bitumen paint and bitumen repair. (Nieuwenhuyse 2007, table 6.10; Nieuwenhuyse and Dooijes 2018, table 8.1). Repair, in general, does not seem to have been common. Repair with plaster is even rarer (only seven items, and all found in room fill contexts).

The analyses performed in 2004 indicated that one used another kind of bitumen for painting sherds than for repairing them. The present study has focused on three samples (Nos. 2316; 1981; 1986) in which bitumen is used either as glue to repair pottery or as painting. There appear to have been several sources in use. The material circulated in exchange networks throughout the region. The bitumen was most probably transported as lumps. Connan *et al.* (2004) have proposed that pottery with bitumen can, at the same time, have been part of the ceramic exchange and not been locally produced pottery. This suggestion is supported by other studies (Le Mière and Picon 1987; Le Mière and Nieuwenhuyse 1996). The Standard Ware was likely a local product, and the same has been said about Fine Mineral Ware (Van As *et al.* 1996/1997), but the bitumen-mended Orange Fine Ware pottery at Sabi Abyad was imported.

However, observed molecular differences in steranes and terpanes may result from differences in the degree of degradation in bitumen samples. Quantities of isolated bitumen are more significant in repair samples than in paintings, and therefore, their terpanes are less altered. C30αβhopane is severely reduced when comparing repair to painting (cf. No.2316: 65 to 5, No. 1981: 382 to 14, No. 1986: 795 to 67). Therefore, changes may be expected due to degradation effects. However, the occurrence of abundant C27 diasteranes in two samples (*e.g.*, No.1986, Figure 5.10) still favours two different origins for the bitumen for repair and painting. The origin of these bitumen samples has not been identified, but the Sabi Abyad data confirm diverse networks of exchange. One would think that the local artisans used the same bitumen for both painting and mending the pottery. This is not the case. Therefore, we have three different scenarios:

1. One chose bitumen suited for a particular use;
2. The repaired painted pottery was non-local and had been repaired after it came to the site;
3. The bitumen trade networks were not stable or were influenced by seasonal change, and the artisans used what was available.

However, the bitumen may sometimes be identical in repair and painting, as seen in sample No.2316 (Figure 5.13B).

The geochemical study has reflected the diversity of bitumen sources through time. Nine samples dated from 7200-6700 BCE and five samples dated from 6700-6400 BCE have been identified as containing bitumen imported from Jebel Bishri, most likely from the area where a quarry is still actively mined

	Total Samples	Paint on pottery	Pottery-repair	Residue on sherd	Basketry impression	Lithics	Architecture#	Other*	Pure bitumen	Unidentified lumps
Group 1	**16**				1		5	2	7	1
Group 2	**10**	5	2	2	1					
Group 3	12			4	2		1			5
Group 4	**22**			1	8	10				3
Total	**60**	**5**	**2**	**7**	**12**	**10**	**6**	**2**	**7**	**9**

Table 5.4: Overview of samples analysed in this study. # Architectural samples come from mortar, specimens and bricks. * Other is a jar stopper and a part of a pottery wheel (Dataset: Akkermans 2014a, b; Akkermans and Verhoeven 2014).

Period	Excavation	Basketry impression	As paint pottery	Pottery-repair	Pottery + residue	Stone vessel	Plaster (WW)	Lithics	Architectural	Other*	Pure bitumen	Unidentified lump	Total finds / samples
LBA	LBA	11	1		6				5	8	7	18	56
Pre-Halaf – Transitional – Halaf	Sab I: Op I	1	177	6						1			185
	Sab I: II		10	3	1								14
	Sab I: III			6		2				1		1	10
	Sab I: III	2	2	1	1	1				3		17	27
EPN	Sab I: IV				2								2
	Sab I: V				3							1	4
	Sab I: III	8			2				1			11	22
Late PPNB – Initial PN	Sab II	6					1	10					17
	Sab III	121			2		4	1				85	213
	TOTAL	149	190	16	17	3	5	11	6	13	7	133	550

Table 5.5: The table below summarises quantitative archaeological data of bitumen objects/samples at Tell Sabi Abyad (All Tells and Operations combined) with the objects/samples designation. #Architectural material: bricks, mortar, tiles. *LBA other: plastered lid, grinders, jar stopper, plug, pottery wheel, sealing. The rest other: jar stoppers and pestles.

today. One sample of bitumen (No.1988) of Group 2 (6100-5700 BCE), coating a part of a potsherd, has also been identified as originating from Jebel Bishri. These bitumens are primarily associated with basketry and seem to be occurring as raw materials for quartz grains are abundant within the mixtures. These properties question the building of these baskets. Are the baskets made in Jebel Bishri and reinforced on-site with sands impregnated with bitumen or woven at Sabi Abyad and then coated with imported tar sands?

Apart from bitumen from Jebel Bishri, other sources are present. One consists of bitumen with abundant C27 diasteranes (Nos. 1974; 1976; 1978; 1979 of group 3 and No.1992 of group 2). So far, such a characteristic has never been observed in oil seeps analysed in Iraq, Turkey and at archaeological sites of western Iraq and Northern Syria used as proxies. This unknown source has yet to be discovered and is likely located in southern Turkey.

Hit was suspected as a possible source for sample No. 2338 according to Ts/Tm and δ^{13}Casp, but additional biomarker parameters (rearranged steranes/regular steranes) led to discarding this possibility. The famous Hit oil seep bitumen was not imported to Sabi Abyad.

Another source has been used in the Sabi Abyad Bronze Age fortress, where pristine, undegraded lumps of pure bitumen were found. A unique source occurs in the fortress, where more degraded samples were recognised among the processed samples. This source also seems present in archaeological sites (Tell Atij, Raqa'i, Mashnaqa) of the Khabur valley. However, the exact origin of the bitumen – Eastern Iraq? Southern Turkey? Eruh? (Connan *et al.* 2013, 2022) – has not been identified.[3] The Samsat oil seep that may have been under the control of the Assyrians has not been found at Tell Sabi Abyad.

3 Integration of isotopic and biomarker information on oil seeps allowed us to discard some oil seeps as possible candidates. In Turkey, potential sources are as follows: Eruh 1 and 2, Batman-Gerçus, Yeşilli, Kilis-Kosagiz, Adiyaman-Icmeler. In Kurdistan, many sources may be discarded, namely OS1; 2A; 3; 5; 6B; 8; 45; 18.

Conclusions

Sixty bitumen samples (Table 5.4) dated from 7200 BCE to 1150 BCE were submitted to geochemical techniques comprising GC-MS analyses of biomarkers, steranes and terpanes in C_{15+}branched and cyclic alkanes and acquisition of carbon isotopic data on chromatographic fractions (saturates, aromatics, resins and asphaltenes).

The results show that the sources of bitumen at Tell Sabi Abyad were diverse and changed through time. A unique source has been used during the most recent period, exemplified by the Assyrian fortress. Lumps of pure bitumen with a conchoidal fracture were analysed in the set. Other samples of the same source represent bitumens with various degrees of degradation. The exact source of this bitumen has not been determined, but it may be located in southeastern Turkey, *i.e*., a place with bitumen properties similar to Eruh (Connan *et al.* 2013, 2022).

Between 6000 and 5700 BCE (Group 2), the situation is diversified and covers a wide range of geochemical properties, with even one sample (No. 1988) coming from Jebel Bishri in central Syria and another sample (No. 1992) with properties of particular samples of Group 3. Comparison between bitumen used for repair or painting on the same potsherd suggest that bitumen may be either the same or different. The exact origin of bitumen has not been determined.

Between 6700 and 6400 BCE (Group 3), the geochemical characteristics are again diverse. Five samples come from Jebel Bishri. The rest comes from different sources. One of these sources (samples Nos. 1974; 1976; 1978; 1979 and 1992) is characterised by abundant C27 diasteranes. It has never been observed so far in oil seeps analysed either in southeastern Turkey, Iraq or elsewhere. The origin of this bitumen is unknown. Other samples have properties matching sources in western Iraq and southeastern Turkey.

Between 7000 to 6700 BCE, the source of bitumen mainly attached to samples associated with basket imprints came from the Jebel Bishri in Central Syria. One sample (No. 2338) first thought to come from Hit has, in fact, a different origin that was not clearly determined.

This study confirmed known uses of bitumen in numerous archaeological sites already analysed. Bitumen is used as mortars, to glue flint implements, to reinforce baskets, to repair broken pottery, and to paint decorations on the outer surface of pottery. Bitumen had to be imported at Sabi Abyad and came from different sources. In the oldest period, between 7000 and 6700 BCE, the bitumen was imported from the southern desert in the Jebel Bishri, through the Balikh valley. Later, many other sources were used, likely in south Turkey and Iraq. Some sources have geochemical characteristics which have not been seen in oil seeps of Iraq and Turkey analysed so far.

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Chapter 6

Tokens as Indicators of Social Change in the Late Neolithic

Lucy E. Bennison-Chapman

Abstract

Small, geometric-shaped artefacts made of clay (spheres, discs, cones, *etc.*) are a common feature at villages across West Asia. Their sudden appearance at the start of the Neolithic coincides with the shift in lifestyle from mobile hunter-gatherer to sedentary farming communities. As such, it has traditionally been theorised that from their inception, these clay objects acted as 'tokens', used as part of a formal, mnemonic record-keeping system, to administer agricultural goods and other commodities within and between villages. Recent research proves there is no evidence for this model for much of the Neolithic period. However, several late Neolithic sites across upper Mesopotamia (*e.g.*, Tell Sabi Abyad, Tell Halaf and Tell Arpachiyah) demonstrate evidence pointing toward the use of clay objects as basic accounting tools. This paper looks at three discrete settlement exposures at Tell Sabi Abyad dated to ca. 6000 BCE. It demonstrates that alongside stamp seals and clay sealings, 'tokens' became part of the accounting apparatus. Their study can aid in the understanding of the wider social, economic and ritual developments of late prehistory.

Introduction

Societies of the Late Neolithic in upper Mesopotamia share a number of distinctive features, which combined have led to the classification of these sites under the umbrella term 'Halaf' (*e.g.*, Breniquet 1984; Campbell 1992). One characteristic feature of Halaf sites is the use of clay tokens. These are commonly found, alongside other distinctive small artefacts of clay including figurines and sealings. Traditionally, attention has focused on the enigmatic figurines and their symbolic or ritual meaning. Likewise, the role of sealing practices and what these can elucidate regarding concepts of property, ownership, administration and control. This paper focuses on the clay tokens themselves, as indicators of social change within the late Neolithic villages of the Halaf zone. Though small, crude and unassuming, these common artefacts can inform us much about the broader social changes at the time, especially at the site of Tell Sabi Abyad where their quantity, form, deposition and therefore use at ca. 6000 BCE[1] differs starkly to other periods of occupation at this long-lived site.

1 All dates in this chapter are calibrated dates BC.

Research Context

The Neolithic Backdrop

The Neolithic of West Asia is a broad time period, spanning approximately 10,000-5000 BCE. The hallmark of the Neolithic is the transition in lifestyle from mobile, hunter-gatherer groups to sedentary farming village settlements (*e.g.*, Childe 1936; Hole 1984; Banning 1998; Cauvin 2000). Such drastic changes in lifeways are accompanied by a plethora of other developments covering all spheres of life, ritual and beliefs, symbolism, exchange networks, craft production and concepts of ownership, control and social stratification.

Upper Mesopotamia sees the earliest introduction of pottery in West Asia at the very start of the seventh millennium BCE (Nieuwenhuyse *et al.* 2010; Campbell 2017). Ceramics are immediately widespread, thus the transition into the seventh millennium BCE marks the onset of the Pottery Neolithic period in this region (Garfinkel and Epstein 1999, 11-2; Nieuwenhuyse *et al.* 2010, 72). The invention of pottery brings with it a number of social and economic changes and upper Mesopotamia flourishes in the seventh and sixth millennium BCE as demonstrated by the Hassuna, Samara and Halaf 'cultures' (Le Mière 2017; Tsuneki 2017).

The Halaf

The Halaf 'culture' (ca. 6000-5300 BCE) covers a much wider area of upper Mesopotamia in comparison to the proceeding Hassuna-Samarra. Named after the type-site of Tell Halaf, the name is a largely arbitrary designation based on the extreme cultural continuity over a large horizontal band (von Oppenheim 1931; 1943; 1950-55; 1962; Breniquet 1984; Campbell 1992; Yoffee and Clark 1993). The Halaf is principally characterised by distinctive, fine painted wares. In addition to the pottery, Halaf sites display a number of homogeneous features: namely the presence of stamp seals and sealings, tokens, increased storage capacity and a combination of rectilinear and round (*tholoi*) structures which are found in various combinations across the Halaf sites (including Domuztepe, Tell Arpachiyah, Tell Sabi Abyad I, Yarim Tepe, Tell el Kerkh and Kharabeh Shattani (see, *e.g.*, Mallowan and Cruikshank Rose 1935; Akkermans 1993; Yoffee and Clark 1993; Akkermans and Verhoeven 1995; Campbell *et al.* 1999; Campbell 2000; Carter *et al.* 2003, Özbal *et al.* 2004; Tsuneki and Hydar 2007). The Halaf was a critical time period, emerging from a background of small farming villages, leading into urbanism and complex society by the fourth millennium BCE (Campbell 2000, 1). It is within this setting that the first clear evidence for the use of clay objects as administrative tools emerges, ca. 6000 BCE.

Tokens

Small, geometric-shaped objects made of clay (and less commonly also stone) appear soon after the onset of the Neolithic in West Asia, ca. 10,000 BCE (Bennison-Chapman 2014; 2018; 2018-19). These items are most commonly known as tokens (Schmandt-Besserat 1992; 1996) and are found in a range of basic three-dimensional shapes such as spheres, cones and discs. On average they measure about 1.5-2 cm, and, in the prehistoric period, they are almost always plain, with a small proportion (less than 10%) displaying intentional decoration in the form of incised lines or circles (Figure 6.1). Until the last decade, little research had been undertaken on the use and role of prehistoric clay objects. When recovered at a site, they were often noted in passing in site reports, and labelled using various terminologies (*e.g.,* token, counter, cone, figurine, miscellaneous clay), yet no stylistic or functional analysis was caried out and they were never published in full. Clay objects persist in the archaeological record of West Asia, and from the mid-late fourth millennium BCE it is clear they were used in the context of administrative practice, as aids to help keep track of commodities, labour, rations, taxes, and so on. The exact details of this system are still debated. Recent research has shown there is extremely tenuous evidence to support the overall theory that clay objects were invented as tokens to keep track of agricultural produce in the early villages of the Neolithic in West Asia, ca. 10,000 BCE (Bennison-Chapman 2013; 2014; 2018; 2018-19; 2020). However, the trends seen in all aspects of tokens (their form, relative quantity at a site, the degree of homogeneity within a site's assemblage and their contextual distribution within a given site) sees a distinct change at the end of the seventh millennium. From this point onwards, they did function as counting tokens at Tell Sabi Abyad and at other Halaf sites.

Late Neolithic Climate Change

An abrupt cold event climax occurred towards the end of the seventh millennium BCE, at 8.2 ka (ca. 6225 BCE) (Akkermans *et al.* 2010). Its extent and effects on prehistoric societies are not yet adequately understood, however this climatic episode does appear to correspond with clear changes within some Neolithic communities. Sites across central Anatolia and upper Mesopotamia, including Tell Sabi Abyad, evidence key changes in subsistence strategies, architecture, settlement location, material culture and social organisation around this point in time (see, *e.g.,* Gerard and Thissen 2002; Clare *et al.* 2008, 73; Akkermans *et al.* 2010; Russel 2010, 55-9, 280-86; Nieuwenhuyse *et al.* 2016; Czerniak and Marciniak 2022; Hodder 2022; Last 2022; Nieuwenhuyse 2022).

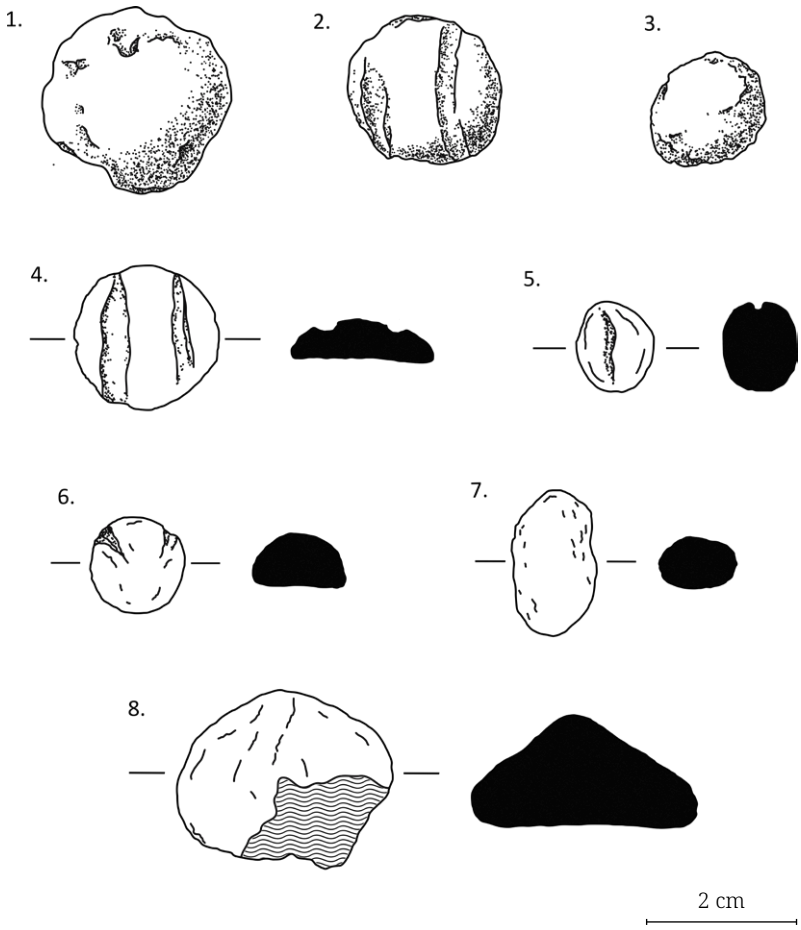

Figure 6.1: Selection of tokens from Tell Sabi Abyad operation II upper phase. Nos. 1-3: Flattened spheres, one with incised markings on the upper surface. From cache of 8 tokens in unit 050-113, Building 3, room 1 (O03-018). Nos. 4-8: Selection of tokens from large token cache in unit 020-046, pit Feature K, level 1 (O02-164). (Image: Amended from ©Tell Sabi Abyad Archive, enhanced by Keshia Akkermans).

The emergence of evidence for the use of clay objects as tokens at the end of the seventh millennium BCE is therefore intriguing, and ties them into the broader changes in style and society of late prehistory in upper Mesopotamia. This chapter presents evidence of the changing form, deposition and use of clay objects from ca. 6000 BCE in the Halaf zone of upper Mesopotamia via detailed examination of three discrete settlement phases at Tell Sabi Abyad. The paper asks how well-made are the tokens of this period? How much diversity is seen in their shape, size and other aspects of their appearance? Are specific combinations of clay object 'types' and/or other artefacts found? Do we see distinctive sets of types of tokens which could have been used to symbolise commodities? Is there any decoration? How were tokens deposited? Are they ever recovered in situ? This chapter also looks deeper, attempting to answer questions related to the social need and implications of the use of tokens in Late Neolithic administration systems. Why were tokens needed at this point in time, in the villages of the Halaf zone? Who used them? What were they used with? What was being counted? Are there any links to ritual or performance?

Late Neolithic Tell Sabi Abyad

The site of Tell Sabi Abyad needs little introduction (see chapters 3 and 4 in this volume). Its location in north Syria's Balikh river valley places it close to the heart of the Halaf 'cultural' phenomenon of the sixth millennium BCE. The site is a group of four prehistoric tells, clustered together and named Tell Sabi Abyad I-IV. Prehistoric occupation shifted between areas and also from tell to tell during the eighth into the sixth millennia BCE. At five hectares, Tell Sabi Abyad I is the largest, with Neolithic occupation covering much of the mound in four or five separate villages (or 'Operations'). At Tell Sabi Abyad, the effects of the 8.2 ka climatic event are notable (Akkermans *et al.* 2010; Nieuwenhuyse *et al.* 2016), with many changes evident, both economically and culturally. There is a shift in settlement away from the smaller tells, and across parts of Tell Sabi Abyad I (Nieuwenhuyse *et al.* 2016, 70-74). New types of architecture are introduced, which co-exist with the earlier style of rectilinear buildings (exemplified by Operation I) (*i.e.,* Akkermans *et al.* 2014, Fig. 2.3). In animal exploitation there is a shift from pig to cattle for the main meat source and the beginnings of milk

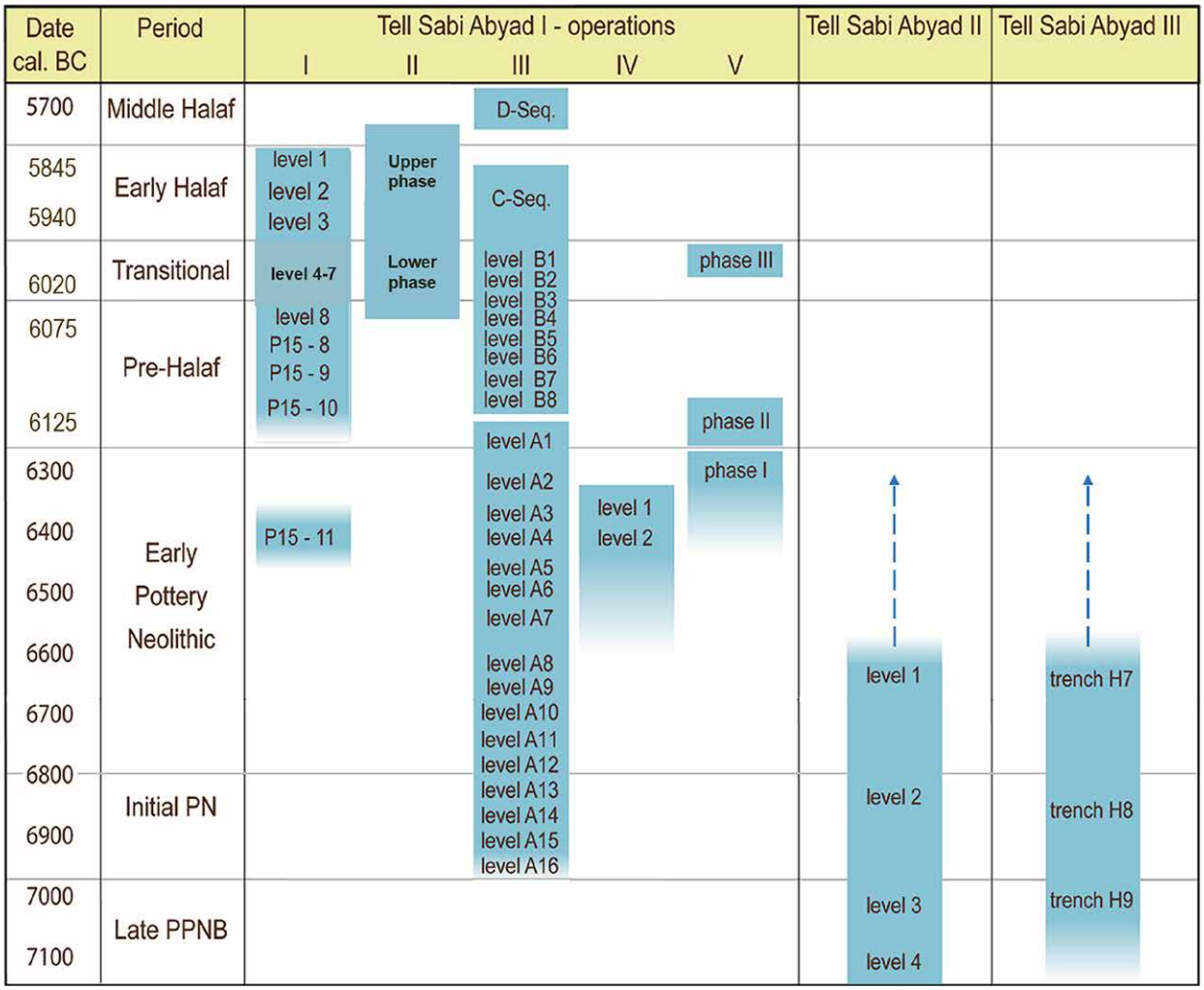

Figure 6.2: Chronological chart of Tell Sabi Abyad, detailing the broad sequence of Neolithic occupations (Adapted from Nieuwenhuyse *et al.* 2010, Fig. 5; and Bennison-Chapman 2018-19. Also see Akkermans *et al.* 2014, Tables 2.1-2.2).

production (from sheep and goat) (Evershed *et al.* 2008; Russel 2010; Akkermans *et al.* 2010; Nieuwenhuyse *et al.* 2016, 78-81). There is a new emphasis on wool, seen by the increase in spindle whorls and in sheep aged over four years (Rooijakkers 2012; Nieuwenhuyse *et al.* 2016, 79). Other hallmarks of the Halaf appear at this time such as fine bodied, polychrome pottery, and sealings and the use of stamp seals become widespread (Akkermans *et al.* 2010; Nieuwenhuyse *et al.* 2010, 81-5; Nieuwenhuyse 2022). It is within this setting that a change in the use of clay objects also occurs at Tell Sabi Abyad. They move from being a divergent set of multi-purpose objects to being counters used in administration.

Case-Study 1: Operation I, Level 6 'Burnt Village'

Village Layout

Occupation at Operation I, on the south-eastern part of the main tell has been extensively excavated, to reveal a series of at least eleven villages (Akkermans *et al.* 2014). Each excavation level represents a short-lived village settlement, with levels 10 to 1 each displaying a similar pattern of architectural construction, use, abandonment and infilling. Each village built upon the remains of the last (*ibid.*, 32). The latest ten (levels 10-1) span a continuous sequence of occupation, each lasting one generation, or approximately 35 years (*ibid.*, Tables 2.1- 2.2). Level 6 sits in the middle of this sequence, and represents a significant investment in time and labour in order to level and terrace the south-western part of Operation I in preparation for the construction of the at least fifteen buildings of this level

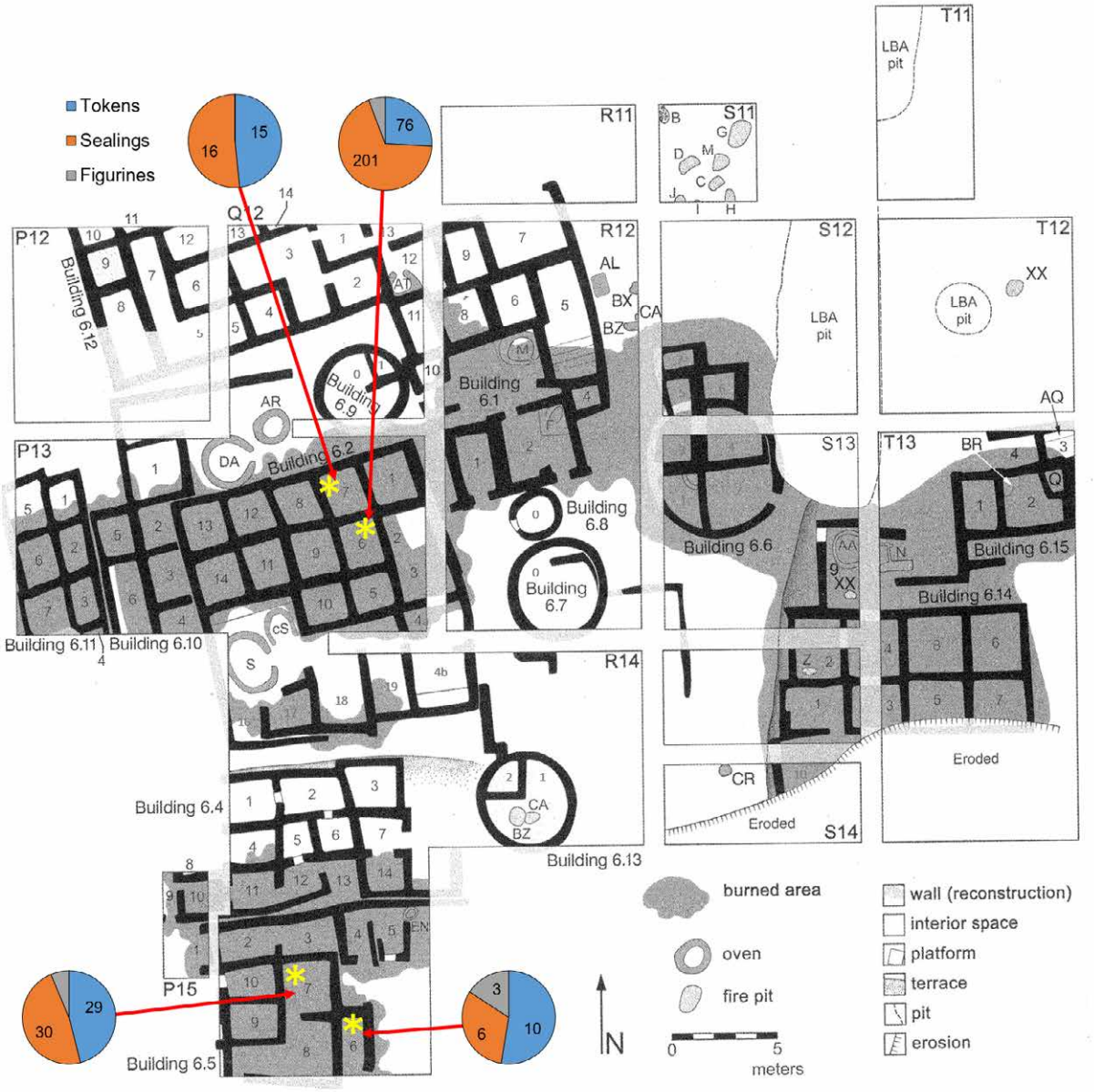

Figure 6.3: Plan of level 6, Operation I, the Burnt Village. The extent of the burnt areas can be seen in grey. Rooms with more than 20 clay artefacts (dominated by tokens and sealings) are marked by an asterisk (Based on Akkermans *et al.* 2014, Fig. 2.29).

(Figures 6.2-6.3) (*ibid.*, 67-8 and Figs. 2.28, 2.31). The village stands out within the sequence at Operation I, due to the large number of densely packed, well-preserved buildings which are full of material-culture remains (Akkermans and Verhoeven 1995; Verhoeven and Kranendonk 1996, 38-63; Akkermans and Duistermaat 1997; Verhoeven 1999, 25-44; Akkermans *et al.* 2014, 67-78).

Like most Halaf sites, the level 6 'Burnt Village' has a mixture of rectilinear and round buildings (*tholoi*), densely packed in an organic fashion (Akkermans and Verhoeven 1995, 10; Akkermans and Duistermaat 1997, 17). It is sometimes unclear where one building ends and another begins. The rectilinear structures are far larger than the *tholoi*, most are subdivided into small rooms, yet there is considerable diversity amongst the rectilinear buildings in the internal use of space, presence of an internal courtyard (*e.g.*, Building 6.2) or external enclosed yard space (Building 6.14) with or without external ovens (Akkermans and Verhoeven 1995, Fig. 5). Some buildings have internal ovens and hearths (Akkermans *et al.* 2014, Table 2.9 and Fig. 2.28). The village is constructed on terraces, with access to buildings and internal rooms

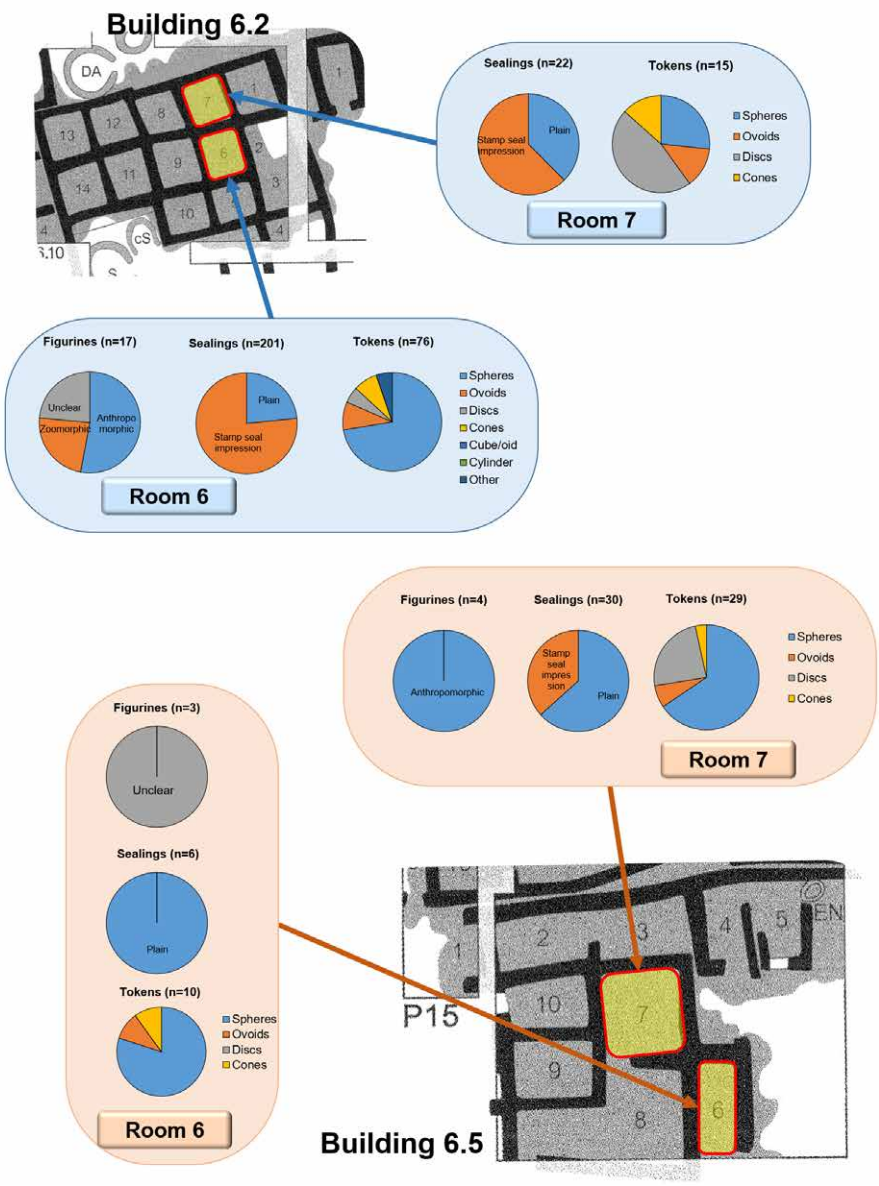

Figure 6.4: Detail of the type and deposition of tokens and sealings in the four rooms most dense in administrative items at the Burnt Village; Building 6.2 (rooms 6 and 7) and Building 6.5 (rooms 6 and 7).

varying between doorways, port holes and those with neither, presumably accessible via the roof (Akkermans and Verhoeven 1995, 10 and Fig. 4; Akkermans *et al.* 2014, Fig. 2.31). At least one of the large rectilinear buildings had an upper story as seen by the remains of a staircase (Akkermans *et al.* 2014, 72-3 and Fig. 2.32). The *tholoi* too are diverse in size. All but one is subdivided, either into smaller rooms or with a storage compartment on one side (*ibid.*, Fig. 2.28).

The Tokens

Large quantities of clay artefacts were recovered from the Burnt Village, with sealings and tokens the most common. The sealings have been extensively published and discussed (*e.g.*, Duistermaat 1996; Akkermans and Duistermaat 1997; Duistermaat and Schneider 1998; Akkermans and Duistermaat 2004; Duistermaat 2013; Akkermans and Duistermaat 2014), yet the tokens were, until now, never studied in any significant detail. Re-analysis of the excavation records has identified 261 individual artefacts fitting the criteria for a small geometric clay object in the Burnt Village and these were used as tokens. The quantity of tokens from the level 6 Burnt village, compared to other villages in Operation I is striking, with no earlier village levels at the site yielding anything near this quantity. Yet within the broader context of the level 6 village, the quantity of tokens is fitting, with an even higher number of clay sealings (n= 300), along with other small artefacts made of clay such as figurines, labrets, sling missiles and pierced

Artefact type	ARTEFACT DETAIL				CONTEXT		
	Total	% of all artefacts	Sub-type	Count	Internal	External	(Open-air) courty-ard of building
Token	**261**	28,43	**ALL**	261	**191**	67	1
Sealing	**299**	32,57	**Plain**	103	**272**	26	0
			Stamp seal impression	196			
Stamp-seal	**4**	0,44	**Clay**	1	**2**	2	0
			Stone	2			
			Shell	1			
Figurine (clay)	**46**	5,01	**Anthropomorphic**	25	**38**	8	0
			Zoomorphic	14			
			Unclear	7			
Labret	**29**	3,16	**All clay**	29	**17**	11	1
Sling missile	**62**	6,75	**All**	62	**46**	13	1
Vessel	**155**	16,88	**Clay**	85	**98**	55	2
			Stone	68			
			Whiteware	2			
Pierced-disc	**62**	6,75	**All**	62	**40**	20	2
ALL	**918**	**100**		**918**	**704**	**202**	**7**

Table 6.1: Small finds from level 6, Operation I (the Burnt Village) at Tell Sabi Abyad by broad context.

discs (Table 6.1). This is in addition to huge quantities of (complete or near complete) vessels, including those made of pottery but also white-ware and occasionally stone (Table 6.1). Although tokens come in a broad range of three-dimensional shapes in the village, four basic forms, *i.e.*, spheres (60.9%), discs (17.2%) ovoids (11.1%), and cones (7.7%), constitute more than 95% of all examples. The Burnt Village token assemblage is also distinct as the overwhelming majority of tokens are complete or near complete, contrasting with the nature of the tokens from earlier periods of occupation at Tell Sabi Abyad.

The token assemblage of the Burnt Village is also striking due to the context of the artefacts. They are most commonly found inside buildings, with just 25% found in open air spaces. The same is true of sealings and figurines (Table 6.1). The majority of the tokens come from the extensively burnt buildings, with Buildings 6.2 and 6.5 combined having more than three quarters (n= 146) of all Burnt Village tokens (Figure 6.3). The distribution of tokens within these two buildings is not random. In each, two rooms have high quantities of tokens, along with other clay artefact types suggesting their use as administrative tools. In Building 6.2 for instance, a single room of one square metre (room 6) contains over 300 clay artefacts, including 200 sealings (most with stamp seal impressions), 76 tokens (of five different shapes) and 17 figurines (mostly anthropomorphic females) (Figure 6.4). Room 7 of the same building again has many tokens and sealings, this time in equal proportions. The tokens of room 7 are found in five shapes, with discs most common. There is a larger proportion of plain sealings ('jar-stoppers'), though sealings with stamp seal impressions remain the majority. The evidence from Building 6.5 is similar.

Once again, two rooms were full of both tokens and sealings, the majority coming from room fill not floor surfaces, so they are no *in situ* depositions within rooms (Figures 6.3-6.4) (Bennison-Chapman 2020). Yet the fact that both tokens and sealings are deposited together, into the same rooms, suggests they were also originally used together. Overall, the context and nature of the small finds from the four rooms highlighted (Figure 6.3) are very similar.

Interpretation of Use

The large quantity of tokens at the Burnt Village stands out in Operation I. Other settlement levels in this location have only a handful of tokens between them. They are also noteworthy due to their homogenous appearance compared to the tokens of earlier phases of the Neolithic; they are largely complete; and a small number of well-defined shapes appear again and again. Lastly, they are found almost exclusively within rooms and in groups, not singly in external spaces or thrown into middens as is common for earlier phases of the Neolithic at Tell Sabi Abyad and across West Asia. Though excavation processes may partially account for

the concentration of internal versus external tokens, there is a real concentration of tokens within just four rooms of two buildings at the Burnt Village. In these rooms, tokens were not haphazardly found within the fill, but appear to represent the intentional, deliberate deposition of administrative items, with sealings and figurines also found in the rooms and deposit. Combined, the evidence suggests tokens were used in the same location as stored and sealed goods, in the counting in or out, of the stored items.

What did the tokens administer? Small portable containers of stone, clay, basketry and bags were commonly used at the Burnt Village. All types of goods could have potentially been stored within the Burnt Village. Analysis of the sealings (and also the pottery) recovered from the buildings demonstrate a wide variety of vessel sizes, forms, and also basketry and bags. Tokens are found with diverse sealings and therefore were used with a variety of stored items. Exactly how the tokens were used is a crucial question. It seems this was either purely for counting, or with the shape of tokens representing two or more variables on an ad-hoc basis. Across the buildings, and considering the tokens on a room-by-room basis with buildings, no specific sets or shape combinations can be identified, which would be expected if the shape of a token represented a specific commodity (Figure 6.4). There is also a difference in the proportion of tokens and other administrative artefacts (plain sealings, sealings with impressions and vessels, zoomorphic figurines) across the buildings of the village. The rooms yielding tokens and sealings in the Burnt Village were not used in a consistent way, in terms of the nature of the goods they were used with, the quantity of goods stored, or the symbolic meaning of the tokens. This is supported by evidence from the sealings. Over 77 distinct seal designs are represented, with no correlation between the type of container it sealed (basket, sack, bag, type of ceramic), the container's capacity and the quantity, range and/or design of sealings on the exterior (Duistermaat 1996; Akkermans and Duistermaat 1997; Duistermaat and Schneider 1998; Akkermans and Duistermaat 2004).

The Burnt Village: Abandonment and Ritual

Clay objects were not only used as counting tokens. In the Burnt Village, they were an integral part of the ritual closure of the village. Death, fire and abandonment are interlinked in the Burnt Village, and the deposition of tokens, figurines, sealings and pottery into specific rooms of certain buildings was part of that process. The occupation of level 6 came to a violent end around 6000 BCE. The entire level 6 village was almost certainly simultaneously abandoned and set alight. The village was heavily burnt, with orange-red walls and rooms full of black ash remaining. This led to excellent preservation of the buildings and their contents (Akkermans *et al.* 2014, 68, 77-8 and Fig. 2.29). The burning was intentional and prolonged, part of a wider ritual event involving large numbers of people, as the village was cleared before being set alight, and effort would have been required in order to maintain the flames (Verhoeven 1999, 224-31; 2000, 60-61; Akkermans *et al.* 2014, 68, 77-8).

Building 6.5 is a central focus of the ritual activity. Recovered amongst the burnt roof remains, on top of the room fill, were ten large clay ovoids (one also from within Building 6.4; Verhoeven 1999, 38 and Fig. 3.5; Verhoeven 2000, Table 1). They measure up to 50 cm in length, and have holes in the sides. Sheep horns and long bones of quadrupeds were found inside and amongst these objects, suggesting they might have been large animal figures, with legs, tails and horns originally attached (Akkermans and Verhoeven 1995, Figs. 7-8; Verhoeven 2000, 48, Figs. 3-5). Certainly, the use of sheep horns suggests a symbolic, ritual nature of the deposition as part of the ritual closure of the village as the bucrania motif is common in symbolism of the region from the early Neolithic onwards (Cauvin 2000), at Çatalhöyük most famously (Hodder and Meskell 2010, 50-52 and Fig. 2.7) but seen across the entire West Asia (*e.g.*, Mallowan and Cruikshank Rose 1933, 154-63). The nature of their contextual deposition shows they originally were placed on the roof of the building, falling into the room when the roof collapsed due to the fire (Akkermans and Verhoeven 1995, 16; Verhoeven 2000, 56 and Fig. 2).

Along with the clay ovoids were the remains of two human bodies, a young male and female. They were presumably originally placed on the roof of the building, along with the ovoids before it was set alight (Akkermans and Verhoeven 1995, 16; Verhoeven 2000, 48-50, 56 and Figure 6.3). As the village has no other human casualties of the fire, the placement of the humans on the roof was likely an intentional, ritual act linked to the burning and abandonment of the village (Akkermans and Verhoeven 1995, 16; Verhoeven 2000, 55-6; Akkermans *et al.* 2014, 78). The destruction event likely remained in the memory of the villagers, with flames and smoke viable over vast distances at the time of the destruction. Other parts of the tell were occupied at this point in time, ca. 6010-5995 BCE (Figure 6.2). Tokens and sealings, once invaluable tools in the administrative processes of counting and storing, sealing and keeping goods securely closed, were in the final stage of their use-life, deposited into the abandoned buildings to be burnt, stripping them of their symbolic meaning.

Case-Study 2: Operation II, Lower Phase (ca. 6050-6020 BCE)

Located in the north-western part of Tell Sabi Abyad I, occupation in Operation II overlaps with that of Operation I level 6, yet far smaller with a single 10 by 10 m area uncovered. Two broad phases of occupation are represented which temporally are separated by less than one generation, either side of ca. 6000 BCE (Figure 6.2). Despite the small size and short occupation, many aspects of the material culture, administration practice and ritual activity seen at Operation I's Burnt Village are paralleled at Operation II.

The lower phase is dominated by Building 1, a large, multi-roomed, rectilinear structure, with a broad room at one end making it roughly 'T'-shaped (Figure 6.5) (Akkermans *et al.* 2012, Figures 6.3, 6.5). When occupied, open spaces remained immediately to the south and west, yet it is likely that contemporary architecture was located nearby, just outside of the excavated zone. Like the buildings of Operation I's Burnt Village, Building 1 is remarkably well preserved, as at the end of its life it was extensively burnt at high temperatures, resulting in large quantities of black ash filling the rooms in the south and centre of the building (Figure 6.5). Upon excavation, the walls remained standing up to one metre in height. Building 1 was recovered packed full of finds, with a small quantity of artefacts also recovered from the open spaces surrounding the building (Table 6.2). Like the deposition of tokens and associated artefacts at the Burnt Village, the distribution of artefacts within Building 1 is highly structured. Artefacts of certain types cluster within specific rooms, most artefact caches are within the mid-upper room fill, thus most are not *in situ* remains. Yet the distribution of finds across the building suggests the structured deposition of objects, during and/or immediately after the building was set alight, as caches of finds can be identified in the sloping layers of ashy fill material.

The large quantity of tokens, sealings, vessels and potsherds indicate that administrative activity was carried out at or close to Building 1. Small artefacts made of clay (including complete or near complete ceramic and other vessels) are the most common (n= 234), yet ground-stone tools are also numerous, n= 142 (Table 6.2) (Akkermans *et al.* 2012, Figures 6.7, 6.9 and Table 6.2). The form and distribution of the small geometric clay objects in Building 1 suggests that like at Operation I's Burnt Village, here too they functioned as simple tokens. Room 1.3, a small square room of less than one square metre, located in the south-eastern part of the building (Figure 6.5) contained almost half of the building's tokens, along with one third of its sealings (Table 6.2). The co-occurrence of tokens and sealings is repeated in rooms 1.1 and 1.5; all three are heavily burnt and full of ashy material. Room 1.3 has tokens through all of the in-fill layers, suggesting they were thrown into the building in sets, between abandonment and burning, or during the burning ritual, remnants of accounting activity which had taken place in a different location.

Rooms 1.1, 1.3 and 1.5 contain the bulk of the building's tokens and sealings (Table 6.2). The number of vessels

CLAY ARTEFACTS	Room 1.1	Room 1.2	Room 1.3	Room 1.4	Room 1.5	Room 1.6	Room 1.7	Room 1.8	TOTAL	EXTERNAL SPACES
Room character	**BURNT-LARGE**	**BURNT-LARGE**	**BURNT-SMALL**	NOT BURNT-SMALL	**BURNT-VERY LARGE**	NOT BURNT (SOME ASH)-SMALL	NOT BURNT (SOME ASH)-SMALL	NOT BURNT-SMALL		
Token	**20**	0	**44**	**15**	**13**	7	0	0	**99**	**10**
Sealing	**14**	0	**19**	0	**28**	0	0	0	**61**	**2**
Figurine	2	0	1	0	0	0	0	0	3	**2**
Labret	1	2	1	0	0	2	0	0	6	**7**
Bulla	0	0	3	0	2	0	0	0	5	**0**
Sling missile	9	3	5	1	1	0	0	0	**19**	**45**
Pottery vessel	2	1	3	0	1	0	0	0	7	**4**
Pierced disc	**15**	3	3	2	8	3	0	0	**34**	**12**
CLAY TOTAL	**63**	**9**	**79**	**18**	**53**	**12**	**0**	**0**	**234**	**82**
OTHER ARTEFACTS:										
Pottey sherds (highly fragmented)	**671**	79	46	93	**672**	112	108	31	1812	
Groundstone	**53**	5	**36**	2	**45**	0	0	1	142	
GRAND TOTAL	**787**	**93**	**161**	**113**	**770**	**124**	**108**	**32**	**2188**	

Table 6.2: Building 1 (lower phase burnt building), Operation II; character of the rooms and distribution of clay artefacts across them.

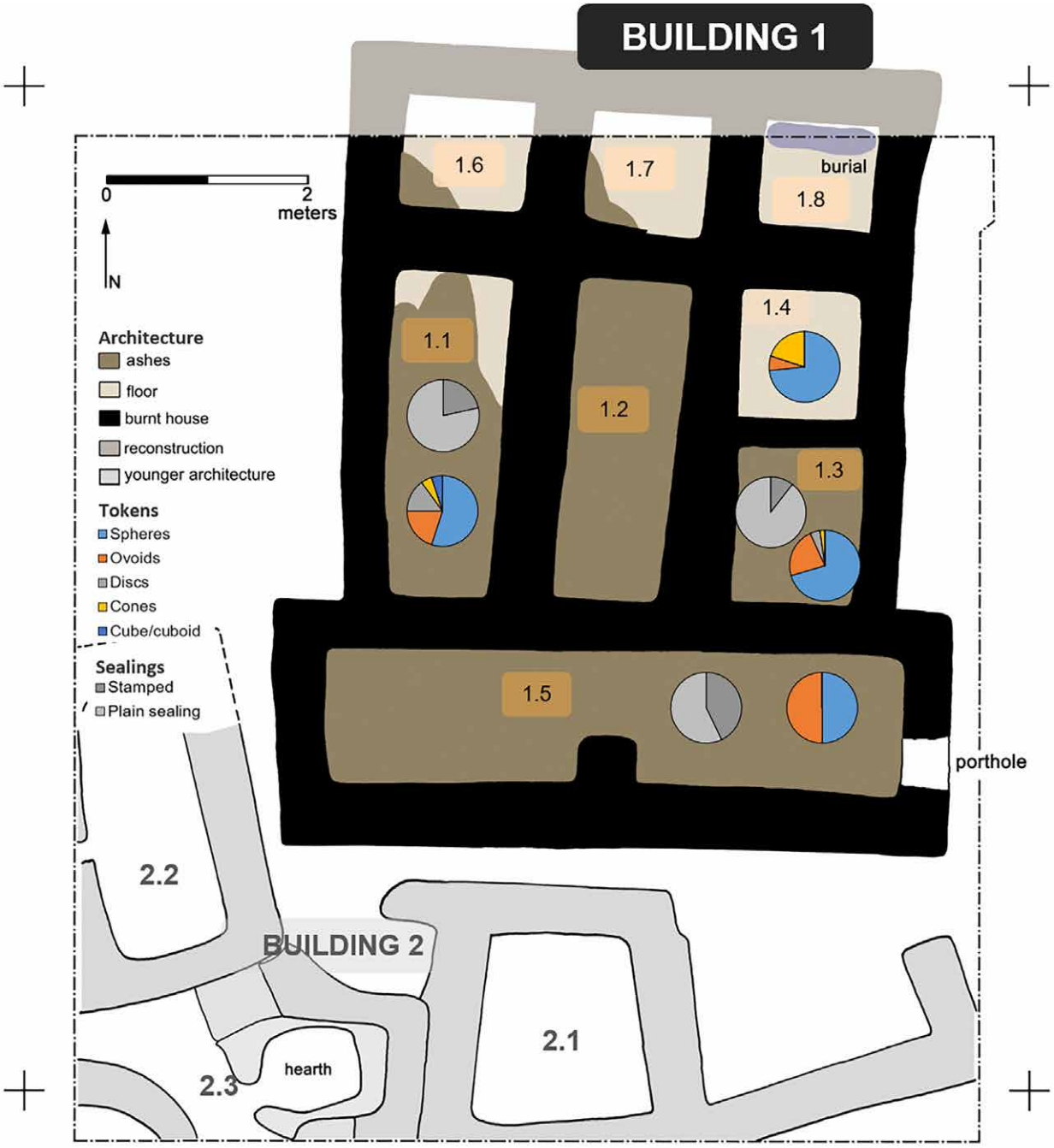

Figure 6.5: Plan of Operation II, lower occupation phase, dominated by Building 1. The distribution of ashes in the burnt Building 1 are shaded. The location and proportion of sealings (plain versus stamped) and tokens (by three-dimensional shape) are shown. Note Building 1 predates the structures in the south (Building 2) (Adapted from Akkermans *et al.* 2012, Fig. 4).

(ceramic and whiteware combined) in Building 1 is small, yet huge quantities of broken pottery are found amongst the fill of most rooms of Building 1, with rooms 1.1 and 1.5 combined having around three quarters of the building's pottery sherds, demonstrating a clear link between tokens, sealings and ceramic containers (Table 6.2) (Akkermans *et al.* 2012, Table 6.3). Analysis of the range and proportion of token shapes within each room shows a limited degree of diversity, yet high standardization *within* each shape type. Spheres dominate, followed by ovoids, discs and cones. Rooms 1.1 and 1.3 are the only rooms to contain more than three different basic shapes of tokens (Figure 6.5). The limited range of shapes along with the standardisation within shape and size of the tokens in

Building 1 suggests that (a) three-dimensional shape was meaningful and (b) the tokens likely acted as symbolic representation of a specific item when in use. Different sealing practices are seen across the three rooms, each room is heavily burnt, and each has additional evidence pointing to portable storage vessels (large quantities of pottery sherds). The accompanying sealings are almost exclusively plain in Room 3. Room 1.5, with the highest number of sealings, contains the highest proportion of sealings with stamp-seal impressions (found on 42.9% of the room's sealings). The impressions are varied, yet some designs such as the 'Z' and 'S' shape patterns are common. Most sealings with stamp-seal impression are stamped multiple times. At least 12 different stamps can be identified across the 42 stamp-seal impressions found across the rooms. Room 1.5 contains many examples of a repeated, 'S'-shaped seal design. This strongly suggests the operation of an administrative system incorporating tokens, sealings and stamp seals. Goods were placed in small ceramic and stone vessels, and less commonly into baskets. These were often authenticated with unique stamp seals, yet not always. At times tokens were also enclosed, creating an early proto-bulla. They were packed into small and shallow, open bowls, covered with a thick, convex slab of clay which was firmly pressed around the container (Bennison-Chapman 2023). As such a large quantity of administrative tools was deposited in a short time frame, and it is likely these items were retained for a time, in one location, gradually accumulating before mass disposal.

Abandonment and Destruction

There is no doubt that the burning of Building 1 was a deliberate and managed act. Most rooms were recovered full of ash. The distribution of such administrative finds in the middle and upper fill layers of rooms suggest that once Building 1 was abandoned, it was cleared of most cultural items. This includes room 1.8, into which the body of an adult female was carefully laid on the floor, close to the rooms' northern wall (Akkermans *et al.* 2012, 312-4 and Figure 6.5). The building was then set alight. As the building's internal walls blackened, administrative tools of clay, along with fragments of ceramics, were thrown into specific rooms in large quantities (*ibid.*, Tables 6.2-6.3). These items are likely to have come from nearby buildings, disposed of as part of Building 1's ritual closure and destruction. As well as the ending of the life of the building, the deposition of tokens and sealings into the burning or soon to be burnt rooms abandoned building was an act of ritual, removing the power embedded in these objects. The abandoned shell of the building was also covered in and surrounded by ash, appearing like a small red mound upon excavation (pers. comm. P.M.M.G. Akkermans and M. Brüning; Akkermans *et al.* 2012, 311 and Figs. 3-4). Only one room, 1.8, was entirely untouched by the fire, and devoid of ashes and most finds and other cultural remains too. This room contained the body of the above-mentioned young female, positioned along with a chunk of yellow ochre, a basalt macehead and a large mammal bone (Figure 6.5) (Akkermans *et al.* 2012, 312-4 and Fig. 6).

Case-Study 3: Operation II, Upper Phase (ca. 6000-5800 BCE)

The intentional, ritual character of the abandonment and burning of Building 1 is emphasised by the nature of the subsequent occupation. The burnt shell of Building 1 would have remained visible for some time and subsequently much of Operation II became open space. Yet within one generation another building, almost identical in size, layout and orientation, was constructed, just a few metres north of the original building, ca. 6000-5800 BCE (Akkermans *et al.* 2006, 129-32 and Fig. 3; Bennison-Chapman 2018-19, Fig. 22). The importance attached to buildings and place in the memory of prehistoric villagers at Tell Sabi Abyad is emphasised by the practice of the abandonment and reconstruction of buildings on the same spot again and again (see, *e.g.*, Plug *et al.*, in press). In Operation II, Building 3 is so similar to its predecessor of the earlier phase, that it seems the residents of the upper phase must have remembered the earlier building and attempted to re-create it. As the northern part of Building 3 lies outside the excavation area, only the southern rooms were excavated (the broad east-west room and the first row of smaller rooms to the north) (Figure 6.6). Despite this, Building 3 was, like its predecessor, full of clay artefacts. A similar range of artefact types were recovered, yet in different proportions. The clay artefacts from Building 3 are almost exclusively tokens, with more tokens in the excavated portions of Building 3 than from the entire Building 1 (Figure 6.7). The use of sealings did continue in the area however, as one stone stamp seal was recovered in Room 3.2 and the three sealing fragments from the building all have stamp-seal impressions.

The deposition of finds into Building 3 is once again highly structured, yet no evidence of burning or other ritual activity is seen in the final stages of Building 3's life. It seems that, like Building 1, it was largely cleared out before abandonment, after which objects were deposited into the rooms (Table 6.3). Two clear artefact caches can be identified within the six units of fill of the small unit in the western part of the building. Room 3.1 measures 1.70 by 1.25 by 1.10 m and contains almost all of Building 3's tokens. They were deposited in two main events. First, nine tokens were deposited together, 10 cm above floor level. Eight are identical ovoids of 1.1-2.3 cm. The second group is a huge cluster of 135 tokens, in an ashy deposit in the centre of the room. These objects were placed during the abandonment

ARTEFACT TYPE	Room 3.1	Room 3.2	Room 3.3	Room 3.4	Room 3.5	TOTAL
Token	**146**	1	0	**5**	**9**	**161**
Sealing	0	**2**	0	0	**1**	3
Stamp seal (stone)	0	**1**	0	0	0	1
Figurine	**3**	0	0	0	**5**	8
Labret	0	0	0	0	0	0
Bulla	0	0	0	0	0	0
Sling missile	2	0	0	2	1	5
Pottery vessel	3	1	0	1	0	5
Pierced disc	0	0	0	**4**	0	4
TOTAL:	**154**	**5**	**0**	**12**	**16**	**187**
OTHER RAW MATERIALS:						
Groundstone	0	1	2	**20**	0	23
Bone tools	0	0	0	6	1	7
ALL ARTEFACTS:	**154**	**6**	**2**	**38**	**17**	**217**

Table 6.3: Distribution of artefacts across the rooms of Building 3 (level 4) at Operation II.

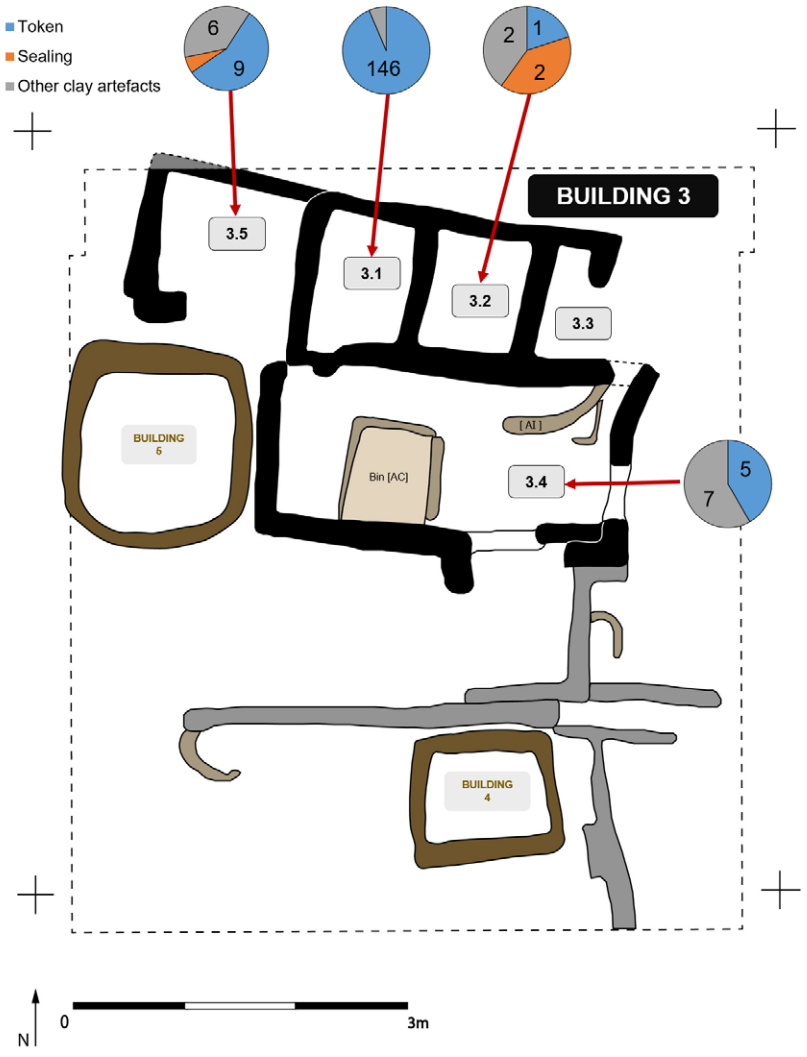

Figure 6.6: Plan of Operation II, upper occupation phase. Building 3 (level 2) dominates (other visible architecture is younger; see Table 5.4 for details). The quantities and relative proportions of clay artefacts per room are shown (room 3.3 has none). (Image: M. Brüning ©Tell Sabi Abyad Archive).

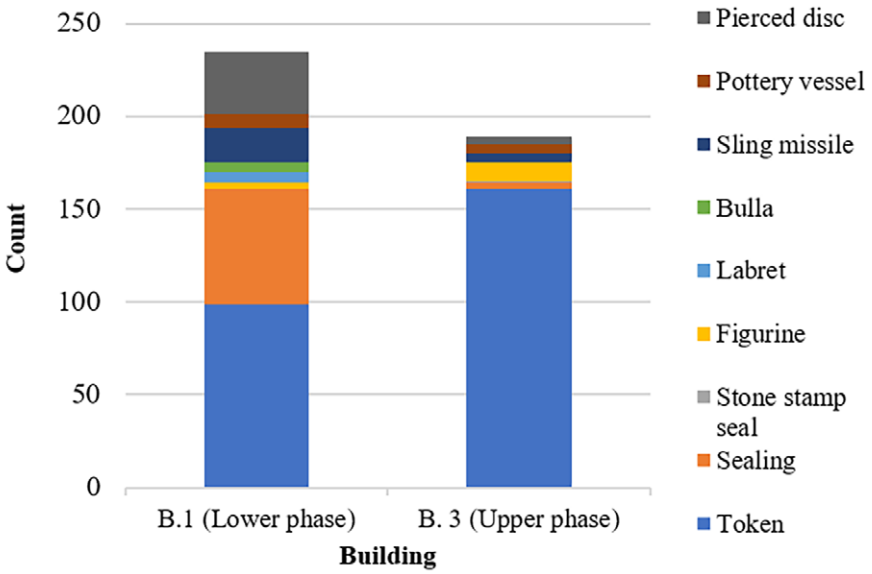

Figure 6.7: Diversity and counts of clay finds, lower and upper phase T-shaped buildings of Operation II, Buildings 1 and 3.

Figure 6.8: Figurines from the upper phase of Operation II, Tell Sabi Abyad: (Top left) Bird/human hybrid F02-026, (4.2 by 1.8 by 1.5 cm) from the central deposit of n=135 tokens and three figurines in Building 3, room 3.1 (020-046). (Top right) Bovine, F02-021, (6.1 by 1.7 by 4.7 cm) from pit Feature [K], 16-39. (Lower) Horned quadruped, F02-020 (9.1 by 3.8 by 6.0 cm) from pit Feature [K], 16-35. (Photo: Tell Sabi Abyad Archive, enhanced by Monique Arntz).

phase as they are 50 cm above floor level. Three main shapes are represented: discs (n= 40), spheres (n= 25), and semi-spheres (n= 15). A further 45 tokens are fragmentary or miscellaneous in shape. The majority are complete and measure 2 cm on average. In addition to the tokens, this artefact cache contained a sling missile and three clay figurines. The first figurine is a tall, cylindrical shaped man-bird hybrid with large oval eyes and a pinched, beak-like nose or mouth (Figure 6.8). The figurine is almost complete, and has traces of secondary burning. The other two figurines are zoomorphic, yet the fragmentary remains of a horn and the leg of an unidentified animal. Building 3, and specifically Room 3.1, is unburnt, yet this large cache of finds sits within dark ashy fill, demonstrating it originated at a different location and was deposited into the building's shell after abandonment. This cache represents the disposal

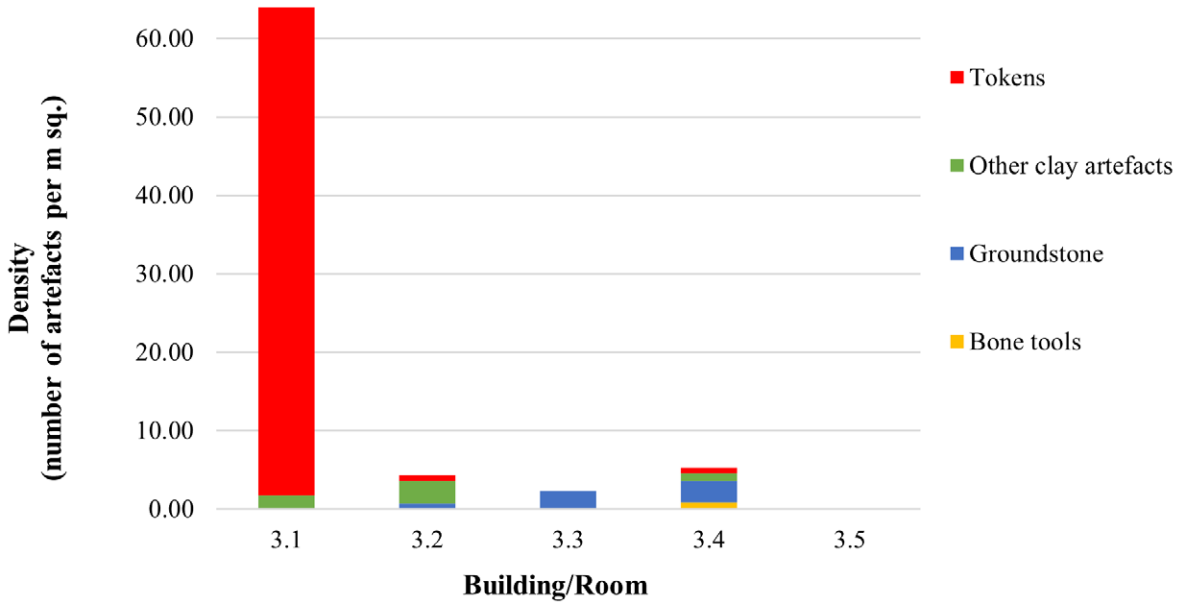

Figure 6.9: Density of finds, including ground-stone tools and pottery sherds, across the rooms of Building 3, Operation II.

of a set of accounting tools, retained together for some time, finally being disposed of into the abandoned room. The other excavated rooms have far fewer finds within them (Figure 6.9 and Table 6.3). A total of just eight figurines come from Building 3: in addition to the three above, five clay figurines (all fragmentary) come from room 3.5, to the far west of the building. This room also contained nine tokens and three sealings. All of Building 3's ground stone comes from a single room, Room 3.4, the largest room at the southern end of the building. This room also contained five tokens, three of which were placed on the floor together, along with a grinding slab and other ground-stone tools. The three tokens are all semi-spheres, two with clear nail markings on the upper surface.

Once Building 3 fell out of use, tokens still continued to be used in the immediate vicinity. A pit (Feature K), in the upper most occupational level, was cut into the abandoned remains of Building 3, above the intersection of rooms 3.1, 3.4 and 3.5. The pit was full of tokens and therefore demonstrates a continues use of tokens in this location. The initial phase of the pit had two deposition events, which consisted of two almost complete zoomorphic figurines and a further three figurine fragments. The pit was then enlarged, and during the main phase of use, 189 clay artefacts were deposited in the pit. All but two of these are tokens, which were deposited in five separate events. The tokens from Feature K are distinctive as they are highly similar in size, shape and decoration. Two-thirds are disc-shaped and a further 26% are semi-spheres, thus very similar in shape (Figure 6.10). Around 14% have decoration on their upper surface. All markings are the same, two parallel and closely-spaced incisions, showing that their application was intentional and meaningful, a way to signal difference in addition to three-dimensional shape.

Operation II: Discussion

All evidence from Operation II suggests this short-lived area of activity on Tell Sabi Abyad's north-east slopes was a special purpose zone in use for a few decades, either side of 6000 BCE. It was not a residential area, but an area used for economic and ritual activities by people living on other parts of the mound. Unfortunately, only a small 10 by 10 m square was excavated. It is likely that other buildings, including those where the administrative artefacts of Buildings 1 and 3 were initially used, were situated close by. The evidence from Operation II's lower phase burnt building (Building 1) is remarkably similar to Buildings 6.2 and 6.5 of the level 6 Burnt Village (Operation I). The large number of tokens, recovered in specific rooms, with sealings and other evidence of storage (vessels, potsherds and pierced discs) shows that tokens were part of a wider administrative apparatus operating in both areas ca. 6000 BCE. Three of Building 1's eight rooms (1.1, 1.3, 1.5) each contained high quantities of tokens, with the small room 1.3 being the most dense in both tokens and sealings. The deliberate burning of the building, and the disposition of high quantities of tokens and sealings into the burnt structure, are reminiscent of the strategy seen in Operation I's Burnt Village. The simple and basic three-dimensional tokens were used to count, and also their shape was used to communicate variables, likely different counts of two or three different items or stages of accounting. The meaning held in these simple tools was

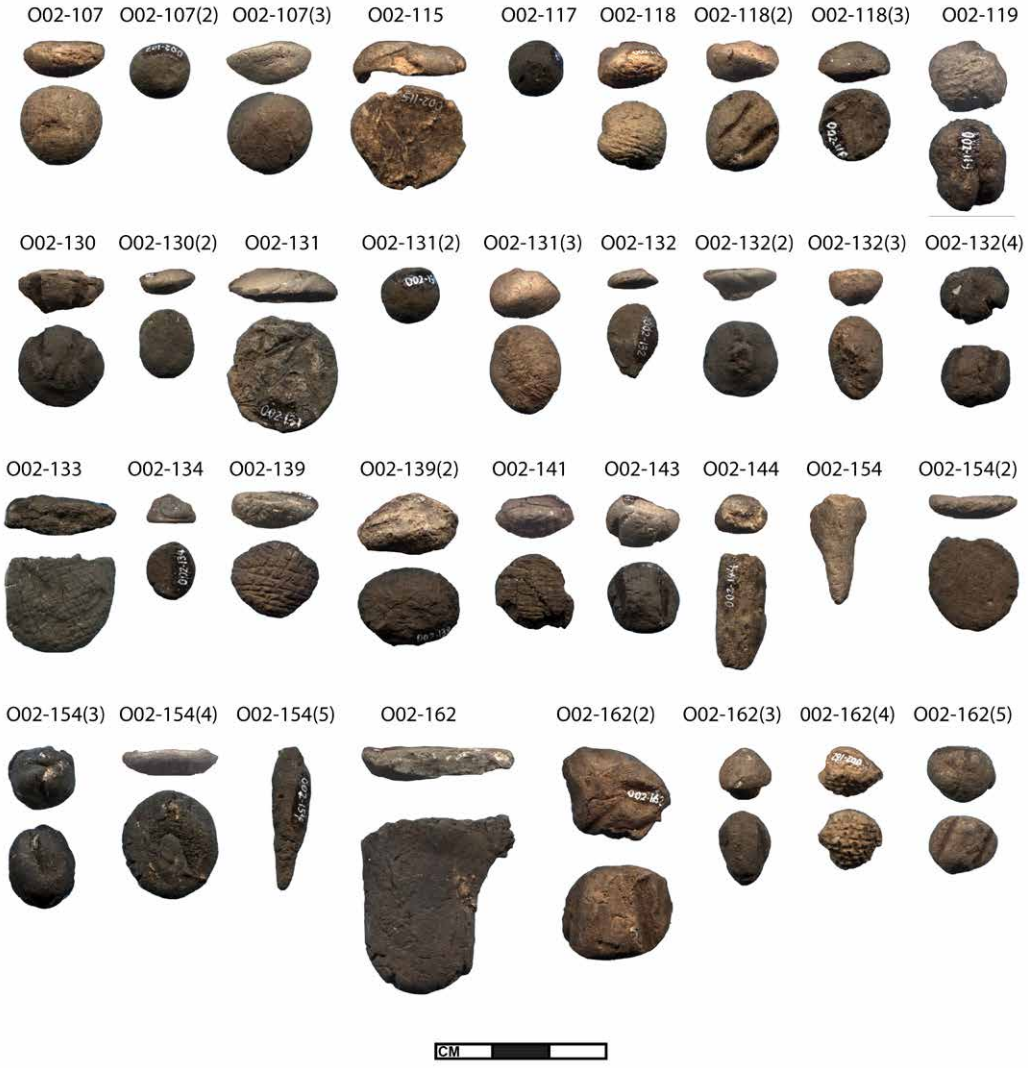

Figure 6.10: Selection of tokens from pit Feature [K], level 1 of Operation II (upper phase), square V6. Many tokens display intentional decorative markings and impressions. Average diameter: 1.50 cm (Photograph: Tell Sabi Abyad Archive, enhanced by Monique Arntz).

purely symbolic, yet powerful. Therefore, both tokens and sealings were not simply tossed aside once they were no longer needed but were used in the ritual closure of the building, an act invoking fire, flames, the deposition of large volumes of cultural materials, tokens, sealings, and also massive quantities of broken pottery. The placement of the body of a young woman in room 1.8 was deliberate: her placement on the floor surface, with selected goods, and the management of the fire so that that room and the rooms either side of it remained untouched by fire, were all integral elements of the closure ritual. In the upper phase of Operation II tokens continue to be used, albeit in a slightly different way. Sealings are still used yet not as commonly, and the tokens are more regular in shape, often with markings on the upper surface. The figurines of the upper phase are also distinctive in form.

Discussion: Style and Society at Tell Sabi Abyad, ca. 6000 BCE

Administration

The form, use, deposition and abandonment of small geometric clay objects in the three areas detailed above, all occupied at the very end of the seventh millennium BCE, contrasts strongly to that seen in earlier phases of occupation at Tell Sabi Abyad, and indeed at other sites in Neolithic West Asia (Bennison-Chapman 2018-19). It is only at the end of the Neolithic in upper Mesopotamia (*i.e.*, the Halaf cultural horizon) that evidence pointing to the use of clay objects as basic administrative tools emerges. From this point in time, clay objects are used as tokens, and tokens become a regular and integral part of the material culture of villages in the region. This

change is in accordance with broader evidence from the Halaf, where transformation takes places across various spheres of life including settlement location, village layout, architecture, subsistence strategies, material culture and ritual practice, seen at Tell Sabi Abyad (Akkermans *et al.* 2010; Russel 2010; Nieuwenhuyse *et al.* 2016) and elsewhere in West Asia (Clare *et al.* 2008; Bartl 2022; Campbell 2023; Czerniak and Marciniak 2022; Hodder 2022; Last 2022; Nieuwenhuyse 2022). These developments broadly correspond to the 8.2 ka climate change event as explained above (Akkermans *et al.* 2010).

Tokens were, from the end of the seventh millennium, administrative tools, used on a regular basis and accessible to all within the community. Small numbers of tokens of a limited range of well-defined shapes were used together in administrative activities involving the counting, storage and retrieval of stored items. The quantity of tokens and sealings, and the different seal designs found on the sealings, at both the Operation I Burnt Village and Operation II, suggests large numbers of people were involved in administration and that it was part of regular village activity. The use of tokens and sealings was not an elite or restricted activity, nor the preserve of a single authority, but undertaken by most households. This matches the current understanding of the nature of Neolithic village society, which sees an increasing sense of privatisation and ownership during the period (Byrd 2000; 2005, 266; Kuijt and Goring-Morris 2002). The variation in shape represented by the tokens, and the relative proportions of each shape, suggests that at this point in time, tokens did not have a fixed and standardised symbolic meaning. The information held in the token's shape and markings was assigned by the user, maintained and remembered throughout their use, until the task was complete and the tokens were no longer needed. Tokens were kept carefully together for a period of time, yet not archived long-term and held no intrinsic value.

Once items were sealed, either with a plain 'jar-stopper' type piece of clay or a sealing secured with the impression of a stamp, tokens acted as a visual and tangible reminder of the quantity and range of goods sealed. Therefore, the seal did not need to be broken open nor the contents physically checked. Neither tokens nor sealings were retained indefinitely, as archives or personal records. There is no indication for long-term, managed archives at either the Burnt Village or at Operation II. Rather, the deposits within specific rooms represent the dumping of waste administrative material as a form of managed waste. Waste which at the end of the building/village's life was destroyed, as part of the building/village's ritual destruction. Tokens were symbolically and ritually destroyed along with the building they were placed in.

Though tokens are common, they are not universal in the late Neolithic. Operation III on the north-western slope of Tell Sabi Abyad I was occupied throughout the Halaf. The quantity of administrative evidence seen in level 6, Operation I, is not matched in other occupational levels in the area. Although the evidence from the Burnt Village and Operation II at Tell Sabi Abyad is remarkable for both the quantity and quality of the administrative evidence, the use of tokens is paralleled at other sites in the broader Halaf zone at the end of the prehistoric period (*i.e.,* Tall i-Bakun, Tell es-Sawwan, Tell Arpachiyah, Tepe Gawra, Tell Brak, Tepe Gawra and Tell Abada; Mallowan and Cruikshank Rose 1935, 88 and Figs. 49.6, 7, 13-4, 19-20; Tobler 1950, 170 and Plates LXXXIII.e-g, LXXXIX.c; Jasim and Oates 1986; Campbell 2000; Lamberg-Karlovsky 2003, 61; Alizadeh 2008, 83-5, 88-90).

Ritual and Symbolic Spheres

It is now clear that in the three areas investigated, the artefact clusters recorded are mostly not *in situ* snapshots of daily life, but the final deposition of the tokens and other finds, *i.e.*, evidence of their disposal. This is not to say no meaning can be inferred from this. To the contrary, the evidence from Operations I and II demonstrates that tokens were not only functional, but that their crude form and ease of manufacture hides the fact that they were valued tools, imbued with meaning and significance. At late Neolithic Tell Sabi Abyad, tokens were not solely utilitarian but played a role in the ritual closure, burning and abandonment of the entire village in the case of level 6 Operation I and of the T-shaped building of the lower phase of Operation II. The deposition of tokens in both areas was not haphazard, but was deliberate and intentional.

At both locations, tokens were placed into specific rooms of certain buildings and along with other valued and important items like sealings and figurines, thus linking the administrative and symbolic spheres. Remnants of ceramic vessels are also common in the same buildings and often the same rooms. The clay figurines and ceramics of the Burnt Village and Operation II's Burnt Building are often recovered broken; the ceramics in particular are heavily fragmented, leading to the interpretation of deliberate breakage as part of the ritual process (O. Nieuwenhuyse, pers. comm.; Verhoeven 1999, 229-31; 2000, 52). Such activity, the deliberate breakage and then scattering of ceramic sherds (also stone vessels and figurine fragments) into ritual deposits, is a relatively common ritual phenomenon in the Neolithic, seen at contemporary sites in upper Mesopotamia, such as Yarim Tepe II and III (Merpert and Munchaev 1993a, 144-5), Tell Arpachiyah (Mallowan and Cruikshank Rose 1935, 16-7, 99-100, 103-22; Campbell 2000), Domuztepe

(Campbell 2007-2008, 127; Campbell *et al.* 2014, 47-9) as well as sites further afield such as Çatalhöyük and 'Ain Ghazal (Rollefson 1986, 47, 50 and Plate II.4-5; Hamilton 2006; Meskell *et al.* 2008, 151; Plug *et al.* 2021, 5). The deliberate fragmentation and scattering of human bones is also attested at a number of Halaf sites (Campbell 2007-2008, 127, 129-30, 133-4 and Fig. 4; Campbell *et al.* 2014, 30-31, 33-5).

Contemporary Parallels

Halaf levels at Yarim Tepe II demonstrate many parallels to the Tell Sabi Abyad evidence. At Yarim Tepe, there is a clear link between the use of fire and the deliberate breakage of items as part of ritual practice. A number of deposits in the Halaf levels include small ritual pits, into which intentionally broken ceramics, stone vessels and large, hitherto unique intricately painted ceramics vessels of anthropomorphic and zoomorphic forms are smashed and then deposited (Merpert and Munchaev 1993a, 144-5 and Figs. 8.13-8.15). These ritual pits also incorporate burnt fragments of sheep and goat bone including the skull in one case (*ibid.*). Mortuary practices at Halaf Yarim Tepe (I, II and III) are diverse, attesting to the complexity of beliefs held within Halaf communities. The cremation burials at Yarim Tepe II incorporate the use of fire, burning, charring and fragmentation (Merpert and Munchaev 1993b, 212-7). The cremation burials at Yarim Tepe II are each unique, yet united by some common elements (*ibid.*). They combine the use of fire, burning, charring and fragmentation. Once burnt and broken into pieces, the human remains are moved to a burial pit where they are often accompanied by intentionally smashed pottery and stone vessels (*ibid.*). Other human cremations incorporate charred and fragmented sheep and goat bones (*ibid.*). Stamp seals are also incorporated into the cremation burials on occasion (*ibid.*). The rituals seen at Yarim Tepe attest to the power of fire as a transformative, purifying, destructive and fertilising force. There is a clear link between deliberate fragmentation and fire. The site demonstrates the use of fragmentation across varied media including human bodies, animals, ceramics, stone vessels. Fragmentation appears to release the power or spirit of the smashed items, acting as a metaphor.

Likewise, the ritual closure and abandonment of buildings is seen not only at Tell Sabi Abyad (Verhoeven 2000; Akkermans *et al.* 2012; Akkermans 2014, 249) but in similar forms at other Neolithic sites such as Bouqras and Jerf el-Ahmar (Verhoeven 2000, 61-2). The large, substantial building at Tell Arpachiyah TT6 in upper Mesopotamia contains many tokens, sealings with stamp seal impressions, stamp seals, incised pendants, and high-value painted pottery (Mallowan and Cruikshank Rose 1935). The building was heavily burnt, yet full of high-value artefacts. Many of the ceramics are broken, likely intentionally. With no attempt to receive any of the high-value items inside, the burning of this building was most probably intentional, a ritual act marking the building's closure, considering the range and quantity of items inside (Mallowan and Cruikshank Rose 1935, 106; Campbell 2000). The closure and abandonment of buildings at Neolithic Çatalhöyük is often accompanied by ritual action including the clearing out of most items of daily use, the deposition of burials, caches of finds, and sometimes the burning of buildings before they are infilled, flattened and a structure re-built on top (*e.g.*, Düring 2005; Hodder and Meskell 2010, 61-2; Hodder and Pels 2010, 168-72, 182 and Fig. 7.5; Hodder 2016; Plug *et al.* 2021, 4-5, 9, 14, 17-8). Therefore, the incorporation of tokens in the ritual closure of buildings and all of the associated activities as seen at Tell Sabi Abyad, attests to the power imbued within them, and their significance to the villagers that used them.

Conclusions

The style and society of late Neolithic Tell Sabi Abyad demonstrates a multitude of cultural, economic and social developments indicative of a changing society. The lifestyle of late Neolithic villages in the Halaf zone necessitated the need of communities to count and to keep track of daily commodities and items which were stored, exchanged and traded within and between communities. Yet these changes are underpinned by changes in ritual practice and symbolism. These developments, though excellently demonstrated by the case-studies from Tell Sabi Abyad ca. 6000 BCE, are part of a broader picture indicating a changing society from the late seventh and sixth millennium BCE in upper Mesopotamia (Akkermans 2023; Campbell 2023).

Small, geometric clay objects were from the end of the seventh millennium BCE, first and foremost, used in the counting and short-term information storage of goods in villages. They were part of day-to-day bookkeeping activities, available to all, used by most, simply made utilising the abundant clay within the immediate environment. They are common across the Halaf zone of this time, yet they are not found in large quantities at every site. Matters of identification, documentation and survival cannot explain these differences (especially within different levels of a single site, such as at Tell Sabi Abyad). Though largely utilitarian, simple and often crude in appearance, perhaps *because* of these very qualities, tokens are part of the wider ritual enacted at these sites – both mortuary and non-mortuary. There is a clear link between tokens, sealings, intentionally broken pottery, and figurines. These artefacts are at the Burnt Village and the lower phase of Operation II intentionally deposited together into specific areas of certain buildings, before or during the intentional, ritual burning which marked their

end of life and their closure. Therefore, despite tokens not being as stylish or iconic as are many other Halaf artefact types (such as the polychrome pottery, the painted figurines and the sealings with stamp seal impressions), tokens were part of this system, and an integral and valued part of late Neolithic society in upper Mesopotamia.

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Chapter 7

Daily Negotiations with Materiality

Re-Assembling Halaf Ornamentation

Ellen Belcher and Karina Croucher

Abstract

In this paper we consider the making, daily use and deposition of ornaments in the Halaf period. We seek to move beyond rigid 'craft production' interpretive frameworks intersecting symbolism, complexity and social inequality. Instead, we seek different ways of knowing prehistoric ornaments, through their materiality, assemblage and visuality as evidence of ambiguous mutable person-object relationships and experiences. Making and decoration of/with ornaments offers insights into social concepts of embodiment, personhood, identity and belonging, and should be interpreted as having ambiguous, multiple uses and meanings. Using six case studies of ornament types from excavated assemblages, we critically examine existing methods of small finds' presentation and suggest more dynamic ways of artefact analysis, interpretation and publication. We present this interpretative model as a methodology applicable broadly to small find studies in all archaeological contexts. In our analysis we re-orient towards considering assemblages of dynamic communities of makers, users and identities embedded in these objects' life histories.

Introduction

Inspired by conversations with and publications by Olivier Nieuwenhuyse, who encouraged us to analyse ceramic evidence in new ways, we consider multiple and mutable ways of making and using in the Halaf. This cultural horizon occurred in the sixth millennium calibrated BCE in northern Mesopotamia.[1] Here we focus on some of the smallest archaeologically-known objects, those physically and representatively engaged with Halaf bodies, including beads, pendants and labrets, as well as objects which are not traditionally interpreted as ornaments, such as bone awls and seals. We also consider what figurines offer as evidence of adornments and in some cases they function as ornaments themselves.

1 Whilst 'Halaf' is used for ease of archaeological categorization, it should be noted that the term is problematic: a reflection of archaeological frameworks rather than real entities in the past (see Campbell 1992; 1998).

Ornaments are ubiquitous at most Halaf sites, however, there are few published works which investigate the materiality of these artefacts or theorise on their entanglements in Halaf communities. We seek to reconsider the use-lives of these objects, separate from symbolism and outside of concepts of hierarchical 'craft industries' traditionally paired with elite control. In rejecting concepts of nascent hierarchical control of industries of craft, we turn to different analyses of these 'non-utilitarian' objects by focusing on materiality, visuality, tactility, ambiguity and experiential relationships with persons and other objects.

Our approach to these archaeologically-known 'craft' items is inclusive of dynamic, ambiguous, situational and transitory use and meaning of ornaments, acknowledging their messy, entangled and changing meanings. Polyvalent functions and meanings motivated complex and intersectional object life-histories[2] of Halaf ornaments through conceptualization, making, use, re-use and final deposition. We foreground ambiguities rather than forcing objects into strictly defined functional categories (Gero 2007).

We present possibilities for ambiguities in lived human-object engagements with specific ornament types excavated from Halaf settlements. To better understand prehistoric communities, we argue for thinking beyond traditional, rigid, categorizations of objects and consider multiple uses, materialities, embodied relationships and ambiguities. This approach is relevant for the study of small finds from all periods and regions, even 'complex' societies. Before discussing our approach further, we present our observations on the role of making, meaning and uses of specific ornament types in Halaf communities and in archaeological analyses.

'Craft Production' in the Halaf

The material culture of the Halaf is well-known for complex, beautifully-crafted objects from small settlements across the landscape of sixth millennium BCE northern Mesopotamia, encompassing the areas of what are now known as northern Syria, northern Iraq and south-eastern Turkey. Excavations have revealed small villages and hamlets, most occupied year-round, relying upon an economy of rainfall agriculture and pastoralism. Material culture similarities suggest that these village societies participated in reciprocal exchange networks, resulting in shared social and material practices (Campbell 1992; 2007; Spataro and Fletcher 2010). Across these settlements, a variety of raw materials were used to create complex objects that adorned and represented the lived Halaf experience and ornamented Halaf persons, objects and communities.

From the earliest excavations of the Halaf, innovative and finely-crafted items were presented as markers of the beginning of a trajectory toward elite control of materials and production (Mallowan and Cruikshank-Rose 1935; Mallowan 1936; Schmidt 1943; Tobler 1950). The Halaf horizon is positioned millennia before the traditionally accepted rise of complex societies in Mesopotamia during the 'Ubaid (fifth millennium BCE) and the rise of cities and civilization during the Uruk (fourth millennium BCE). The material culture of these later times is traditionally viewed in terms of hierarchical control of materials and resources and their exchange by ruling classes or elites (Appadurai 1986; Earle 1987; Costin 1991; Algaze 1993; Stein 1998, 14; Wattenmaker 1998). Theories of elite exchange and control of innovative, well-crafted and/or exotic objects within complex societies has long influenced the archaeologist's interpretation of early social stratification (Brumfield and Earle 1987; Costin 1991). Indeed, publications of remarkable Halaf assemblages continue to present them as precursors to hierarchical elite status and control. We are critical of the premise that complex, symbolic, well-made and/or innovative objects must be connected to social systems of elite-controlled 'craft production' as indicative of nascent 'social complexity' known from much later cultures.[3]

We describe Halaf ornaments as complex objects here because of the advanced skills required in their making, but it does not follow that they must have been made within, or are evidence of, social complexity in the Halaf. Rather than viewed primarily as evidence of the foreshadowing of social structures which chronologically follow this cultural horizon, the florescence of production of skilfully-crafted ornamental objects from Halaf sites can and should be considered as entangled in their networks of making, using and discard, with nuanced, dynamic, ambiguous and multiple meanings and functions. The many Halaf body adornments show that skilled making and extensive use of complex 'non-utilitarian' objects existed as practices embedded in Halaf communities not directly connectable to the later rise of social complexity and the elite control of 'craft production' and consumption (see Denham 2013, *contra* Costin 1991; Stein 1998, 18-22).

Halaf raw material procurement, object making and use are embedded in community values and practices (Spielmann 2002, 197-9; Bernbeck *et al*. 2003; Castro-

2 'Life histories' is intentionally used here as a more community-entangled and intersectional approach rather than the closely related theoretical term 'object biographies'. Other scholars (notably Joyce and Gillespie 2015) choose the term 'itineraries' which focuses on movement.

3 Brian Boyd has made a similar argument against considering Natufian assemblages as precursors for chronologically later Neolithisation in subsistence and social structures of the Levant (Boyd 2018).

Ornament categories	Traditional interpretation	Alternative and mutable use	Archaeological artefact evidence	Archaeological context
Seals	Ownership, status, administration and exchange	Protection, pendants, fastenings, burial goods	Complex stone object production	Isolated finds, graves
Labrets	Personal ornamentation	Tokens, fastenings, protection	Complex stone object production	Isolated finds, graves
Pendants	Personal ornamentation	Seals, Figurines, protection	Complex stone object production	Isolated finds, graves
Beads	Personal ornamentation	Tokens, fastenings, exchange	Diverse raw material procurement	Isolated finds, graves
Bone Awls	Tools for fiber production, cloth	Ornaments, hand-held, fastenings, hair ornaments	'Invisible' craft industries, *i.e*, textiles, burial preparations	Isolated finds, graves (near skull), bag fastenings
Figurines	Ritual objects	Ornamentation, seals, pendants, vessels	Ornamentation	Isolated finds

Table 7.1: Ornament categories, interpretations, re-use, evidence and context.

Gessner 2008; Starzman 2013; Nieuwenhuyse 2017). New work on Halaf seals has found that past analysis linking these objects exclusively to status has hampered our understanding of their meanings and functions (Denham 2013; 2018). With these works as inspiration, we center ambiguities and nuances (Gero 2007) in the archaeological and artefactual evidence, to bring us closer to understanding ornaments' life-histories in Halaf society.

The objects we consider here are seen in Table 7.1. Seals (Table 7.1, row one) have been generally presented as devices of individual economic exchange, ownership, identity, apotropaic protection and status, which is documented in later periods in Mesopotamia (Collon 1987; Akkermans and Duistermaat 1997; 2004; Costello 2011; Akkermans and Duistermaat 2014). They also function as personal identity and adornment as pierced and decorative objects, uses for which there is much more evidence than for administration and exchange (Tomas 2011; Denham 2013).

Surviving labrets (Table 7.1, row two*)* are usually made from stone or clay; burial evidence demonstrates they were often worn though the bottom lip (Hole *et al.* 1969; Plug 2022). As isolated finds, other functional interpretations are possible. Pendants and beads (Table 7.1, rows three and four*)* are predominately made of stone, though clay, shell and bone beads are recovered from Halaf sites. These are shaped, polished and drilled so that they can be strung on a string or cord, and worn about the body. Bone awls (Table 7.1, row five*)* are commonly classified as bone 'tools' traditionally interpreted as related to textile production. Burial contexts demonstrate they should also be considered as bodily ornaments.

Figurines (Table 7.1, row six) are usually interpreted under the problematic label of 'ritual' or symbolic object (although see Meskell *et al*., 2008; Belcher and Croucher 2016; Croucher and Belcher 2017; Campbell and Daems 2017). Here we consider figurines both as evidence of body ornamentation and as ornaments themselves. In the following pages we present new interpretations, inspired by assemblage theory, for these six ornament types, by examining material, person and object relationships and meanings, acknowledging that their life histories were entangled in ambiguous and mutable ways, potentially changing with each interaction.

Making, Materiality and Identity

In seeking alternative yet evidential interpretations, we look toward ornaments' materials, manufacture, multiple re-use and discard embedded in community practice. Considering the whole objects' life-histories allows for questions to be asked of the *materiality* of objects and the parallel sense of *belonging* that they carry, starting with the procuring of raw materials. Considerations of *identity* may have been entangled in the object encounters of makers and users. For example, does a finished object carry belonging from the place of raw material procurement, as suggested by Fogelin and Schiffer (2015)? Do fragments retain the same entanglements of meaning as the original complete object, as suggested by Chapman (2000)? Critical questions can be answered when the objects' social meanings are considered together with the lived ornamentation practices of communities that conceptualised, used, re-used and eventually discarded them. Rather than discussing these ornaments in frameworks based on twentieth century theories of economic and political constructs, such as of modes of production and consumption posited for elites, we find it more authentic to theorise interpretations directly from the evidence of the objects and their excavated contexts. We have previously suggested such an approach to Halaf figurines (Belcher and Croucher 2016; Croucher and Belcher 2017). Starting with material culture itself, we advocate for moving closer to Halaf human agency by reaching interpretations through examining the making, use, re-use and final deposition of these objects (Dobres and Robb 2000).

The impetus for Halaf community outlay of time and effort in making complex or innovative objects from old and new materials may have been entangled with deep-seated social needs and cultural traditions (Haaland and Haaland 1996; Hodder 2012). We note previous discussions in this regard in relation to Halaf material culture (Starzmann 2013; Nieuwenhuyse 2017). Negotiated spaces and material acquisition and technologies enabled the creation of Halaf learning communities in which makers shared skills and concepts which resulted in creation of intricate and imaginative objects (Pfaffenberger 1988; Dobres and Hoffman 1999; Castro-Gessner 2008; Belcher 2011). These ornaments, and the maker and user agent interactions within which they moved, were entangled in efforts to extend their life history in the community through re-use and repair (Gosden and Marshall 1999; Fogelin and Schiffer 2015). Some object fragments retained significance, evidenced through further effort by repairing through piercing (Figures 7.1; 7.3; and 7.4) which altered them for re-use (Chapman 2000).

The makers of Halaf ornaments were intimately involved with the tactile features of the materials they worked, altering surfaces from rough to smooth to polished to incised. A skilled application of pressure with certain tools was needed to work the materials to create ornaments by pecking, perforating, grinding, and sometimes decorating with paint or incision (Belcher 2011; Healey and Campbell 2014). Objects' making would have involved significant, tactile engagements with the materials used. As Ingold (1993) argues, materials 'act back' on their users and makers (see also Conneller 2011; Fowler 2013; 2016 for discussions on engagements with material culture). From a somatic perspective, the maker's physicality would be impacted upon, as their muscles and bone structures became shaped by their repeated activities (Molleson 1994). Their skin would have been hardened, softened, or cut, depending on materials and techniques used. Using clay and pigments would have permeated the skin, staining it (Waddington 2009).

The choice of materials impacted the techniques used; clay-working builds layers of material, whereas working with stone or bone is reductive, starting with a pre-defined shape and working to construct the final object from it. The choice of stone or clay was significant. Clearly Halaf makers were deeply engaged in working clay, as evidenced by the fine ceramics and polychrome pottery for which the period is well-known. However, at Domuztepe, although finely worked pottery was plentiful, three quarters of the figurines known were made from stone, which required different skills and assumption of risk (Belcher 2011; 2014). The choice to work with stone was deliberate – perhaps tied to embedded relationships to materials as well as to the final products (Croucher and Belcher 2017, 457).

The raw materials were carefully selected, from nearby and faraway sources; their colour and material qualities may have had significance, even for ubiquitous materials such as clay. The eventual function of wearing close about the body ensured they were personal items often handled and felt, were sometimes visible, other times hidden. The small size of ornaments suggests possibilities of export and mobility to different locations, people and places. These items did not belong to a select few, but are ubiquitous finds – often associated with general fill contexts – suggesting that they did not require special treatment (Table 7.1). Proliferation across Halaf communities suggests potentiality of mutable relationships with these portable, tactile, wearable and 'pocketable' ornaments.

Re-interpreting Object Categories: Six Ambiguous Interpretations

Portable objects are embedded with meaning and social messaging, and their uses are not as clear-cut as our archaeological categories of interpretation suggest (Wiessner 1983). Existing archaeological categories of analysis for ornaments often assume a single function and use. These objects appear in publications of Halaf excavations within their traditional interpretative categories, such as items of exchange, ownership markers, personal ornamentation, tools, or symbolic or ritual items (Table 7.1, column 1). Considerations of ambiguities in use include possibilities for mutable uses and functionalities that could potentially change with each user (Table 7.1, column 2). For example, pendants are traditionally associated with personal ornamentation; seals are connected to ownership, commodities and economic exchange; but both can have the same functionalities. Rarely do we actually contemplate how one object may have embodied multiple functions and meanings. For example, a seal-pendant could be used in contexts of exchange or administration – which are the traditional interpretations of a seal (Akkermans 2023; Akkermans and Duistermaat 1996; 2004; 2014) – but equally it could be a very personal ornament worn on the body, or used to fasten a garment. Furthermore, there is no reason to assume that all pendants were worn on the human body only; they could also be hung as architectural elements, affixed to animals, sewn to textiles or animal skins as fastenings. Equally, pierced objects affixed to beings or things could also be used to mark and record identity, ownership or exchange or be entangled with connections to the source of the raw material. An unpierced object, such as a token or bone awl, could also have been used for adornment or as a symbol of personal identity kept close to the body.

Figure 7.1: Late Halaf seals from Domuztepe front and back views (top and left, dt1682; bottom and right, dt1687), now in the Kahramanmaraş Museum, Turkey (Photos: courtesy of Stuart Campbell, Domuztepe Project).

Seals as Ornaments

Seals are an object type that clearly had multiple uses and meanings (Figure 7.1). These objects were pierced and had incisions on one or more faces with designs that could be 'stamped' onto wet clay and other surfaces, including skin. Seals are also pierced so that they can be worn, hung or fastened. Traditional understandings of these objects have revolved around concepts of trade, exchange, administration and recording; however, it is now recognised that this is likely to be at different degrees rather than evidence of institutional or elite administration, as demonstrated at Tell Sabi Abyad (Duistermaat 2013).Bernbeck *et al.* (2003, 56) argued that the 'seals' at Fıstıklı Höyük are not objects for sealing, based on the lack of sealing evidence and that the designs are too similar to be differentially identifiable. In addition, at least one example had been re-drilled, obscuring the design. This is also true of the 'seal' assemblage excavated at Domuztepe, where hundreds of seals were found which feature a very small repertoire of sealing designs, and sealing impressions are quite rare finds (Carter 2010). Conversely, at Sabi Abyad, many sealings were found and very few seals (Akkermans and Duistermaat 1997; 2004; 2014). In addition, sealings assemblages at Tell Sabi Abyad have also been interpreted as having non-administrative meanings and functions (Akkermans 2023; Duistermaat 2013). Given this evidence, Halaf 'seals' are likely to have had a variety of uses. Denham (2013, 268) suggests that these seals may represent *…non-status related generic forms of perceived kin relationship* at a macro level, and at a micro level, that they *were used in a wide variety of ways reflecting short-term identities through amuletic and talismanic ways of using the efficacy of the shared symbolic language*. There is also little evidence of the use of seals in long-distance trade relations, and no evidence to support the idea that they were high-status goods (Denham 2013, 268). The reverse seems to be the case; seals appear to be mundane and ubiquitous finds. Seals are most commonly recovered from rubbish deposits, but they are also found in graves. While most are deposited whole, some appear to have been intentionally broken (*ibid.*).

The production sequence of Halaf seals always included a piercing for suspension from a string or cord, presumably as body ornaments. Re-use and recycling of the ubiquitous button-shaped Halaf seals focused upon maintenance of the piercing, possibly because they were worn about the body. This was initially often accomplished by the creation of a shank at the back of the seal, which when broken, was

Figure 7.2: Grave at Tell Sabi Abyad (BN09-060) with labret *in situ* at upper lip (Photo: courtesy of Peter Akkermans, Tell Sabi Abyad Research Project).

re-pierced straight through the middle of the incised design with examples known from Fıstıklı Höyük (Bernbeck *et al.* 2003, 56), Domuztepe (Carter 2010) and nearly every Halaf site where seals are found (Denham 2013). These piercings and re-piercings indicate that the function of seals as pendants for bodily adornment may have had a greater significance in their use-lives than their incised stamping surface (Figure 7.1).

There are examples of seals associated with bodies in graves. At Boztepe, a stamp seal was found near the wrist of a Halaf burial and was interpreted as a bracelet (Parker and Creekmore 2002). The excavations at the Halaf graveyard of Tell el-Kerkh recovered 15 seals from 11 graves. One individual (Str.1086, an adult burial) had a seal associated with the hip area indicting it may have been tied to a belt. Seals were also found to be held in the hands; for example, one individual (Str. 860) was found holding three seals and a child (Str. 1088) was found with one seal placed on its palm (Tsuneki 2011, 7-8; Tsuneki *et. al.* 2022). That seals were buried with children as well as adults further negates that seals had solely an administrative function.

Figure 7.3: Pendant – Figurine – Seals from Domuztepe (dt1793 and dt6560) now in the Kahramanmaraş Museum, Turkey (Photo: courtesy of Stuart Campbell, Domuztepe Project).

Seals were altered through recycling, frequent use or fragmentation, and for re-use. These objects continued to be used as pendants or ornaments, though the remaining incised surface recalls their meaning as seals. As such, these objects are embedded with efficacy; they have the potential for inalienable and potent exchanges, as well as representing personal and social belonging (Charvát 1994; Denham 2013, 67). It seems likely that seals were connected through social relationships, which may been extend to concepts of personhood, and significances beyond status and economy.

Labrets Beyond Ornaments

Labrets are generally thought to be worn as lip piercings, as has been demonstrated through both ethnographic (Fisher 1984, 16) and archaeological evidence. A fifth-millennium ('Ubaid) burial excavated on the Deh Luran Plain bore an *in situ* labret by the bottom jaw, which displayed wear and corresponding marks on the teeth (Hole *et al.* 1969, 254; Croucher 2010). An adult female burial (BN09-060) at Tell Sabi Abyad I, dating to pre-Halaf transitional levels, had a rock crystal labret in the face area, with similar corresponding wear marks on the front teeth (Nilham 2014). Another burial, also from Operation III of Tell Sabi Abyad I, likewise had a stone labret in the face area (Figure 7.2; Burial BN09-40, Plug 2022, 281). Labrets were made from a variety of raw materials at Tell Sabi Abyad, including sun-dried clay and stones of many colours including limestones, serpentinite and quartz. These were fashioned into various shapes; some were squat and flat, others taller with a pointed base and convex head (Akkermans and Verhoeven 1995, 61; Nilhamn 2014). While remarkable, the above *in situ* finds are anomalies, since most labrets are found as isolated finds associated with mundane fill or other objects related to activities of the living. This context suggests that labrets may have been worn or kept about other parts of the body, or perhaps were used for other purposes, such as fastenings, architectural emblishments, fishing weights or in textile production. It is also possible that they were carried about the body or stored as objects with non-ornamental significance. Labrets look very similar to tokens and may have been used interchangeably (for more on tokens see Bennison-Chapman, this volume). A relationship has been noted in the excavated contexts of labrets and tokens; at Tell Sabi Abyad, they were often recovered together (Nilhamn 2014, 179-80).

Pendants as Experiential Objects

Ranging from the simple to the complex, pendants provide ways for shaped stones, shells and to attach to bodies, animals and things. While some pendants have alternative uses as seals and figurines, most Halaf settlement excavations have found a variety of pendants in a variety of raw materials. Making complex stone pendants was a risky undertaking requiring considerable skill, especially when multiple holes are pierced into the same pendant. One Halaf pendant type common in late Halaf levels are links, which are often crescent or rectangular, featuring two or more piercings so that the ornament lays flat onto the surface of skin or garments. Many examples are known from Domuztepe and Arpachiyah (Belcher 2011; Healey and Campbell 2014).

The sensory experiences of pendants' materials are felt closely on the skin, potentially held, stroked, tasted and touched throughout the course of daily activities. Pendants worn around the neck would rest

close to the heart, lungs and other organs; perhaps they were thought to protect these vulnerable bodily areas with apotropaic qualities. Several Halaf figurines bear V or X shaped neck and torso decorations on the chest and upper spine, perhaps representing pendants (Belcher 2014). Pendants do not necessarily need to adorn a human neck, they could also be hung on animals, attached to architectural elements, affixed to textiles or animal skins as ornaments or fastenings. Anything with a hole for suspension can become a pendant; probably many existed fashioned from organic materials, now lost in the archaeological record. It seems that a pendant was rarely 'just a pendant', but was also entwined with uses as seals or figurines, representing zoomorphic or anthropomorphic shapes, suggesting ambiguous and dynamic uses and meanings.

Re-interpreting Beads

Halaf excavations have yielded thousands of beads, especially where soil sampling and flotation is included in the field methodology. Most beads are tiny, isolated finds found through micro-sorting of settlement soils. These assemblages show that beads were ubiquitous adornments in the Halaf, probably falling off garments or other beaded objects, when the breakage of string caused by rubbing, catching in conflict with other objects happened in the course of daily human activity. The loss of a few beads tumbling into the dirt – from the fringe of a garment for example – probably went unnoticed and soon got buried into the matrix in the course of further activity. For example, at Domuztepe many beads found in the Death Pit fill suggests concentrations of human activity (Campbell *et. al.* 2014) – rubbing of garments with other objects, for example – which resulted in high number of bead finds in this particular area (Figure 7.5). A basket decorated with thousands of beads in a checkered design was recently excavated from Halaf levels of Yumuktepe/Mersin (Baysal 2016). In the course of community activities, this beaded basket must have shed and scattered many individual beads from interacting with the living bodies of those that carried it.

Intentional deposits of beads have also been found in mortuary contexts. At Tell Sabi Abyad, child burial BN92-B1 was placed upon a randomly ordered string of disc and tube beads of different sizes and stones coloured green, white, black, blue, red, orange, pink, beige-brown and translucent stones, including quartz, serpentinite and obsidian (Akkermans *et al.* 2014, cover and Figs. 7.5, 8.11; Brüning 2014, 176). At Yarim Tepe II, a miniature cup associated with an infant burial contained 572 beads, of many different stones and shells (Merpert and Munchaev 1987, 25-6). At Tell el-Kerkh, beads were found to be interred with several individuals, sometimes on the same cords with seals and pendants (Masumori 2011).

Figure 7.4: Obsidian pendant – seal from Domuztepe (dt3859), now in the Kahramanmaraş Museum, Turkey (Photo: courtesy of Stuart Campbell, Domuztepe Project).

Each individual bead carries the characteristics, feel, colour, and tactility of the raw materials from which they were made. These materials may also carry meaning and apotropaic qualities, of protection, for example, or perhaps associations with the source locations of the raw materials. We suggest that these communal associations with materials influenced choices made in their manufacture, use and deposition. In late Halaf levels of Domuztepe, three native silver beads – the first known use of this metal – were found in midden deposits, most likely lost in the course of daily activities even though to us they are quite rare and exotic materials (Gauld *et al.* 2003, Fig. 14). Halaf beads and pendants demonstrate that material variety was quite important, even if new methods of making – such as metalworking – needed to be developed and learned. We suggest the material variability of these beads was embedded with associations such as the place of raw material sources, colour, texture, workability and enmeshed with community meanings and beliefs.

Bone Awls as Ornaments

Bone awls are usually assumed to be utilitarian in use. Traditional analysis assigns the functional nature of all bone 'tools' to textile production methods (*i.e.*, Genz 2016). From the personal perspective of bone tool analysis and excavation,[4] it was observed that while these objects were indeed functional hand-tools, they undoubtedly suggested possibilities for more complex life histories (Choyke 2006). Bone awls are smooth, especially when polished, and feel pleasing in the hand and many show wear that they were held often. Many bone awls are beautiful objects and yet they are rarely described or discussed in these terms. It is notable that bone tools are rarely analyzed for their

4 Both authors have worked with bone 'tools' at Domuztepe. One of us was tasked with recording size, weight, wear marks, as well as photographing and cataloguing each 'tool' according to traditional textile production typologies, the other three-dimensionally recorded the deposition of the bone tools in the 'Death Pit' and registered them according to a set typology and source animal part.

Figure 7.5: Late Halaf stone beads from Domuztepe, not to scale, for dimensions see https://opencontext.org/projects/3, (upper row, disc beads, left to right: dt1773, dt436, dt1961. Lower row, barrel, ball beads left to right: dt182, and dt2782 dt2786, which were found together), now in the Kahramanmaraş Museum, Turkey (Photos: courtesy of Stuart Campbell, Domuztepe Project).

aesthetic qualities by archaeologists in the same ways as pendants, seals and figurines might be.

We suggest that bone awls and perhaps other bone 'tools' should also be considered as ornaments. Domuztepe and Tell Sabi Abyad offer direct archaeological evidence for bone awls as body ornaments from mortuary contexts. For instance, at the Death Pit at Domuztepe, there are a number of bone awls recovered in association with disarticulated skulls and long bones (Kansa *et al.* 2009;). These may have been visible fastenings that ornamented bags or other containers for carrying the disarticulated body parts. They were found intermingled with human and animal long bones and ribs. There is evidence that bone awls may have been used for hair ornamentation. One striking example is an awl associated with the decapitated skull of a female aged around 18 years, in an isolated burial at Domuztepe, related to and slightly later chronologically than the Death Pit (Figure 7.6). It is clear from the articulation that the skull was fleshed when buried (Croucher and Campbell 2009; Croucher 2012, 253). When lifting the skull, a bone awl was discovered at the back of the head, a perfect position for hair ornamentation. Several individuals found during the excavations of the Tell Sabi Abyad burial ground also had bone awls in close association with the interred, suggesting they may have ornamented other parts of the body (Plug 2022).

Further examples from ethnographic data demonstrate the use of bone tools for body ornaments in different contexts, such as through the ear (Fisher 1984, Pl. 79). This possibility highlights that we should be thinking differently about object classifications. It also highlights the serendipitous nature of excavation and interpretation (although rarely acknowledged), where the same archaeologist excavating this skull in one year, found herself working on bone tools in a subsequent field season, stimulates new ways of thinking about objects and artefacts. The objects themselves are likely to have had mutable uses, for instance, a miniature bone piercing tool at Tell Sabi Abyad resembles a labret (Akkermans and Duistermaat 2014, 116). Bone tools may also have associations with the source animals they came from and further associations to animal behavior and engagements with the community.

Figurines and Ornamentation

Halaf figurine evidence also shows mutable functionalities. Several remarkable dual-use figurine vessels have been found at Halaf sites, representing adorned bodies which were directly handled, used for containing, pouring and potentially drinking liquids (Belcher 2021). A Halaf figurine vessel from Yarim Tepe II (Figure 7.7) appears to be represented wearing several ornaments.

Figure 7.6: In situ skull with bone awl found deposited underneath (feature 1143), Domuztepe (Photo: courtesy of Stuart Campbell, Domuztepe Project).

The figure is painted as adorned with strings of beads crossing her body, a stamp seal adorning the navel and a beaded pudendum. Campbell has noticed a close link between the motifs on this figurine to those used on other pottery, which may have shared the same meaning and significance (Campbell 2010). A figurine vessel from Domuztepe (Figure 7.8) portrays a walking female, painted as ornamented with strings of beads at the waist and hips, knees and ankles along with a beaded pudendum.

Functional intersectionality as ornament, anthropomorphic representation and seal is particularly evident in several examples from Domuztepe, where nine stone anthropomorphic figurine-pendant-seal objects were excavated from Halaf levels (Figure 7.3; for more examples see, Belcher 2014, 235-43; 2016). These were pierced for suspension on a cord, as indicated by string wear, and some were pierced in such a way that, if suspended on the body, they were oriented toward the perspective of the wearer, thus appearing upside down to onlookers (Figure 7.3, left). As with all pendants, we suggest possibilities that were worn on human or animal bodies, attached to clothing, or affixed to structures (Croucher and Belcher 2017, 458). It is also possible that these figurine-pendants had a further function as seals, as evidenced by complex geometric incisions similar to stamp seals, for impressing clay or perhaps stamping pigments onto textiles, human or animal skin (Belcher 2014, 462-70; 2016). A similar figurine, presumably also made of stone, was used to impress a sealing at Tell Sabi Abyad (Akkermans and Duistermaat 1996, 25, Fig. 5). At Domuztepe, one figurine-seal-pendant was deliberately placed at the bottom of a post hole (Figure 7.3, left), whilst another was packed into the mortar of a wall[5], indicating that they also held symbolic and/or apotropaic functions. An additional five figurine-pendant-seals, representing anthropomorphic body parts, were also recovered from Halaf levels at

5 Figurine dt1788 was found in the mortar of a wall; for the data record of this object see: https://opencontext.org/subjects/13859_DT_Spatial.

Figure 7.7: Figurine vessel from Yarim Tepe II, now (IM79740) in the Baghdad Museum, Iraq (Photo: courtesy of Stuart Campbell).

Domuztepe – four representing feet and one representing a hand – all with common crosshatched incised sealing surfaces. This type of ornament-seal is well known from other Halaf sites (Denham 2013; Belcher 2014).

We can see from the above discussion that the artefact types can be ambiguous and dynamic, with multiple uses and meanings. Table 7.1 shows how ornaments have previously been categorized and how we believe that

Figure 7.8: Figurine vessel from Domuztepe (dt4174), now in the Kahramanmaraş Museum, Turkey (Photo: courtesy of Stuart Campbell, Domuztepe Project).

they can be more fruitfully interpreted. Table 7.2 offers suggestions to move ornament interpretation from static concepts routed in complexity, hierarchy and elite control, to interpretations toward recognizing more dynamic and nuanced meanings and uses. Thinking about the ornaments in these dynamic and nuanced ways forms the basis of the discussion in the next section.

Discussion: Using Assemblage Theory as an Interpretive Lens

We argue for a move away from static and traditional interpretations relating to social status, complexity and hierarchy, elite control of craft, and single functions. We recognise the dynamic and nuanced interpretations of meanings based in community engagement, lived experiences, and networks of makers, materials and users, as well as ornaments' life histories of uses and re-uses (Table 7.1). Viewing the ornaments as relational and situated in their dynamic and multiple assemblages enables a move away from traditional analyses which do not capture the evidence surrounding the ornaments (Table 7.2). In this section we begin with thinking about the development of nuanced approaches to material culture, drawing on concepts of enchainment and

Static, pre-described interpretations Traditional	VS	Dynamic, nuanced interpretations Assemblages
Social status		Community engagement
Complexity, hierarchy		Situational experiences human/object and object/object
Elite control of craft		Maker and materials
Single predetermined use		Use and re-use, multiple uses, life histories
Symbolism		Transitory, mutable meaning, personhood, apotropaic protection and identity
Administration		Worn closely tied to the living body
Trade		Ambiguous shared practices, multiple users
Ornamented females		Ornamenting people, animals, architecture and things

Table 7.2: Static *vs*. dynamic interpretations of Halaf ornaments.

circulation (*e.g*., Chapman 2000), to broader materiality-based approaches (*e.g*., Ingold 2007), before proposing the lens of assemblage theory (DaLanda (2006; founded upon Deleuze and Guattari 1987). Assemblage theory has recently been discussed as applicable to archaeological research and interpretation (*e.g.* Harris 2014, Hamilakis and Jones 2014 and Cobb and Croucher 2020). This theoretical lens recognises the importance of the human and non-human relationships, experiences and changing spheres of use and meaning. An assemblage theory approach encompasses our observations on the ornaments discussed, as it views the material in their wider networks, and recognises the role of material objects in human and non-human interactions (such as their relationships with other objects, people, animals and architecture).

Theoretical approaches to understanding material culture have shifted, building on concepts of enchainment (Chapman 2000), to a growing recognition of the value of non-human components in assemblages of objects, people, animals, architecture and place. If we think of Halaf objects as inalienable, in that they are closely linked to individual and group identities and associated personhood (Fowler 2004; 2016), exchanges build relationships between people, and the movement of objects becomes more intricately entwined with relationships and identities. These small, hand-held objects were potentially participant in gift communications, in which human-object relationships maintained inalienable belonging to previous owners in subsequent exchanges (Mauss 1950; Strathern 1988). In use and re-use, as in exchange, each human-object engagement builds and reinforces enchainment networks and relationships (Chapman 2000). Ornaments may be the result of the circulation of skills, memories, materials and networks entangled in the social fabric of the prehistoric community. The same can be said of recycled and fragmented ornaments, enchained to the significance of the original whole object, as well as previous and future human-object interactions and uses (*ibid*.).

Building on these approaches, we can see that objects were imbued with meaning, influenced by the source and qualities of raw materials chosen, and the use-life of the objects and their users. Object meaning and visual symbolism may have been closely entwined with the the wearer, as well as potentially the intrinsic use life attached to the object itself, including its significance as an item of identity construction and reflection. The tactile qualities of ornaments had influence on their makers, users and wearers; they were not simply passive items. The feel of the object may have been compelling – smoothed and polished, or roughened with makers' tools or use wear. The temperature and weight of the item would influence how it felt against the skin, in turn absorbing and conflicting with bodily heat, in perpetual and dynamic actor-object negotiations. Stone, clay or minerals absorb and conduct temperatures from their surroundings, and their appearance and feel would alter with heat or cold, wet or dry. As Ingold (2007) discusses in *Materials against Materiality*, the appearance and experience of viewing and handling stone objects is variable and mutable according to surrounding conditions (see also Cooney 2002; MacGregor 1999).

The ornaments we discuss here were not only decorative; as discussed, they were perhaps intimately connected with concepts of identity, and embedded with meaning which influenced their wearing. Ornaments can be considered to be social agents, imbued with qualities and meanings, from of which may have derived from their sources of raw materials, their manufacture, their use, re-use, and circulation or exchange. Seen in this light, seals, beads or labrets take on a role which exceeds traditional categories of administration or adornment; rather, they held multiple, meaningful uses, reflecting deeply-embedded identity relationships with material culture. Furthermore, their agency may have been mnemonic,

reminding the wearer/user of exchanges, relationships, places, people and events.

Incorporating ideas of materiality and the material values of objects, expands our interpretations to incorporate examinations of person/thing relationships, explored in various theoretical frameworks commonly referred to under the umbrella term 'new materialist' approaches, for instance, Actor-Network Theory (Latour 1999; 2005); Meshworks (Ingold 2011; 2013); Entanglement (Hodder 2012); and most recently, Assemblage Theory (Bennett 2010; Fowler 2016; Hamilakis and Jones 2017; Harris 2014; Harris and Cipolla 2017). We are informed in particular by these approaches as we reject limited static interpretations. We focus on a combination of assemblage theory and object life histories, considering Halaf ornaments within their enmeshed symbiotic relationships assembled through mutable person/thing and thing/thing engagements.

Building on the above approaches, the interpretative lens of assemblage theory (DeLanda 2006) offers a new way to look at Halaf ornaments. Assemblage theory recognises the meaning of objects (and other non-humans) as having an equal role in relationships and networks, relating to the things, people, animals and places around them. Each object brings components of the materials, experiences, decisions and influences of the makers and users, which combine to result in assemblages which are the result of wider networks and interactions. Rather than simply thinking about the ornaments alone, a relational approach offers a more nuanced understanding of ornaments beyond their immediate functional interpretations. It brings a recognition of life histories, imbued with the combined experiences of making, using, exchanges, deposition, and materiality.

We have discussed above ornament use-lives that were dynamic, multiple and ambiguous. Seals, beads and pendants were pierced to be worn on the body, as were some figurines and tools. Pendants were carved with geometric designs so that they could be also used as seals, and labrets can be indistinguishable from tokens. Many of these ornaments have been found as isolated finds; however, intentional deposition in mortuary contexts blur categories further. For example, bone 'tools' are found as hair ornaments and seals are found as body ornaments. A pendant or bead could represent as strong a symbol of exchange as either tokens or seals, given the literal attachment to the body, signifying identity connotations, closely associating with the life-ways of the wearers, worn close to an individual's breath and heart. Seals, pendants and figurines cannot be confidently separated into distinct artefact categories; and many can function as any and all of these. Many ornaments discussed here could potentially be worn, make impressions on clay and also hold very personal connotations. Burial evidence suggests seals were worn closely about the body as ornaments; but that doesn't negate their potential function to impress sealings. Some figurines were also pierced so they could be worn, and they could also potentially be used to impress seals. Figurines present visualisations of the ornamented Halaf body, communicating identity markers we may not fully understand (Belcher 2014; 2016; Croucher 2008).

Our approach challenges rigid categorisation of ornaments encouraging us to think about intersectionality, multiple uses and ambiguity, as each object moved in and out of the shifting spheres of use, temporally, spatially, functionally, and symbolically. Ornaments were significant in many spheres, such as communication, adornment, exchange, relations, identities, and treatment of the body. An assemblage approach recognises the relationships between these ornaments and the wider interactions that brought them into being and resulted in their use, re-use, discard, and analysis. Ornaments were likely part of relationships between people, objects, animals, architecture, as they were moved between people, communities and locations. We encourage a reflexive approach to ornaments' use analysis which includes perspectives on other material culture and users through their associations, use, storage, discard, recovery and modern-day study. The ornaments we discuss comprise complex assemblages that are messy to categorise. Rather than separating out what these objects are, we can instead think about them as assemblages of actions and identities, disrupting rather than conforming to rigid categories imposed on them by modern archaeologists and finds specialists.

Binding archaeological ornament interpretation to entrenched traditional, artificial categorisations tied to economic and social structures oversimplifies and potentially obscures crucial information. Accepting ambiguity in use requires us to think beyond traditional artefact categorizations, in order to accommodate multiple, ambiguous functions and meanings. We have taken an intersectional approach to the nuances of function and meaning over the life histories of Halaf ornaments, and suggest that these were mutable and flexible.

Modern and Ancient Specialists

Moving beyond the archaeological life histories of these ornaments, we now consider their role in our modern contexts. Reflexivity in analytical approaches to material culture analysis, excavation processes, and interpretation. In order to view objects differently, and accept nuances in use and meaning, and we must critique, and consider how modern processes of recording and analysis may skew interpretation. It is the practice of many excavations

to classify only certain categories of 'small finds' to be recorded in detail, with best practices in setting out a recovery policy in the fieldwork project design (Chartered Institute for Archaeologists 2014, 3.3.2). Excavation guidelines recommend that

> *finds of all categories, and of all periods, are recovered as a matter of routine during excavation. In an ideal situation total recovery should be practiced, but this is rarely achieved owing to a variety of constraints, recognising that decisions around recovery strategies are made* (MoLA 1994, section 4).

The archaeological context of some small finds might be carefully recorded but the context may not be reported upon in publications if it is deemed unremarkable.

Artefact categories and classifications can sometimes restrict nuanced interpretations in purpose and ambiguity in use (Croucher and Belcher 2017, 452; comparable arguments have been made with regard to categorisation of figurines by Hamilton 1996; Joyce 2003; and Meskell *et al.* 2008). Examples that blur artefact categories relevant to this discussion include objects such as figurine-seal-pendants (Figure 7.3) and bone awl-ornaments-tools that can be worn about the body as well as be used for non-adornment purposes. Life histories of ornaments can change often over time, as can the identity and the embodied object relationship of each user and situation (Table 7.2).

In archaeological excavations, choices are made about which objects to record in further detail, such as with triangulated or the GIS location data, and which objects to keep or discard, and which to publish. Post-excavation decisions can be related to the frequency or remarkability of occurrence of different find types: a pottery sherd or lithic tool on one site is so common as to be generally recorded, whereas on another site is regarded as highly significant. Multiple fragments of non-diagnostic worked clay, stone or bone, might be recorded but never published, whereas the image of a remarkable and beautiful pendant or figurine might appear as the cover illustration of an excavation report or publication, and on the site's website, even when it is a unique example and therefore also non-diagnostic for comparative purposes (Figures 7.4, 7.7, and 7.8).

Constructing and refining typological classifications and imposing their order on assemblages of artefacts is essential to interpreting objects within their archaeological contexts (Adams and Adams 1991). However, ridged imposition of type schemas onto artefacts, particularly ornaments for which visuality and materiality are key functions, does not allow for nuance and ambiguity in their daily uses and significance. Many published archaeological reports are compiled around chapters of analysis by artefact classes or materials as separate static entities, without the possibility for ambiguous and mutable interpretations in their uses and meanings. Classifying assemblages in ways that recognise inherent ambiguity is to get closer to the reality of mutable prehistoric human-object relations (Gero 2007).

We have stated above our rejection of the modern term 'craft specialists' and here consider ornaments as produced by 'makers' embedded in the daily lives of Halaf communities. In these small dynamic villages, Halaf makers may not have had rigidly demarcated 'specialist' roles; the skills needed for the manufacture of ornaments were not exclusive. Halaf maker and learning communities were adept at raw material procurement and shared deep knowledge of the traits of the materials with which they worked objects needed for daily use including tools, vessels, structures and ornaments. These skills and knowledge were transferrable and adaptable to the needs of the community and tasks at hand. For example, bead-makers, in addition to being able to perforate stones for pendants and seals, would have useful skills for grinding and polishing, and could have also made other objects of stones, such as vessels, and may have known how to knap their own lithic tools (Belcher 2011).

Conclusion

In this paper we have demonstrated that Halaf ornaments are well-suited to considering material relationships as well as nuances in object life histories and ambiguities in use, particularly through the lens of assemblage theory. We have demonstrated that interpretations of complex ornaments can be posited through relationships embedded in assemblages, rather than from over-arching (modern) concepts of social hierarchy and complexity. We have suggested that ridged archaeological object categorisations can lead to missed opportunities of knowing meanings and uses, which in reality were much more ambiguous and dynamic, and which potentially changed with each interaction.

Halaf human-object interactions with seals, labrets, pendants, beads, bone awls, and figurines played key roles in exchange, communication, adornment, identity, and object relationships, none of which are mutually exclusive of the other. These interactions were in turn likely to be embedded in networks of social meanings and community belonging related to visuality and materiality. When viewing the evidence in this way, it becomes clear that manufacture must also have played a significant part in the meaning behind ornaments, their use and re-use. Materials, skills, methods and technologies must all have played their part in an object's meaning.

In this paper, we have offered alternative perspectives and opened up new ways of viewing small finds relating

to ornamentation of Halaf individuals and communities. Assemblages of identity, belonging, embodiment, and relationships are fundamental to understanding ornaments. These enigmatic objects deserve deeper, more fluid interpretations than those traditionally associated with social 'complexity'. Such an approach is well suited in particular to the Halaf material culture of ornaments and other small finds. We hope others will find it useful for the interpretation of material culture of different types and other archaeological contexts also.

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Chapter 8

Figurines to Be Felt?

A Group of *Appliqué* Figurines from Tell Sabi Abyad, Syria

Monique Arntz

Abstract

This paper discusses a small group of figurines found in the Early Pottery Neolithic levels of Operation III at Tell Sabi Abyad in Syria. This group of 18 objects forms a unique group within the larger corpus of figurines discovered at the site. Their most salient feature is the presence of round *appliqués*, often with fingernail impressions, placed on the bases of these objects. A brief discussion of the figurines from the site will be followed by object biographies of the 18 figurines, focussing on their production, use and deposition. Finally, I will reflect on the nature of these figurines in relation to Olivier Nieuwenhuyse's research on *appliqués* on pottery and whether we might interpret the *appliqués* on pottery and figurines as similar phenomena.

Introduction

Tell Sabi Abyad, located in the Balikh Valley in Upper Mesopotamia, is well known for several reasons. First, the four mounds (numbered I-IV; see Figure 8.1) that make up the site revealed a long-lasting sequence of occupation from the PPNB to the Halaf (see Figure 8.2; Verhoeven and Akkermans 2000; Akkermans *et al.* 2006; Akkermans and van der Plicht 2014; Akkermans and Brüning 2019). Second, the 'Burnt Village' (ca. 6000 BCE) on Tell Sabi Abyad I yielded very early evidence for the practice of communal storage and sealing practices (Akkermans and Verhoeven 1995; Akkermans *et al.* 1996; Akkermans and Duistermaat 2004). Third, the site has yielded very early pottery, as well as an important Late Neolithic pottery sequence, that has facilitated researchers to rethink Halaf chronologies, pottery decorations, and the changing social roles of ceramics in Neolithic societies. The latter subjects are ones in which Olivier Nieuwenhuyse made an immense and lasting contribution (Nieuwenhuyse 1997; 2007; Nieuwenhuyse *et al.* 2010; Nieuwenhuyse 2013; 2017a; 2017b; 2018).

This paper deals with figurines from Tell Sabi Abyad, a class of artefact that has not received as much scholarly attention as the pottery from the site. However, the figurine corpus is equally noteworthy and is among the largest and best-documented assemblages of Neolithic figurines from Upper Mesopotamia currently known. Although Olivier Nieuwenhuyse's scholarly focus was mainly on researching pottery found at Tell Sabi Abyad (and many other sites), his interests also included the figurines from the site. In our conversations, he noted a possible link between *appliqués* found on some of the figurines

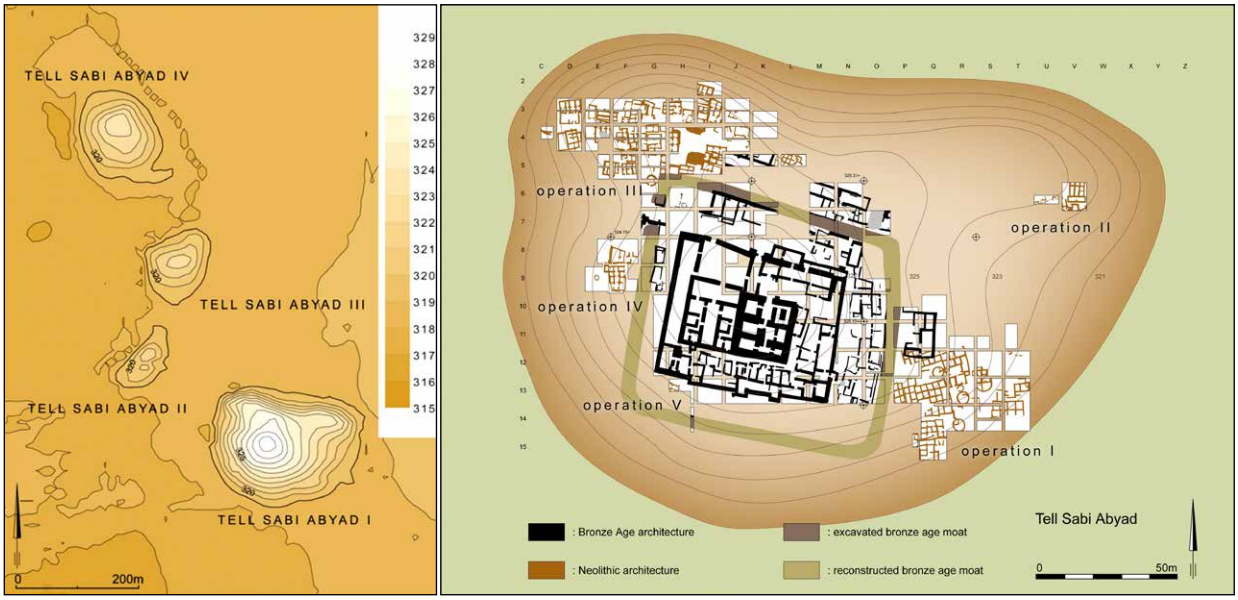

Figure 8.1: Site overview. The four mounds and the various Operations on Tell Sabi Abyad I. (Courtesy of the Tell Sabi Abyad Research Project).

and *appliqués* on pottery. Therefore, this paper focuses on that subset of figurines with *appliqués* that held a special interest to him.

The Tell Sabi Abyad Figurines

The dataset analysed here is part of a large corpus of 1608 objects (see Table 8.1). This dataset represents objects I could confidently identify from my study of the object forms and available visual references from the Tell Sabi Abyad archives. Figurines at the site (and Neolithic sites in general) are small and often fragmented, making identification difficult at times, even more so if one cannot view and handle these objects in person.

The figurine corpus consists mostly of clay objects. A small number of figurines are made of stone (21), bone (3) and shell (1). Little information is available about the properties of the clay used to make the figurines. Data on clay paste and inclusions are not often recorded. However, when mentioned the fabrics are often fine, inclusions are described mostly as being small to medium in size and naturally occurring, except for a few mentions of chaff and grog being added as temper (Arntz 2022, 203-17).

Figurines range from being very well smoothed to roughly finished. Additional surface treatments in the form of slip and/or paint are rarely recorded, and occur mostly on anthropomorphic/abbreviated figurines. The most convincing evidence of paint on figurines (as opposed to colour stains) dates to the later Halaf layers. Only a few objects in the Halaf-levels are recorded as being fired like ceramics. Notwithstanding this, fire marks are quite common on figurines, as can be observed in the colour of these objects and even traces of sintering (Arntz 2022, 203-17).

The figurines are small in size, measuring only a few centimetres, and are most often recovered in a fragmentary state, often likely due to their fragile nature. A contributing factor is the contexts in which they are very often found: namely refuse contexts that occur both in open areas and abandoned buildings. Although mostly discarded, there is also evidence for the intentional placement of figurines, most notably in the Burnt Village (Verhoeven 1999, 230-1; Arntz 2022, 234-6). Linked to this is evidence of the intentional breaking of objects, as they were found in primary, intentional depositions as fragmentary objects.

Figurines from the site have been classified as anthropomorphic (with three subtypes) and zoomorphic. This classification was primarily based on the figurines found in Operation I on Tell Sabi Abyad I (Collet 1996; Kluitenberg 2014). Subsequently, figurines have been discovered across all operations on the main mound, on Tell Sabi Abyad II (briefly described by Verhoeven 2000, 100-1), and on Tell Sabi Abyad III. The figurine assemblage derives from the entire occupational history of the site.

Based on my studies of this expanded corpus, I would now classify most of the human figurines as 'abbreviated', *e.g.*, very schematic and virtually never shaped as 'realistic' human bodies (but see Figure 8.3, no. 12, for the exceptional find of a more naturalistic stone figurine found on Tell Sabi Abyad II). Although there is much variety within all figurine categories and objects are idiosyncratic, there are some clearly definable types within the anthropomorphic

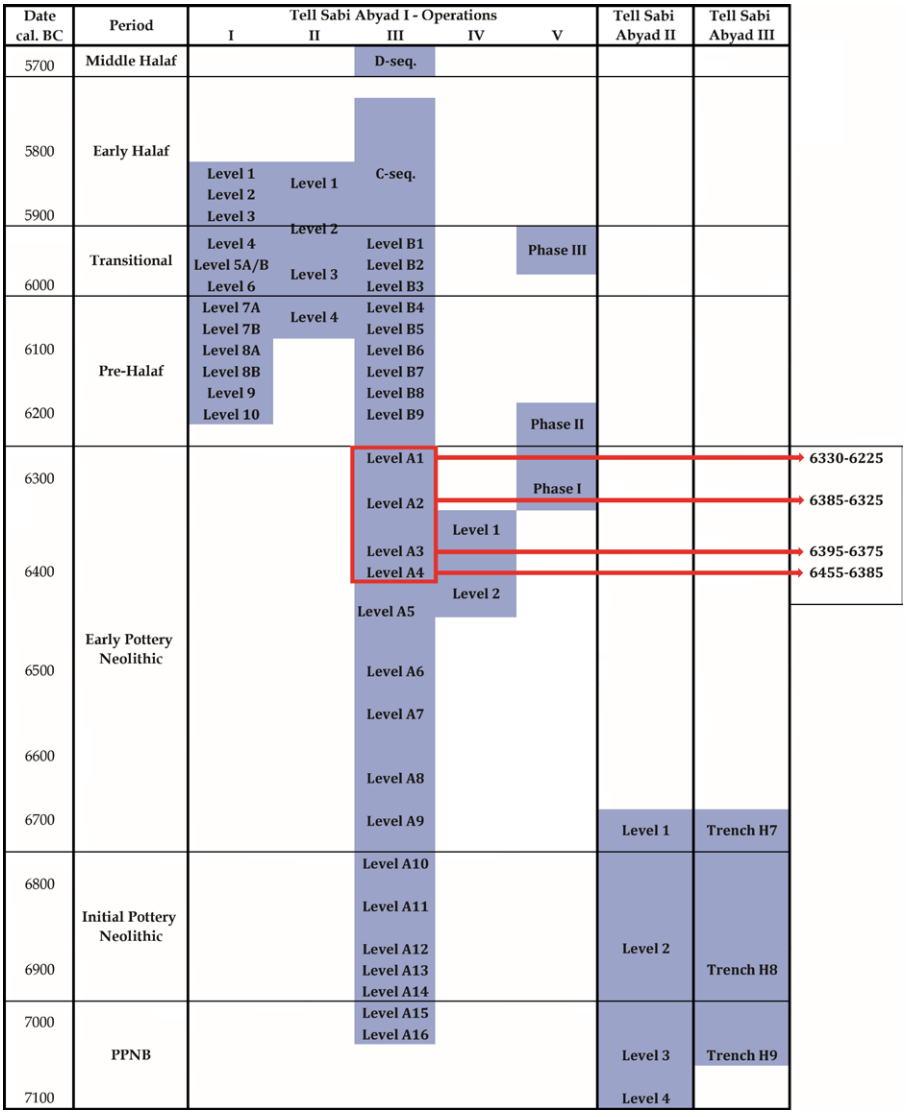

Figure 8.2: Chronology of the four Tell Sabi Abyad mounds. Indicated in red are the levels in which the figurines discussed here were found. (Courtesy of the Tell Sabi Abyad Research Project).

corpus as seen in Table 8.1 and Figure 8.3, and within some of these types, objects can be relatively standardised and have clear defining features.

In the typology presented here, there are eight types of anthropomorphic/abbreviated figurines. First, there are the very schematic head on base (Figure 8.3, nos. 1-2) and head on divided base (Figure 8.3, nos. 3-4), the distinction being the presence of legs. All of these objects are very simple humanoid shapes. The human-undivided base is distinguished by having an (at times only slightly) more naturalistic body shape, *e.g.*, a waist and rounded shoulders, or arms are indicated. When the heads are preserved, some have applied eyes. This type shows quite a bit of variation. The human-divided base type consists only of one 'realistic' single stone anthropomorphic figurine, which was already mentioned.

'Pillar shapes', the most numerous anthropomorphic/abbreviated type at the site, stand on a pinched-out base and have round to oval 'bodies' (Figure 8.3, nos. 5-6). Whilst the shapes of the body can vary, their defining characteristic is the presence of arms raised or curving in front of the body. When preserved, their heads usually only have a pinched-out nose.

The 'decorated' and 'violin' types are found in low numbers. The first are figurines with distinctive and quite standardised markings. Their backs are covered with impressions made either with a tool or fingernails. Their fronts are covered with impressed or incised grooves (Figure 8.3, nos. 8-9). The violin type includes two 'typical' Halaf examples (Figure 8.3, no. 11), which are flat, have very rounded 'hips' with a waist indicated, rounded shoulders and (applied) breasts. They are covered with a slip layer and geometric painted motives. Some earlier examples are similar in shape, but these objects are not flat and can stand unaided (Figure 8.3, no. 10). Furthermore, they are not slipped and painted as the two later examples are.

Figurine Corpus Tell Sabi Abyad		
Zoomorphic	498	31%
Anthropomorphic and abbreviated	406	25.2%
Geometric	240	14.9%
Indeterminate/ unclear	464	28.9%
Totals	**1608**	**100%**

Zoomorphic Corpus		
Quadruped	**349**	**70.1%**
Body and head	41	8.2%
Body	225	45.2%
Head	76	15.3%
Legs	7	1.4%
Bucrania	8	1.6%
Bird	1	0.2%
Horns	121	24.3%
Indeterminate	19	3.8%
Totals	**498**	**100%**

Anthropomorphic/ Abbreviated Corpus		
Head on base	**83**	**20.4%**
Rounded base	47	11.6%
Head on divided base	36	8.9%
Pillar shape	145	35.7%
Decorated type	22	5.4%
Violin type	13	3.2%
Human-undivided base	37	9.1%
Human-divided base	1	0.2%
Heads	8	2%
Indeterminate	61	15%
Totals	**406**	**100%**

Table 8.1: The Tell Sabi Abyad figurine corpus typology.

Finally, there are eight objects shaped only as heads, including three very early examples made of stone (Figure 8.3, no. 13). The other objects in this group are more tentatively designated as figurines: two bone fragments with possible facial features and three possible flat, schematic stone heads that might also be pendants.

Zoomorphic figurines are predominantly quadrupeds and fragments thereof (Figure 8.3, nos. 14-18). Furthermore, there are eight bucrania, and objects shaped as horned heads (Figure 8.3, no. 21). A singular example consists of a bird figurine, dated to the later Halaf levels (Figure 8.3, no. 20). A large part of the corpus consists of horn fragments belonging either to quadrupeds or bucrania (Figure 8.3, nos. 23-25). There is one stone zoomorphic example: an animal head fragment within the zoomorphic corpus (Figure 8.3, no. 22).

Inevitably, when working with a corpus of often fragmented objects there is a group of 'indeterminate' fragments within the zoomorphic and anthropomorphic/ abbreviated categories. There are also geometric objects, which are conical and cylindrical in shape, which were perhaps parts of figurines (horns/arms) or fit somewhere in the range of the very schematic humanoid forms. Finally, the category of indeterminate/unclear contains objects that are perhaps parts of figurines, but their designation as such is tentative.

Within the 'head on base' objects, there is a subcategory of objects that I have designated 'rounded base'. Most often they are fractured above their base, but if preserved, the 'stem' is undifferentiated with no features and without a recognisable head. Instead, they end with a simple tip. In general, these objects are so abbreviated that they are not clearly figural. On some of the object forms, they are described as 'stud' figurines. However, I have classified them as figurines as they do not fit within the category of tokens and some examples are slightly more anthropomorphic (see, *e.g.*, Figure 8.3, no. 2). A group of figurines within the rounded base category are unique because of their *appliqués* and they are the focus of this paper.

The Figurines with *Appliqués*

There are 18 objects with such rounded bases and *appliqués*, of which originally only five objects were classified as figurines. I identified 13 additional examples that were previously categorised under 'other clay objects' as possible tokens or objects with an unknown designation. There is variety in both the shape and execution of these objects. Whilst all have rounded bases (see Figure 8.4), some are more ovoid or square in shape or are slightly flatter. They range from being very carefully shaped and smoothed to being coarser in finish, most notably object O04_297 (Figure 8.4, no. 9).

These figurines have been classified as belonging to the same type not only due to their similar shapes but primarily because of the round to oval *appliqués* arranges in rows or groups. One of the objects has both *appliqués* and fingernail impressions. A further four objects with only fingernail impressions have been added because they are very similar in shape and execution. The fingernails were carefully placed to form a row and in one instance the entire object is covered in fingernail impressions forming 'wavy lines' (Figure 8.4, no. 11). So, whilst they do not have *appliqués*, they seem to be a variation on the theme.

The execution of the *appliqués* ranges from being very carefully and symmetrically applied in rows encircling

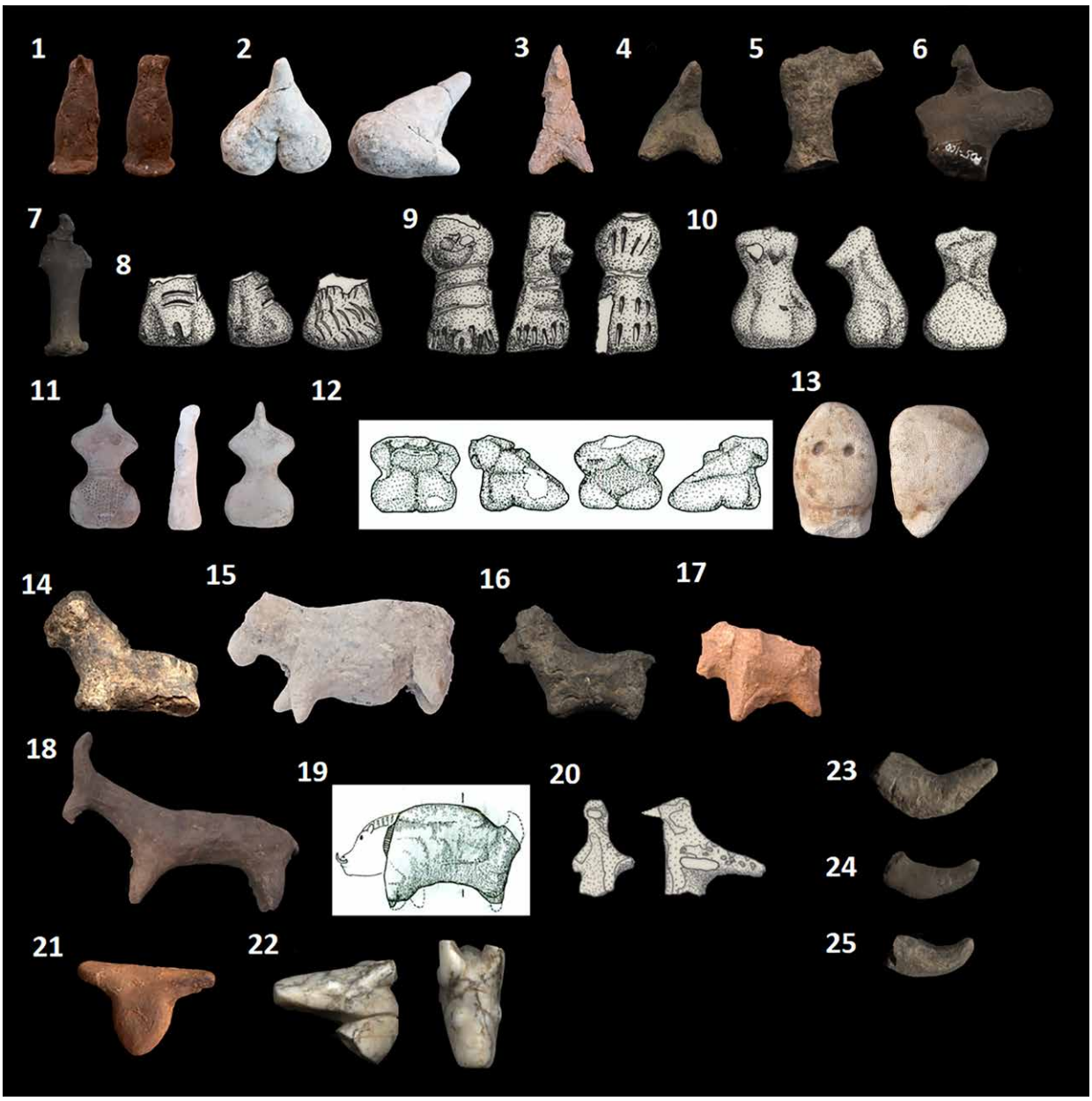

Figure 8.3: Examples of figurines from Tell Sabi Abyad. Head on base (1-2); head on divided base (3-4); pillar shapes (5-7); decorated type (8-9); violin shapes (10-11); human-divided base, the only truly 'realistic' anthropomorphic figurine made from stone (12); stone head (13); quadrupeds (14-19); bird (20); stone bucranium (21) and zoomorphic head (22); horn fragments (23-25). Not to scale. (Original images courtesy of the Tell Sabi Abyad Research Project).

the base to seemingly randomly placing one or several *appliqués*. Perhaps in some cases, more *appliqués* were originally present and their placement was not as random as it now appears. However, the presence of more *appliqués* was not commented upon and could not be seen on the drawings/photographs. At times it is quite clear that more *appliqués* were originally present, indicated by small depressions in the clay and colour differences (for example Figure 8.4, no. 13). The number of *appliqués* varies greatly (see Table 8.2), ranging from (at least) four to up to 30. Furthermore, two (potentially three) objects have an additional thin band of clay applied around the base. Similarly, the number of fingernail impressions on the *appliqués* differs, some have none whilst on one object there are up to six per *appliqué* (see Table 8.2). The size range is considerable with the smallest object measuring 1.3 by 2 cm at its base and the largest 5.4 by 4.7 cm.

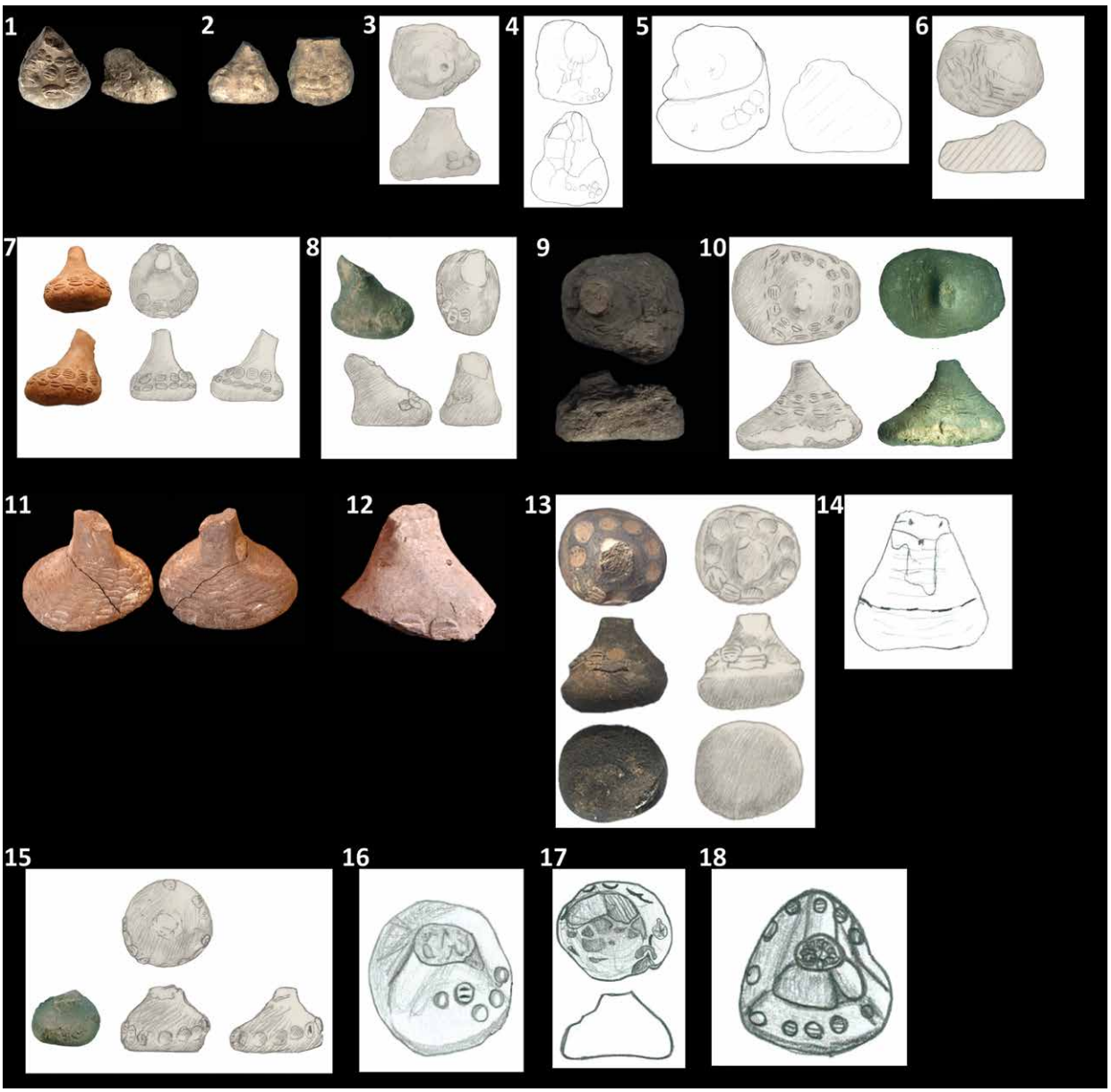

Figure 8.4: Figurines with *appliqués* and/or fingernail impressions. Dated to level A04, nos. 1-9: F04_052 (*appliqués*), F04_056 (*appliqués*), F08_030 (*appliqués*), F08_031 (*appliqués*), O08_114 (*appliqués*), O08_273 (*appliqués* and fingernail imp.), O09_193 (*appliqués*), O09_351 (*appliqués*), O04_297 (fingernail imp.). Dated to level A03, no. 10: O08_178 (*appliqués*). Dated to level A03/A02, no. 11: O07_492 (fingernail imp.). Dated to level A02/A01, no. 12: F07_016 (*appliqués*). Dated to level A01, nos. 13 & 14: O03_075 (*appliqués*), O07_033 (fingernail imp.). Dated to level A04 or A02, nos. 15-17: O09_038 (*appliqués*), O09_082 (*appliqués*), O09_248 (fingernail imp.). Unknown level, no. 18: O09_229 (*appliqués*). (Image by the author, original images courtesy of the Tell Sabi Abyad Research Project).

The Chaîne Opératoire

Unfortunately, there is no information on the material properties of the clay used to make the objects in question and the colour is known for only a few objects (see Table 8.3). Nine objects are recorded as having been smoothed. The figurines seem to have been made by hand, the only instance of possible tool use is seen on F08_030 which has a hole in the top of the fractured stem likely made with a round implement such as a stick or an awl. Originally this was described as a dowel hole, but there is no evidence that these objects had detachable heads.

The steps required to make these figurines were not many. The main shapes are simple and could easily have been created from one piece of clay. The objects were then

Object_no	Size in cm (LxWxH)	Appliqués/finger-nail impressions	Amount	Placing	Fingernail impressions	Notes
F04_052	2.8x22x99	Appliqués	Unclear, at least 12	In a group, random	Varying: one to three	Bottom is rough with plant impressions
F04_056	2.1x2.4x99	Appliqués	Four (possibly more, two additional depressions seen)	In a row	None	Strip of clay placed underneath appliqués
F07_016	2.1x2.1x0.6	Appliqués	Two (at least one more depression seen)	In a row	Unclear (damaged)	
F08_030	3.7x3.1x3	Appliqués	Five	One single, and four in a group	None	Hole in top of broken stem
F08_031	4.4x4.1x4.6	Appliqués	Unclear, at least five	In a group, random	None	
O03_075	2x1.9x2.1	Appliqués	Nine, seven only depressions	In a row, encircling base	Three	Below appliqués a band with incisions, partly preserved. Depression for the band encircles the object
O08_114	5.4x4.7x3.54	Appliqués	At least four (only depressions)	In a row, seem to overlap	Unclear	
O08_178	3.5x2.7x2.5	Appliqués	Thirty	Two rows of 15 encircling base	Varying: one to three	
O09_038	2.3x2.2x1.7	Appliqués	Unclear, at least 11 (three as depressions)	In a row, encircling base	One	
O09_082	2.5x2.3x1.8	Appliqués	Five (four as depressions)	In a group, random	Two	
O09_193	2.7x2.6x2.7	Appliqués	Unclear, at least 22	Two rows, encircling base	Top row: four to six; bottom row: one	
O09_229	2.3x2.1x1.5	Appliqués	Eleven (three as depression)	In a row, encircling base	Two	
O09_351	2.3x1.7x2	Appliqués	Unclear, at least four (one as depression)	Three in a row, one on other side	Unclear, looks like two	
O08_273	3.5x2.1x1.8	Appliqués and finger-nail impressions	Appliqués: unclear, at least four; fingernails; unclear	Appliqués: in a row, encircling base; fingernails: in groups on all sides	None in the appliqués	
O04_297	4.7x3.7x99	Fingernail impressions	Unclear	On drawing seen mostly on front of base	n.a.	On drawing seen mostly on front. The fingernails have the same orientation
O07_033	1.3x2x1.9	Fingernail impressions	Six	In a band, encircling part of base	n.a.	Plant impressions on all sides. On drawing, it looks more like fibre impressions. In the fractured area on top three small holes
O07_492	2.9x2.9x3.5	Fingernail impressions	Unclear	Covered in fingernail impressions, forming wavy lines	n.a.	
O09_248	2.5x2.2x1.5	Fingernail impressions	Six	In a row, encircling base	n.a.	Perhaps an applied band around object, but surface is damaged

Table 8.2: The corpus of figurines with *appliqués*.

(most often) smoothed and, subsequently, the *appliqués* were applied by pressing them into the clay of the main body whilst it was still (semi-) plastic and creating fingernail impressions in them and/or on the body of the object. Whilst creating the main shape is relatively straightforward, the small size of the figurines would make it quite fidgety work to apply the tiny *appliqués*, which on some of them were executed with high precision.

Use Wear

Use wear comes in the form of impressions of plant materials on the 'rough' base of the otherwise smoothed object F04_052 and the possible fabric impressions on object O07_033. The latter object shows these impressions on all sides, which is very interesting and perhaps indicates it was wrapped in cloth at some point. No handling polish or other possible indications of use-wear are recorded.

Potentially, heat exposure was part of the use of figurines. However, it is difficult to ascertain at what stage, *e.g.*, production, use, or after deposition, heat exposure occurred. The correlation between burnt contexts and burnt or baked figurines is not apparent with this group of objects. Only one, object O07_492, is burnt and was also found in a burnt, ashy layer (see Table 8.4). Figurines in this period were never fired like ceramics. However, it cannot be excluded that they were exposed to heat to make them more durable. Equally, heat exposure might have been part of the way they were used.

Various researchers have suggested that figurines were 'passively' exposed to heat by proximity to hearths and

Object_no	Colour	Heat exposure	Level of smoothing
O09_229	Unknown	Unbaked	Smoothed
O03_075	Dark-brown to black	Baked or burnt	Smoothed
O07_033	Unknown	Burnt	No information
F07_016	Unknown	Unknown	Well smoothed
O07_492	Black	Burnt, likely partially	No information
O08_178	Unknown	Lightly baked	Smoothed
O09_038	Unknown	Unbaked	No information
O09_082	Brown/gray	Unbaked	smoothed
O09_248	Unknown	Unbaked	Smoothed
F04_052	Unknown	Baked	Smoothed
O08_273	Brown/dark-gray	Unbaked	Smoothed
O09_193	Unknown	Unbaked	No information
O09_351	Unknown	Unbaked	Smoothed
F04_056	Unknown	Unbaked	Smoothed
O04_297	Unknown	Unbaked	No information
O08_114	White to brown/gray	Unknown	No information
F08_030	Unknown	Baked	No information
F08_031	Unknown	Unbaked	No information

Table 8.3: Colour, heat exposure and level of smoothing of the figurines with *appliqués*.

ovens (*e.g.*, Meskell *et al.* 2008; Nakamura and Meskell 2013; Kluitenberg 2014). Whatever the case, there are clear examples of direct heat exposure at Tell Sabi Abyad, both in this group of objects and the figurine corpus as a whole. Within the figurines with *appliqués*, object biographies differ in this sense. For example, from the two objects from bin GE one is baked and the other unbaked. The other ten figurines are also either unbaked (N= 2) or baked (N= 8). This might indicate that these objects were in use for some time before deposition and underwent some transformative processes before ending up in this bin.

Contextual Information

As Table 8.4 shows, the figurines come from a range of contexts with most found in the A04 levels. No clear patterning in contexts exists except for the three objects found in building 4.4, room 2. There, two objects were found in a plastered bin feature with a large cluster of other objects including 10 other figurines. This bin had been plastered over and thus also presents a convincing instance of the deposition of fragmented objects, which were perhaps intentionally broken before their placement. The third object in this room was found in the fill of a wall, it is unclear if it was intentionally incorporated into the wall or found in building debris. A final instance of potential intentional placement is the object in building 4.12, which was found on the floor instead of being part of the room fill. Most figurines were found in open area contexts, in five instances from ashy pit fills. Most likely these objects were discarded there, instead of intentionally placed.

Changes through Time

This group of figurines is in part so interesting as it is a distinct type that is both spatially and temporally restricted at the site. All the objects come from levels A04-A01, which date to between 6455 and 6225 BCE. The dating of the figurines is secure except for those from squares H4/I4, which is either A04 or A02 and object O09_229, from square J05, which could not be securely dated in relation to the stratigraphy.

The largest concentration of these objects is found in the A04 sublevels, even more so given that the three objects from square H4/I4 might also belong to this level. Clear patterns in either production, use or deposition/discard are not readily apparent, the only thing to note here is that all the occurrences of these objects in building contexts date to level A04.

Appliqués on Pottery

The presence of *appliqués* in the Tell Sabi Abyad figurine corpus is not unique. However, in other instances, the added pieces are different in nature. Some objects are 'composite', *e.g.*, not made from one piece of clay. Applied pieces include ears and horns on zoomorphic figurines and breasts and eyes on anthropomorphic/abbreviated figurines. The *appliqués* on the group of figurines discussed here are different: it is unclear if they are decorative in nature or convey some sort of information known to the people making and using these objects. In this way, this group offers an interesting comparison to the pottery

Object_no	Square	Locus/Lot	Level	Building/ room	Feature	Context Type	Burnt?	Context description	Found with
O09_229	J05	170/353	?		Oven: CQ	Oven fill	No	Found inside oven CQ. Likely not primary fill	None
O03_075	F03	052/088	A01b		Pit: AO	Pit fill	No	Found in an ashlayer that seems to run into a large pit. Several of these pits were found. They were all filled with ash and refuse material	Two bone awls
O07_033	G03	103/284	A01b			Soil layer	No	Found between wall, section wall and modern Islamic burial	One stone grinder/hammer
F07_016	G03	110/337	A01d/A02b			Ash layer	No	Found in ashlayer, no features nearby. Soil here also covered with ashlayers and with many limespots and charcoal	Four tokens (all burnt), stone bowl fragment, two slingmissile fragments, one indeterminate figurine fragment
O07_492	G4n	061/154	A02b/A03			Ash layer	Yes	Found in ash layer. Arbitrary locus with two large pits below	One stone palette
O08_178	F04	208/471	A03a/b		Pit: DY	Pit fill	No	Found in ash fill, cutting through a large ash pit/depression, deposited near the edge of the pit	Five tokens, one unclear clay object, two stone grinding slab fragments. (Many more objects recovered in other lots within pit)
O09_038	H04/I04	263/403	A04 or A02			Soil layer	Yes	Found in an open area with fireplaces	None
O09_082	H04/I04	268/448	A04 or A02			Soil layer	Yes	Found about 50cm west of ashpit, in an open area with many hearths and burnt earth	None
O09_248	H04/I04	325/546	A04 or A02	4.9/7?		Soil layer/ room fill?	No	Was found approx. 25cm west of wall JH. Unclear if in building or under floor in open area	One hammerstone
F04_052	F05	072/175	A04a			Debris layer	No	Found in debris from (possible) wall BX. Close to an oven. Seems to be outside the building	One bone awl
O08_273	H05	205/451	A04a		Pit: DE	Pit fill	No	Found on the bottom of a large ashpit DE, as part of object cluster	One token, one ceramic bowl, one stone vessel fragment, one unclear clay object
O09_193	H04/I04	304/507	A04a/b		Pit: IZ	Pit fill	No	Found in ashpit IZ, which is located in an open area with many hearths	None
O09_351	H05	252/735	A04a/b/c	4.12/1	Floor: EU	Room, floor level	No	Found on floor EU. No other objects were found on this floor, but many bones and sherds were found	None
F04_056	G03	050/169	A04b	4.18/6		Room fill	No	Roomfill consisted of compact loam/ clay, mudbrick debris and mortar fragments. Found along the east side of wall AH, on the north side of plastered wall relating to plastered floor AN	None
O04_297	D03	004/003	A04b		Pit: A	Pit fill	Yes	Found in ashpit A	None
O08_114	H03	231/527	A04b	4.4/2	Wall: CO	Wall	No	Found in wall fill wall CO	One unclear clay fragment
F08_030	H03	276/687	A04c	4.4/2	Bin: GE	Bin fill	No	Found in lowest part of bin, below floorlevel GN in the adjoining room. Object cluster of 62 objects as well as animal bones	Three stone beads, five dentalia beads (with an additional six possible dentalia beads), three bone awls, four stone hammers, one stone axe, one stone palette, one stone vessel fragment, one whetstone, one unknown clay object, ten figurines (five anthro/ abbr, three zoomorphic and two indet/unclear)
F08_031	H03	276/687	A04c	4.4/2	Bin: GE	Bin fill	No	Found in lowest part of bin, below floorlevel GN in the adjoining room. Object cluster of 62 objects as well as animal bones	See F08_030

Table 8.4: Contextual information for the figurines with *appliqués*.

	A5	A4	A2	A1	B8	B6	B5	B4	Mix-B	D-seq.	Total
 Single circular blob									2		**2**
Horizontal coffee bean				1							**1**
 Single crescent pointing down								1	1		**2**
 Single crescent pointing up									4		**4**
 Vertical ovoid and two circular blobs		1									**1**
 Two horizontally-arranged horizontal blobs		1									**1**
 Three diagonally-arranged horizontal blobs		1									**1**
 Double row of six circular blobs		1									**1**
 Single vertical Z	1										**1**
Eroded			1	2	4	1	1		4	3	**16**
Total	**1**	**1**	**3**	**4**	**4**	**1**	**1**	**1**	**11**	**3**	**30**

Table 8.5: The types of *appliqués* found on pottery in Operation III, with absolute amounts per level. (after Nieuwenhuyse 2018, Table 4.37).

found on the site that also has a range of various non-figurative *appliqués*.

Appliqués on pottery first appear at Tell Sabi Abyad around 6350 BCE and are known from other sites in Upper Mesopotamia, the northern Levant, the Zagros and eastern Anatolia. Current finds indicate that this decoration type lasted for a period of some 500 years in Upper Mesopotamia, disappearing at the start of the Halaf, ca. 5850 BCE (Nieuwenhuyse 2019, 191). Across the sites where *appliqués* on pottery were found, they occur on coarse, plant-tempered pottery and are found mostly on large, closed vessels (Nieuwenhuyse 2019, 191, 198). *Appliqués* rarely if ever occur with other types of decoration and, in contrast to painted designs, the *appliqués* are most often singular, non-repetitive, and placed in an unbounded way. Both geometric and figurative *appliqués* are recorded, including ones that are humanoid or resemble a variety of animal species (Nieuwenhuyse 2019, 191).

At Tell Sabi Abyad *appliqués* were strongly associated with the coarser variety of 'Standard Ware', which is defined at the site by being: first, plant-tempered, second, having a buff-to-brown to pinkish-red surface colour; third, a high degree of burnishing as a surface treatment; as well as, fourth, having characteristic techniques and styles of decoration (Nieuwenhuyse 2018, 45). Standard Ware comprises the bulk of the pottery at Tell Sabi Abyad and during almost the entire 7th millennium, pottery was plain and undecorated. After around 6300 BCE a range of decorations (red slip, painting, impressing, incising and *appliqués*) is seen regularly (Nieuwenhuyse 2018, 92). *Appliqué* as a decorative technique is found in low numbers in Operation III, related almost exclusively to jars with a few examples on vertical pots. *Appliqués* on pottery are also found in other Operations, namely levels 8-4 in Operation I, dated pre-Halaf to Transitional, and in contemporaneous levels in Operation II (Nieuwenhuyse 2019, 201). Whilst in Operation III, the *appliqué* technique is found mostly from level A01 onward, two very early examples date to levels A05 and A04 and are thus contemporaneous with the figurines analysed here (Nieuwenhuyse 2018, 93, 102).

Appliqué elements were either placed on the shoulder (jars) or close to the rim (vertical pots). They were not bounded and appeared as isolated, 'free floating' design elements. Some ten different design configurations or motifs were documented in Operation III (see Table 8.5; Nieuwenhuyse 2018, 102). Mostly they are single geometric elements and occasional combinations of circular and oval shapes or several circular shapes applied in rows. Most commonly circular shapes and crescent shapes were applied (Nieuwenhuyse 2018, 102-3).

Decoration to Be Seen and Decoration to Be Felt

In his work on pottery decorations, Nieuwenhuyse emphasised the differences in context, both spatial and social, related to different types of decoration on pottery. Painted pottery was meant to be *seen*. Nieuwenhuyse stated that for potters there was a concern to maximise the visibility of the painted motifs by creating contrast between them and empty vessel surfaces (Nieuwenhuyse 2017b, 116). Whilst reconstructing the how and where of consumption remains difficult, it does seem that in many Neolithic villages, with their small interior spaces, communal events involving the use of painted pottery took place in outside areas (Nieuwenhuyse 2017b, 117).

Furthermore, Olivier argued that at the end of the 7th and beginning of the 6th millennium BCE there were pronounced changes in pottery decoration style that happened within timespans that were short enough to fall within discursive memory. The wide variation not

only in motifs and design structures but also in the quality of the design execution makes it clear that these vessels were indeed made to be seen (Nieuwenhuyse 2017b, 117; 2019, 198; see also Hole 2013). Stylistic innovation in painted decoration in this period emphasised open shapes such as bowls, goblets and small jars suitable for serving and consuming food and drinks. Furthermore, painted vessels are thinner-walled, more carefully finished and, potentially, potters employed different tempering strategies as well (Nieuwenhuyse 2017b, 117; see also Le Mière and Nieuwenhuyse 1996, 129-32; Nieuwenhuyse 2007, 74-8).

Appliqués on pottery, conversely, were argued to be decorations to be *felt*, thus also highlighting the importance of the non-visual senses. These *appliqués* were placed on ceramics that were larger, coarser and most likely used for storage (Nieuwenhuyse 2017b, 123-4). Nieuwenhuyse argues that the non-visual nature of these *appliqués* is based on the difficulty to see them, as they are the same colour as the main body (unlike the painted pottery) and their spatial settings, being placed in poorly lit confined spaces inside storage buildings (Nieuwenhuyse 2019, 198; see also Verhoeven 1999). This was part of a larger argument for a multi-sensory approach in our interpretation of pottery decorations in particular and an over-emphasis of the visual sense in archaeological discourse in general (Nieuwenhuyse 2019, 189). Taking a post-processual approach, applied decorations to pottery were argued to be a non-visual language governed by relations between people, things and material worlds at large. Thus, in his interpretations, understanding these relations and specific social contexts was essential in getting insights into meaning in past societies (Nieuwenhuyse 2019, 190). Instead of arguing for specific symbolic meanings, Olivier's emphasis was on the physical and sensual aspects of various types of pottery decorations and their use as a *lingua franca* employing different communication strategies (Nieuwenhuyse 2017b, 124).

Finally, there is an interesting hypothesis that Nieuwenhuyse offered on the possible apotropaic nature of these *appliqués*. He stated:

> *Operating in the dark, their main purpose may have been to exude an enduring protective presence, as permanent guardians against evil. As magic devices mediating between the human world and the supernatural, they were a form of distributed agency. Deposited inside the buildings by their human operators, they were left behind to confront demons or other supernatural agents deemed responsible for generalised evil or specific illnesses, pests or theft. As far as their human interlocutors were concerned, applied humanoids were to touch rather than to see, but the figures may have had their primary intended audience in the non-human world.* (Nieuwenhuyse 2019, 205).

Whilst this particular statement concerns figurative *appliqués*, not found at Tell Sabi Abyad, he made a similar claim for non-figurative *appliqués* as well (Nieuwenhuyse 2017b, 124).

Discussion and Conclusions

Turning to possible links between the *appliqués* on pottery and figurines we can first note that they appeared at the same time. Whilst it might be that the two types of *appliqués* are unrelated it is interesting that both are attested in Operation III at roughly the same time in level A04 (6455-6385 BCE). However, only a few examples on pottery are found in these early levels: the *appliqués* on pottery become more common after level A01 (6330-6225 BCE). Second, the appearance of the *appliqués* is in part similar. Singular round or oval *appliqués*, as well as round *appliqués* arranged in rows, are seen on both pottery vessels and figurines. Although, in contrast to the *appliqués* on pottery, there are no different design configurations and no other geometric shapes found on the figurines. Furthermore, fingernail impressions do not seem to occur on pottery *appliqués*.

Perhaps we can posit that the appearance of the two practices indicates a shared crafting tradition in figurines and pottery production, in which either the same people were making both or there is a sharing of knowledge and ways of doing. It seems that after this initial co-occurrence, the figurines disappear relatively quickly after level A01, whilst the *appliqués* on pottery remain in use for a long time after. Furthermore, whilst the figurines are only found in Operation III, pottery with *appliqués* is subsequently found in other parts of the tell as well.

The question of whether the *appliqués* on both artefact groups are the same in nature in terms of their function remains a difficult one. The contextual links between *appliqués*, both on pottery and figurines, and dark interior spaces are not clear from the finds in Operation III (Nieuwenhuyse 2018). By inference, we can assume the original contexts of the pottery sherds with *appliqués* as being inside buildings, as all the sherds belong to storage vessels. However, for the figurines, the original use context cannot be established. Therefore, it is impossible to say if the *appliqués* on figurines were also meant to be *felt*, as Nieuwenhuyse argues for those on pottery vessels. Similarly, the hypothesis of *appliqués* as being apotropaic cannot be substantiated. However, although speculative, the single figurine covered in possible cloth impressions perhaps indicated it was wrapped and perhaps carried as some sort of amulet with an apotropaic function.

Furthermore, Nieuwenhuyse's theory invites us to think differently about how figurines might have been experienced and what intrinsic properties were considered important such as the colour and texture of objects. It is

certainly possible that the sensory aspect afforded through the texture and relief of the *appliqués* was an important consideration and these objects were also made to be felt as much as to be seen.

To conclude, I want to address Olivier Nieuwenhuyse's methodology, calling for a multi-sensory approach to ceramic decorations. In a sense, the issues he raises concerning reading decorations as a 'language' and focusing on their symbolic meaning are issues that have traditionally also impacted figurine studies. The main drawback of many of the more traditional interpretative frameworks is that they fail to analyse and interpret figurines as artefacts. Instead, figurines are treated primarily, or even exclusively, as images or texts (Weismantel and Meskell 2014). I have had interesting conversations with Olivier Nieuwenhuyse on this topic and undoubtedly his interest in figurines partly stemmed from similarities in their theoretical and methodological approaches.

It was not only his vast knowledge of the material but foremost his innovative approaches to ceramic studies that established Olivier as a pre-eminent scholar in the field of Neolithic ceramics and his contributions to the field will remain to be influential for many years to come. Furthermore, through his willingness to freely share his knowledge and ideas, he inspired many scholars, both inside and outside the field of pottery studies. On a personal level, I greatly valued our discussions, his teaching and the knowledge he shared with me. He has profoundly influenced my work. Olivier is greatly missed.

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Chapter 9

Reconsidering Cruciform Figurines of Chalcolithic Cyprus

Bleda S. Düring

Abstract

Hundreds of cruciform figurines have been found in Chalcolithic sites across Cyprus, and these were produced in a variety of media that include clay, limestone, and picrolite. These stunning figurines continue to fascinate people today, but they remain enigmatic in the context of the Chalcolithic communities that produced them. What meanings did they capture in the Chalcolithic and why were these objects so important to these societies? In this paper I will survey existing scholarship and evaluate the merits of previous interpretations of these objects. Finally, I will suggest a new interpretation of these iconic objects. In this manner I aim to contribute to a topic that was dear to Olivier Nieuwenhuyse: how to understand prehistoric iconographies.

Introduction

This paper is concerned with prehistoric imagery, which is a topic that I am sure would have interested my friend Olivier Nieuwenhuyse, who passed away much too early and whose personal flair and contributions to archaeology are much missed.

Olivier's main focus was of course on prehistoric ceramics, on which he became one of the most preeminent researchers in the field (see his bibliography at the start of this volume). However, it would be a mistake to reduce Olivier to a ceramic specialist. Apart from the fact that he investigated ceramics in order to reconstruct social practices, such as dining habits and the emulation of style, his interests were wide and included, for example, climate change, heritage, and the ceramics of Pieter Groeneveldt.[1]

Here, I would like to latch onto one of Olivier's other interests: his fascination with depictions of human figures in prehistoric art and the significance of these images in the societies that made them. He was intrigued by depictions of human figures possibly engaged in drinking, feasting, and dancing (Bartl and Nieuwenhuyse 2008; Nieuwenhuyse 2017; 2019). In his work on such images Olivier was primarily interested in understanding what these figures were doing and what these activities might have meant in a particular cultural context. For example, Olivier wrote on a Halaf-period image:

1 A Dutch ceramicist of which Olivier was a fan, see https://pietergroeneveldt.nl/88

> *I argue that these designs are structural 'building blocks', acting as culturally-accepted components from a narrative 'tool-kit' available to Halaf painters. By arranging these elements in a process of bricolage the artist was able to convey a specific message.* (Nieuwenhuyse 2017, 135).

In this and other papers (*e.g.*, Nieuwenhuyse 2019), Olivier wrote about Late Neolithic figurative scenes in language analogies, in which images have grammar and syntax, and consist of specific elements that are combined to convey a message (in this he was a product of a particular moment in post-processual archaeology; *e.g.*, Tilley 1991). The figurative components and message resonated with the people that made and interacted these objects, as they were derived from their cultural repertoires and everyday lives. It is up to us to try to reconstruct these complex compositions by analysing these components and how they were combined.

Thus, for Olivier understanding such imagery was a hermeneutic exercise, in which engagement and familiarity with a specific cultural tradition was of key importance. This can be contrasted with totalising approaches in which images are understood as transcending symbols of 'the Neolithic', *i.e.*, representations of pervasive ideas that were common across West Asia over a span of time of at least four millennia. Examples of such approaches can be found in the works of Cauvin (1997), Lewis-Williams and Pearce (2005), and Hodder and Meskell (2011).

Olivier's approach to prehistoric figurative art is exemplified in a brilliant analysis of a human figure on a Halaf bowl from Tell Sabi Abyad (Nieuwenhuyse 2017). In this study Olivier contextualised this image in the broader iconography and archaeological knowledge of Halaf society in order to arrive at his interpretation of this scene representing a feasting episode. This emphasis on understanding cultural practices in Olivier's work, rather than reading images as broad symbols, is a very productive one, I think, and one that can be used as a starting point for other scholars trying to make sense of prehistoric imagery. In this contribution I would therefore like to follow in Olivier's footsteps and apply this approach to Chalcolithic Cyprus. In particular I would like to focus on the remarkable assemblage of Chalcolithic cruciform figurines that have achieved iconic status in recent decades.

The Chalcolithic Cruciform Corpus

Hundreds of Chalcolithic cruciform figurines have been found across Cyprus (but not beyond), although most were retrieved from the art market rather than excavations. They range in size from about 3 to 15 cm, with the smaller and more schematic variants often classified as pendants. These schematic andromorphic figurines typically have bent knees with legs pressed together, outstretched arms, a long neck and a tilted head with simplified facial features (Figure 9.1). In general, these figurines lack features that mark their identities or sex, although a minority (c. 20%) have features that might be breasts (Winkelmann 2020, 302). Indeed, Lessure has underlined these impersonal characteristics of the cruciform figurines by labelling them as *logo-like symbols … vaguely anthropomorphic* (Lessure 2017, 33). There are a number of synthetic studies on these objects, which provide a good overview of their characteristics (a Campo 1994; Winkelmann 2020).

The cruciform figurines are typically made from picrolite, a rare type of serpentinite rock occurring on Cyprus that is relatively soft and occurs in veins of a few centimetres wide in rock formations and in the form of river pebbles (Peltenburg 1991; Xenoponthos 1991; Moutsiou *et al.* 2022). Figurines were also made in other types of stone, such as limestone, chalk, and ceramics. There are clear links in the imagery in the various media, with, for example, tilted heads on elongated necks and outstretched abbreviated arms occurring in picrolite, limestone and ceramic figurines. This overlap in the imagery has been of central importance in how picrolite cruciforms are now commonly interpreted.

Reading Cruciform Figurines

The cruciforms resonate with contemporary tastes, and have become iconic in the articulation of Cypriot identities in the present. They feature on Cypriot Euro coinage and appear on public buildings, such as Paphos Airport. In popular culture these figurines are often linked to the 'Mother Goddess' and are presented as a manifestation of a predecessor of Aphrodite. Thus, they are associated with fertility and childbirth, such as, for example, on the website of the Museum of Cycladic Art in Athens:

> *They may have been linked with the cult of the Great Mother Goddess or with practices associated with childbirth. It may not be coincidence that the district of Paphos (where many such figurines have been found) became in historical times the focus of worship of another fertility goddess, Aphrodite.*[2]

These popular understandings of Chalcolithic cruciform figurines are firmly rooted in academic studies. In a study published in 1977, entitled *La grande déesse de Chypre et son cult*, Jacqueline Karageorghis argued that these cruciform figurines were representations of the Great

2 https://cycladic.gr/en/page/i-techni-tis-kiprou, accessed on 24 May 2022.

Figure 9.1: Three picrolite cruciforms from the Metropolitan Museum of Art. Rogers Fund, 1951. (Reproduced under CC0 permission, retrieved from Wikimedia).

Mother Goddess (Karageorghis 1977). This interpretation was also put forward in a follow-up study by Flourentzos published in 1988. In essence, these studies are variations on the ideas of Gimbutas (1974), which had an enormous impact on how figurines were understood. This narrative was further reinforced by the idea that Cyprus was the island of Aphrodite, a theme celebrated in academic and popular sources (Bolger and Serwint (eds.) 2002).

A significant shift in the interpretation of the cruciform figurines occurred in the work of Morris and a Campo in the 1980s and 1990s, both of whom argued that these figurines represent mere women rather than deities, and that their bent knees are best understood as representation of being in labour (Morris 1985, 113-35; a Campo 1994, 83-8, 163-4). This new interpretation, *i.e.*, that cruciform figurines are best understood as women giving birth, was further strengthened by contextual evidence found at the site of Kissonerga-*Mosphilia*. Here, in the so-called 'ceremonial area', a house model was found with a series of associated figurines in and around it. One of these ceramic figurines, 'KM 1451', is commonly interpreted as representing a woman giving birth with the baby emerging between her legs. There are also four further ceramic figurines from the same context with legs spread apart and possibly representing the act of giving birth (Goring 1991).

This interpretation was subsequently transposed from this (small) group of ceramic figurines from Kissonerga-*Mosphilia* to the much larger corpus of picrolite cruciform figurines. The latter also have outstretched abbreviated arms, and tilted heads on slender necks. Diane Bolger and Elizabeth Goring firmly dismissed the interpretation of these picrolite cruciforms as representations of the Great Mother Goddess. Instead, like Morris and a Campo, they argued that these figurines were closely associated with childbirth, and depicted woman in labour. They also suggested that some of these objects were used as part of birthing ceremonies and initiations (Goring 1991, 54-5; Bolger 1996; Goring 1998, 164-6).

After the emergence of this new interpretation of cruciform figurines in the 1980s, which was supported by all key scholars working on Chalcolithic figurines at the time, this reading has been often repeated and not much scrutinised. While the ceramic figurine KM 1451 found at Kissonerga-*Mosphilia*, and the additional ceramic figurines found in the same context, might well represent women giving birth (although this interpretation too can be challenged; see Lesure 2017, 39), the transference of this interpretation to the corpus of cruciforms is by no means self-evident.

Importantly, the small corpus of ceramic figurines from Kissonerga-*Mosphilia* differ in a number of key

respects from the picrolite cruciform figurines found in great numbers across Chalcolithic Cyprus. For example, while the ceramic figurines have clear indicators of their sex, in the form of breasts and vulva, such indicators are rare in the picrolite cruciforms. Moreover, while the ceramic models are depicted with legs spread apart and often seated on a stool, the picrolite cruciform are invariably standing with bent knees and with both legs pressed together. Thus, the idea that ceramic birthing figurines can be used to understand the meaning of the much larger and rather different corpus of cruciforms is not unproblematic. Nonetheless, the idea that picrolite figurines are depictions of women giving birth has been so often repeated that it might be considered a factoid, *i.e.*, *a speculation or guess that has been repeated so often it is eventually taken for hard fact* (Yoffee 2005, 7).

Rereading Cruciform Figurines

Christine Winckelmann, in her recent study that considers Chalcolithic Cypriotic figurines in great detail, outlines the problems with the interpretation of the cruciforms as representing women in labour (Winkelmann 2020). First, she argues that the large majority of the cruciform figurines should be understood as lacking any indication of a clear sex. Thus, the classification of such figurines as (fe)male represents *our* focus, and might have been less important to people in prehistory (see also Kuijt and Chesson 2005; Nakamura and Meskell 2009). Second, none of the cruciform figurines have characteristics that suggest that they are pregnant, such as a swollen belly or pendulous breasts (indeed, as has already been mentioned, cruciforms only rarely have breast-like features that might suggest that they represented women, and vulvas and pubic triangles are altogether absent). Thus, both their pregnant status and femininity should be called into question. Third, the bodily postures of the ceramic birthing figurines (seated on stools, legs spread apart) is quite different from those of the cruciform (legs pressed together with bent knees). Hence, the idea that the posture of the cruciforms represent the act of giving birth is not unproblematic. As Lesure (2017, 39-40) puts it:

> *the idea that an uplifted face and cruciform-style arms illustrate the stance of a woman at the moment of birth – straining, with arms flung wide for support by other women – is problematic, because those features are actually common among figurines of every posture.*

In particular, the fact that legs are not spread apart in the cruciforms, is an issue that warrants further scrutiny. To resolve this apparent contradiction, Morris argued that the cruciforms represent the moment *after birth* (Morris 1985, 122-3), but in that case it is not clear why is the body still in a straining position and why would it need to be supported.

In a recent study of the cruciform figurines, Richard Lesure stresses their impersonal and schematic qualities and argues that they are each to be understood as a prehistoric 'logo'. He states:

> *The basic referent of cruciform figurines was a logo-like symbol conceived as vaguely anthropomorphic. Like many powerful symbols, its meaning was complex and layered. It invited explication. Figurine makers were agents in that process. Instead of copying by rote, they engaged with the cruciform as sign.* (Lesure 2017, 49).

This thesis put forward by Lesure that the standardisation of the cruciforms was linked to a circumscribed meaning of these objects for Chalcolithic people, much like a cross signifies specific things to Christians, is a plausible one, I think. At the same time, one would like to understand more about what these cruciforms might have meant specifically and why these figurines were so prevalent, and presumably highly valued, in Chalcolithic Cypriot societies.

Picrolite Cruciforms and Chalcolithic Practices

A lot of ink has thus been spilled on what Chalcolithic figurines might have stood for, be it the Great Mother Goddess, women in labour, or logos that were (as yet undefined) powerful symbols. Yet, relatively little has been said how these objects might have been used in social practices or how they might be a representation of such practices, which is the type of analysis that Olivier successfully applied to Neolithic images in Upper Mesopotamia. Is it possible to crack the visual language of these figurines, by analysing the components occurring in these figurines and how they were combined in various figurines and materials? Given the substantial corpus of cruciforms I can only explore a few issues following the approach outlined by Olivier. To address these images more substantially would be a project for future research. So, what can we say about how Chalcolithic cruciforms might have been used in social practices or might be a representation of such practices?

One clear starting point is that a few of these figurines, both picrolite and ceramic examples, are shown wearing a cruciform pendant around the neck. Indeed, many smaller cruciforms have been found which are clearly pendants, and many of these have perforations. Some of these cruciform pendants were found in association with other beads in grave contexts that show that they were indeed part of necklaces (Peltenburg *et al.* 2019; Winkelmann 2020).

Figure 9.2: Traditional women's dance in Limenaria on the island of Thassos. Photo taken in 1958 by Gerhard Haubold. (Reproduced under CC0 permission, retrieved from Wikimedia).

Winkelmann extended this functional interpretation beyond the cruciform pendants and argued that also the larger picrolite cruciform figurines were worn as necklaces (Winkelmann 2020, 307). In her view, the larger objects without perforations would have been strung below the head and worn on a necklace, or were attached to clothing. Such a use would be similar to current uses of amulets in the eastern Mediterranean, where amulets such as the hand of the Fatima (*hamsa*) and eye beads circulate widely to ward off the evil eye. They are part of necklaces and bracelets, and are attached to cloths or to rear windows in cars (Abu-Rabia 2005).

On the one hand, such an interpretation of cruciforms as amulets would explain the logo-like adherence to particular visual combinations, as observed by Lesure. On the other hand, this type of analogy runs the risk of uncritically and anachronistically imposing beliefs from recent times onto prehistory, which moreover cannot be evaluated in any substantive way. For example, while picrolite is a soft material that can be scratched easily, there is no good evidence that the larger picrolite cruciforms were strung and worn in the manner envisaged by Winkelmann (Goring 2019). However, this observation, *i.e.*, that there is no use wear to indicate that larger cruciform were indeed worn, does not in itself disqualify a possible talismanic function, as such objects could also have been strung up on house walls, for example above entrances.

Whatever the specific meaning of the picrolite cruciform (whether an amulet or something else), it is clear that these figurines are part of a broader visual assemblage that also includes figurines and statuettes made in ceramics and stone. The figurines in different media share the outstretched arms, long necks, tilted heads and highly schematic rendering of faces. There is thus a considerable overlap in the visual language used in various objects of different sizes. It is likely that the gesture of extending the arms horizontally sideways conveyed a broadly similar message, as perhaps did the tilted head. It has been suggested that these outstretched arms were extended for support during birth episodes, (Morris 1985, 122), but as has been discussed this interpretation if far from self-evident. Other readings are equally possible, for example arms outstretched in anticipation of an embrace, or to reach out to other beings situated to either side of the figurine.

So, what activity are the picrolite cruciform figurines engaged in? Why do we see outstretched arms and tilted heads? Why the bent knees? Here it should be noted that even in the smallest cruciform pendants an effort is always made to represent the bent knees, so they were clearly crucial in some way for Chalcolithic people.

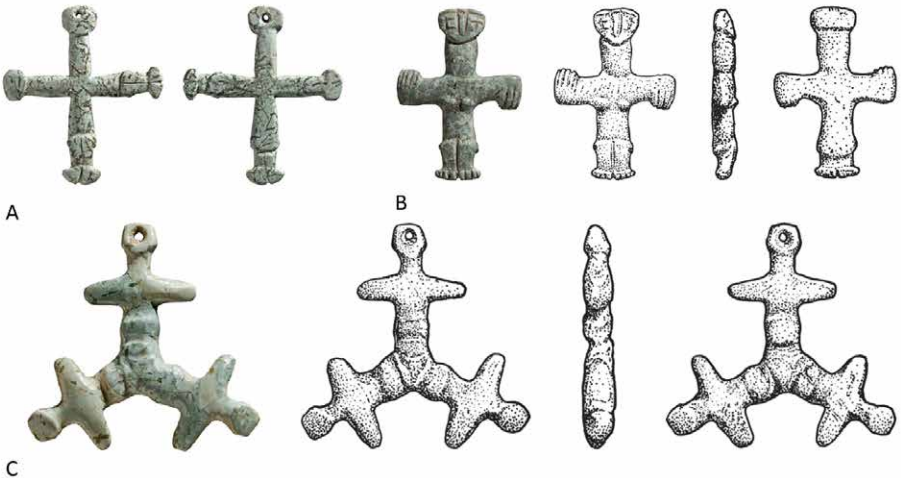

Figure 9.3: Picrolite cruciforms showing indications of rotational movement, not too scale. After Peltenburg *et al.* 2019 plate 47.8; 48.7, and 85.8. (Reproduced with permission of the Souskiou-*Laona* project).

To me, the combination of bent knees, outstretched arms and tilted heads suggests that we might be dealing with an activity that might involve movement. The most likely activity I can think of that would fit is dancing. The idea that dancing and feasting was of central importance to Neolithic and Chalcolithic societies of Western Asia and that dancing features prominently has been forcefully and successfully argued by Garfinkel (2003) in a book called *Dancing at the Dawn of Civilization* that has met with much approval. In his book, Garfinkel does not discuss the cruciforms from Chalcolithic Cyprus, but he does discuss a series of gestures / body positions that might indicate dancing activities. These postures include outstretched arms and bent knees (Garfinkel 2003, 29-30), and this body posture is indeed one replicated today in many traditional dances in the Eastern Mediterranean (Figure 9.2).

The idea that the cruciforms depict a dancing pose would explain why the bent knees were so central in their iconography, and the outstretched arms and tilted heads would also make sense in such an activity. Dancing might have been culturally meaningful as a representation of feasting activities and in the creation of social ties. The cruciforms could then represent a typical dance pose.

If we follow this idea, it would be possible to interpret necklaces of cruciform pendants as a representation of a group dancing in a circle. The juxtaposition of multiple cruciform pendants in a necklace was quite common, for example in the cemeteries at Souskiou (Vagnetti 1980; Peltenburg *et al.* 2019; Winkelmann 2020, Fig. 27.1).

Further, there is a number of cruciforms in which one hand is held up and the other down (a Campo 1994, Pl. viii.2; Peltenburg *et al.* 2019, Pl. 48.7; Winkelmann 2020, Figs. 19.11, 20.5, 20.11, 22.13, 26.4), possible denoting a dance posture or how hands were held in a line of dancers (Figure 9.3).

These hands held upwards and downwards could also be understood as representing a rotating movement. If this idea of rotation holds true the cruciforms would indicate both clockwise and counterclockwise directions, as the direction of which hand points up or down varies. That (some) cruciforms might be engaged in a rotating movement, finds further support in two other sub-categories of cruciforms. One of these consists of a number of figurines in which three figurines are linked at their feet to form a triangle of otherwise similar figures (a Campo 1994, Pl. ix.5; Peltenburg *et al.* 2019, Pls. 42.4, 85.8, 86.1; Winkelmann 2020, Figs. 23.2, 23.3), which again suggests a rotating movement. The other category includes the most celebrated of the cruciforms, those known as the 'Salamiou' type, in which the arms represent a secondary figure, often executed in less elaborate form, at right angles to the main figure (a Campo 1994, Pl. viii.1; Peltenburg *et al.* 2019, Pls. 47.8, 85.10, 86.5, 102.5; Winkelmann 2020, Figs. 19.17, 20.4, 20.9, 20.14, 20.15, 21.4, 21.5). Like for upward and downward held hands, these figures suggest rotation in both clockwise and counterclockwise direction.

These indications for rotational movement suggest to me that the cruciforms represent dancers. While such an idea cannot be proven, at least there are no direct contradictions in the visual imagery of the picrolite cruciforms (figurines and pendants) that would make such a hypothesis problematic. Further, we can be confident that dancing was important to these prehistoric societies, as it is in most societies across the globe. Thus, if these are in fact representations of dancers, they would reference something that resonated with activities that would have been very familiar to Chalcolithic people.

Conclusion

Chalcolithic figurines were obviously of great significance to Chalcolithic societies in Cyprus, as they occur across the island and hundreds of these objects have been found. At the same time, the fact that none have found beyond the island suggests that their appreciation was strongly related to a local cultural repertoire in which these objects

held a specific meaning. Over time various interpretations have been put forward for these objects, including that they represent fertility goddesses and women giving birth. These interpretations are generally variations of much more widely circulating ideas on the meaning of (female) figurines in the ancient Eastern Mediterranean, and often do not take into account the particularities of culturally specific iconographies.

When exposed to greater scrutiny such generic models can be shown to be problematic for the Chalcolithic cruciform corpus. Thus, the fact that these cruciforms sometimes wear a cruciform pendant is a good indication that they are probably not goddesses, as they are unlikely to wear a representation of themselves. Likewise, the fact that their legs are invariably pressed together and the common lack of (pregnant) female characteristics, suggest that we are not dealing with women giving birth.

The way forward, then, is to take the characteristics of these cruciforms seriously, and to try to develop interpretations that resonate with our knowledge of these societies and what people were doing in these societies. I have suggested, based on the bent knees and legs pressed together and the fact that some figurines display indications of rotational movement, that the picrolite cruciforms are schematic representations of dancing. This fits with the iconographic evidence, and there is little doubt that dancing was important in Chalcolithic Cyprus, like elsewhere in the Eastern Mediterranean and West Asia.

Someone who was also clearly an important advocate of the idea that dancing, feasting, and intoxication were crucial in Neolithic and Chalcolithic societies in West Asia was Olivier Nieuwenhuyse, who has made this point concertedly in his works on ceramics and on figurative art (Nieuwenhuyse 2007; Bartl and Nieuwenhuyse 2008; Nieuwenhuyse 2017; 2019). I like to think he would approve of the ideas put forward here.

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Chapter 10

Pottery Development in the 7th millennium BCE in the Northern, Central, and Southern Levant

Karin Bartl

Abstract

The invention of ceramics at the end of the 8th and the beginning of the 7th millennium BCE and the mass production of vessels later in the 7th millennium BCE constitutes the last major technological innovation of the Neolithic, which influenced a wide range of practices. Early centres of ceramic development in Southwest Asia are, besides Asia Minor, the Northern Levant and the Syrian Jazirah. Olivier Nieuwenhuyse's research has focused on the latter two areas, and has yielded significant new insights into both regional and local developments. However, it remains unclear to what degree the data of the Northern Levant can be linked with the data on ceramic use in the Southern Levant, which started considerably later. Based on the current state of research, the very different developments in both regions and the possible reasons for these differences will be discussed.

Introduction

The Levant is the one of the most important regions for Neolithic research in Western Asia and for understanding the long-term transition from mobile hunter-gatherer cultures to sedentary societies whose subsistence basis was based on crop agriculture and pastoralism.

This transformation process already began in the Late Epipalaeolithic (12,000 - 10,000/9800 BCE) with the emergence of settlements used for extended periods and the beginning of the manipulation of wild food resources. In the earliest phase of the Neolithic, the PPNA (9800-8600 BCE), this process continued, but it is not completed until the MPPNB (8200-7500 BCE) with the full domestication of all major crops and livestock species.

The last important innovation of the Neolithic was the introduction of ceramic technologies around 7000 BCE in the Northern Levant and around 6400 BCE in the Southern Levant. This moment also marks the distinction between the Early (Aceramic) Neolithic and the Late (Ceramic) Neolithic (7000/6400-5200/5000 BCE).

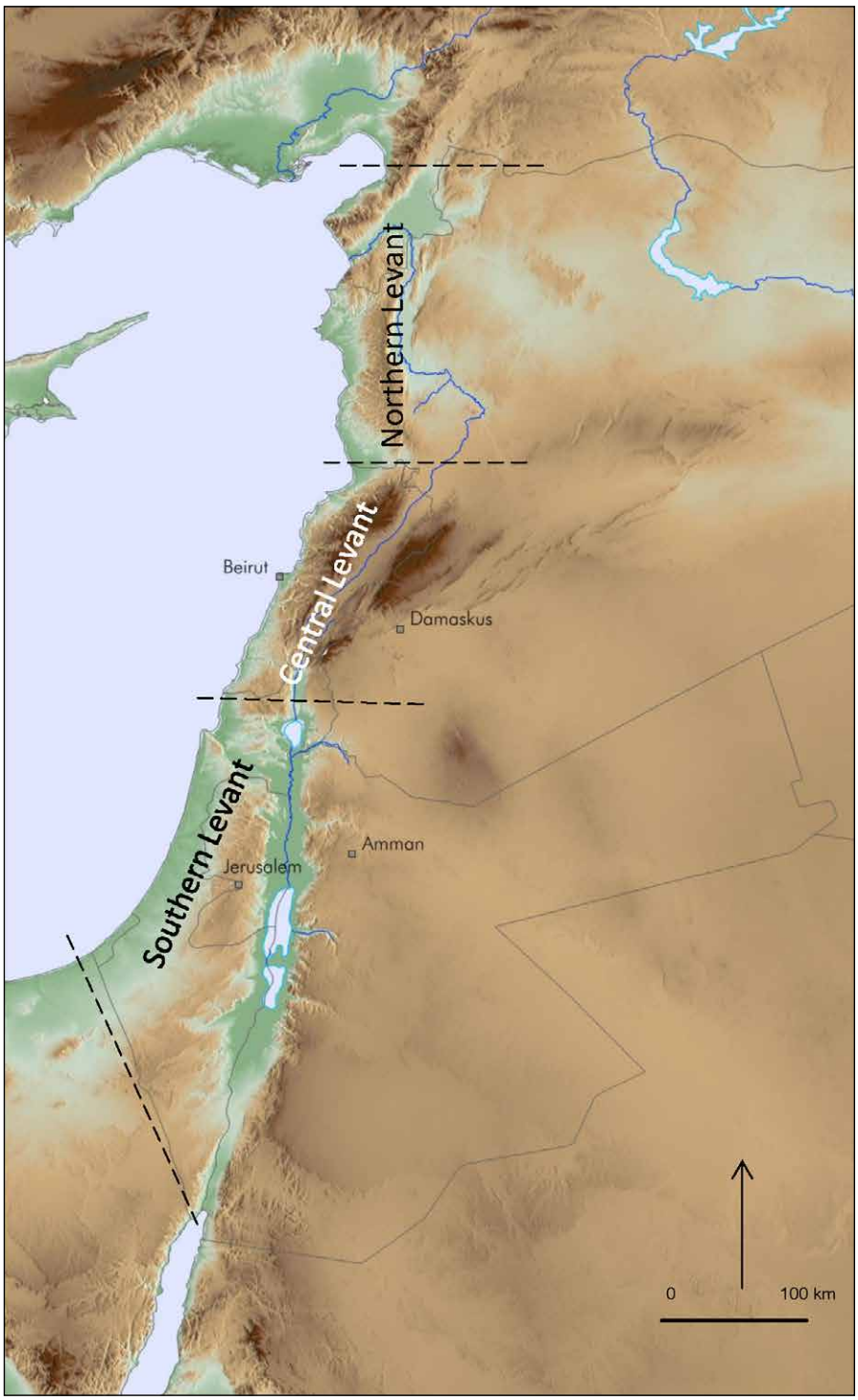

Figure 10.1: The Levant with the sub-regions distinguished in this study (Map: DAI, Orient Department, Th. Urban, K. Bart).

The remarkably low number of known sites from the second half of the 8th millennium BCE in the Central and Northern Levant compared to the Southern Levant and the apparently different developments in the North and South in the first half of the 7th millennium BCE have been discussed repeatedly (Cauvin 1994; Haïdar-Boustani 2001-2; Goring-Morris *et al.* 2009; Goring-Morris and Belfer-Cohen 2011; Haïdar-Boustani 2013; Garrard 2017). Recent research data now allow for a more differentiated assessment of developments in this period, even if some key questions cannot be answered fully.

Phase/Southern Levant	Date BCE	Phase/Northern Levant	Date BCE
Pre-Pottery Neolithic A / PPNA	9800 – 8600	Pre-Pottery Neolithic A / PPNA	9800 – 8600
Early Pre-Pottery Neolithic B / EPPNB	8600 – 8200	Early Pre-Pottery Neolithic B / EPPNB	8600 – 8200
Middle Pre-Pottery Neolithic B / MPPNB	8200 – 7500	Middle Pre-Pottery Neolithic B / MPPNB	8200 – 7500
Late Pre-Pottery Neolithic B / LPPNB	7500 – 7000/6900	Late Pre-Pottery Neolithic B / LPPNB	7500 – 7000/6900
Pre-Pottery Neolithic C / PPNC or Final PPNB	7000/6900 – 6400	Early Pottery Neolithic	7000/6900 – 6000/5800
Late Neolithic 1 (Yarmoukian)	6400-5800		
Late Neolithic 2 (Jericho IX / Lodian)	5800-5500	Late Pottery Neolithic/Halaf	5800-5200

Table 10.1: Chronology of the Neolithic in the Levant.*

*Absolute data for PPNA-PPNC according to Benz 2015. For somewhat different dating approaches see, for example, Hours *et al.* 1994; Kujit and Goring-Morrris 2002; Twiss 2007; Rollefson 2008; Goring-Morris *et al.* 2009; Goring-Morris and Belfer-Cohen 2011; Rollefson 2019. Data for the Late/Pottery Neolithic according to Hours *et al.* 1994; Akkermans and Schwartz 2003; Goring-Morris and Belfer-Cohen 2020.

The Region

The Eastern Mediterranean coast and its hinterland which are included under the term Levant stretches north-south across the present states of Syria, Lebanon, Israel, the Palestinian Territories and Jordan.

The region is characterised by a similar zoning of landscapes throughout: a relatively narrow coastal strip in the west is bordered to the east by a hilly and mountainous region, the highest elevation of which are the Lebanon Mountains, and is in turn delimited to the east by the Rift Valley, with its Orontes, Litani and Jordan Rivers, as well as the Dead Sea and the Wadi Araba. This valley landscape is followed to the east in a north-south direction by the North Syrian Plain, the Anti-Lebanon and the Jordanian Highlands, which then merge into the desert steppe zone to the east. The definition of the eastern border of the Levant is ambiguous and often includes areas very far to the east, such as the Middle Euphrates and large parts of the desert steppe (for example Borrell 2017, fig. 1).

In this paper, the western edge of the steppe zone is understood as the border of the Levant. The following division of the region is used, the Southern Levant (Israel, Palestinian Territories, West Jordan); Central Levant (Lebanon, Damascus Region); and the Northern Levant (Western Syria) (Figure 10.1).

According to the geomorphological structure, the region features different climatic zones, although a Mediterranean climate regime with hot summers and cold, humid winters is predominant in large parts (Wirth 1971; Palmer 2013).

Chronology

The Neolithic of the Near East is divided into two periods: the Early or Pre-Pottery Neolithic (9800-7000/6900 BCE) and the Late or Pottery Neolithic, which begins at different times in the Northern and Southern Levant (7000 *vs.* 6400 BCE) (Table 10.1).

Settlement Development

The Early Neolithic (10,000-7000 BCE)

The Early Neolithic of the Levant, especially the period between the PPNA and the MPPNB, is mainly known from the research in the Southern Levant, where a large number of sites is known both west and east of the Jordan River (Rollefson 2008; Goring-Morris and Belfer-Cohen 2020). The data attest to an increasing complexity between the PPNA and the LPPNB in subsistence, architecture, crafts and inter-regional exchange, and strong continuities in this sequence spanning almost three thousand years. The final phase of the Early Neolithic, the LPPNB (Figure 10.2), in the Southern Levant is associated with the so-called mega site phenomenon, *i.e.*, the assumption of a significant increase in settlement areas and population numbers resulting in the overexploitation of resources in the settlement environments.[1]

The situation is completely different in areas further north. In the Central Levant, only a few sites are known for this period through excavations or soundings, and a few more through the results of prospections (Haïdar-Boustani 2001-2002; 2013; Garrard 2017; Sader 2020). Sites of the PPNA to MPPNB are rare, *e.g.* in Nachcharini Cave (PPNA) as well as the more recent sites of Moghr el-Ahwal (MPPNB) in the northern Lebanese mountain region (Garrard and Yazbeck 2008; Garrard 2017) and Tabarja Wata Slam 100 (MPPNB) off the coast (Yazbeck 2020). Only the LPPNB is slightly better known, mainly at sites in the Beqa'a plain such as Saaidé (Hours 1969), Tell Labweh South (Haïdar-Boustani and Ibáñez 2011) and Baalbek (Rokitta-Krumnow 2008; van Ess 2008). East of the mountains, in the Damascene, Tell Ramad (LPPNB, EPN) (de Contenson 2000), Ghoraife (MPPNB, LPPNB) and Tell Aswad (EPPNB, MPPNB,

1 For a critical evaluation of this assumption, see Verhoeven 2006; Bartl and Kafafi in press.

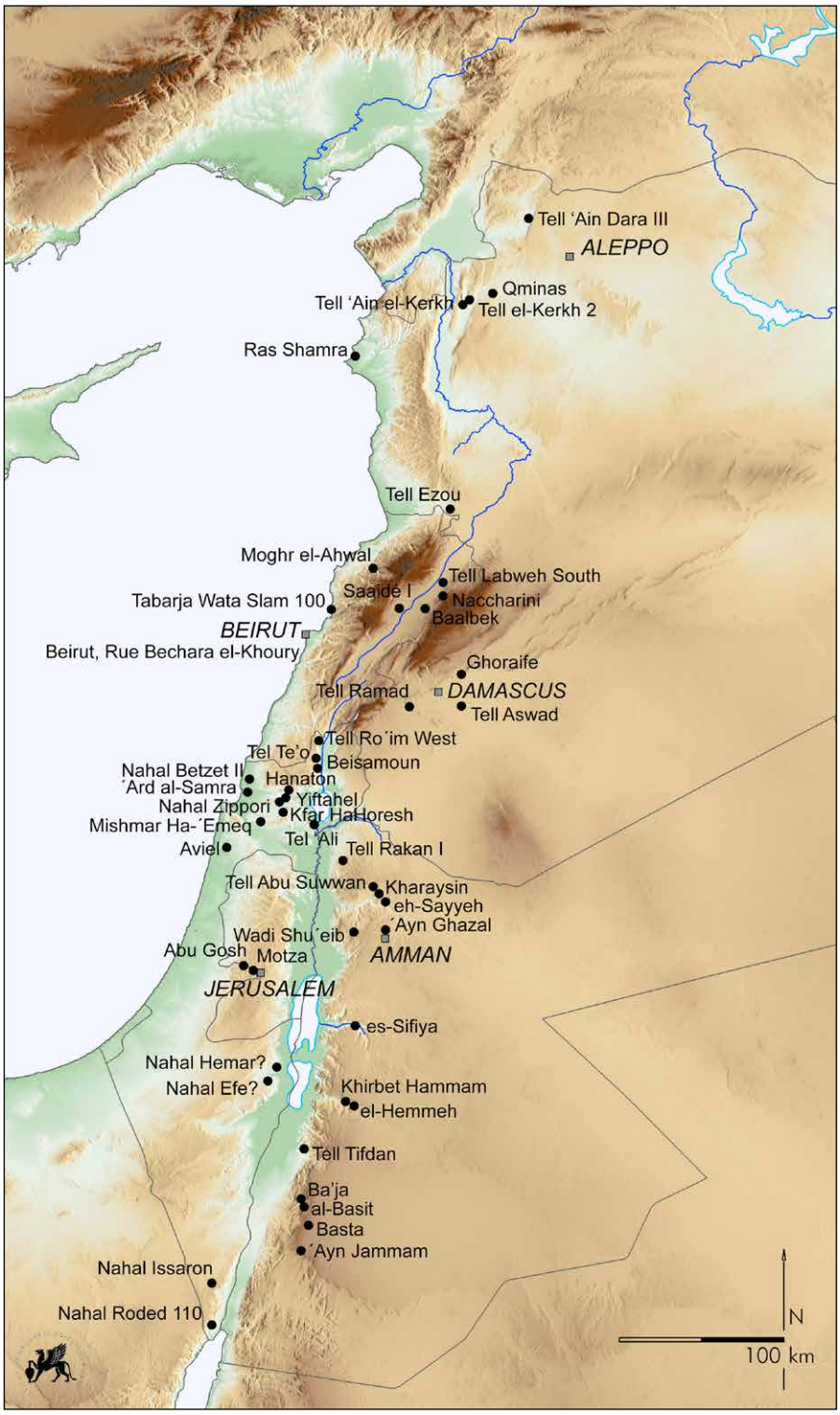

Figure 10.2: Settlements of the second half of the 8th millennium BCE (Late Pre-Pottery Neolithic B / LPPNB) in the Levant (Map: DAI, Orient Department, Th. Urban, K. Bartl).

LPPNB) (de Contenson 1995; Stordeur *et al.* 2010) should be mentioned. On the north-eastern edge of the Southern Levant lies Tell Qarassa in the Lejja volcanic region, the oldest layer of which dates to the EPPNB (Ibáñez *et al.* 2010). Thus, the distribution of the few sites known so far in the Central Levant indicates the use of all areas from the coastal zone to the high mountain region and the eastern bordering edge of the desert steppes.

Like for the Central Levant, the data for the Northern Levant, which comprises the area between the 'Gap of

Homs' and the Amuq plain, are limited. Sites from the PPNA are completely missing here, the EPPNB is represented by a single settlement, Tell 'Ain el-Kerkh in the Rouj Basin (Tsuneki *et al.* 2006), MPPNB settlements are not known so far (Arimura 2020, Fig. 1.14). It is only with the LPPNB that a somewhat larger number of settlements appears, concentrated in the north of the region: Ras Shamra on the coast (de Contenson 1992) and the inland sites of Tell 'Ain el-Kerkh and Tell el-Kerkh 2 (Arimura 2020), Qminas near Idlib (Masuda and Sha'ath 1983) and 'Ain Dara III near Afrin (Arimura and Suleiman 2015). The only northern site with traces of the LPPNB/PPNB final is Tell Ezou in the 'Gap of Homs' (Haïdar-Boustani *et al.* 2007, 7).

The Early/Initial Late Neolithic (7000 – 6000/5800 BCE)

In the Southern Levant, the 7th millennium BCE is divided into two periods, the cultural distinction of which is the appearance of pottery around 6400 BCE. The period between 7000/6900 and 6400 is referred to as Final PPNB or PPNC, the following period from 6400 to 6000/5800 constitutes the first phase of the Late, or Ceramic Neolithic, also known as the Yarmoukian. Numerous sites are now known for both periods (Figures 10.3 and 10.4).

These sites provide evidence of settlement continuity for the first half of the 7th millennium BCE at various LPPNB sites. Thus the often assumed decline in settlements in the Final PPNB/PPNC (Rollefson 2008) does not correspond to the actual data. However, at the end of the LPPNB a number of settlements are abandoned, especially south of the Dead Sea. However, recent ^{14}C data show that some LPPNB sites continued into the 7th millennium BCE, for example at Basta (Gebel 2009) and Ba'ja (Gebel and Hermansen 2004; Benz *et al.* 2019). These sites are apparently only abandoned in the course of the first half of the 7th millennium BCE. Furthermore, west of the Jordan River, there are various sites that may only be settled from the Final PPNB / PPNC onwards, such as Ashkelon (Garfinkel and Dag 2008) and 'Atlit Yam, a submerged settlement west of the coast (Galili *et al.* 1993).

In the Central Levant, the Late Neolithic is the first period in which settlement can be attested on a larger scale. Byblos with its three phases 'néolithique ancien', 'néolithique moyen' and 'néolithique récent' shows the most extensive archaeological evidence for the Late Neolithic period (Haïdar-Boustani 2001-2002; 2013). This long sequence has not yet been attested at any other site in the region. However, the exact chronological classification of Byblos is difficult, since the stratigraphic correlations are not clear and only two ^{14}C dates are available, only one of which points to the 7th millennium BCE (Hours *et al.* 1994, 389). The chronology is therefore largely based on typological observations of the architectural features and the assemblages (Hours *et al.* 1994, 89), and we will return to this point later. The oldest layer of Byblos is significant for understanding the beginning of ceramic development.

In the important settlement zone of the Beqa'a Plain, Tell Labweh South is the most relevant site (Kirkbride 1969; Haïdar-Boustani *et al.* 2011). Some other sites of the Late Neolithic have recently been documented in surveys and excavations. These include Tell Hmaira in the Akkar plain (Müller-Neuhof 1998; Bartl and Chaaya 2002) and Tell Koubba I on the northern coast (Badreshany 2016). Overall, however, the number of known 7th millennium BCE settlement sites remains small (see below).

In the Northern Levant, a significantly larger number of sites is known for the Late Neolithic. In addition to Ras Shamra, 7th millennium BCE layers are found on the coast at Tabbat el-Hammam (Braidwood 1940; Hole 1959), Tell Sukas (Riis and Thrane 1974) and Ras Shamra (de Contenson 1992), and inland at Tell Nebi Mend (Parr 2015), Tell el-Marj (Haïdar-Boustani *et al.* 2007; Ibáñez *et al.* 2008; 2009), Hama (Thuesen 1988), Shir (Bartl 2018), Qal'at Mudiq (Collon *et al.* 1975) and Qminas (Maeda and Sha'ath 1983), as well as in Tell el-Kerkh, Tell ´Ain el-Kerkh and Tell Aray in the Rouj Basin (Odaka 2017; Arimura 2020).

In the Rouj Basin, the most comprehensive Neolithic sequence of the Northern Levant has been established. In a compilation of data from several neighbouring mounds, a regional chronology was developed which, in addition to the EPPNB of the 9th millennium BCE, covers the entire period between 7500 and 6000/5800 BCE (Tsuneki 2016; Arimura 2020, Fig. 1.21) and complements the long-known Neolithic sequence of the Amuq plain to the west (phases Amuq A-D) (Braidwood and Braidwood 1960).

Ceramic Developments

The Northern Levant

In contrast to the Neolithic settlement development in the Levant, which can best be recognised in its entire temporal depth in the south, the initial ceramic development has so far only been documented in the north.

The earliest pottery of the Northern Levant is formed by different variants of mineral-tempered ware, whose dark surfaces are well burnished or polished and are called 'Dark-Faced Burnished Ware' (DFBW) (Balossi-Restelli 2006). This pottery has been known since the 1930s from excavations at Tell Judeideh in the Amuq Plain (Braidwood and Braidwood 1960). The vessels are relatively thin-walled, the range of shapes includes small to medium-sized types of mostly round-based bowls and pots (Figure 10.5).

An important aspect for understanding the development of pottery consists of absolute dates. In an

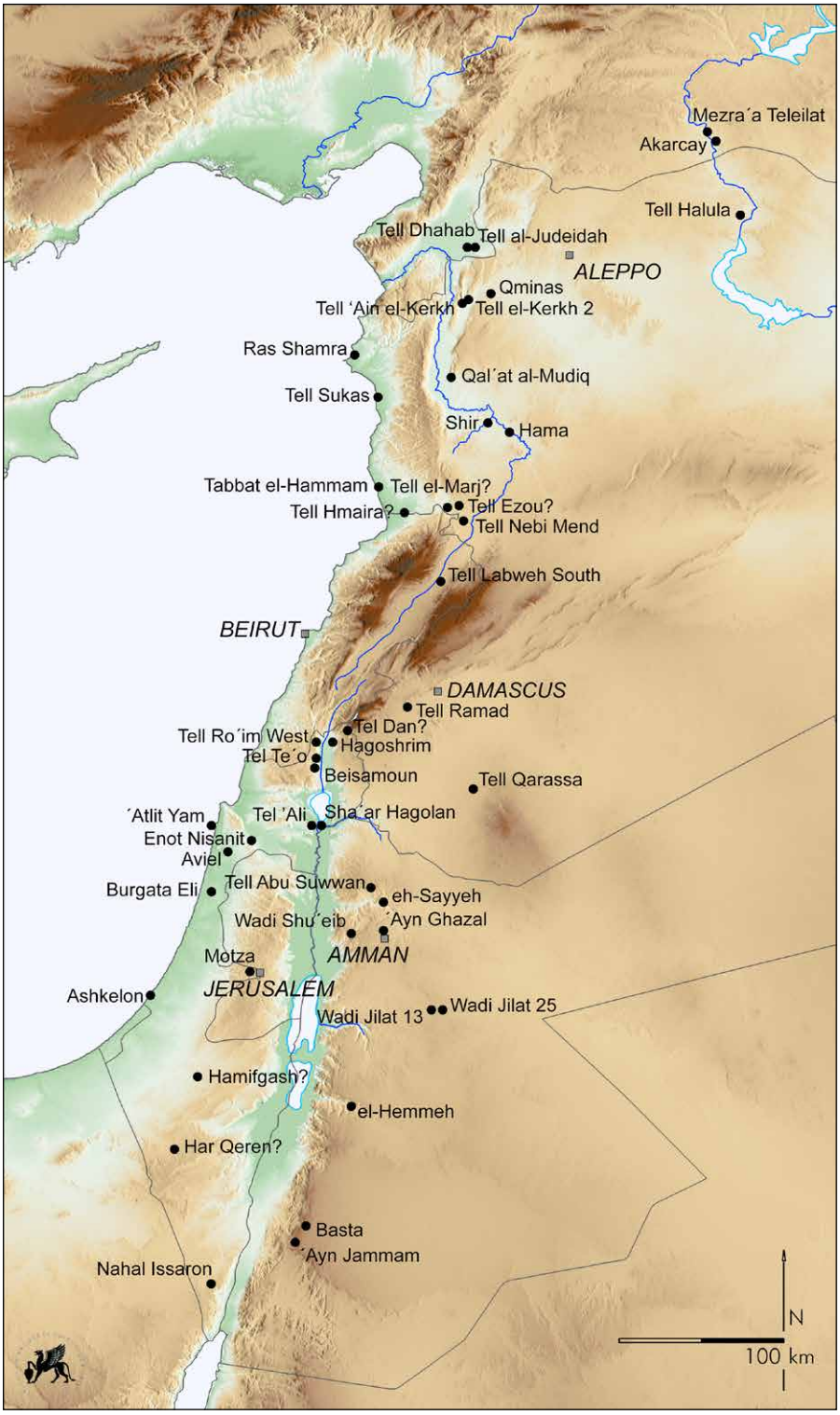

Figure 10.3: Settlements of the first half of the 7th millennium BCE (Southern Levant: Final Pre-Pottery Neolithic B / FPPNB / Pre-Pottery Neolithic C / PPNC; Central and Northern Levant: Early Pottery Neolithic / EPN / early phase) (Map: DAI, Orient Department, Th. Urban, K. Bartl).

analysis of ^{14}C data from a total of 12 sites from south-eastern Anatolia, Upper Mesopotamia and the Northern Levant, Stuart Campbell (2017, Tab. 12.13) was recently able to demonstrate that for the Northern Levant the period around 7000 BCE, but more plausibly 6900 BCE, can be considered the earliest start of pottery assemblages. This corresponds well with the earliest occurrence east of the Euphrates, for example at Tell Sabi Abyad

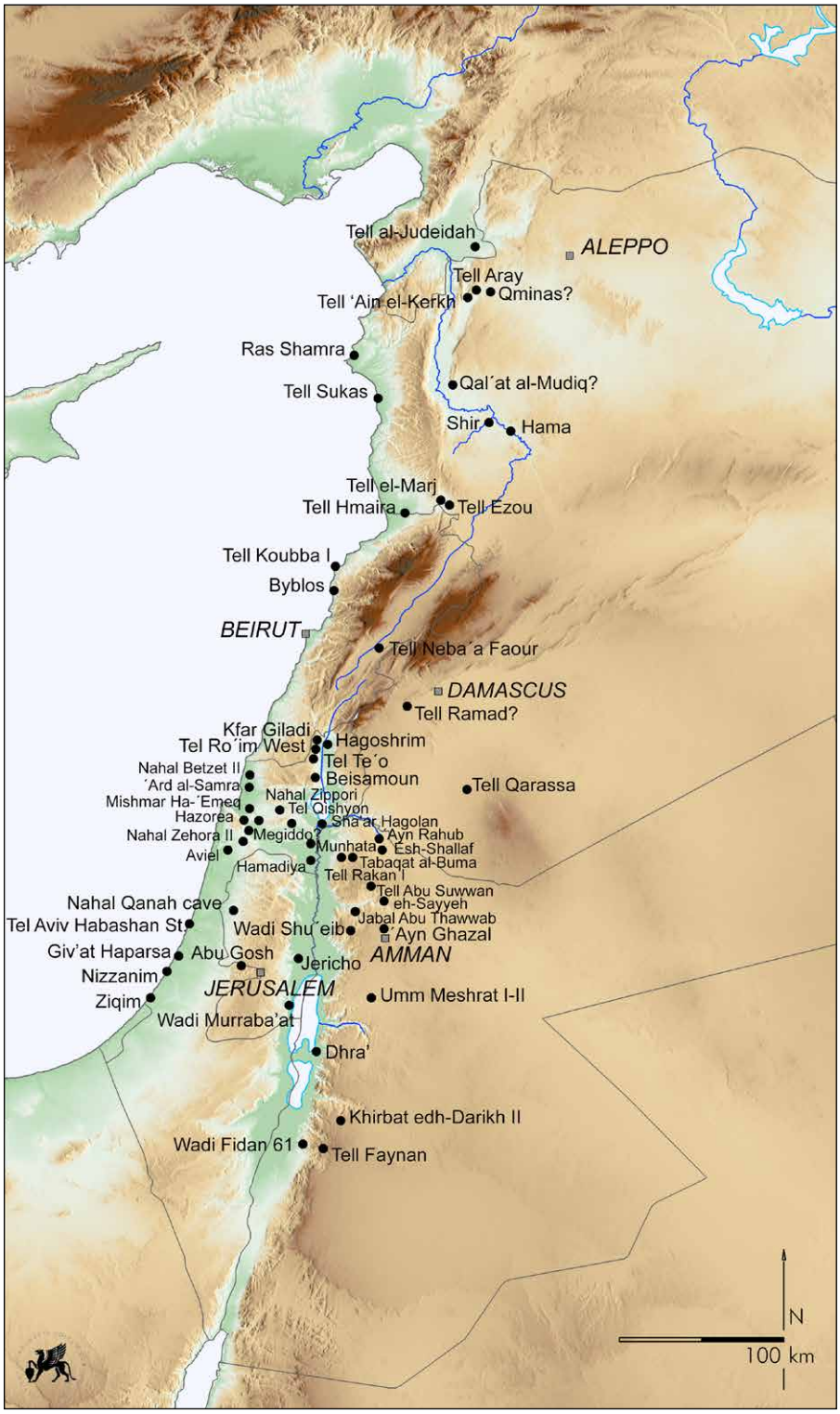

Figure 10.4: Settlements of the second half of the 7th millennium BCE (Southern Levant: Yarmoukian, Jericho IX/Lodian; Central and Northern Levant: Early Pottery Neolithic / EPN / late phase) (Map: DAI, Orient Department, Th. Urban, K. Bartl).

(Nieuwenhuyse 2018a, Fig. 2.3) and in the settlements on the upper reaches of the Euphrates, such as Akarcay and Mezra´a Teleilaat. Whether finds from Tell Halula are actually somewhat older, *i.e.*, dating before 7000 BCE, must remain open for the time being (Campbell 2017, Tab. 12.13, 137).

The oldest pottery evidence from the Northern Levant derives from Tell el-Kerkh 2 (= Rouj 2a, 2b) and

Figure 10.5: Small pot of Dark Faced Burnished Ware / DFBW from Shir (Photo: DAI, Orient Department, I. Wagner, drawing: O. Nieuwenhuyse).

Figure 10.6: Two small pots of Coarse Unburnished Ware / CUW from Shir (Photo: DAI, Orient Department, I. Wagner).

Figure 10.7: Shards of Coarse Unburnished Ware / CUW with lime plaster coating and painting from Shir (Photo: DAI, Orient Department, I. Wagner).

Figure 10.8: Sherd of Coarse Unburnished Ware / CUW with zoomorphic application (Photo: DAI, Orient Department, K. Bartl).

Figure 10.9: Large storage vessel of Coarse Unburnished Ware / CUW with application (Photo: DAI, Orient Department, Th. Urban).

Tell Aray in the Rouj Basin (= Rouj 2b) (Odaka 2017, Tab. 7.1, 62; Arimura 2020, Fig. 1.30), and Shir, located near Hama (Nieuwenhuyse 2018b, Figs. 84-5). Both projects have produced long sequences through which ceramic developments in the 7th millennium BCE can be reconstructed.

At Tell el-Kerkh, the oldest ceramic type is the so-called 'Kerkh Ware' (Tsuneki and Miyake 1996), which differs from the stratigraphically younger DFBW in some characteristics (Odaka 2017, 62). However, the limited and possibly unreliable ^{14}C dates from the relevant layers do not allow for an exact chronological placement of the earliest pottery finds in the Rouj Basin (Rouj Phases 2a-2b) (Odaka 2017, Tab. 7.1; Campbell 2017, 134).

By contrast, at Shir ten ^{14}C dates from the lowest layers 0 and I appear to confirm a date around 7000/6900 BCE (Clare *et al.* 2018). The oldest pottery at Tell Nebi Mend, located south of Homs, has dates similarly to those of Shir (Parr 2015, Tab. 2.2).

DFBW constitutes the initial pottery assemblage in the Northern Levant and is also common in the neighbouring regions of Cilicia, the Upper Euphrates, and Upper Mesopotamia to the north and north-east. This type of pottery can be traced in Shir until the end of the 7th millennium BCE, but starts to decrease in ubiquity from the 2nd quarter of the 7th millennium BCE onwards (Nieuwenhuyse 2018b, Fig. 81). A special variant of DFBW is the so-called cord-impressed ware, which shows cord or textile impressions. It occurs in Shir from about 6600 BCE and is characterised by a regionally limited distribution (Nieuwenhuyse *et al.* 2012; Berghuijs 2018).

As archaeometric studies show, the chemical composition of DFBW at Shir indicate non-local production in several, so far unlocalised, regions (Daszkiewicz and Schneider 2018, 441). It was therefore assumed that DFBW containers circulated in networks of exchange that connected the site with other neighbouring settlements in the immediate and wider vicinity (Nieuwenhuyse 2018b, 284).

Another pottery group, which constitutes the bulk of the ceramic assemblage in the Northern Levant soon after the first appearance of pottery, is the so-called Coarse Ware (CW) (Odaka 2017, Fig. 7.3, Tabs. 7.2-7.3), or Coarse Unburnished Ware (CUW) (Nieuwenhuyse 2018b, Fig. 81). This pottery is thick-walled, usually undecorated, and was initially made of clay with coarse mineral inclusions, while later plant temper also occurs (Figure 10.6). As the finds at Shir demonstrate, white, partly red-painted lime coatings (Figure 10.7), and applications of anthropomorphic and zoomorphic figures (Figure 10.8) occasionally occur. A remarkable innovation consists of large vessels that appear from about the middle of the 7th millennium BCE onwards (Nieuwenhuyse, in prep.) (Figure 10.9).

Dark Faced Burnished Ware and Coarse Unburnished Ware constitute the two most important wares of early ceramic development in the other sites of the Northern Levant as well.

In summary, it can be stated that in the Northern Levant ceramics developed from a rather rare object

Byblos / Phase	Hours *et al.* 1994	Marfoe 1998, fig.20	Byblos /Phase	Badreshany 2016, Fig.2
Néolithique ancien partie inférieure	ASPRO Period 5 6900-6400 BCE			Early Pottery Neolithic 1 7000/6800-6500 BCE
Néolithique ancien partie supérieure	ASPRO Period 6 6400-5800 BCE	Early Neolithic 6900-6000 BCE	*Néolithique ancien*	Early Pottery Neolithic 2 6500-6000/5800 BCE
Néolithique moyen	ASPRO Period 7 5800-5400 BCE	Middle Neolithic 6000-5500 BCE	*Néolithique moyen*	Late Pottery Neolithic 6000/5800-5300 BCE
Néolithique récent	ASPRO Period 8 5400-5000 BCE	Late Neolithic 5500-5000 BCE		

Table 10.2: Chronology of Byblos (*néolithique ancien* to *néolithique recent*).

category with probably special functions at the beginning of the 7th millennium BCE to a mass-produced class of objects for everyday use from about the second quarter of the 7th millennium BCE. However, it is still unclear whether the 'developed' stage of DFBW actually represents the earliest pottery or whether there is an as yet unknown earlier stage of pottery production in the region, a 'ceramic experimental stage' (Le Mière 2017, 24).

The Central Levant

Dark-Faced Burnished Ware is also predominant in the early ceramic development in the Central Levant. The earliest occurrence has so far been documented in Tell Labweh South in the northern Beqa´a Plain. However, during the soundings by D. Kirkbride in 1966, only a few sherds of DFBW, including a round-based bowl with a combed pattern, were found (Kirkbride 1969, Fig. 1 below). The only ^{14}C date published at that time point to the period around 7900 BP (Hours *et al.* 1994, 404) / 5950 BCE (Kirkbride 1969, 50). In 2011, new investigations took place in Labweh, in which four settlement phases were documented, of which the oldest (IV) dates to the LPPNB and the two youngest (II-I) to the early Pottery Neolithic. DFBW was found, including examples with mat impressions (Haïdar-Boustani *et al.* 2011, 14; Fig. 26). According to the new ^{14}C data, the foundation of the settlement (layer IV) dates to around 8100 ± 40 BP / ca. 7100 BCE, the youngest layer (Ia) to 7640 ± 40 BP/ ca. 6600-6500 BCE. The occupation period thus covers the end of the LPPNB around 7100/7000 BCE until the middle of the 7th millennium BCE (Haïdar-Boustani *et al.* 2011, 25).

Pottery therefore appears here in the first half of the 7th millennium BCE, conceivably in the first quarter of the 7th millennium BCE. Badreshany (2016, 10) assumes the period 7000/6800 BCE on the basis of typological comparisons with Syrian sites such as Shir and Tell Nebi Mend.

In addition to Labweh, a number of other Neolithic sites were discovered during the various surface surveys in the 1960s and 1970s (Copeland and Wescombe 1965, 1966; Marfoe 1995), for example, Neba 'a Faour, which was classified as younger than Labweh (Copeland 1969). An important criterion for dating was the presence of coarse ware (Copeland and Wescombe 1966, 7). During the survey by L. Marfoe, besides Labweh south (Labweh III al-Yamin/345 MS), the neighbouring Labweh I ash-Shimal/MS 346 and Tell Qabb Elyas/MS 159 were classified as sites of early Pottery Neolithic 1 (= Labweh stage). For the following early Pottery Neolithic 2 (= Neba'a Faour stage) considerably more sites were identified (Marfoe 1995, maps 8-9).

In a reassessment of the pottery from survey sites on the Beqa'a Plain by Badreshany, it was recently determined that DFBW is the predominant pottery there throughout the EPN (7000-6000/5800 BCE), and was supplemented to some extent by Coarse Ware over time. As petrographic studies have shown, the earliest DFBW is of non-local origin, like at Shir. The clay composition points to the basalt zone, most likely the Homs region, with the same origin assumed for Labweh and Tell Nebi Mend (Badreshany 2016, 15). These early DFBW imports are therefore interpreted as exotic goods used to consolidate social aspirations (Badreshany 2016, 53). Only in early Pottery Neolithic 2, thus the second half of the 7th millennium BCE, can several manufacturing regions for DFBW be assumed (Badreshany 2016, 20).

In the coastal area of the Central Levant, Byblos has the most substantial Late Neolithic assemblage. In Byblos *néolithique ancien*, the pottery of the lowest strata consists of various types of smoothed and polished wares, which, however, are not designated as DFBW. The range of forms includes various bowl shapes, but also round-based pots and pots with necks ('ballons'), which often have decoration in the form of incisions and impressions, such as the so-called *décor imprimé cardial* and *décor griffé*, created by impressing shells (Dunand 1973, 42-61, pl. XLV-LXV).

As previously mentioned, the exact chronological placement of the Byblos layers is difficult. Only for the '*partie supérieure de néolithique ancient*' are two ^{14}C dates available: 7360 ± 70 BP / 6180 BCE and 6550 ± 250 BP / 5440 BCE (Hours *et al.* 1994, 389). Primarily on the basis of typological comparisons, various chronological models have been established in recent decades (Table 10.2). An assignment of the *néolithique*

ancien to the second half of the 7th millennium BCE can now be considered probable.

At Tell Koubba I, located north of Batroun, another relevant settlement has been investigated. This site was already documented in earlier surveys (Copeland and Wescombe 1965, 101) and also has strata of the early Pottery Neolithic (Badreshany *et al.* 2017). Based on typological comparisons, this complex is also dated to the second half of the 7th millennium BCE, according to local terminology to the early Pottery Neolithic 2 / 6500-6000/5800 BCE (= ASPRO period 6) (Badreshany 2016, 7, 17).

In addition to the Lebanese sites, Tell Ramad in the Damascene is also important for the understanding of the development of pottery in the Central Levant. In addition to layers of the Late PPNB and the final PPNB (= layer II), this settlement also has a large assemblage of early pottery, which, however, comes from pits assigned to layer III. The ceramics consist exclusively of DFBW, partly with imprint or incised patterns. A radiocarbon date from this area points to the period (7880 ± 55 BP /6630 BCE), thus the first half of the 7th millennium BCE (de Contenson 2000, 220).

In the Central Levant, therefore, DFBW pottery appears as early as the first half of the 7th millennium BCE, possibly around 6800/6700 BCE or perhaps even earlier. These early examples are imports from regions further north.

The Southern Levant

The initial phase of the Pottery Neolithic in the Southern Levant is assigned to the Yarmoukian (6400-5800 BCE) (Garfinkel *et al.* 2012, 105), named after the site of Sha'ar Hagolan located on the Yarmouk River south of Lake Tiberias. The most extensive ceramic assemblage to date also comes from this site (Garfinkel 2019). The ^{14}C dates at Sha'ar Hagolan range between 6400 and 5800 BCE (Garfinkel *et al.* 2012, Tab. 1, Fig. 6). Other important sites of this period include Munhata (Perrot 1964; 1965), `Ayn Ghazal (Kafafi 1990) and Jebel Abu Thawwab (Obeidat 1995; Kafafi 2001).

The pottery of the Yarmoukian is plant-tempered and thick-walled. Characteristic decorations are red slip and incised herringbone bands applied horizontally or vertically on the vessels. Among the handmade vessel forms, round-based, short-necked pots with side handles and simple bowls are typical.

The distribution of Yarmoukian pottery is concentrated in the northern part of the Southern Levant (Vieugue *et al.* 2016, Fig. 1). In the northeast, Yarmoukian-affiliated pottery has been recorded at Tell Qarassa in the south Syrian volcanic landscape of Lejja (Godon *et al.* 2015), some Yarmoukian-period finds, including pottery, are also attested as imports in Byblos (Garfinkel 2004).

The chronology of the Yarmoukian in relation to the 'Pottery Neolithic A' (PNA) known from Jericho and Lod (= Jericho IX, Lodian), and which is also characterised by ceramics with relatively coarse plant temper and largely undecorated vessel surfaces (Kenyon and Holland 1982), remains controversial. On the one hand, Yarmoukian and Jericho IX/Lodian are understood as different but contemporary assemblages (Garfinkel 1993). On the other hand, a chronological succession of Yarmoukian and Jericho IX / Lodian has been postulated (Gopher and Gophna 1993, Fig. 17; Goring-Morris and Belfer-Cohen 2020, Tab. 1). Clear stratigraphic correlations between these two assemblages are lacking, and the co-occurrence of both ceramic groups has so far been limited to a few sites, such as Wadi Shu'eib (Simmons *et al.* 2001, 6).

Another facies of the early Pottery Neolithic is defined as the 'coastal Neolithic' with the dune sites of Givaat Haparsa (Olami *et al.* 1977), Nizzanim (Yeivin and Olami 1979) and Ziqim, which are also thought to be largely contemporary with the Yarmoukian (Garfinkel *et al.* 2002). In part, however, these three sites are considered to be younger than the Yarmoukian and Jericho IX because of the chipped stone finds (Gopher and Gophna 1993, 319).

Various pottery wares, which can be assigned to the period around 6500 BCE by radiocarbon dates, were also recently documented in Wadi Fidan 16, located south of the Dead Sea. So far, they cannot be clearly assigned to one of the above-mentioned groups (Burton *et al.* 2021).

Another early pottery assemblage, probably contemporary with the Yarmoukian, has been recently documented in the sites of the Huleh Basin (Tell Ro'im and Beisamoun) (Nativ *et al.* 2014; Rosenberg 2010). Tel Ro'im West was also the first site in the region where a finely tempered ware with a dark, smoothed or polished surface was found (Nativ *et al.* 2014, Figs. 8. 6, 8-9; 10. 2), which has been taken to emulate northern assemblages.

Discussion

The assemblages discussed demonstrate that the Northern Levant, along with Upper Mesopotamia and Southeast Anatolia, which are not the subject of discussion here, is one of the origins for ceramic development in Western Asia. Possibly already at the end of the 8th millennium BCE, but certainly at the beginning of the 7th millennium BCE, the fully developed pottery of the DFBW type is found here, a mineral tempered ware with a dark burnished or polished surface. As archaeometric data from Shir show, at the beginning of pottery use, this ware is apparently made at specific – as yet not localised – sites, and traded from there to other regions. This non-local production, as well as the relatively rarity of early pottery, indicates its special significance at the beginning of the 7th millennium BCE. It remains unclear, however, whether the DFBW is actually the oldest pottery, given the sophisticated way in which it was made (Le Mière 2017).

As the absolute data from various sites in south-eastern Anatolia, the upper Euphrates region and upper Mesopotamia show (Campbell 2017), the period around 7000/6900 BCE can be regarded as the beginning of pottery production in all these regions, so that the question of the spread of production knowledge from a specific centre of origin appears irrelevant.

However, it is striking that in the Northern Levant, after the Early Neolithic/PPN (9800-7000 BCE), which is only sporadically attested there, the emergence of new settlements and the appearance of pottery practically coincide in time. Influences from other regions in the north and/or even the 'introduction' of DFBW ceramic technology, e.g., from the Euphrates region – possibly in connection with the resettlement of the Northern Levant at the end of the 8th / beginning of the 7th millennium BCE cannot be completely ruled out.

Almost at the same time, or shortly after the appearance of the DFBW, another type of ceramic appears in all sites in the Northern Levant, the so-called Coarse Unburnished Ware, a relatively coarse, thick-walled, predominantly plant-tempered ware. This ware complements and almost completely replaces the DFBW already in the first half of the 7th millennium BCE. Ceramics now changed from a special object to a mass product with mainly functional value. According to our current knowledge, this development occurs in the entire region up to about the 'Gap of Homs' with Tell Nebi Mend as the southernmost site.

The development in the Central Levant is less clear, since only few sites of the Pottery Neolithic with ^{14}C dates are known so far. The oldest excavated pottery finds, which also represent the DFBW type, are found in Tell Labweh South in the northern Beqa'a plain. They date to the first half of the 7th millennium and are either contemporary with the oldest North Levantine finds or somewhat younger, perhaps dating to around 6800/6700 BCE. The DFBW finds from pits in Tell Ramad III in the Damascene also date to the first half of the 7th millennium BCE, *i.e.*, around 6600/6500 BCE.

The finds in Byblos, the most important Neolithic settlement in the coastal region, have been the topic of some controversy. On the basis of typological comparisons and the above-mentioned ^{14}C date, a dating of the *néolithique ancien* to the second half of the 7th millennium BCE is suggested (Badreshany 2016, 10).

In the Byblos *néolithique ancien*, some Yarmoukian finds, such as certain vessel forms with herringbone patterns, denticulated sickle blades and typical pebble figurines have been found, however, indicating interregional contacts in the second half of the 7th millennium BCE. In a re-evaluation of the Byblos material, Garfinkel suggested that the oldest phase, the *néolithique ancien*, represents a mixed assemblage of PPNB-period architecture and Pottery Neolithic A (Yarmoukian) finds. According to this hypothesis, especially the floors made of lime mortar, which are typical of the oldest layer of Byblos, together with the occurrence of white ware vessels and naviform core technology in the chipped stone industry, are regarded as evidence for a PPNB occupation, since these specific features no longer occur in the Southern Levant after the Late PPNB (Garfinkel 2004, 176, Tab. 14.1). The ceramic finds, which according to this idea cannot be connected with the architectural complexes, is explained as deriving from pits that were not detected, and would then be evidence of a Yarmoukian period settlement (Garfinkel 2004, 182).

However, sites in the Northern Levant, such as at Ras Shamra (de Contenson 1992), Tell Sukas (Riis and Thrane 1974) and Shir (Pfeiffer 2018) show that lime mortar floors, white ware, and naviform core technologies all occur until well into the second half of the 7th millennium BCE. The assemblage in Byblos thus corresponds to the general developments in the Northern Levant in the 7th millennium BCE, and the Yarmoukian finds are therefore probably imports into the local settlement context and do not represent evidence for a separate and undetected occupation. Instead, they confirm the above-mentioned dating of the oldest settlement phase in Byblos to the second half of the 7th millennium BCE.

In the Southern Levant, the period around 6500/6400 BCE is considered to feature the emergence of pottery, thus significantly later than in the Central Levant. The characteristic pottery of the first phase, the

Site	Northern Levant	Central Levant	Southern Levant	^{14}C-Date
Tell el-Kerkh /Tell ´Ain el-Kerkh	7000/6900 BCE			√ (unreliable)
Shir	7000/6900 BCE			√
Tell Nebi Mend	7000/6900 BCE			√
Tell Labweh South		6800/6700 BCE?		√
Tell Ramad		6600/6500 BCE		√
Sha´ar Hagolan			6400 BCE	√
Wadi Fidan 61			6500 BCE	√

Table 10.3: The earliest appearance of pottery in the Levant.

Yarmoukian, is a coarse, plant-tempered ware with some specific types of decoration such as herringbone patterns and red slip, DFBW is missing here so far. However, a different type of ceramics has recently been discovered at Tel Ro'im in the Huleh Basin, which is probably contemporaneous with the Yarmoukian, including a dark polished ware, similar to the DFBW of the north. Thus, at least for the northern zone of the Southern Levant, there seems to have been a certain affinity with the North or Central Levant, albeit only in the second half of the 7th millennium BCE.

Despite systematic and substantial research that has taken place especially in the northern part of the Southern Levant, no pottery there can be dated before ca. 6500 BCE, although pyrotechnical experiments with white ware, *huwwar* (a mixture of crushed chalk, soil, and water) (Rollefson and Köhler-Rollefson 1992) and occasionally clay have already been documented for the preceding PPNB. For the latter, some pottery finds from EPPNB-LPPNB contexts are documented at Kfar HaHoresh (Biton *et al.* 2014), which, however, represent an isolated occurrence.

The present state of knowledge thus suggests a spread of pottery from the Northern to the Southern Levant over a period of about 400-500 years (Table 10.3), which seems quite a long time span given the relatively short distances between the Northern, Central and Southern Levant.

The question therefore arises as to how these divergent ceramic developments in geographically not too distant regions can be explained? Does the current state of knowledge represent the actual situation or are there previously undiscovered 'missing links', for example in the area of the Central Levant?

In view of the current state of research, in which a relatively large number of sites have now been documented for the first half of the 7th millennium BCE in the northern part of the Southern Levant (Bartl and Kafafi, in press, Fig. 1C.1a), it seems rather unlikely that fundamental data on early pottery development has been completely overlooked. Instead, the present data suggest that there was no need for ceramic vessels in the Southern Levant until the middle of the 7th millennium BCE and that the existing possibilities for consumption and storage of foodstuffs (vessels made of mineral materials such as stone and white ware, containers made of plant materials such as baskets and nets, and containers made of animal tissues such as skins) were sufficient.

As has been discussed, the oldest DFBW ceramics in the Northern Levant fall into the category of 'special objects'. They were rare and therefore probably correspondingly valuable or prestigious (also Özbal, this volume). They were apparently initially manufactured in a few, probably specialised production sites and exchanged from there. Even if production sites and exchange networks are not yet known, it can be assumed that production and consumption sites were not too far apart from each other. Transporting pottery over long distances was probably not a realistic option given the fragility of the material. It is therefore not surprising that there are no imports of North Levantine DFBW into the Southern Levant and that developments in the north apparently remained unknown. The North Levantine pottery zone probably extended to the northern Beqa'a and possibly included the Lebanese coastal zone as far as the Akkar Plain and Tripoli. Areas further south do not seem to have played a role in early ceramic exchange networks (also Nieuwenhuyse and Campbell 2017). The reasons for this are unclear.

Even if the absence of early ceramics in the southern Levant can hypothetically be explained by a lack of North-South contacts, the question remains why pottery suddenly also appears in the Southern Levant from about 6500/6400 BCE onwards and whether the rather distinct resemblance to the 'coarse ware' of the Northern Levant is a coincidence. In any case, the earliest pottery occurrence in the Southern Levant roughly coincides with the final establishment of pottery as a mass product in the Northern Levant. The clarification of the 'why' and 'how' of the initial occurrence of pottery in the Southern Levant therefore still remains a desideratum, despite increasing research data.

Acknowledgments

With this contribution I would like to express my great respect for Olivier Nieuwenhuyse, who has been a long-time friend and an outstanding colleague, and who has contributed significantly to the success of our excavation project Shir in Syria.

Olivier has made fundamental and groundbreaking contributions to Neolithic research in the Near East. Both his well-founded, detailed material analyses and his resulting syntheses on early ceramic development and its socio-economic implications are of extraordinary importance for the understanding of the Late Neolithic in Western Asia and form the indispensable basis for all further research in this field.

It is tragic that Olivier could not win the battle against an insidious disease. For his family, friends and colleagues, as well as for the scientific community, his death is a great loss. However, I am sure that his scientific legacy will endure and that he will be remembered for this as well as for his personality.

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Chapter 11

Early Pottery and 'Displaced' Cooking Pots

Rana Özbal

Abstract

Novel material objects like the first pots need to be embedded in local cultural repertoires. This paper explores the range of different arenas in which early pottery finds its place. In recent years, the idea that these pots were prestige objects used in feasting and symbolism has become popular on the basis of data from a series of sites in the North Mesopotamian steppe and piedmont zone. Here it is argued that this prestige model is to be understood as an effect of displacement. Cooking must have played a central role in the adoption of ceramics at sites of early pottery production as demonstrated by sites like Sumaki Höyük (Batman, Turkey) and the somewhat later Barcın Höyük (Bursa, Turkey). The ideas explored in this paper are informed by an ethnoarchaeological example of utilitarian goods that likewise became commodities of prestige and affluence.

Introduction

It was in the village of Oylum Höyük in Kilis, Turkey, in the summer of 2000, where I got to know and befriend Olivier Nieuwenhuyse. In the same summer I had the chance to identify the use of prestige goods in a contemporary context. Here I make a rough analogy between these modern-day goods and the special role of Early Mineral Wares, that permeated much of northern Mesopotamia in the early seventh millennium, played in the prestige economies of Neolithic Southwest Asia.

As the excavations were ongoing at Oylum Höyük that summer, I undertook an ethnoarchaeological project. Through this work I met some of the local residents and was invited into their traditional mudbrick houses. Walking into these houses, I was immediately struck by the array of goods that the residents tried to cram into their rather small homes. The mudbrick structures were clearly not designed to house all the couches, tables, chairs, mattresses and appliances that often stood unused, typically occupying the corners. Mostly still wrapped in their original store-plastic, the items were of little practical use to local residents, who preferred floor mats for sitting and dining instead of couches, tables and chairs, and traditional floor-beds instead of rigid spring mattresses. These unwieldy mattresses, in fact, stood permanently in vertical position along the back wall of the house, often bedecked with the careful needlework displaying the handiwork of the lady of the house and were never part of the sleeping ensemble. Instead, space efficient traditional

Figure 11.1: An example of an unused washing machine purchased not for functionality but to fulfill the expectations of the bride-price (Photo by the author).

beds were typically used on the floor (or on rooftops in the summer) and could be rolled up and put away during the day. Most striking among the 'global' goods were the washing machines that stood wrapped up in their original Styrofoam packaging, devoid of any functional purpose in houses with no plumbing or running water! At the time, although all houses had been furnished with electricity, running water was only available in a few homes, yet this did not prevent young couples with idle washing machines from hoping to someday receive this amenity (Figure 11.1).

Given that 'global' household goods and appliances were available in local shops in the nearby city of Kilis, village residents of Oylum were compelled to include them in their bride-price. Far from functional, these goods were items of prestige that young men went into considerable financial debt to purchase. The items signaled prosperity and hinted at a carefree life in city apartments that most brides aspired to have instead of the life that awaited them in their new village homes. These goods acted as prestige items in the plainest of ways.

This paper explores this idea, in which prestige is key to understand the presence of objects that are not part of the typical repertoire of goods, whether these are Early Mineral Ware pots or modern washing machines. In both cases, these new objects are incorporated within local cultural repertoires and their inclusion involves a translation of 'foreign' objects into a new cultural context. This process of appropriation transforms objects as they are used in new contexts, become part of social practices and acquire new meanings.

The Appropriation of Objects

The use and meaning of objects are fluid, by definition, because each and every object can be imbued with countless differing readings. This premise is central in research of archaeologists and anthropologists (Hodder 1982; Kopytoff 1986; Greenblatt 2009; Hahn 2004, Hahn *et al.* 2022. Hahn and Weiss (2013, 1), for example, argue that:

> *Cultural artefacts never stand still, are never inert. Their existence is always embedded in a multitude of contexts, with tensions surrounding their roles, usages and meanings. Objects are meaningful only in relation to conflicts, negotiations and appropriations. Things shift in a wide range of modes, and very often it is through these particular alterations that they assume a specific meaning.*

Research on objects and assemblages therefore is always focused on how we can understand the people and their potential incentives as they categorise new objects within their societies. Whether washing machines, mattresses, or Early Mineral Wares, objects of every type become entwined with new stories and are valued in alternative ways in new settings. People are driven not by the objects but, as highlighted by Hahn and Weiss (2013, 7), by the particular historic, economic, political and social circumstances that make these objects available and potentially create new niches for their appraisal. Based on intra-community variables and dynamics, novel items are either embraced or shunned. This mechanism makes it extremely difficult to identify the underlying reason for the adoption of novel objects. Any meaning that objects become entangled within one particular society were almost certainly different from how the same objects were viewed and used elsewhere.

Returning to the origins of pottery, in this volatile context of function and meaning, reconstructing the specific incentives that drove the invention and spread of early pottery vessels would be difficult to ascertain. While cooking seems to have been a main incentive at some sites, as will be discussed in this chapter, a main motivation to obtain pots at sites such as Sabi Abyad may have been for the prestige and importance they carried, whether to pay a hefty bride-price as in the washing machine example, or simply out of need for use in special ceremonies. In either case, objects, especially newly introduced ones, have infinitely shifting uses and meanings in given local contexts.

Early Pottery and the Birth of New Assemblages

Archaeologists discussing the invention of ceramics typically present the surprising juxtaposition between the absence of pottery in the Near Eastern Mesolithic and Aceramic Neolithic periods on the one hand, and the presence of the technological capabilities for making objects of clay on the other (Brown 1989; Moore 1995, 45-6; Özdoğan 2009). Fired clay technologies for the production of figurines (Verpoorte 2000) and other clay objects (Schmandt-Besserat 1992) as well as pyrotechnical knowledge for lime plastered floors (Kingery *et al.* 1988) and for shaping native copper (Patterson 1971) precede ceramics by centuries, if not millennia. The question of why ceramics had not yet entered the scene (at least in West Asia before the seventh millennium BCE) ensues only when the developments are viewed in a purely techno-functional way.

Instead we can ask how these technological inventions become adopted and how in turn daily life changed with the eventual development of pottery. Cooking, for example, is a transformative practice that would have had a deep effect on everyday routines (Arnold 1985, 128-44; Brown 1989). Perhaps more importantly, this 'mundane' task would also have acted as a way to create and maintain social bonds between people that partook in food preparation. In order to understand how pottery, and especially Early Mineral Wares, were reinterpreted in new settings, the next section explores the functions that early pots may have served. A supra-regional perspective is used to evaluate the impact that ceramics had on Neolithic societies in West Asia and the Eastern Mediterranean in the seventh millennium BCE.

Early Pottery in Southwest Asia

Even though the Neolithic of the Near East is chronologically divided into Pre-Pottery and Pottery periods, ceramic technologies are not unknown from Pre-Pottery levels of sites like Demirköy (Rosenberg 2011, Fig 4), Boncuklu (Fletcher *et al.* 2017; Spataro *et al.* 2017), Kfar HaHoresh (Biton *et al.* 2014) and Çayönü (Özdoğan and Özdoğan 1993; Özdoğan 2009, fig. 1-1). The evidence suggests that even the earliest pots at ninth millennium Demirköy were intentionally produced. A small, pierced hole close to the rim for suspending the vessel, suggests

imitation of stone vessels, which typically also have such small, pierced holes (Rosenberg 2011, 82). Early pottery has also been found at Boncuklu (Fletcher *et al.* 2017; Spataro *et al.* 2017), although Doherty (2020) has questioned whether these vessels were fired intentionally. Excavations at Çayönü have also yielded various vessels made from a mudbrick-type paste including at least two thick dish or platter-like vessels and one flower-pot shaped deep bowl (Özdoğan 2009, 25-6). Before pottery became extensively used, sites ranging across a broad geography like Çatalhöyük, Ras Shamra and Ain el-Kerkh initially yielded a *technically primitive*, highly friable, plant tempered ware which seems not to have continued (de Contenson 1979; 1992; Last *et al.* 1995; Nishiaki and Le Mière 2005, 63; Tsuneki and Miyake 1996).

While these vessels indicate that clay was used to fashion receptacles of various shapes and sizes already in the Pre-Pottery Neolithic, they effectively suggest that the technology did not catch on. These experimental examples were halted at what essentially can be called 'dead-ends'. These fired-clay containers apparently did not have use or meaning in PPN societies.

A major impetus for the adoption of pottery, I argue, is through a realization of the potential that it could have in everyday life and, in turn, the two independent case-studies I discuss in this paper, both focus on cooking. I suggest that although there are undeniably many other uses that made pottery indispensable in local repertoires, for at least some regions cooking would have made a notable difference in the day-to-day of people's lives. By contrast, in many sites elsewhere, as emphasised by Olivier Nieuwenhuyse (Nieuwenhuyse *et al.* 2010), early pottery was typically used as an item of display and prestige.

Whether display, cooking, or serving or commensality, I agree with Bernbeck (2017) that the major implementation step requires the ceramics to have a 'seat in life'. While cooking may have been the incentive at some sites where pottery came into use, these vessels appear to have been simultaneously adopted and put to use in an array of different ways at other sites including ritual display, serving, commensality, consumption or stylistic expression. I embrace Le Mière's 'displaced cooking hypothesis,' an appellation suggested by Nieuwenhuyse and Campbell (2017, 182) for Le Mière's perspective, which I feel encapsulates some of these ideas of use and appropriation in an apt way. This hypothesis states that vessels may have originated and proliferated at a few sites where they were used primarily for cooking. However, when the vessels ended up elsewhere, the tradition of using these new containers for cooking or any other utilitarian task often did not catch on. Given their rarity and exotic character, these pots might have become imbued with other connotations including prestige (also Bartl, this volume).

In this paper, I will focus on the importance of cooking in early pottery and suggest how items that are of utilitarian value in one location could in turn become items of prestige in another. This concept aligns with the ideas put forward above by Hahn and Weiss (2013): people have always used different valuation systems and accordingly tended to categorise objects within their societies.

The Adoption of Pottery

While cooking as the cause for the uptake of pottery met with great enthusiasm in culture historical approaches and in the New Archaeology (Arnold 1985; Brown 1989), more recent interpretations have increasingly avoided putting cooking at center stage. Cooking and culinary explanations for the invention of pottery, according to Prudence Rice (1999, 10), remains rooted in Gordon Childe's early works. In *Man Makes Himself,* Childe viewed pottery as central to sedentary village life and part of the package of inventions that came with the Neolithic revolution (1936, 89). An adaptationist stance of the culinary model was outlined by Brown (1989), who suggested that the switch to the ceramic container when other storage and serving containers existed, must have been primarily for culinary reasons because ceramics allowed for the boiling, storing and the processing of foods in ways that other containers could not.

Such explanations fell out of favour soon thereafter when models like prestige economies (Hayden 1990) and ritual importance (Clarke and Blake 1994) became prominent. Further, many sites yielded so little data that anything as mundane as cooking could not be substantiated. This relegated cooking and daily tasks to a secondary position. In an essay based on a full cross-cultural review on ceramics, for example, Prudence Rice (1999, 45) claims that early pottery containers seem to have been most important in serving (display) rather than in cooking or long-term storage.

Olivier Nieuwenhuyse has been a major proponent of this idea of display, for example in his publication titled *Not so Coarse, Nor Always Plain – The Earliest Pottery of Syria* (Nieuwenhuyse *et al.* 2010). This idea was also put forward for the earliest pots in Greece, where Vitelli (1989) titled her paper: *Were Pots First Made for Foods? Doubts from Franchthi:* a skeptical review of any perspective where cooking could indeed be viewed as a viable motive for the emergence of early pots. Indeed, one could argue that the fine wares at Sabi Abyad (Nieuwenhuyse *et al.* 2010) and the shapes at Franchti, which are far from cooking-friendly (Vitelli 1989) do suggest other purposes for early pottery.

At the same time, however, much of the early pottery elsewhere does look like it was produced for cooking. In the concluding chapter of *The Emergence of Pottery in West Asia* based on the conference in Tsukuba, Nieuwenhuyse

and Campbell clearly state that no one denies that cooking had a critical role in the emergence of Early Mineral Wares and argue along various lines of evidence *that the earliest pottery containers presently known in the region could indeed have been used for cooking* (2017, 181). Indeed, the well-made mineral tempered wares at sites like Akarçay (Arimura *et al.* 2000, 239; 2001; Cruells and Molist 2021), Mezraa Telleilat (Özdoğan 2009) and Seker al-Aheimar (Nishiaki and Le Mière 2005) among others, all dating to the beginning of the seventh millennium BCE, have the perfect attributes for a good cooking pot.

Further, the rarity of pots in this period, coupled with concepts like display, prestige, serving, commensality, feasting, ritual character, network and circulation, has relegated cooking to mundane and utilitarian concepts, less central in how these objects are understood. Instead of throwing the baby away with the bathwater, it is worth recognizing the role that cooking may have played at some sites situated to the north of the Mesopotamian steppe and to embrace Le Mière's above mentioned concept on the 'the displaced cooking hypothesis' (Nieuwenhuyse and Campbell 2017, 182).

In a similar vein, everyday utilitarian objects that we use in a functional sense and are typically part of global economies today, such as spring mattresses, washing machines, tables and chairs, became heavily laden with symbolism and prestige in Oylum society a couple of decades ago. This story of displaced objects may parallel that of pottery reinterpreted in new contexts such as at Sabi Abyad, where objects that may have been mundane in one setting became imbued with alternative meanings through a process of re-translation following a long route of circulation (Nieuwenhuyse *et al.* 2010). Even the most mundane of pottery may have been elevated to an article of prestige when exotic, rare and imported. Interestingly, soon after its appearance, the qualities that make vessels suitable for cooking, like the mineral tempering and lugs, slowly disappeared. At some sites, like Sabi Abyad (Nieuwenhuyse *et al.* 2010), Tell Seker al-Aheimar (Nishiaki and Le Mière 2005, 62) and Akarçay (Arimura *et al.* 2000; Cruells and Molist 2021) even slipped or painted examples appear, which detaches early pottery in this region from cooking entirely. Olivier Nieuwenhuyse and colleagues (Nieuwenhuyse *et al.* 2010, 83) state that:

> *the small numbers of pots in daily use at this stage argue against a large-scale 'culinary revolution'. Using these vessels for the preparation of food and drink probably involved small numbers of people, perhaps socially restricted segments of the population. This pottery may have been reserved for special occasions or for special, perhaps only seasonally available, types of food.*

Indeed, a few imported mineral tempered sherds are a far cry from a revolution. But if we consider, as suggested by Le Mière, that cooking pots were 'displaced' (Nieuwenhuyse and Campbell 2017), we may ask *where* such culinary revolutions may have taken place. Were there locales where Early Mineral Wares were not exotic imports but where they were regularly produced and used in more mundane contexts? Some lines of evidence suggest that cooking appears to be among the purposes that the earliest pottery was used for. This includes traces of fire and soot on ceramics at Salat Cami Yanı (see Miyake 2010, 419) and at Sabi Abyad (see Nieuwenhuyse 2017a, 26) as well as clear evidence for the 'technological performance characteristics' suitable for cooking as noted at Shir (see Nieuwenhuyse 2017b, 80). One wonders whether even items that reached places like Sabi Abyad via exchange networks could not have had a completely different life-history of having been actively used above a fire before entering their new role of prestige and display.

Early Cooking Pots: Two Case-Studies

From recent excavations significant new data has emerged that change our understanding of early pottery and how it was likely used. One key site that shows how Early Mineral Wares were put to use as cooking vessels, is the site of Sumaki Höyük, located in the high plateau of Batman in southeast Turkey (Erim-Özdoğan 2011). Unlike sites in the steppe and piedmont zone of northern Mesopotamia, where early pots were rare and imported, Sumaki yielded evidence for the *local* production of Early Mineral Wares: the mineralogical analyses demonstrated that the basalt outcrop within the immediate vicinity of the settlement was the main raw material source for the ceramic temper (Le Mière *et al.* 2018; Gündüzalp 2021a, 276; 2021b; 2022; Gündüzalp *et al.* in prep.). Excavations yielded over 500 Early Mineral Ware sherds in its earliest level and ten times this amount across the whole site (Gündüzalp 2021a, 270).

Local production determines in part the nature of the ceramics and how they were viewed. Rather than being rare and exotic items of prestige, anything produced locally falls within a different realm of appreciation where the mundane and the everyday are the norm. Indeed, Early Mineral Wares were discovered in ample quantities at Sumaki Höyük from the earliest levels onwards. Their prolific nature, the identifiable evidence for soot and burning on the vessels, the discovery of sherds directly associated with hearths and the confirmation of organic residues including porcine fats secured through isotopic analyses, make it clear that cooking was, with little doubt, an activity that these vessels were regularly used for though probably not exclusively (Gündüzalp 2021a, 2021b). Apart from cooking, a storage function has been

Figure 11.2: Examples of some fire-cracked stones which were likely used as indirect heating agents during the earliest phase at Barcın Höyük when ceramics were rare. (Photo printed with permission from the Barcın Höyük project).

postulated for the Sumaki's box-like vessels in particular, which also appear in the earliest levels (Gündüzalp 2018; 2022). In other words, in Upper Mesopotamia, at the turn of the seventh millennium BCE and the following centuries, while some people at some sites held ceramics in high regards and viewed them as prestige goods that were reserved for ceremonial purposes, at other sites, where people produced pottery locally, these vessels were embedded and fully integrating within daily lives and used for mundane activities.

This scenario, in which cooking was a key factor that drove ceramic production is also witnessed at the site of Barcın Höyük, in the Bursa province of Northwest Turkey (Gerritsen *et al.* 2013; Gerritsen and Özbal 2019; Özbal and Gerritsen 2019). Ceramicist Laurens Thissen, who analyzed the Barcın ceramics was able to show the direct evidence that cooking had on the proliferation of ceramics at Barcın Höyük (Thissen *et al.* 2010).

The site yielded no Aceramic Neolithic phase, but ceramics in the earliest levels of the site (dating to 6600 BCE) were extremely rare. The earliest sherds were thick walled and had a heavy schist temper. Even though this would make them fire resistant, they have often been found with large quantities of fire-cracked stones (Figure 11.2). Used in ways likely similar to the Çatalhöyük clay balls, fire cracked stones would have enabled people to cook food in vessels indirectly such that heat containing elements (whether clay balls or stones) were heated separately and thereafter placed directly within vessels containing the foods or soups to heat them up (Atalay 2003; Atalay and Hastorf 2006; Thissen *et al.* 2010).

A transformation in terms of ceramic technologies, and consequently on the tradition of cooking and food preparation traditions, took place at Barcın Höyük by around 6500 BCE in Phase VId1. In this phase, thin-walled mineral (calcite) tempered ceramics, much better suitable for prolonged use on an open fire, appear, and cooking stones simultaneously disappear. Thinner walls mean better heat conductivity, less fuel use, and hence, quicker and more efficient cooking (Thissen *et al.* 2010). Barcın Höyük vessels from the earliest levels onwards show evidence for cooking, heat exposure and what appears to be evidence for daily functional use. In addition to plant and animal-based recipes, residue analyses starting from the earliest phase, yielded evidence for dairy lipids as well (Özbal *et al.* 2013).

Both of these examples illustrate functional and practical uses of pottery and require us to approach the

proliferation of ceramics pragmatically. This standpoint thus contradicts the alluring theories of ritual and symbolism that make ceramic studies so appealing. Ultimately, the realization that ceramics and all material goods travel and are imbued with new meanings within local contexts should not be overlooked. The same vessels, that may have been intended and effectively used for cooking at one location, might have been translated, re-interpreted and promoted to a role of symbolic significance at other, more distant locations.

Discussion and Conclusion

Even today, despite the increasingly globalizing world, we remain keenly aware that washing machines and mattresses and many other 'global' commodities continue to be imbued with different connotations in different geographies. For the residents of Oylum Höyük nearly a quarter of a century ago, such items were representative of prestige and were purchased for the main purpose of recognition and establishing respect. These items, which, typically carry little meaning beyond functional and mundane everyday uses for us, were, in some contexts, meant to be noticed and acknowledged by others and to bring status to their owners.

If our goal is to go beyond the material objects whether these are appliances or examples of early pottery like Early Mineral Wares, we are forced to disentangle the dynamics of social organization and understand how these items were used or appropriated. Igor Kopytoff's (1986, 67) oft cited comment is appropriate in this context:

> *What is significant about the adoption of alien objects – as of alien ideas – is not the fact that they are adopted, but the way they are culturally redefined and put to use.*

How were these objects put to use, how rare were they, on which occasions were they used, and how were they perceived? Regardless of whether displaced or alien, Early Mineral Wares at places like Sabi Abyad, where they were rare and reserved for special contexts, were fulfilling a given purpose and were used in practices that had little relation connection to cooking.

As commonplace and practical as they are to us, washing machines in certain contexts, especially when idle and non-functional, as confirmed by their stryrofoam wrapping, may carry completely different connotations and, in fact, represent the material manifestation of economic viability in the form of hefty bride-prices. Although an admittedly awkward and perhaps debatable analogy, something as mundane as a cooking pot, likewise, typically intended for daily use, may in other contexts become imbued with a multitude of non-cooking related symbolic connotations. In their new locales, where they are rare and admired, they may have been revered as prestige items reserved for display, ritual and feasts. This paper hence hopes to show how material objects, ethnographic or archaeological, can in different circumstances, take on alternative meanings and be used in practices very different from those that they were first produced for.

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Chapter 12

Husking Trays in the Context of Neolithic Socialization

The Sensory Experience of 'Bread' Consumption

Francesca Balossi Restelli

Abstract

Olivier Nieuwenhuyse has shared with other scholars, including myself, the idea that pottery was part of the tool set that enabled communities to establish social networks and that the most symbolically charged pottery was that which was used in commensality events. Much of his most recent research has been devoted to demonstrate this idea through a systematic scientific analysis of Late Neolithic pottery from Northern Mesopotamia and the Levant. He also argued that in order to investigate the meaning and symbolism conveyed by pots, one must concentrate on sensory experiences made possible by the pots ('*Pots to be seen*', '*See or touch?*') (Nieuwenhuyse 2017a; 2019). In this paper I would like to contribute to this argument for investigating the *multi-sensory experience* of Late Neolithic communities (Nieuwenhuyse 2019) through the investigation of husking trays, which I propose were used to bake symbolically charged 'bread', the shared consumption of which contributed to the maintenance and regulation of social relations (Balossi Restelli 2021).

Introduction

The period that we call the Neolithic in Western Asia is one in which new cultural processes were being employed to build and maintain sedentary and co-resident communities of unprecedented scale, born from the integration, development and intensification of technological, economic and social dynamics that had developed over several millennia between the end of the Pleistocene and the beginning of the Holocene (Watkins 2008; Verhoeven 2011). Early Neolithic communities were strongly engaged in the construction and maintenance of extensive social networks, manifested in long-distance obsidian exchange, shared lithic technologies and shared symbolic and ritual imagery (Ibáñez *et al.* 2015). Cultural interaction or networking both within and between communities was intended to maintain the 'sense of community or commonality', and at the same time of 'difference from the others'.

This capacity to build and maintain communities larger than the circle of the immediate kin was necessary in Neolithic settlements where hundreds or even thousands of people lived together or interacted in regional networks. Standardised building plans

in the Levant and in the Anatolian Neolithic and the shared treatment of the dead are amongst material expressions of these 'networks of community', which were central in the construction of a common or shared origins, histories or ancestries (Düring 2001; Hodder and Pels 2010). There were a complex series of overlapping levels of social interaction that characterised Neolithic groups and included households, kinship, community, and regional and supra-regional groups (Kuijt 2000; Watkins 2008; Borrell and Molist 2014). The dimensions of these supra-regional networks, as suggested by the vastness of the span of obsidian exchange, is astonishing and, it will be argued, not specific to the early phases of the Neolithic but continuing into the later Neolithic.

Social Networks in the Ceramic Neolithic

It was initially thought that the Early Pottery Neolithic in Upper Mesopotamia was a period of small-scale interaction followed by a renewed boost in connectivity during the 6th millennium BCE in the Halaf period. However, Olivier Nieuwenhuyse has shown on various occasions that the Early Pottery Neolithic of Upper Mesopotamia was also a period of substantial interaction, undertaken by communities of which the boundaries were fuzzy and difficult to pinpoint (Nieuwenhuyse 2013). He proposed to view the Halaf as as a period of globalization, in which small communities which were speaking their own languages and were ethnically distinct, had regular interactions with other groups more than 400 kilometres distant, manifested for example in the bitumen found in the Balikh region (Nieuwenhuyse 2017b).

Jean-Daniel Forest has linked the exchange of ceramics with exogamous marriages (Forest 2013), which would constitute direct evidence of social relations between distinct communities. According to him, exogamous marriages were one of the most effective ways to regulate networks of supra-community interaction.

Olivier Nieuwenhuyse has underlined how decorated Halaf pots, such as those with feasting images and more generally vessels used for drinking and eating, were made to be seen during communal social events, and argued that these commensal occasions served to overcome social boundaries, renew cultural affinities, and facilitate social interaction at an inter- and intra-community level (Nieuwenhuyse 2007; 2017a).

In the earlier phases of Pottery Neolithic, the difficulties of identifying precise boundaries separating *culture-historical entities* (to put it like Olivier would have), are probably the result of overlapping dynamics of interaction (Nieuwenhuyse 2013) (Figure 12.1). The distribution of specific diagnostic elements of material culture are the best expression of this: the sharing of DFBW (Dark Faced Burnished Ware) commensal ware throughout large regions, as well as the exchange of obsidian, or the distribution of stylistically similar *pintaderas* in Anatolia and the Aegean are the result of multiple types of interaction and intersecting social networks.

Research on the Early Pottery Neolithic of Upper Mesopotamia has typically concentrated on the identification of cultural boundaries on the basis of distinct ceramic assemblages, and Olivier Nieuwenhuyse has had an important role in these discussions (Nieuwenhuyse 2013). Terms such as Pre-Proto-Hassuna, Proto-Hassuna, Standard Archaic Hassuna have been used to distinguish areas and phases of the 7th millennium BCE, and I still remember vividly a workshop in Leiden a decade ago in which such discussions were taking place (Nieuwenhuyse *et al.* 2013).

Without getting involved in this discussion here, I want to point out one difficulty of this approach, which concerns the fluidity of borders between these Neolithic assemblages. Neolithic societies did not have political control over their territories (Frangipane 2013), making it thus complicated for us to identify borders of such societies. Boundaries between groups were essentially social and cultural, meaning that they were perceived and constructed by people and depended on distinctions between 'us' and 'them'. Since people have multi-layered identities (including those linked to families, households, lineages and kin, villages *etc.*), borders too will inevitably be multifaceted, and apparently contrasting indications in assemblages are probably due to such mixed messages. For example, Olivier Nieuwenhuyse noted that coarse plant-tempered pottery with *appliqué* decoration and pottery with red painted decoration crossed over the borders normally considered to separate pre-Halaf from Proto-Hassuna assemblages in the 7th millennium BCE (Figure 12.1). In his words:

> *the notion that material culture reflects existing identities finds archaeological expression in the general lack of serious discussion of what caused the distribution that we observe in the field.* (Nieuwenhuyse 2013, 118).

Following Olivier's suggestion, concentrating on spheres of interaction and on their material expressions can inform us about identities of Neolithic people. By assigning shared meaning to objects, people construct and communicate identities. Amongst the multiple levels of identity construction, personal dress and adornments, as well as food practices are key as they are involved in direct and intense social interactions, as they imply physical contact, people who see and touch each other, and communicate nonverbally their affiliations.

Given that we have very little direct evidence of dress or food, it is mainly through pottery and material adornments that we can try to reconstruct food practices and personal

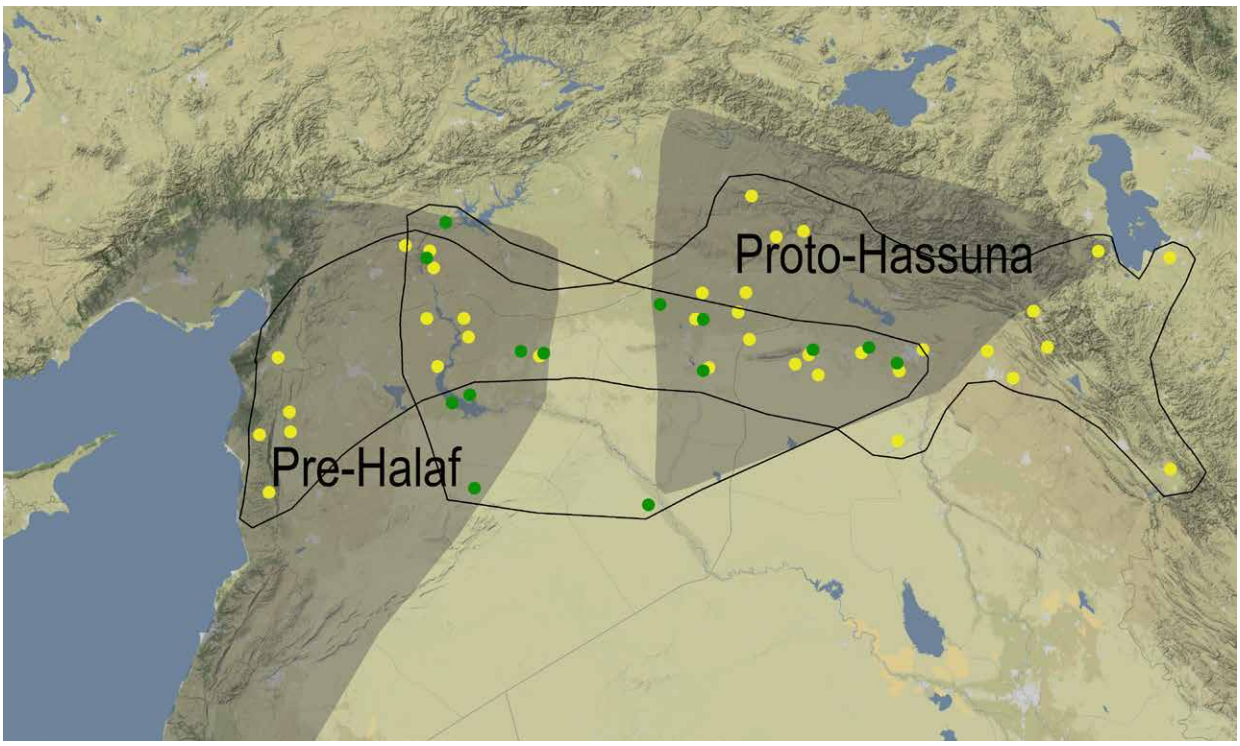

Figure 12.1: Northern Mesopotamia and the Northern Levant during the Pottery Neolithic and the difficulty of making 'culture-historical boundaries'. The superposition of the distribution of two material categories (plant tempered ware and husking trays) on a map showing the boundaries of the western Neolithic 'pre-Halaf' communities and the proto-Hassuna ones (Nieuwenhuyse 2013, 114) suggests intersecting spheres of interaction between the communities that produce and use them. The green dots indicate sites with coarse plant tempered pottery; the yellow dots indicate sites with husking trays. Composed from Nieuwenhuyse 2013 and Balossi Restelli 2021 (Produced by the author).

appearances. An example of the former is that of DFBW, where identical pedestalled bowls are found from the Amuq to the Balikh in the early 6th millennium BCE, which might suggest that communal drinking of beverages was socially important, most likely alcoholic (Balossi Restelli 2006). As Olivier argued, such social events were mediating moments of interaction between people, presumably from different groups. I will now advance the hypothesis that another ceramic container characteristic of 7th millennium BCE northern Mesopotamia might also underline 'intercommunity' interactions, namely shared bread consumption.

Bread as a Social Technology

Before moving to the container in question, I want to argue that bread and its consumption must have been charged with important symbolic and social meaning in the Neolithic, as it has been in most societies until very recently.

In all of Western Asia, bread has been the main staple food since Neolithic times. From the end of the 4th millennium BCE onwards, epigraphic sources show that bread was consumed, with beer (*i.e.* liquid bread), by all members of society and, often in more elaborate recipes, offered to the gods (Balossi Restelli and Mori 2014). The Akkadian *Aklu* means bread, but it is also the more generic term for food/nourishment and *bel akli* denotes the 'guest', the one you should supply food and honour to (Lambert 1996, Counsels of Wisdom, 61-4). The symbolic value of bread in the Mesopotamian world is evident, as literary, religious, and juridical texts indicate bread consumption as the means to civilise, to seal agreements and to establish social relations inside the town (Milano 2008; Sallaberger 2012).

In a totally different context, at Bosa in Sardinia, accounts of the early 20th century CE narrate that whilst men grew wheat, women baked bread together in their homes. Work was organised collectively, with the help of neighbours, a help that was later reciprocated when they did their own baking. Women baked every ten to fourteen days, in an extended process during which a lot of talking took place: whilst bread was prepared, the women would 'X-Ray the village' (Barbiellini-Amidei and Bandinu 1976). Bread was then circulated to friends and kin and was consumed communally (Counihan 1984). As the main

staple food, bread symbolised life, and husband and wife were expected to consume the 'easter bread' together as an act of eternal union. Bread was, in the words of Mauss (1925), a 'total social act.'

When we think about bread in ancient southwest Asia, we should think of it as a generic dough, baked product, the ingredients of which varied. A more-or-less coarse flour, obtained from plants that we imagine were mostly cereals, but could include other types of plants too. A more realistic term could thus be 'dough'. Ovens appear for the first time in the Pottery Neolithic and these are a necessary precondition for leavened foods; we may thus imagine that bread could be both unleavened or leavened and, whilst unleavened bread could truly be made from any ingredient, it is generally thought that leavened bread is mostly made from wheat, due to its high gluten content, maybe with the addition of a legume to enhance fermentation and leavening.

Even though the presence of ovens alone does not testify to the production of leavened bread, the contemporary finding of these and possible baking moulds is, I will argue, a good enough combination to believe that in this period, leavened bread-like products were amongst the foods baked in these ovens.

Bread Moulds and Bread Baking in the Neolithic

Baking moulds are wide and shallow ceramic trays, not easy to identify when fragmentary since they break into many undiagnostic sherds. Amongst these, husking trays are, however, highly recognizable, due to their peculiar morphology that has long attracted the attention of scholars (Figure 12.2). Today there is consensus that these were baking moulds (Voigt 1983; Tekin 2005; Taranto 2020a; Balossi Restelli 2021). I have been told that Olivier was not convinced by this functional interpretation, but I am sure he would have appreciated the arguments put forward here.

Various scholars, amongst which myself, have carried out experimental work with replicas demonstrating that bread can be baked in these husking trays and that the wear traces coincide with those left by a sticky dough (Taranto 2020b). In the absence of meaningful residue analyses that refute this hypothesis, I consider the interpretation of bread moulds the most plausible at present.

Researchers have reflected on the function of the impressions and incisions on the husking trays, hypothesizing they aided the rising of the bread or avoided its burning (Balfet 1975; Taranto 2020b; Balossi Restelli 2021) and our tests have testified that bread did not stick nor burn. In this context I would like to stress though, that whatever the practical use of these decorations, the different patterns of the incisions and impressions must have produced differently decorated breads. Our tests have in fact also shown that the bread that was obtained from these trays maintained the decorative pattern on its crust.

Here I would like to draw on another ethnographic examples from Italy. Basilicata is famous for its bread baking traditions. Until less than 50 years ago, each family had its own bread stamp, a wooden seal, generally incised by the herdsmen during the long days in the pasture. Bread was prepared at home but baked in collective ovens. The stamps thus served to identify the breads produced. The bread stamps in Basilicata were thus not so much linked with consumption practices but to mark the owner of the bread.

Husking trays are considered a hallmark of 7th millennium BCE 'Hassuna Culture', even though they also occur in the Proto-Hassuna and Early Halaf (Odaka *et al.* 2019; Taranto 2022), and their spatial distribution stretches far beyond the area traditionally considered as Hassuna (northeastern Mesopotamia).

I postulate that husking trays, found throughout this wide area, are the expression of shared bread/pastry traditions within and possibly between these communities. However, was it the production process of these containers that was shared, or rather the moment of consumption that they represented?

The North Mesopotamian Neolithic sites of the 7th millennium BCE have ovens both inside structures, which appear to be domestic in character, and in external areas (Bader 1989). Data is not sufficient at present to confidently argue that bread was collectively baked, but it is possible that bread decoration served to identify bread after baking. The wide distribution of husking trays, well beyond the boundaries of the area traditionally considered as Hassuna, suggests that the symbolic value of this specific bread stretched beyond the village and direct kin. The question is, were people sharing a bread-production system, or were they consuming a special bread together?

Husking trays were coarse and rather ugly looking ceramics; nothing like the fine and painted Halaf ceramics that were later used during inter-group commensal events, or to the equally fine and contemporary pedestalled Dark Faced Burnished Ware decorated bowls of the earlier 7th millennium BCE. In the latter examples, the elaborate containers for food consumption appear to us as important as the food they contain, possibly even more so than the food. People recognise the pot, and it is important in the construction of social relationships. Fine Dark Faced Burnished Ware and Halaf painted pots were made to be seen and contributed to event of inclusion (or exclusion), participation, and identity construction.

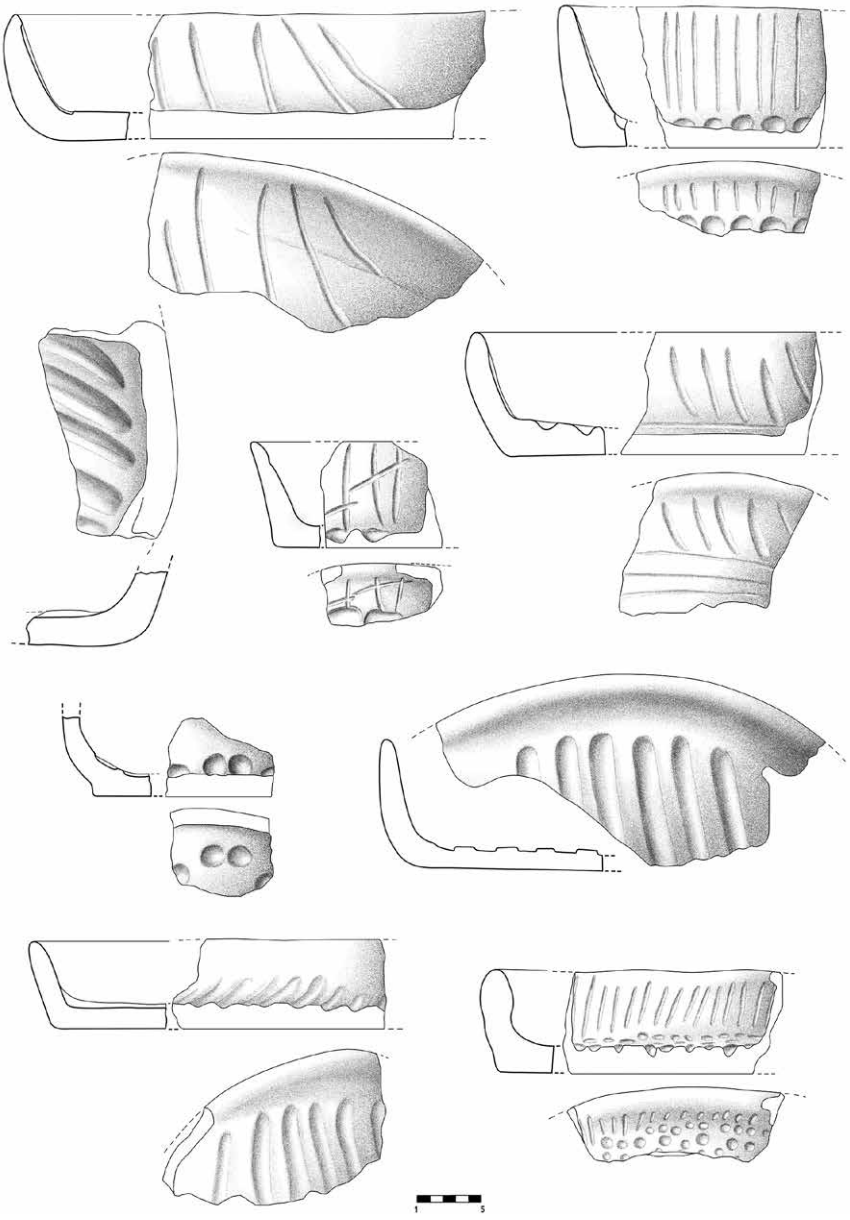

Figure 12.2: Examples of husking trays from Tell Sabi Abyad and Shir. Redrawn from Le Mière and Nieuwenhuyse 1996; Nieuwenhuyse 2007; 2009 (Drawn by Alice Siracusano for the author).

By contrast, husking trays were not intended to be seen. They were large (often more than 50 cm in diameter) and heavy, and it was their product that mattered – that had to be seen and consumed – not the container. Its large size could furthermore testify for a shared consumption. Bread/pastry was probably not served in the moulds, but most likely separately, maybe sitting on a coloured cloth, in a basket or on a mat. It was its shape, its appearance (colour, decoration, *etc.*), its ingredients, its dimensions, its smell, and perhaps the temperature at which it was served, that were important and that were probably charged with shared meanings that conveyed a sense of membership, of alliances and social relationships. The bread that was consumed over large distances was recognizable by its recipe and appearance; likewise, the people sharing it recognised each other through a fully immersive experience, stimulated by all senses: sight, smell, taste, touch and probably also the sound that the breaking and chewing of bread made.

Husking trays disappear after the beginning of the Halaf period. Does this mean that people were no longer sharing these bread-like products in their meals? I suggest a technological transformation towards more manageable containers for leavened bread, but at the same time, a possible change in shared foods, as suggested by the cream bowls and large plates of Halaf period, that probably contained differently elaborated foodstuffs. Specific research on the use of these ceramics may aid to further elaborate on this.

Conclusion

To conclude, the observations made here on a single element of material culture, traditionally considered diagnostic of a specific archaeological culture, namely the Hassuna, has allowed me not to get entangled into the much debated and complex use of cultural labels based on ceramic assemblages. In approaching this problem, by which he was much troubled, Olivier has emphasised on multiple occasions the non-homogenous character of the Proto-Hassuna and Hassuna ceramic assemblages (Cruells and Nieuwenhuyse 2004; Nieuwenhuyse 2013) which for present purposes we have termed Proto-Halaf (about 6100-5900 cal. BCE). He suggested that this variation arose from:

> *the role of individual communities within their wider socio-economic networks, their location in the landscape, or the status of their inhabitants*. (Nieuwenhuyse 2013, 122)

Even though recognizing the usefulness of the broad culture-historical definitions, research should thus open up to a detailed analysis of the contexts of use of the ceramics. In fully agreeing with Olivier, I follow him in the suggestion that the contextual study of the meaning and use of specific functional categories of pottery (or of material culture in general), and in this case husking trays, may be a key approach to unveil the dynamics of inter community relations in past societies.

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Chapter 13

The Social Dimensions of Regularities and Ambiguation in Neolithic Painted Pottery

A Comparative Perspective

Reinhard Bernbeck and Susan Pollock

Abstract

This contribution examines painted pottery decoration from four Late Neolithic sites (late 7th-mid-6th millennia BCE) in three regions of southwest Asia, posing the question of why contemporary traditions show distinctly different structures of decoration. We ask the question, what kinds of rule-like regularities lay behind the pottery painting traditions that we recognise today? Painted pottery from three of the four sites exhibits clear configurational regularities in terms of where and how motifs were placed in painting fields, whereas the fourth site, belonging to the Halaf tradition, appears to have had loose rules at best. Explanations for these differences point to a combination of the degree of social fluidity and the complexity of the painted designs.

Introduction

In the conclusion of his PhD dissertation, Olivier wrote:

> *Studies on Late Neolithic pottery in the Near East have thus far focused almost exclusively on the level of the design motif. The present study suggests that not the individual motifs per se, but the way they were incorporated in design structures constituted an important stylistic message.* (Nieuwenhuyse 2007, 212).

In our paper in Olivier's memory, we pursue this statement at a comparative level by considering the painted pottery from four sites that date to the time range of the late seventh to the first half of the sixth millennia BCE, but that are located in regions as far apart as the Fars province of highland Iran, on the one hand, and the Upper Euphrates region in southeastern Turkey, on the other.

Our comparison is not based on any assumption of direct contact among the four sites or regions. Instead, we investigate traditions of painted pottery decoration that are presumably unrelated as well as similarities and differences between them. The

main research question arises from our recognition that some of these painted pottery traditions are more highly structured than others. Our interest is oriented toward the reasons for this phenomenon. Before pursuing the comparison, several preliminary remarks are necessary.

First, a number of archaeologists (Muller 1979; Washburn and Petitto 1993; Roe, 2004) have assumed that ceramic paintings could be read in analogy to language. If so, one could interpret Olivier's distinction of design structure and motif as the difference between syntax (structure) and vocabulary (motifs), where sentences follow underlying grammatical structures even when the motifs are not the same. Margaret Hardin has explored such issues in ethnographic and ethnoarchaeological contexts. Her research concerning the parallels between language and design grammars ended with a clear conclusion that there are none (Hardin 1979; 1983). While we tend to agree with Hardin's conclusions concerning the absence of a simple parallel between linguistic structures and structures of pottery painting, we think that there are regularities, even 'rules' for more or less strict arrangements of painted elements in pottery designs. There is even the possibility of different kinds of rules that can simultaneously work at several levels (see also Hodder 1982). Indeed, it is possible that some motifs or even whole configurations of designs had discursive meanings in the past, but we do not think that it will be possible to decipher such explicit meanings in the present.

Second, because we do not assume that pottery designs can be read like a text, it becomes all the more important to include other elements of material culture when trying to unravel the 'meaning' of pottery designs. Their understanding needs to include the wider material environment in general – in particular, the archaeological context. Obviously, knowledge about such wider contexts is dependent on both their preservation and the extent to which excavations have revealed them.

Third, material culture needs to be understood as part of an encompassing assemblage that consists of living beings and other parts of what is called 'nature', emotions, concepts, and the relations among them. A study of their entanglements needs to start somewhere – in our case pottery design and more specifically the configurations of painted pottery, rather than single motifs. While our primary goal is to extract 'rules' from pottery design and to see how they compare with each other, an analysis of visual elements could also be pursued for wall paintings, seal designs, carpet patterns, decorations of quivers or shields, and other materials.

Geographic and Chronological Setting of the Four Sites

Two of the sites we compare, Tol-e Bashi and Qale Rostam, are situated in the Iranian highlands, more specifically, in valleys in the Zagros Mountains of southwestern Iran (Figure 13.1). One site, Tell es-Sawwan, is located in Central Mesopotamia, and the last one is located along the Upper Euphrates in the hilly flanks of the Taurus, namely Fıstıklı Höyük. Qale Rostam's phase I can be dated to 6370-5900 BCE (Daujat *et al.* 2016, Table 1) and Tol-e Bashi to 6230-5530 BCE (Pollock 2010). For Tell es-Sawwan, there are six dates from Levels II, IIIA and III, dating to a time range between 6070-5740 BCE (Burleigh *et al.* 1982), while Fıstıklı Höyük, a Halaf site from the Taurus edge, dates to 6090-5710 BCE according to Campbell's Bayesian analysis (Campbell, 2007, Table 3).

Tol-e Bashi

Tol-e Bashi is a relatively large site (8 ha, albeit not completely occupied in Neolithic times) in the Marv Dasht plain in southern Iran. In 2003 we exposed a short stratigraphic sequence with two main phases, one well known from the Marv Dasht area as the Jari phase (Vanden Berghe 1954; Alizadeh *et al.* 2004), the other older one defined by us as the Bashi phase. The two phases were encountered in levels V through III (Bashi phase) and I (Jari phase) with a hiatus in level II (Bernbeck 2010, Tab. 5.20). The older Bashi phase was more intensively explored and contained a few painted ceramics similar to the Mushki phase, named for the eponymous site. The Mushki phase begins earlier than the Bashi phase, although it partially overlaps it chronologically. The typical Mushki vessels differ markedly in ware, form, and decoration from the pottery identified at Tol-e Bashi as typical for the Bashi phase.

Bashi pottery is extremely uniform, consisting of one simple open shape; more than 80% of the painted vessels show one and the same painted design, which we have dubbed the 'Bashi motif' (Figure 13.2). Whether a distinct chronological phase associated with this pottery exists throughout the Kur River Basin remains to be established (Nishiaki 2013). Similar pottery has been found at Arsanjan in caves A4-1 and A4-2 (Ikeda 1979) and at Rahmatabad (Azizi Kharanaghi *et al.* 2014, Fig. 19, Nos. 5,8,25,26). The level attributable to the Jari phase at Tol-e Bashi contains ceramics that are brittle and covered with two motif variants (Figures 13.3 and 13.4), both of which are derived from the above-mentioned Bashi motif, and a whitish limy coating that dissolves in water.

It is not difficult to identify several structural similarities in the ceramics of both Bashi and Jari phases. First, the vessel forms are such that their largest

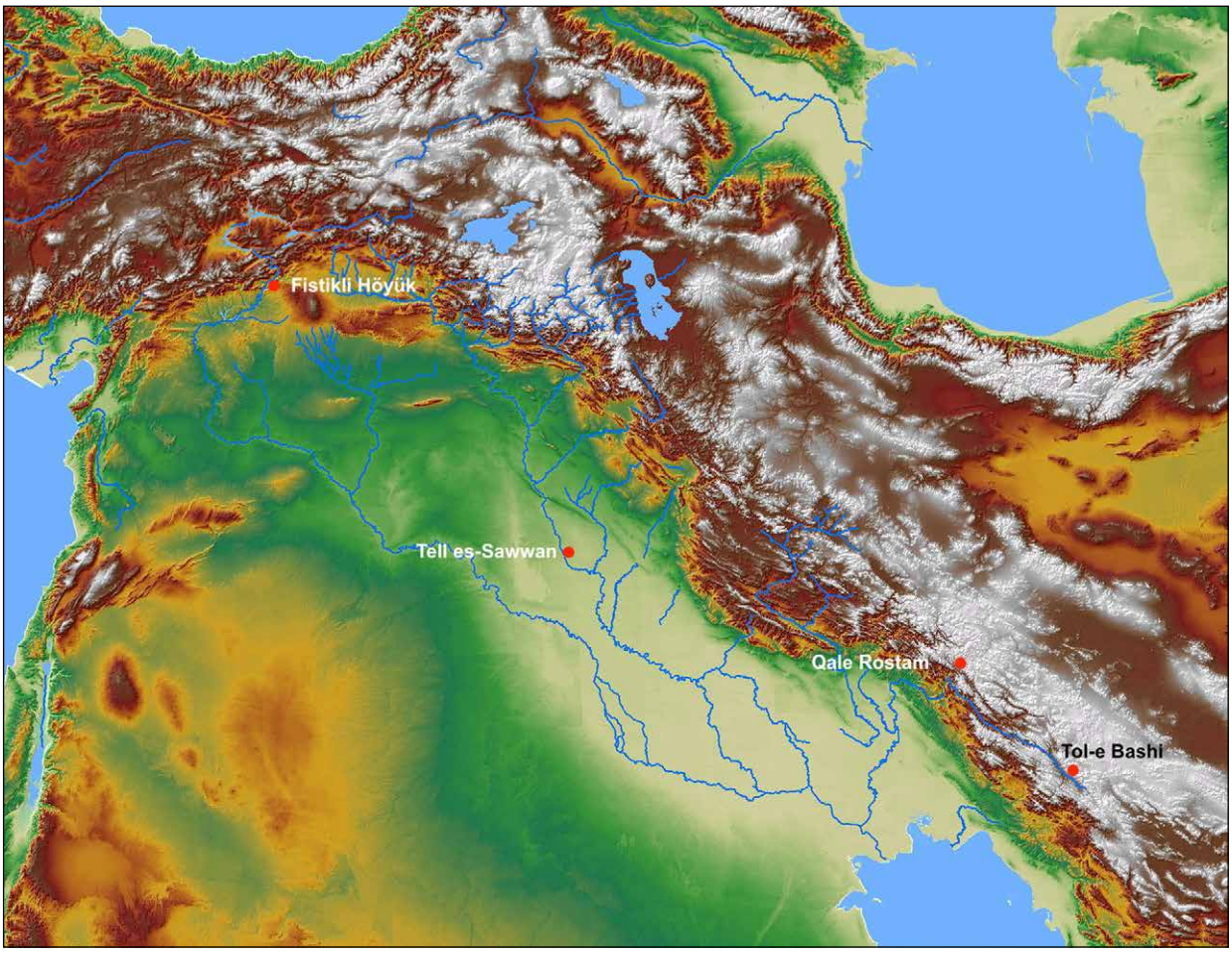

Figure 13.1: Map of Western Asia with the four sites discussed here. (background: https://www.asor.org/resources/photo-collection/maps/mid000020/ (license CC BY-ND 4.0) with additions by R. Bernbeck).

diameter is usually at the rim, but overall they have steep, S-shaped walls. The structure of the decoration is in almost all cases tripartite with a framing scheme: at the rim of the vessel and at the lower edge of the painted decoration, there is an identical motif: 'A'. These two bands frame a register containing the main motif: 'B'. This register is higher – often much higher – than that of the rim and lower bands. In the Bashi phase, the number of main motifs is extremely low, with only four of them occurring more than once. The distribution of these four motifs is extremely unequal, with one accounting for approximately 82 % of all main motifs (Bernbeck 2010, Tab. 5.20).[1] The two secondary motifs at the upper and lower edges of the painting field slowly replace each other over the course of Levels V to II, from a 21% : 79% to a 59% : 41% relation and in Level I to 98% : 2%. In Level I, datable to the Jari phase, the repertoire consists of two main motifs, distributed slightly more evenly than in Levels V to III.[2]

All of the motifs have a translational symmetry, with a lower left /upper right orientation, regardless of the specific design. This basic structure across motifs indicates that the change in ceramics at the site, although unmistakable, also includes strong continuities. Unfortunately, so few sherds are available from the transition from the Bashi to the Jari phase (Level II) that no further statement about this change can be made. The low visual variability and the strongly geometric motifs are striking, evolving over time from staircase-like, carefully juxtaposed brushstrokes to a simplified ladder or to single, hook-like elements (Figures 13.2, 13.3 and 13.4). This narrow range of motifs is accompanied by an almost completely uniform structure of painting in both occupation phases.

1 The diversity index H is 0.582. The potential maximum diversity for the same number of motifs and actual number of sherds would be 1.79.

2 Diversity index H increases only slightly to 0.624.

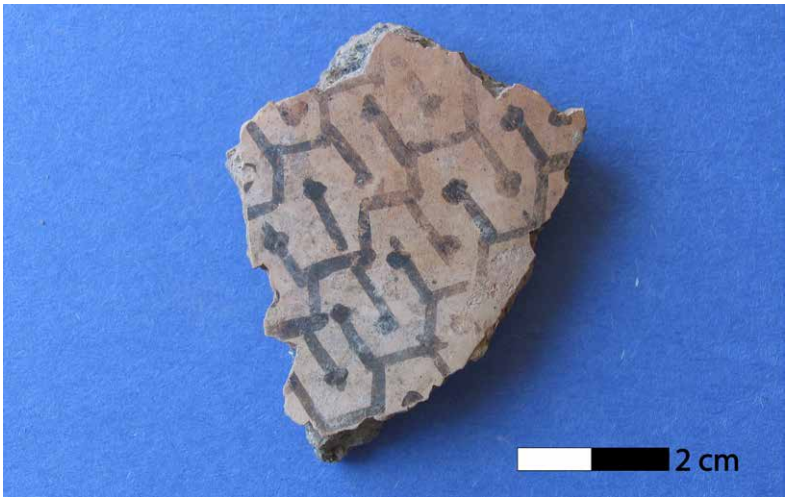

Figure 13.2: 'Bashi' motif, prevalent in the Bashi phase (Photo by Susan Pollock).

Figure 13.3: Jari-period 'ladder' motif (Photo by Susan Pollock).

Figure 13.4: Jari-period 'hook' motif (Photo by Susan Pollock).

The high uniformity and degree of abstraction of the motifs are accompanied by the complete absence of human representations among ceramic motifs or in the form of figurines. Furthermore, there are few easily identifiable sherds of vessels that can be considered foreign to the site. The similarities of Bashi-phase decorations with the main motif found on Mushki pottery as well as the occurrence of the 'Bashi motif' in low numbers at other sites allow two different interpretations. First, Bashi pottery may be strongly local and thus contemporaneous with Mushki pottery. Alternatively, Bashi ceramics may represent a transitional horizon between two archaeological phases of the Late Neolithic that have been known for some time, the Mushki and Jari phases, with the transition falling at the end of the 7th millennium BCE to the beginning of the 6th millennium BCE. The radiocarbon dates from Tall-e Mushki and Tol-e Bashi point to the latter, although they are not unambiguous: four radiocarbon dates from Mushki yield a range of ca. 6700-6000 BCE (Alizadeh 2006, 119-21), while eight dates from the Bashi phase at Tol-e Bashi extend from ca. 6230-5540 BCE (Pollock 2010). Although these dates suggest a clear overlap, this is due primarily to a single determination from Tol-e Bashi; the remaining seven dates for the Bashi sequence suggest a beginning at ca. 6070 BCE.

Qale Rostam

We turn now to a contemporary site from a region northwest of Tol-e Bashi, located in the high Zagros mountains at an elevation of almost 2000 metres asl. In 1975 Allen Zagarell and Hans Nissen excavated soundings at a very small late Neolithic hamlet, maximally 0.5 ha, located in the Khana Mirza plain. The two soundings measured 5 by 1 metres each, with Trench A reaching a depth of 2.6 metres and Trench B 3.2 metres. Similar to Tol-e Bashi, the pottery is heavily tempered with chaff. The lowermost two phases contain almost only unpainted wares and date to ca. 7000-6750 BCE, whereas the uppermost phase I can be dated to 6370-6000 BCE (Daujat *et al.* 2016). For our purposes here, only this latter phase I with its painted pottery is of interest.

Qale Rostam phase I vessels are fairly uniform and consist of one basic type: a steep-walled container with a carination at the lower wall. Underneath the carination is a reddish slip and a dimpled base, whereas motifs painted in dark brown to black are found above this carination. There exist a few faint similarities to sherds from sites in the Fars region to the southeast (Alizadeh 2021, Fig. 8, various examples from both Gov Koshi and Qasr-e Ahmad). Qale Rostam vessels vary from high, slender beaker-like forms to wide open bowls. They also come in vastly different sizes and wall thicknesses. Preferences for specific painted decorations are related to vessel dimensions (size; diameter : height ratio) but not to the overall vessel shape. Only in the latest phase 0, close to the surface and represented by a small sample size, do new shapes appear.

The best way to comprehend the structures of the Qale Rostam I pottery design is through an analysis that dissects patterns into their sequential mode of production, as a *chaîne opératoire* (Bernbeck 1999). A close inspection of this pottery reveals that the structural lines of the painting field were drawn first. Then, lines were added internal to this frame that delimit bands and fields. Finally, motifs were inserted into these spaces. Prior to any of these painting processes, a red wash was applied below the carination. We can ascertain this because in several cases a dark brown to black line runs over the reddish wash. The structures for decoration were also to a certain extent dependent on the shapes of vessels. Narrow, beaker-like vessels were mostly painted with one single band that was subdivided into narrow vertical fields by double vertical lines. More compact, squat shapes tended to be divided into two or three horizontal fields or bands.

The lines that divide the painting frame into fields were carried out according to specific configuration rules (Figure 13.5). First, horizontal and/or vertical lines were drawn, delimiting the whole surface to be decorated. Second, the next decision was whether to decorate the vessel with panels, divided by vertical lines, or bands that encircle the circumference of a vessel. Third, if panels were chosen, dividers were invariably double or triple lines running from top to bottom of the painting field delimited in the first step. Fourth, this means that bands and vertically delimited panels could not co-occur on the same vessel. Fifth, if the choice was for bands, no more than two could occur, one above the other. Sixth, depending on the resulting number and kind of fields (bands or panels), motifs were inserted according to a fixed set of design rules.

At the level of designs, the Qale Rostam decoration scheme is vastly more complex than that identified at Late Neolithic Tol-e Bashi. Still, we find one rule that is fairly similar to the one at Tol-e Bashi: if a vessel has three superposed panels, and the motif of the middle one differs from the upper, then the lowermost must correspond to the uppermost. We thus end up again with a horizontal axis of symmetry that can be described as 'A – B – A'. However, because of configuration rules 5 and 6, these fields had to be panels since there could not be more than two bands above each other on one vessel. By way of example, we point out two other design rules: configurations with two bands containing two motifs in one such band were either alternately set on top of each other or as mirror images in the two bands.

By now, it should be clear that there are significant differences in the design repertoire of Tol-e Bashi and Qale Rostam. First, the repertoire of motifs at Qale Rostam is

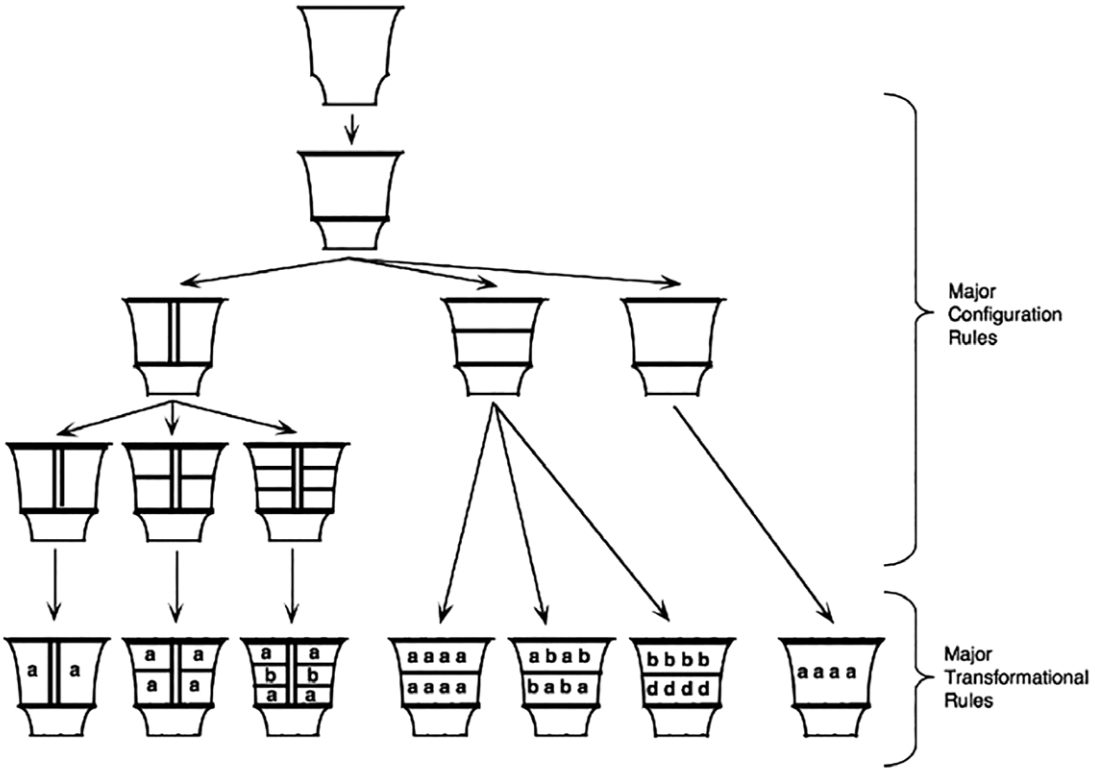

Figure 13.5: Configuration rules of the pottery motifs at Qale Rostam (© Reinhard Bernbeck).

much larger and allows for much more variable but clearly rule-based compositions of pottery decoration. Instead of three motifs in the Bashi phase or four different ones in the Jari phase and their fixed positioning as either peripheral or main motifs, there are at least 34 different motifs on the Qale Rostam pottery that could be combined in several ways, but always according to strict rules (Bernbeck 1989, Vol. 2). The motifs range from rows of animals with curvy backs to purely geometric designs such as boxes and checkerboards. In a second stark difference, the paintings on Tol-e Bashi pottery are entirely abstract, unless one wants to read into the structure of steps and dots a highly stylised rendering of a plant with fruits. In the case of Qale Rostam, there is no doubt about the intent of producing recognizable, relatively naturalistic designs such as smiley faces and rows of animals. However, a general similarity is also the apparent isolation of these assemblages of designs. To our knowledge, pottery similar to that discovered at Qale Rostam is completely unknown except for a few sherds from the cave Eshkaft-e Kharagi B, some 75 kilometres away from Qale Rostam as the crow flies (Zagarell 1982, 132, Fig. 13. 4, 5, 7; Bernbeck 1989, 210-2).

To summarise, the two late 7th/early sixth millennium BCE highland settlements of Tol-e Bashi and Qale Rostam, at a distance of approximately 350 km from one another, were certainly not in direct contact in the Neolithic. Still, on a general level, there are some remarkable similarities between the structures used in painting pottery. One of the most important seems to be that configuration rules persisted for some time, another that single motifs were not to be changed in their basic outline when set into a painted spatial configuration on a vessel surface.

Interestingly, a close analysis of the painted pottery from the contemporary site of Hajji Firuz reveals tendencies towards similarly rigid rules (Van Berg 1987), even though the motifs themselves, again, do not show any direct parallels with those from Qale Rostam or Tol-e Bashi.

Tell es-Sawwan

In contrast to Tol-e Bashi and Qale Rostam, which are located in rugged highland topographies, early lowland sites are normally not as isolated. This is true for Tell es-Sawwan on the Middle Tigris whose pottery is almost indistinguishable from that of prehistoric Samarra, located 10 kilometres downstream. We treat the ceramic assemblage from these two sites together, since it is well possible that they already had a connection in the early 6th millennium BCE. Tell es-Sawwan is a habitation site with well-preserved architecture in Level III (Yasin 1970), while Samarra is said by its excavator, Ernst Herzfeld, to have been a cemetery (Herzfeld 1930). In Level III of Tell es-Sawwan, some burials were found; the burial accompaniments consisted

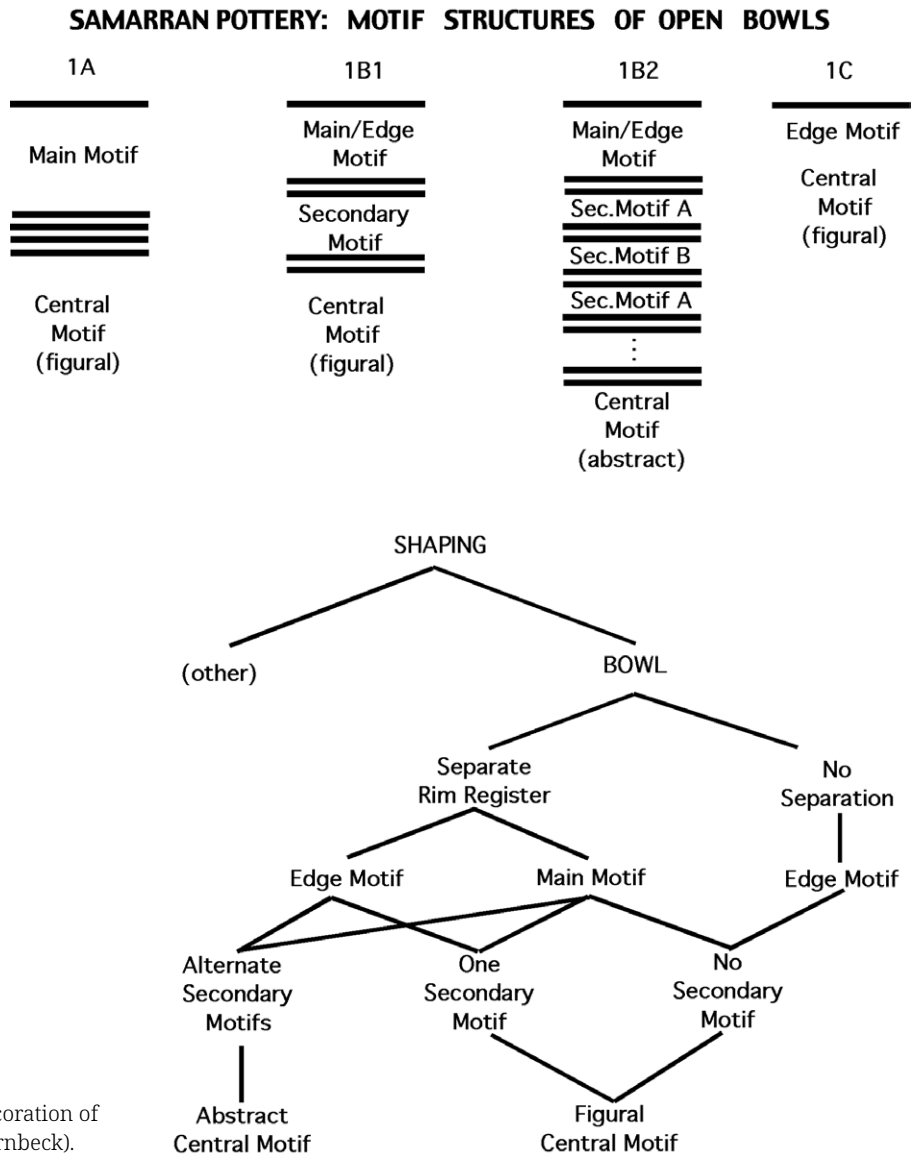

Figure 13.6: Grammar for the decoration of Samarran bowls (© Reinhard Bernbeck).

of vessels that were plain, except for three (Yasin 1970, 7), differing starkly from the intricately decorated pottery found in domestic contexts at the site. It remains to be seen whether the site of Samarra served as the cemetery for Tell es-Sawwan or whether a more complex relationship is behind the similarities in material and differences in function between these two places. For now, we think it appropriate to analyze the painted pottery assemblage from these two sites together.

The first and most important issue we encounter in an examination of this pottery is a stark difference in shapes in comparison to the Iranian assemblages. In Central Mesopotamia (and also in Upper Mesopotamia at the same time), we encounter open as well as closed vessels, the latter often with a pronounced shoulder and a separately shaped and applied neck. The greater variability in shapes has a strong influence on decorations: the structure of the designs follows a rigid structural canon that is based on the three main shapes of bowls, jars and pots. Some regularities apply across these categories:

1. designs are in registers that are always separated by at least two horizontal lines;
2. four types of filling motifs of registers can be distinguished: main motifs, edge motifs, secondary motifs, and incised motifs;
3. the use of three or more secondary registers, one above the other, is possible, but two adjacent registers cannot contain the same secondary motif (see Figure 13.6, 1B2);

4. no secondary or main motif may be placed on the rim of a vessel, whether inside or outside. All shapes require a main motif.

Three rules are shape-specific:

1. under certain circumstances, bowls can have a large inner circular field that is filled with figural motifs with a point symmetry (Figure 13.6, 1A, 1B1, 1C);
2. incised motifs can only be used on jars, immediately below the join of neck and shoulder;
3. secondary motifs above incised registers on necked jars cannot be repeated on the shoulders.

This grammar could be further elaborated by taking into account the number of lines dividing registers, the secondary motifs that can be used in alternating registers, *etc.* The best known vessels from Samarra and Sawwan are the open plates with their spectacular, half-naturalistic motifs of fishes, birds, ibexes, and women. All such motifs except for one (Herzfeld 1930, Pl. XXIII, 123) have a rotational point symmetry, with two to six rotational moves (Figures 13.7 and 13.8, see also Tulane in Braidwood *et al.* 1944, Fig. 261-93). The non-naturalistic motifs are characterised by rotational as well as axial symmetries.

A difference to the highland Zagros sites is that Samarran pottery was found as a minor component at other Late Neolithic sites, upstream on the Tigris at Tell Hassuna, in the Zagros foothills at Matarrah and Shimshara, and on the Middle Euphrates at Tell Baghouz. Braidwood *et al.* (1944, 48) already recognised the ceramic material from Baghouz as 'remarkably typical Samarran', whereas at the other sites, this was not the case. An analysis of painted patterns by Tulane arrives at the conclusion that Baghouz motifs and structures are almost identical with Samarra and Tell es-Sawwan, over 200 km away (Tulane in Braidwood *et al.* 1944). Baghouz material could also easily be identified as 'Samarran' because of a specific fineness of the ware, as elaborated in detail by Olivier and colleagues (Nieuwenhuyse *et al.* 2001). However, here, we are more interested in the structures of painting.

In a detailed analysis that includes stratigraphic differentiation, one of us came to the conclusion that the 'grammar' of decoration of the Baghouz pottery is the same as that of Tell es-Sawwan and Samarra, that is, the combinatory rules outlined above (see also Bernbeck 1994, 182-91). This result is remarkable and cannot be explained easily, since such a level of similarity demands an extraordinary intensity of social contacts.

The Early Halaf Period at Fıstıklı Höyük

We come to our last example, Early Halaf pottery from Fıstıklı Höyük. We had many intensive discussions with Olivier about this pottery and related assemblages. The pottery we recovered at Fıstıklı Höyük site is extremely fragmented so that research on structural rules is difficult. However, based on a comparison with other Early Halaf-period sites, we conclude that the strict configurational and clear design rules that we can identify in the other three cases discussed here are lacking. An interesting outcome of this comparison is the realization, based on the entirety of the Fıstıklı Höyük material culture, that detecting the absence of rules is much more difficult then discovering their presence (Bernbeck 2008; Pollock and Bernbeck 2010a; Bernbeck 2012). We base our discussion here not so much on our own general overview as on the thorough statistical analysis of two-way contingency tables and associative measures (Pearson's r; Cramer's V) carried out by Rol (2018, 60-93) and the detailed examination of the *chaîne opératoire* performed by Castro Gessner (2008). Rol's attempt to identify classes of motifs and structures similar to the ones of the Samarran and two Iranian cases described above proved difficult. While a few preferences were found, they can in no way be described as 'rules'. She states that: 'the motifs' varied patterns of use suggest that decorative content was not subject to fixed rules, or at best, to vague and fluid ones' (Rol 2018, 103). Instead, and in contrast to the assemblages discussed before, motifs appear as 'abbreviations, expansions or hybridizations of one another, with different degrees of detail and complexity' (Rol 2021, 144). Mallowan and Rose (1935, 154-63) already recognised the associative structure of one motif, the bucranium, when analyzing the painted pottery from Tell Arpachiyah. They showed how a natural and easily recognizable graphic element that is in itself metonymic (the bull's horns stand for a whole animal) was modified to become more and more abstract. By turning it sideways and joining the ends, the motif looks like a 'violin case' or 'peanut', and was then further abstracted into a simple 'cable' motif.

At Fıstıklı Höyük, Rol (2021, Fig. 11.4) was able to identify a modification of the bucranium motif that differs from the series recognised by Mallowan at Arpachiyah. At Fıstıklı Höyük, but also at Kazane Höyük in the Sanlıurfa Plain, the modification consisted of adding many coarsely rendered vertical bucrania in a row, sometimes still recognizable as such, along with dots. Increasingly abstract renderings look like a slightly curved zig-zag pattern, a motif we dubbed the 'Kazane pattern' (Figure 13.9). Mallowan interpreted the ambiguity of the bucranium motif chronologically. He asserted that the naturalistic motifs dated earlier than the more abstract versions. We do not think this is necessarily so, based on observations at both Kazane and Fıstıklı Höyük as well as at sites such as

Figure 13.7: Interior of a bowl from the Samarra cemetery, Vorderasiatisches Museum Berlin (Photo © "Einsamer Schütze", Creative Commons CC BY-SA 3.0).

Figure 13.8: Interior of a bowl from the Samarra cemetery, Vorderasiatisches Museum Berlin (Photo © "Einsamer Schütze", Creative Commons CC BY-SA 3.0).

Figure 13.9: Variants of the bucranium motif at Fıstıklı Höyük, Early Halaf period (© Nolwen Rol).

Yarim Tepe II and Umm Qseir in northern Syria. It seems rather that a high degree of ambiguity was present from Early Halaf times onwards. Rather than a chronological dimension, the different iterations of the bucranium seem to exhibit a geographically specific distribution, with the horizontal ones more typical for the regions east of the Khabur, the Kazane pattern more for the far west of the Halaf zone.

Overall, the Halaf motifs display a very high degree of variability. Their creative and dynamic modification in different directions is a remarkable characteristic of Halaf painted pottery in general, even though Late Halaf vessels are less prone to such variability.

On Differences in Adherence to Painted Design Rules

We have described pottery from the late 7th to mid-6th millennium from four sites from widely separate regions. It will therefore come as no surprise that styles of decorating pottery differ markedly from each other. It is, however, remarkable that the three eastern sites – Tell es-Sawwan (Samarra), Qale Rostam and Tol-e Bashi – exhibit internally coherent assemblages with clear compositional structures of decoration. In all cases, the painted assemblages include framing, configurational as well as lower-level design-based rules of how to place specific motifs. Strict configurational rules go hand-in-hand with a strong adherence to a specific and largely invariable form of each motif. For example, the smiley faces on the Qale Rostam pottery were to be either triangular with cross-hatched triangles adjacent to them or placed in narrow panels without such elements. Furthermore, they could not be placed anywhere in a configuration, but rather their arrangement in a larger design followed a strict set of rules. Similarly, naturalistic Samarran motifs were invariably limited to the inside center of bowls, often displaying a rotational symmetry (Table 13.1).

These three assemblages also exhibit a number of differences. Pottery from Samarra/Sawwan and Tol-e Bashi includes a fixed set of secondary motifs, which is not the case at Qale Rostam, whereas the painted vessels from Samarra/Sawwan, as well as Baghouz, stand out due to the close correlation between shape and specific structures of design.

In contrast, Halafian ambiguation in decorative features, so clearly manifest in the bucranium motifs' innumerable manifestations, correlates with an almost complete absence of configurational rules for delimiting bands and/or fields.

How do we explain these differences? Are they mere happenstance, based on cultural preferences? Are they related to varied ontologies, as modern theorists might suppose? Or is there a connection between a less strict adherence to painted arrangements and social structures? In order to pursue such questions, we need to rely on more than just the evidence from pottery.

We try to sort out some of these possibilities by comparing central Mesopotamian Tell es-Sawwan with the evidence from Halafian Fıstıklı Höyük and its surroundings. It is clear that Halafian groups were relatively mobile, moving frequently both between and within sites, in patterns we have referred to as 'multisited communities'. Tell Sabi Abyad displays strong elements of such mobilities, both in terms of intra-site movement and in the distribution of seals and sealings. The contrast to Tell es-Sawwan could not be greater. There, multi-roomed standardised houses are set into a walled community where several buildings form neighborhoods separated from each other by low internal walls. The houses themselves have a courtyard and a bent-axis approach that prevents a direct view from the outside into the core spaces. Tell es-Sawwan exhibits a social structure with a nested division into an inside and outside, an 'us' versus 'them' that is underlined by a defense system. This system was not necessarily meant to protect against other people but could also have been erected against animals that threatened a 'Late Neolithic multispecies resettlement camp', as James Scott (2017, 96-115) calls such newly emerging forms of co-existence of living beings. At Tell es-Sawwan, social distancing is apparent on multiple, nested scales, from household to neighbourhood to the whole village (Bernbeck 1994, 322-44). The fluid and mobile Halaf communities and the evidence for life between, rather than within houses, contrast markedly with the segmented, modular Samarran social structures. Pollock (2013, 179) notes that similarities among Halaf sites consist of:

> *irregular village layouts, general absence of densely built-up architecture, frequent alterations in spatial arrangements … The absence of predictability in many elements of spatial locations and spatial relations means that Handlungsräume were likely quite wide, and leeway for improvisation and a wide array of actions was considerable.*

	Tol-e Bashi	Qale Rostam	Tell es- Sawwan & Samarra	Fıstıklı Höyük (Halaf)
configuration and design rules	x	x	x	
inflexibility of motifs	x	x	x	
ranking of motifs into primary and secondary ones	x		x	
strong rules of symmetry	x		x	
existence of quasi-natural motifs		x	x	x
form – configuration relation		x	x	(x)
internal vessel painting			X	x

Table 13.1. Features of painted designs on pottery at the four sites considered here; x = attested; (x) = attested in a few cases.

It is tempting to conclude from this comparison of Tell es-Sawwan and Fıstıklı Höyük (as well as other sites of the Halafian realm such as Shams ed-Din) that the more fluid and ambiguous relations in a social group are, the less rule-bound their pottery decoration will be. However, does this mean that we can expect socially segmented groups wherever we find pottery with strict rules of decoration, that is, also at Tol-e Bashi and Qale Rostam? Based on our evaluation of the situation at Tol-e Bashi, we do not think so. There, a close analysis of the distribution of artifacts revealed that surfaces in public space were densely littered with objects such as lithics, miniature cylindrical objects and pottery, while floors in houses stayed largely clean and empty. Social life, similar to Halafian Fıstıklı Höyük, seems to have taken place mainly under the eyes of the whole community, not behind the walls of compounds as in Tell es-Sawwan. How then to explain the strict rules for pottery decoration at Tol-e Bashi?

Beyond ridigity, we need to consider the complexity of the designs. In the case of the Samarran pottery from Tell es-Sawwan, rules are shape-specific and complex, while at Tol-e Bashi, we find one single structural rule for all sherds where configurations are recognizable in either occupation phase.

Rule rigidity and rule complexity are two dimensions that need to be distinguished. Taking the contextual evidence together with the results of the design analysis, we have argued that Tol-e Bashi was a society where distinction in terms of material culture was vigorously discouraged in order to prevent the emergence of social inequalities (Pollock and Bernbeck 2010b). Neither single persons nor households were supposed to set themselves apart from others. Such attempts at distinction could be prevented or at least restrained by avoiding stark differences in material culture that would have had the potential for social separation.

Similar data are not available for our last case, Qale Rostam, due to insufficient architectural exposure. However, current evidence makes fluidity in group composition and substantial mobility similar to the Halaf case highly unlikely. New analyses of subsistence data suggest sedentariness (Daujat *et al.* 2016). In addition, almost no other site with similar pottery is known.

In conclusion, our comparison of painted pottery from four Late Neolithic sites shows that an interpretation that relies on unidimensional correspondence between social segmentation and rules of pottery decoration or other kinds of material culture is inadequate – just as a singular focus on motifs is insufficient, as Olivier presciently argued. However, it is also not entirely wrong. More dimensions, such as the complexity of the set of rules, need to be included for a better understanding of the social relations underlying painted ceramics. Olivier helped us along this path with his deep insights, his enthusiasm for anything pertaining to Neolithic pottery, and his critiques of simple solutions. We miss his advice, and we miss him as a colleague and dear friend.

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Chapter 14

Note d'Archéologie Levantine LXVII

Les phases anciennes de Palmyre d'après les données des archives de R. du Mesnil du Buisson et de la mission syrienne de 2011

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À la mémoire d'Olivier Nieuwenhuyse,
en souvenir des années heureuses de l'archéologie syrienne

Resumé
Présentation du matériel disponible dans les archives de Robert du Mesnil du Buisson conservé au Musée du Louvre et des résultats des travaux de la mission syrienne en 2011 dans le chantier (A) à Tell ez-Zor près de la source 'Afqa à Palmyre. Le troisième niveau immergé dans une épaisse couche de sable révèle la présence des éléments architecturaux accompagnés des unités archéologiques avec un matériel du PPNB. Cette découverte apporte un élément nouveau au dossier de l'occupation néolithique de la steppe syrienne. Elle témoigne de la position de l'oasis palmyrénienne au milieu des mouvements de la population en cours de sédentarisation entre l'Euphrate et la Syrie intérieure.

Introduction

Les travaux sur les phases anciennes qui précèdent la consécration du sanctuaire de Bêl ont étaient effectués sur le terrain à Palmyre par deux missions: d'abord la mission française sous la responsabilité de R. du Mesnil du Buisson durant deux campagnes (1965 et 1967), ensuite la mission syrienne sous la direction d'A. Bounni durant cinq campagnes (1981; 1985; 1986; 1987 et 2000) (Al-Maqdissi et Ishaq 2017), et ensuite une campagne supplémentaire en 2011 sous la responsabilité des auteurs de cette contribution.

Les résultats publiés montrent que le sanctuaire est construit à l'emplacement d'une colline artificielle formée par une accumulation de plusieurs niveaux d'occupation dont le plus ancien remonte au Néolithique (la construction du sanctuaire et particulièrement de la cella centrale est liée à des travaux de terrassement et d'aménagement, ce qui a donné la forme actuelle presque carrée de 220 m de côté environ).

Par ailleurs, les travaux menés à Tell ez-Zor confirment une occupation durant le Néolithique précéramique et Néolithique céramique. Nous proposons ici de présenter

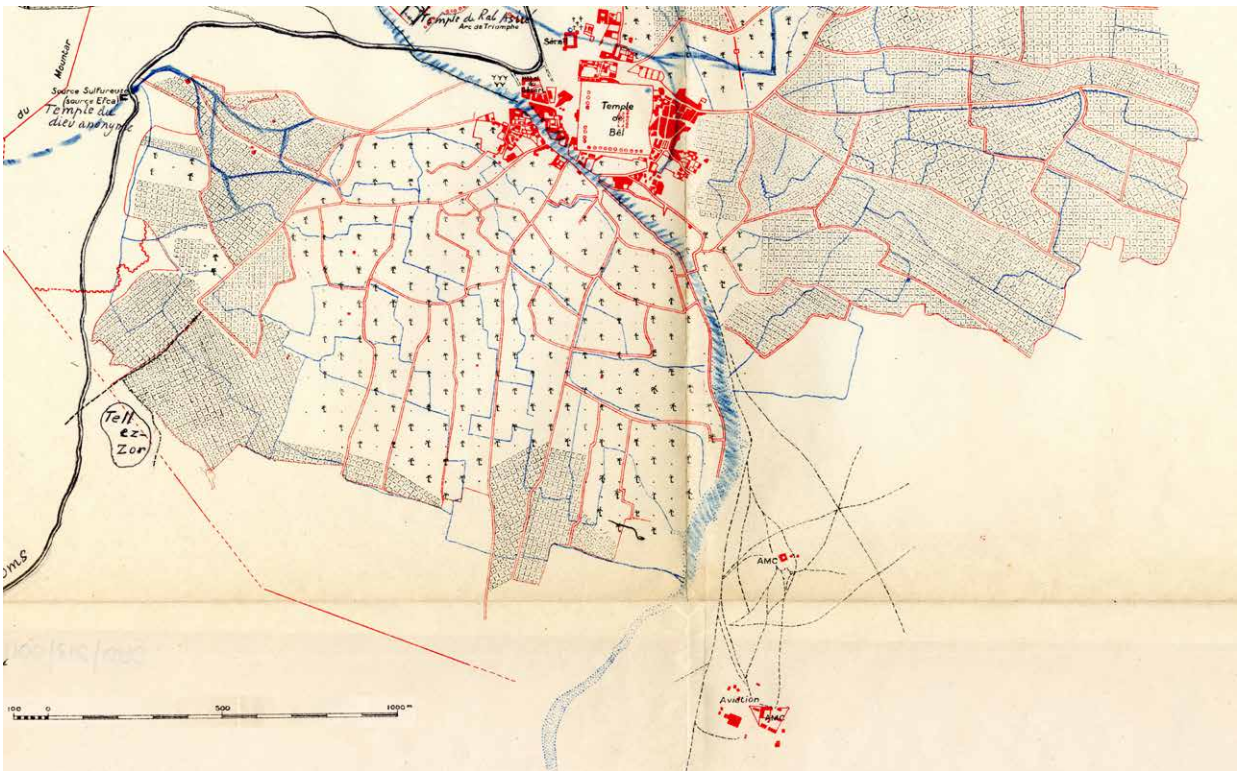

Figure 14.1: Localisation à Palmyre du sanctuaire de Bêl et du Tell ez-Zor d'après une carte de Palmyre, dressée par le Bureau topographique des Troupes du Levant en mai 1939 (1:10.000), document conservé dans les archives de R. du Mesnil du Buisson au Musée du Louvre (DAO/313/001/0011).

le Néolithique précéramique afin de garder pour une autre occasion la période liée à la première production céramique dans l'oasis de Palmyre.

Les premiers travaux de R. du Mesnil du Buisson

Les vestiges de l'occupation néolithique précéramique furent trouvés sur le site dans deux zones différentes (Figure 14.1):

Le ramassage effectué par R. du Mesnil du Buisson durant sa première campagne au fond des deux sondages (a) et (c) (entre 10 m et 12 m de profondeur, cf. Al-Maqdissi 2000a, 147; 2000b) implantés dans la cour du sanctuaire de Bêl a mis en évidence du matériel lithique datant du néolithique précéramique (du Mesnil du Buisson 1966, 182-3);

Au Sud-Ouest de la ville de Palmyre, à environ un kilomètre au sud de la source d'Efqa, R. du Mesnil du Buisson signale la présence d'un petit monticule connu sous le nom de Tell ez-Zor. Un ramassage de surface réalisé durant sa première campagne confirma la présence d'une occupation au Néolithique précéramique *(ibid*., 160-3) avec notamment une pointe de flèche à base pédoncule du type dit 'de Byblos' (*ibid*., 163 et Figure 14.1, cf. plus loin).

R. du Mesnil du Buisson fit à propos de ces travaux au fond du sondage (a) de l'esplanade du Sanctuaire de Bêl les deux remarques suivantes: d'abord il précise à propos de l'industrie lithique, dans un document conservé dans ses archives au Musée du Louvre qu'

> *à 8m. 50., un sol pierré très dur est formé en grande partie de pierres de silex. Parmi celles-ci, nombreux éclats et lames travaillées provenant d'une industrie lithique. Certaines lames sont roulées et émoussées ; d'autres, dans un parfait état de fraîcheur, comme le burin brun foncé de la Fig. 2*[1]*, ainsi que les percuteurs de la fig.*[2] *On remarque qu'ils n'ont pas seulement servi à frapper, mais aussi à broyer*.[3]

De même, dans sa communication sur sa première campagne de 1965 à l'Académie il précise qu'

1 Planche de figure introuvable dans les Archives du DAO au Musée du Louvre.
2 Situation identique de la note précédente.
3 DAO/313/004/0004. Les deux figures nous échappent complètement.

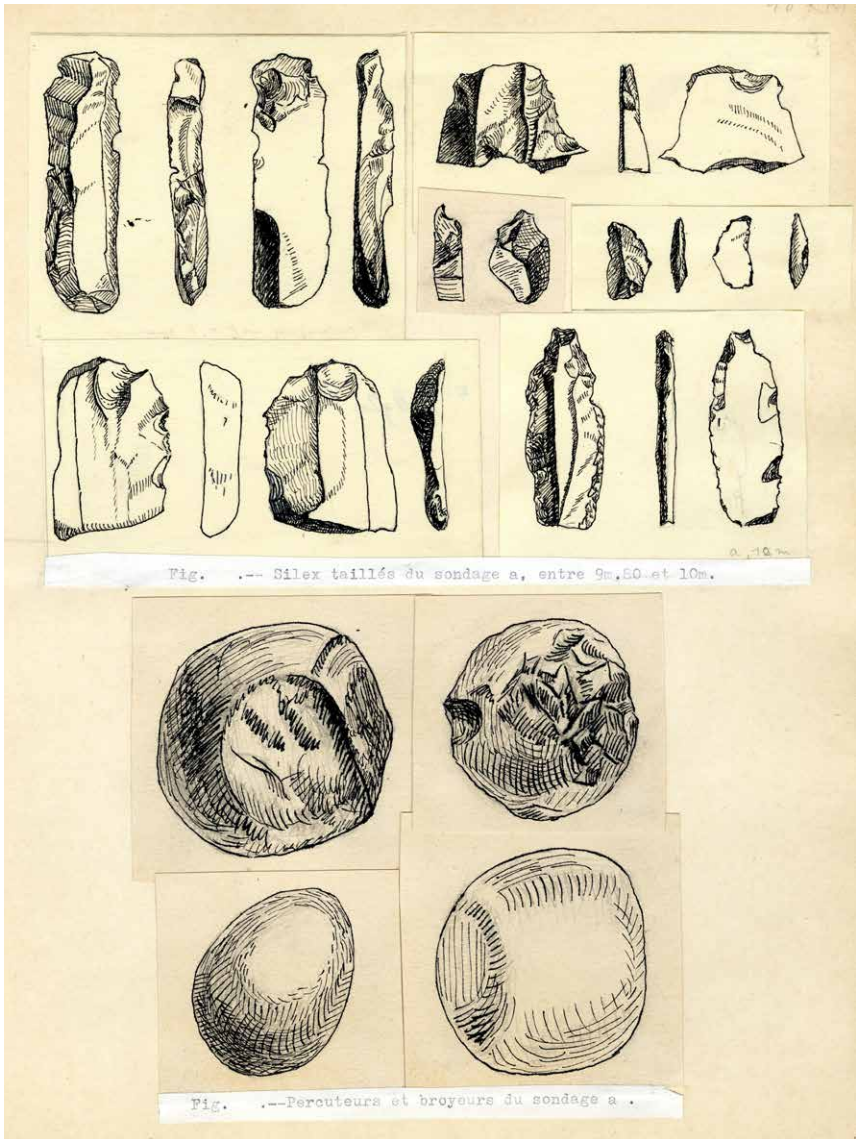

Figure 14.2: Planche inédite avec du matériel du néolithique précéramique (industrie lithique et pilons en pierre) du fond du sondage (a) de l'esplanade du sanctuaire de Bêl (DAO/313/003/0026).

> *au-dessous, on recueille un petit silex taillé très usé, sans doute beaucoup plus ancien que la fondation de la ville, puis du sable, beaucoup de cailloux roulés; on a l'impression de creuser dans le fond d'un wadi. Le travail est arrêté dans ce milieu dépourvu de toute trace de vie, à 12 m. 50* (du Mesnil du Buisson 1966, 182-3).

Ainsi, il propose une conclusion basée sur létude du matériel inédit (Figures 14.2 et 14.3) des sondages (c, d et e):

> *entre 9 m. 80 et 10 mètres sol pierre très dur avec des lames de silex taillé et des percuteurs, mêlés à quelques fragments de jarres, puis un sol marneux, vierge* (du Mesnil du Buisson 1966, 182).

Il s'agit vraisemblablement des éléments du néolithique précéramique.

Pour Tell ez-Zor, il formule une réflexion importante:

> *Au Sud de la Source, à 1 kilomètre ou un peu moins, près l'actuelle route de Homs, à l'Est, nous avons exploré un monticule naturel peu élevé nommé tell ez-Zor. Nous avons recueilli à la surface un grand nombre de lames de silex taillés, spécialement une flèche très soignée caractéristique du néolithique* [ici Figure 14.4]. *C'est le plus ancien établissement humain qui nous soit connu à Palmyre, et comme nous l'avions prévu, il dépend de la Source d'Efqa* (du Mesnil du Buisson 1966, 162).

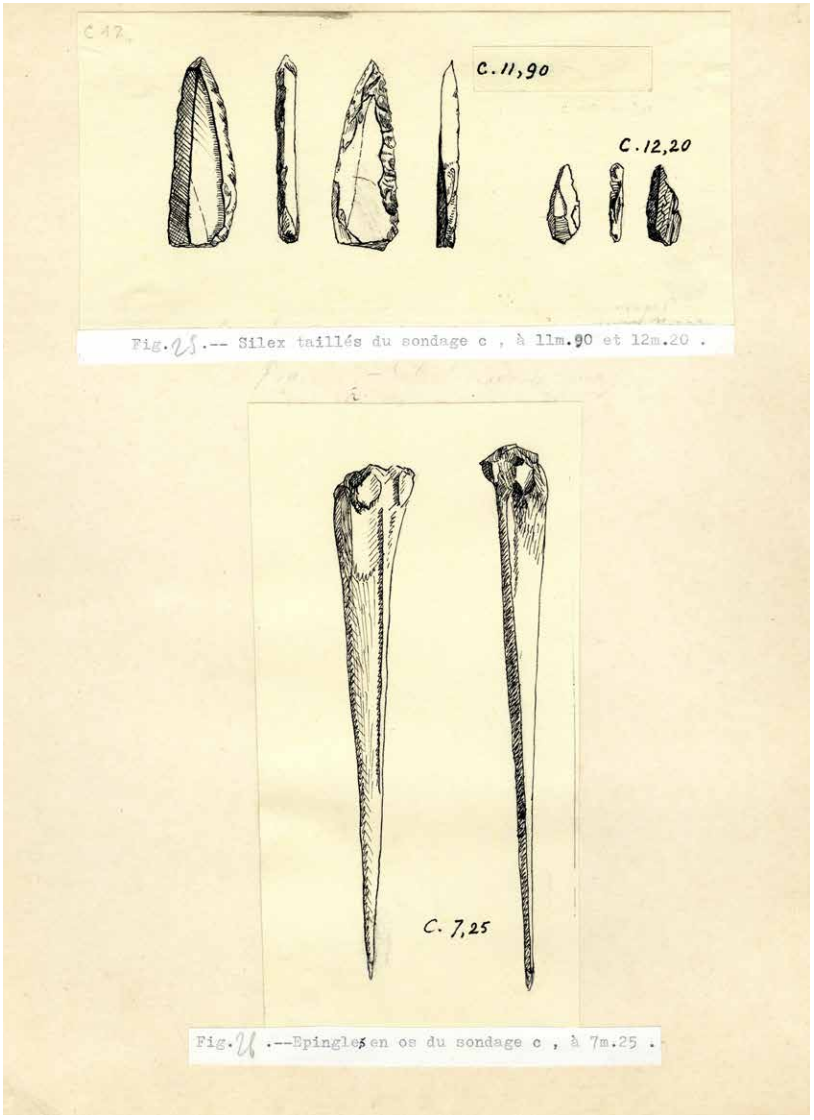

Figure 14.3: Planche inédite avec du matériel du néolithique précéramique (industrie lithique et poinçon en os) du fond du sondage (c) de l'esplanade du sanctuaire de Bêl (DAO/313/003/0027).

Les travaux de la mission syrienne en 2011

La mission syrienne a concentré une partie de son activité en 2011 à Tell ez-Zor durant presque trois semaines (cf. d'une manière générale Al-Maqdissi et Ishaq 2017). Le site est une petite colline de forme allongée de 230 m de long sur 110 m de large, et sa hauteur est d'environ 6 m au-dessus de la plaine environnante. Il comporte deux buttes séparées par une dépression (Figure 14.5). Deux chantiers ont été fouillés:

Le premier (A), sous la responsabilité de Muhidine Hamoudé[4], est installé au nord-ouest de la première butte à l'emplacement d'une zone perturbée par des travaux de terrassement moderne.

Le deuxième chantier (B), sous la responsabilité du regretté Antoine Souleiman, est placé immédiatement au-dessus du sommet de la deuxième butte. Ce chantier qui sera présenté, comme nous avons déjà signalé, dans une deuxième note n'a pas livré de traces des structures construites à l'exception de sols bétonnés liés avec de la céramique datant du néolithique.

Dans le premier chantier (Figure 14.6), une coupe résultant du terrassement a été nettoyée et étudiée en même temps qu'une fouille en extension d'une série de structures construites placée au pied de la coupe précédente. L'analyse de la coupe montre la présence de deux niveaux d'environ 2 m d'épaisseur comprenant neuf couches associés à du matériel allant du Néolithique à la période romaine. Ces niveaux ont été répartis comme suit (Figure 14.7):

4 Alors étudiant à l'Université de Damas-Syrie.

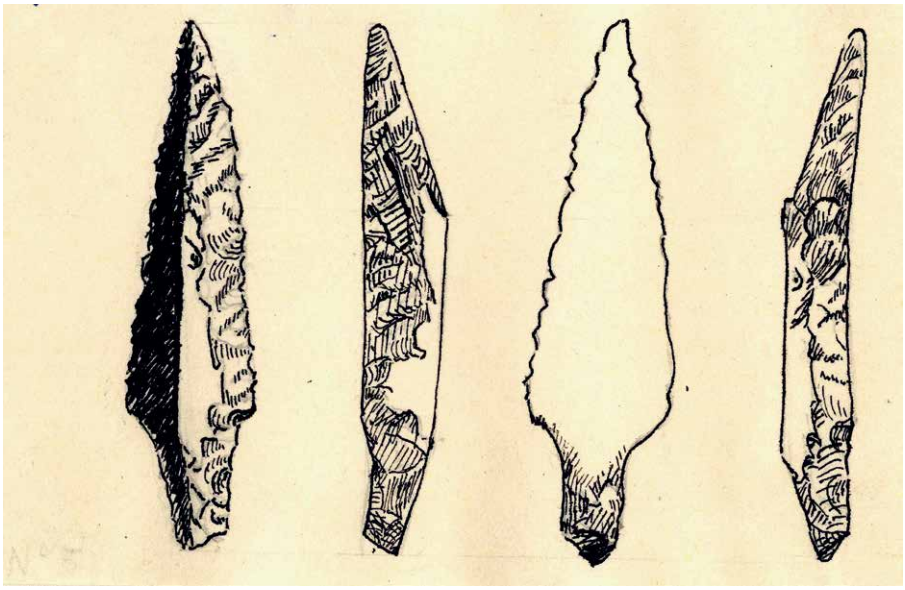

Figure 14.4: Pointe de flèche dite ‘de Byblos’ de la surface de Tell ez-Zor (DAO/313/002/0014a) en même temps publiée dans du Mesnil du Buisson 1966, 163 et Fig. 1.

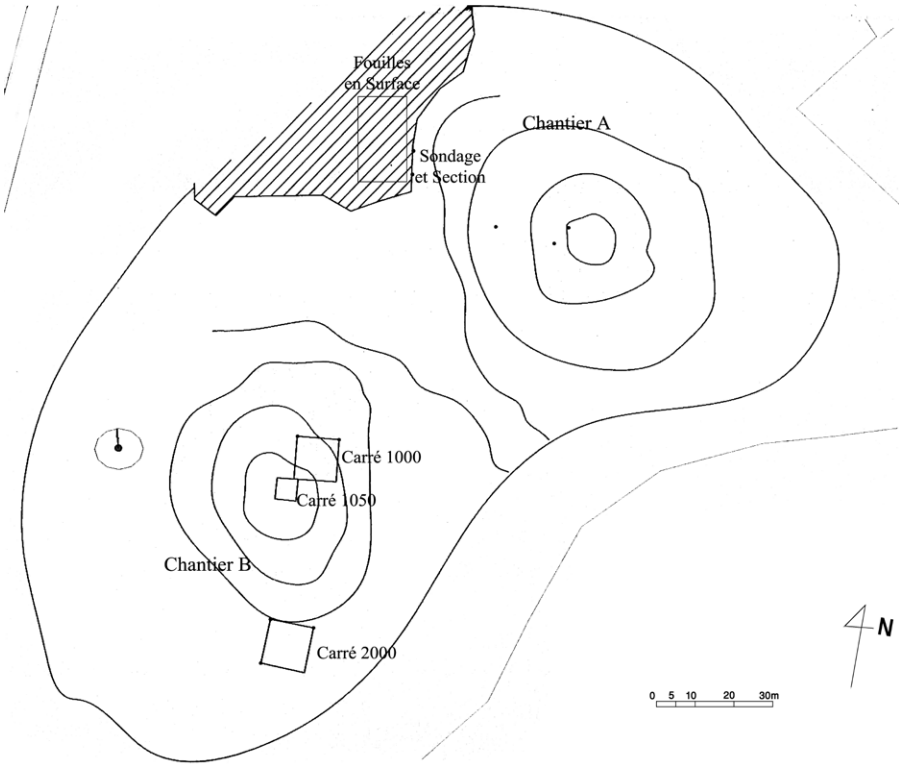

Figure 14 5: Plan topographique de Tell ez-Zor avec la localisation des deux chantiers (A) et (B) (mission archéologique syrienne de Palmyre 2011).

Surface (dans la coupe)

- **101**: Couche de terre dure qui s’étend sur toute la coupe, son épaisseur varie entre 30 et 40 cm. Elle contient des éléments en plâtre, des outils en silex et des ossements.
- **102**: Couche de terre dure grisâtre et cendreuse apparue au milieu de la coupe et s’étendait jusqu’à son extrémité est. Elle contenait principalement des éléments de plâtre, son épaisseur atteignait environ 10 à 20 cm.

Premier niveau (dans la coupe)

- **103**: Couche grise foncée qui contenait des outils en silex, de la cendre et des morceaux d’os.
- **104**: Épaisse couche de sable fin du côté ouest qui diminue au fur et à mesure du côté est.
- **105**: Couche de cendres friable contenant des fragments de terre argileuse de couleur noire.
- **106**: Couche de sable rougeâtre mélangée à une grande quantité de cailloux et d’os.

Figure 14.6: Photographie d'ensemble du chantier (A) de Tell ez-Zor (mission archéologique syrienne de Palmyre 2011).

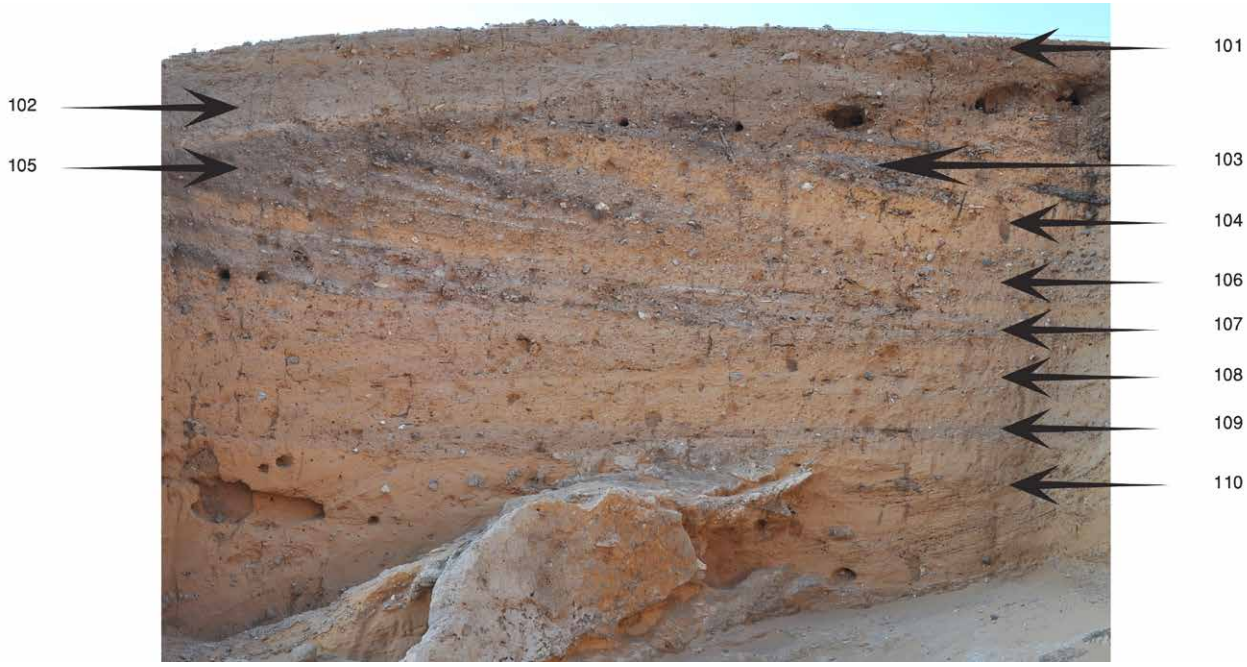

Figure 14.7: Photographie du nord vers le sud de la coupe du chantier (A) de Tell ez-Zor (mission archéologique syrienne de Palmyre 2011).

Figure 14.8: Industrie lithique de la couche (**108**) de la coupe du chantier (A) de Tell ez-Zor (mission archéologique syrienne de Palmyre 2011).

- **107**: Couche de sable fin grisâtre mélangée avec une importante quantité de cendres et d'os.

Deuxième niveau (dans la coupe)

- **108**: Couche de sable rougeâtre contenait des outils en silex (Figure 14.8).
- **109**: Couche de sable fin rougeâtre mélangée de cailloux.

Le matériel archéologique trouvé dans ces couches permet de préciser les remarques suivantes. Le premier niveau comprend les sept premières couches (**101-107**). Il atteste des accumulations d'un mètre cinquante liées à des périodes où il n'y avait pas une activité humaine associée à des unités architecturales avec parfois (**103**, **105** et **107**) des traces du feu[5]. Le matériel trouvé est varié avec des tessons palmyréniens de l'époque romaine et des silex néolithiques.

Par contre, le deuxième niveau qui commence immédiatement au-dessous du niveau précédent est conservé uniquement sur environ 0.80 m d'épaisseur avec deux couches (**108-109**) homogènes.

Les éléments trouvés dans ces couches sont principalement du matériel lithique (nucléus et outillage) (Figure 14.8), des ossements d'animaux et des fragments en pierres travaillés.

Troisième niveau (fouilles en extension)

Le troisième niveau était immergé dans une épaisse couche (**110**) de sable fin rougeâtre d'environ 0,75 m d'épaisseur mélangée avec des fragments de cendres.

Sous cette dernière couche, des éléments architecturaux sont apparus ce qui nous a incités à appliquer une fouille horizontale orientée vers le nord à l'emplacement des travaux de terrassement mentionnés plus haut. Les éléments architecturaux étaient composés des unités archéologiques suivantes (Figures 14.9-14.10):

- **130**: Suite de la couche (**110**) avec un remplissage du sable sur l'ensemble des structures construites.
- **131**: Mur extérieur composé de deux à trois assises de soubassement en pierre. Il est orienté nord-est/sud-ouest et conservé sur environ 4,80 m.

5 Au moins à l'emplacement de la coupe. Il s'agit vraisemblablement des aires limitrophes à l'agglomération.

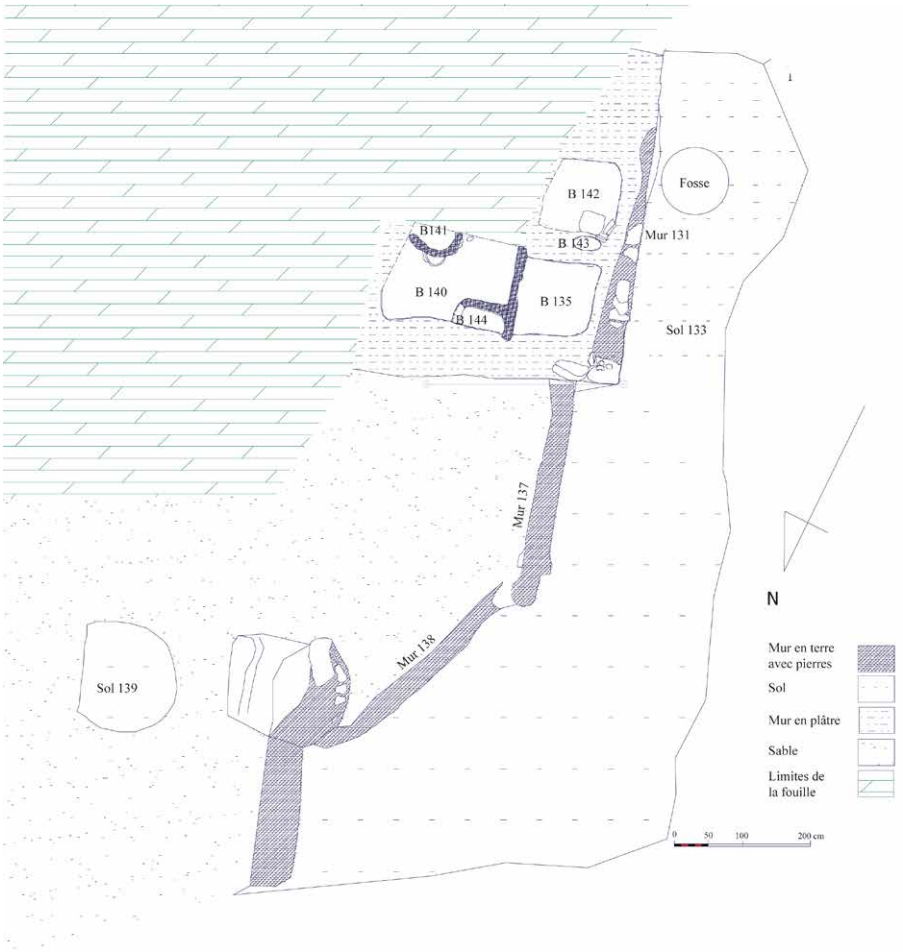

Figure 14.9: Plan des éléments architecturaux et des unités archéologiques du chantier (A) de Tell ez-Zor (mission archéologique syrienne de Palmyre 2011).

- **132**: Couche de sable fin contenant un grand nombre des éclats de silex et d'ossements d'animaux, située des deux côtés du mur **(131)**.
- **133**: Sol extérieur dur (presque bétonné) grisâtre qui prend son départ au pied du mur **(131)**. Il descend progressivement vers le nord et rejoignant les deux murs **(136)** et **(137)**.
- **134**: Couche argileuse située immédiatement au-dessous de la couche **(132)**, dont sa composition est marquée par du sable fin, de morceaux de plâtre et de pierres effondrées des parois du mur **(131)**. Le tamisage du sable a mis en évidence des éclats de silex et des blocs bruts de silex.
- **135**: Petite pièce à l'est du mur **(131)** de plan presque carré d'environ 1.15 m de côté. Elle communique à l'est avec une seconde pièce **(140)**.
- **136**: C'est un petit décrochement est-ouest de 0.60 m de longueur est pour lier les deux murs **(131)** et **(137)**. Il est comparable par sa structure aux deux murs précédents avec un soubassement en pierre surmonté de moellons moyens mélangés avec de la terre dure.
- **137**: Mur ayant la même orientation et de même nature que le mur précédent **(131)**. Il est conservé sur une longueur d'environ 3.20 m.
- **138**: Mur de la même nature que le précédent, mais son orientation est plutôt nord-sud. Il est conservé sur environ 3.40 m. Par la suite le terrain est bien endommagé et nous restituons avec difficulté une prolongation de vers nord-Ouest **(139)**.
- **139**: Sol de l'espace extérieur dur (presque bétonné) grisâtre à l'est des éléments architecturaux précédents.
- **140**: Pièce partiellement fouillée de plan rectangulaire de 1,80 m de longueur sur 1.30 m de large. Elle contenait dans son angle nord-ouest, un petit bassin rectangulaire **(144)**, tandis que nous attestons la présence d'un autre bassin semi-circulaire **(141)** dans l'angle opposé.
- **142**: Petite pièce à l'est du mur **(131)** de plan presque carré d'environ 1.10 m de côté. Une structure composée d'une auge **(143)** et une petite plateforme est aménagée à son angle nord-ouest.

Pour résumer, ces éléments forment un ensemble construit sur une plateforme limitée à l'ouest par une série de murs

Figure 14.10: Photographie d'ensemble des éléments architecturaux et des unités archéologiques du chantier (A) de Tell ez-Zor (mission archéologique syrienne de Palmyre 2011).

Figure 14.11: Photographie des deux pièces (**135**) et (**140**) du chantier (A) de Tell ez-Zor (mission archéologique syrienne de Palmyre 2011).

Figure 14.12: Photographie de la pièce (**140**) du chantier (A) de Tell ez-Zor avec le bassin (**141**) et le bassin (**144**) (mission archéologique syrienne de Palmyre 2011).

(**131**; **136**; **137** et **138**) d'environ 11.5 m de longueur. Ces murs successifs sont composés d'un soubassement de deux à trois assises irrégulières de pierres oblongues noyées dans une terre grisâtre dure. L'épaisseur de ces murs varie entre 0.30 et 0.45 m.[6] Ils soutiennent vers l'est la plateforme composée d'une accumulation compacte de pierres et de terre grisâtre dont la surface aménagée sur une couche de mortier argileux est faite d'une épaisseur de plâtre.

Les trois petites pièces forment une structure homogène en «L» (Figure 14.11). Les murs et les sols sont enduits d'une couche épaisse de plâtre de couleur blanche. Un passage de 0.32 m de large et 0.46 m de hauteur est aménagé entre les deux pièces (**135**) et (**140**). Il est conservé

6 Même jusqu'à 0.65 m à l'extrémité sud.

Figure 14.13: Pan du mur (**131**) effondré sur l'accumulation de sable qui recouvrait la pièce (**142**) (mission archéologique syrienne de Palmyre 2011).

Figure 14.14: Fragment d'une coupelle (Palmyre/Tell Zor 2011/90) en pierre blanchâtre (mission archéologique syrienne de Palmyre 2011).

Figure 14.15: Fragment d'une plaque (Palmyre/Tell Zor 2011/83) en plâtre percée d'un trou (mission archéologique syrienne de Palmyre 2011).

Figure 14.16: Pilon (Palmyre/Tell Zor 2011/88) en pierre de forme tronconique (mission archéologique syrienne de Palmyre 2011).

dans un état exceptionnel avec un seuil et un cadre en bordure en bourrelet (Figure 14.12).

Notons en plus que les aménagements attestés à l'intérieur des deux pièces **(140)** et **(142)** sont dans les angles (Figure 14.12):

Bassin **(141)** partiellement fouillé de forme allongée, conservé sur 0,90 m de long et 0,40 m de hauteur. Il est construit avec du plâtre mélangé avec de petites pierres. Une auge de 0,25 m de long entièrement en plâtre est aménagée sur la paroi extérieure arrondie du bassin.

Bassin **(143)** de forme allongée, aménagée contre le mur qui sépare les deux pièces **(135)** et **(142)** de 0.50 m de long sur 0.35 de large. Il est lié à l'est à un à une auge carrée et au sud à une petite plateforme. L'ensemble est construit avec de pierres mélangées à de la terre brunâtre. La paroi sud est modelée à partir de la plateforme par une épaisse couche de plâtre. Traces de la cendre sont visibles presque partout.

Bassin **(144)** de forme rectangulaire de 0,90 m de long sur 0.40 m de large est conservé sur environ 0.50 m de hauteur. Il est construit d'un mélange de petites pierres et de terre. Les parois sont modelées à partir du sol par une épaisse couche de plâtre. Il y a des traces de cendre presque partout.

Il est important de signaler que parmi les éléments observés dans la coupe **(110)**, il y a un pan du mur **(131)** effondré sur l'accumulation du sable (Figure 14.13) qui recouvrait la pièce **(142)**.

Figure 14.17: Matériel récolté sur le sol (**139**) : outillages lithiques et morceaux épais d'enduits en plâtre (mission archéologique syrienne de Palmyre 2011).

Matériel archéologique

Huit objets ont été récoltés au cours des travaux dans un contexte stratigraphique fiable au fond de l'accumulation qui remplissait les différentes unités.

Dans la pièce **(135)** un objet est attesté sur le sol: **Palmyre/Tell Zor 2011/86**, pilon en pierre dure de couleur brun claire jaunâtre et surface lisse. Il porte une forme circulaire de 9.5 cm de diamètre et 5.8 cm de hauteur.

À l'intérieur du bassin **(141)**, la fouille dans l'accumulation de sable a révélé au fond presque sur le sol la présence des quatre objets suivants: (1) **Palmyre/Tell Zor 2011/84**, Plaque incomplète en plâtre, surface portant les traces d'usure. Elle a une forme rectangulaire de 34 cm de longueur, 23 cm de largeur et 3 cm d'épaisseur; (2) **Palmyre/Tell Zor 2011/85**, disque complet en plâtre de 15.5 cm de diamètre et 2.3 cm d'épaisseur. La surface principale est fine tandis que l'autre porte trace de contact au moment de la fabrication avec du sable; (3) **Palmyre/Tell Zor 2011/87**, pilon en pierre dure de couleur claire et surface grossière. Il a une forme circulaire de 8,5 cm de diamètre et 4,5 cm de hauteur; et (4) **Palmyre/Tell Zor 2011/90** (Figure 14.14), fragment d'une coupelle peu profonde en pierre blanchâtre. Surface lisse et lèvre finement réalisée de 11,5 cm de diamètre et 1 cm d'épaisseur.

Sur le sol de la pièce **(142)** la fouille révèle la présence dans l'accumulation du sable de l'objet suivant: **Palmyre/Tell Zor 2011/83** (Figure 14.15), plaque incomplète en plâtre finement réalisée et percée d'un trou de 2,5 cm. de diamètre. Elle porte à l'origine une forme carrée avec des angles arrondis d'environ 37 cm de côté et 3 cm d'épaisseur.

Enfin au fond du bassin **(144)** nous attestons les deux objets suivants: (1) **Palmyre/Tell Zor 2011/88** (Figure 14.16), pilon en pierre de forme tronconique avec un fond plat et une partie supérieure arrondie. Hauteur 11.6 cm et épaisseur 4.5 cm; et (2) **Palmyre/Tell Zor 2011/89**, outil

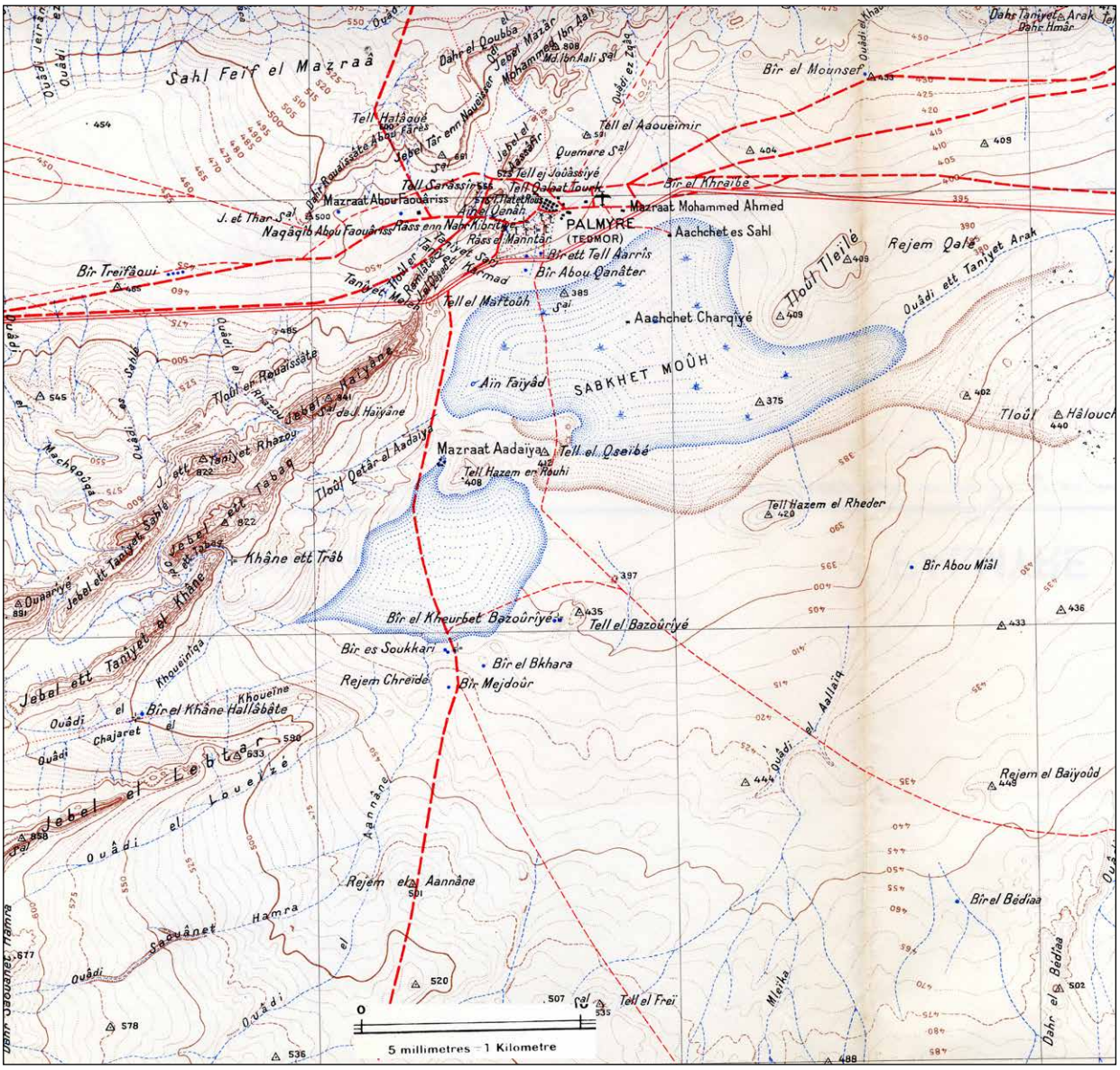

Figure 14.18: Carte générale avec les ressources hydrauliques de l'oasis de Palmyre dressée par le Service Géographique des F. F. L. en 1944 (1:200.000) conservée dans les archives de R. du Mesnil du Buisson au Musée du Louvre (DAO/313/001/0033).

en silex incomplet, extrémité pointue avec les traces de martelage sur sa surface. Hauteur conservée 11.2 cm.

Sur le sol extérieur **(133)** ainsi que le sol **(139)**, nous remarquons la présence de morceaux épais d'enduits en plâtre des murs et des outillages lithiques (pointe de flèche, herminette?, éléments de faucille, éclats) avec parfois des nucléus (Figure 14.17).

L'oasis de Palmyre, une remarque première

La nature de la stratification de Tell ez-Zor situé à côté de la source 'Afqa à Palmyre permet de définir deux phases: la PPNB dans le chantier A (présenté ici) et le Néolithique céramique dans le chantier B (note en cours de préparation) séparées par plusieurs accumulations de terre et de sable sans aucune trace de matériel archéologique.

Il est clair que les travaux menés dans le chantier (A) ont livré des éléments architecturaux composés de trois unités construites sur une terrasse marquée par une plateforme en terre bétonnée et du sable tassé.

Cette dernière est soutenue à l'Ouest par un mur au soubassement en pierre. Les matériaux de construction mis en œuvre pour les murs sont généralement des pierres surmontées de la terre compactée mélangée avec du plâtre, des petites pierres et un peu de sable. Le plâtre est

utilisé en couche épaisse pour enduire les murs, les sols, les bassins et même les sols extérieurs.

La trace de cendres attestée partout sur le sol et les murs indique que la destruction de ce niveau est due à un incendie. Les coupes révèlent des murs qui se sont effondrés à l'horizontale recouvrant ainsi les vestiges et les murs. Chose exceptionnelle qui permettra un jour, lors de la poursuite des fouilles, de donner une image précise de la nature des activités qui s'y déroulaient.

Les éléments les plus proches sont attestés à El-Kowm dans la steppe palmyrénienne à environ une centaine de kilomètres au nord-est durant la période finale du néolithique précéramique (cf. les chapitres III-VI rédigés par D. Stordeur, Cl. Maréchal et M. Molist dans Stordeur 2000, 36-85). De même, le matériel archéologique confirme une date du PPNB avec des éléments de comparaison particulièrement à El-Kowm et à Bouqras (matériel lithique et la coupelle en pierre, cf. Roodenberg 1986, Figs. 40, 81/1).

Pour conclure cette petite campagne, réalisée à la veille du déclenchement de la guerre civile en Syrie, apporte un élément nouveau au dossier des sites néolithiques de la steppe syrienne. Elle témoigne de la position de l'oasis palmyrénienne au milieu des mouvements de la population en cours de la phase de sédentarisation entre l'Euphrate et la Syrie intérieure. Cette constatation permet de confirmer une des conclusions développées par D. Stordeur dans l'ouvrage *El-Kowm 2* qui révèle que les sites de cette steppe partageaient: *un certain nombre de traits culturels … en même temps des caractères plus particuliers qui permettent de les regrouper en régions ou en faciès* (Stordeur 2000, 303). Cette phase de sédentarisation, relativement tardive pour le Néolithique syrien intègre la steppe palmyrénienne selon J. Cauvin dans une phase où *les villages sédentaires, dont le régime jusque-là fondé sur l'exploitation diversifiée des ressources sauvages, resserrent leurs choix* (Cauvin 1978, 140). C'est justement dans l'oasis de Palmyre, riche par des ressources hydrauliques (Figure 14.18) que l'homme traverse une phase cruciale de son existence vers une sédentarisation permanente et un mode de vie parfaitement adapté à la culture steppique.

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STYLE AND SOCIETY
IN THE PREHISTORY OF WEST ASIA

Olivier Nieuwenhuyse was a remarkable archaeologist whose work has transformed the study of later Neolithic societies in West Asia. He has inspired many colleagues and students in their own pursuit of archaeology. Through the analysis of material culture his aim was to reconstruct social meanings and practices of societies in the deep past. In this volume a series of colleagues and friends pay tribute to the scholarship of Olivier Nieuwenhuyse, who died much too young, and present a series of studies on the archaeology of Late Neolithic societies in West Asia.

The volume includes a reflection on Olivier's career in archaeology (Spoor). There are chapters on the key site of Tell Sabi Abyad, on which Olivier worked for many years, dealing with its buildings (Akkermans and Brüning), its funerary practices (Plug), and the use of bitumen at the site (Connan et al.). The next section on the book focusses on the analysis of tokens (Bennison-Chapman), figurines (Arntz, Düring), and ornaments (Belcher and Croucher), of various sites dating to the Late Neolithic in West Asia. Following this there are studies on the emergence of pottery in West Asia (Bartl, Özbal), the use of ceramic 'husking trays' (Balossi Restelli), and the design rules in various prehistoric pottery traditions (Bernbeck and Pollock). Finally, the last chapter presents new data on prehistoric Palmyra (Maqdissi and Ishaq).

Colleagues working on Neolithic West Asia will find much of interest in this volume. We hope they will agree that this is a worthy tribute to the remarkable body of scholarship that Olivier Nieuwenhuyse has created.

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