Transforming the Upper Mesopotamian Landscape in the Late Neolithic

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Abstract. The Late Neolithic period in Upper Mesopotamia is generally associated with a surge in human settlement, in terms of their number, geographic distribution, and organizational complexity. In archaeological discussion, the "advanced farming village" is often seen as the logical "end product" of the agricultural transformations that began in the Early ("Pre-Pottery") Neolithic. However, the complex later prehistoric landscape did not emerge overnight. Current evidence suggests that this profound transformation took about one and a half millennia, and showed much localized variability. Over the past decades, regional surveys have resulted in a rich body of evidence that stimulates the exploration of long-term trends in settlement through the Neolithic period. Here we present a synthesis of this exploration. We highlight some important methodological and conceptual challenges to interpreting these data, and we point out a number of possible shifts in the ways Late Neolithic communities inhabited the landscape.

Keywords: Upper Mesopotamia, Late Neolithic, Halaf, Tell Sabi Abyad, Balikh Valley

The Late Neolithic in Upper Mesopotamia, known also as the "Pottery Neolithic," was a transformative era that saw profound changes in subsistence, settlement organization, religious life, commensality, as well as the formation of local and supralocal identities. The term "Upper Mesopotamia" loosely refers to the area covered by the foothills of the southeastern Anatolian Taurus mountains, the inland parts of the northern Levant, the semi-arid steppes of the northern Syrian Jezirah, and the rolling plains of northern Iraq (fig. 1). The Late Neolithic began with the adoption of ceramics around 7000 cal. BC and came to an end with the shift from the Halaf to the Ubaid pottery style around 5300 cal. BC (Akkermans and Schwarz 2003; Campbell and Fletcher 2010; Karsgaard 2010; Tsuneki, Nieuwenhuyse, and Campbell 2017). Plain and coarsely made ceramics mostly characterize the first half of the period. However, the latter part was characterized by ceramic-technological diversification and a suite of elaborately decorated pottery styles, in what Jean-Luis Huot (1994: 63) termed "L'ère de la céramique peinte." By facilitating new opportunities for symbolic messaging and social networking,

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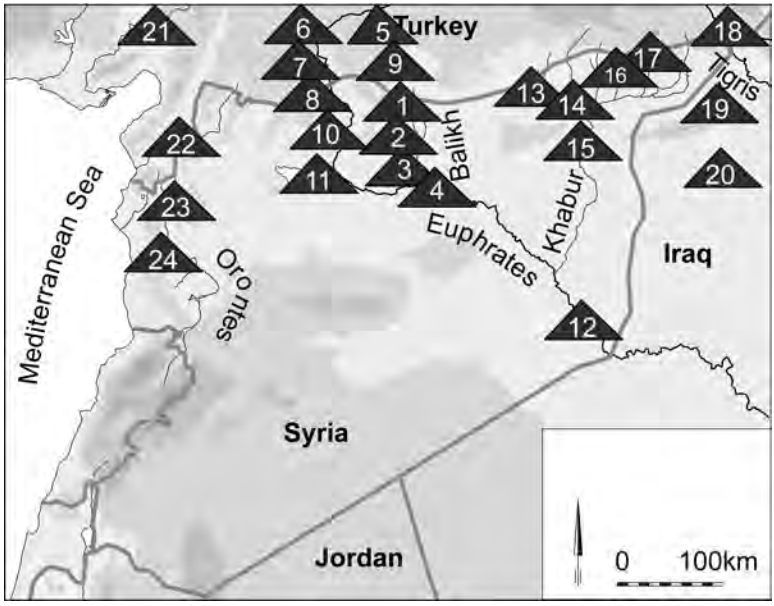

Fig. 1. Map of Upper Mesopotamia showing the locations of some major Late Neolithic sites. 1: Tell Sabi Abyad. 2: Khirbet es-Shenef. 3: Tell Mounbatah. 4. Tell Zaidan. 5: Kumartepe. 6: Fıstıkli Höyük. 7: Mezraa Teleilat. 8: Akarçay Höyük. 9: Tell Kazane. 10: Shams ed-Din. 11: Tell Halula. 12: Bouqras. 13: Tell Halaf. 14: Seker al-Aheimar. 15: Tell Boueid. 16: Chagar Bazar. 17: Nisibin. 18: Takane Hoyük. 19: Ginnig. 20: Umm Dabaghiyah. 21: Domuztepe. 22: Tell Kurdu. 23: Tell el-Kerkh. 24: Shir. (After Akkermans and Schwartz 2003: 3, fig. 1.1.)

advanced possibilities for bulk storage, and innovative ways for preparing food and drink, pottery containers were an important factor contributing to the success and longevity of the Late Neolithic way of life (Nieuwenhuyse 2018b, 2019, in press a, in press b; Redman 1978: 179).

As captured in the phrase "villages in the steppe" (Akkermans 1993), the steady spread of sedentary settlement formed an important element of this Late Neolithic transformation. The "advanced farming village" is often seen as the direct "end product" (Redman 1978: 176–77) of the agricultural transformations that began in the Early ("Pre-Pottery") Neolithic. The Late Neolithic period is generally associated with an increasing number of archaeological sites. For Huot (1994: 67), in the course of the seventh millennium "de petites communautés domestique … se développent peu à peu sur l'ensemble du territoire mésopotamien." In the words of Charles Redman (1978: 178), at the end of the Late Neolithic period, "the agricultural village had established itself as the most effective economic strategy, allowing some communities to grow in large towns … The distribution of farming villages and emerging towns had been extended far beyond the limits of the nuclear zone of the Near East…."

Yet, the mechanisms by which farming villages established themselves as the dominant form of socoeconomic organization across the Upper Mesopotamian landscape merit much further study (Akkermans 1993; Akkermans and Schwartz 2003). Since the 1980s, regional surveys have contributed much to changing our perspectives on Late Neolithic settlement (Wilkinson 2000). These studies enriched the archaeological narrative, and expanded upon the traditional, one-sided focus on isolated sites. They formed a fuller, ultimately more realistic consideration of the ways village communities interacted with, responded to, and affected the environments in which they found themselves. Surveys provide a unique perspective on site-location preferences, socoeconomic aspects of subsistence strategies, and site densities. These data can act as a (rough) proxy for demographic trends, and shed light on relationships between contemporaneous groups. Therefore, the Late Neolithic landscape is not a static background, but rather is the interplay between features of the natural environment and the choices made by prehistoric groups.

Recent surveys in Upper Mesopotamia have been innovative in their explicit focus on the Late Neolithic period as a research topic, in the adoption of chronological subdivisions within this period, and in their advocacy of transparent, more-rigorous analyses of the collected data (mostly pottery sherds). These new approaches offer opportunities to tease out change *during* this period and to identify regionally specific trends. At the same time, it has highlighted serious analytical and conceptual issues that have so far prevented a full consideration of Late Neolithic settlement. Such challenges call out for specially designed research projects targeting this period. Here we will discuss recent site surveys across the Upper Mesopotamian plains as a contribution towards a comparative, synthesizing perspective on the Late Neolithic landscape.

Archaeological Approaches to Late Neolithic Settlement

Until a few decades ago, the limited evidence at hand simply did not allow researchers to differentiate Late Neolithic settlement *within* this long period (almost two millennia). Initial surveys conducted in Upper Mesopotamia were rather unsystematic in detecting and sampling archaeological sites, and they rarely ever published specific information on the materials they collected (for example Mallowan 1936). Researchers at the time were interested in subjects other than the Late Neolithic period specifically. Even if the Late Neolithic was identified as a separate stage at all, its internal subphases were often lumped into a single block termed "Halaf" (among many others, Einwag 1993; Kühne 1977, 1978; Meijer 1986; Monchambert 1984). This stood in contrast to southern Mesopotamia, where surveying had developed into an important, analytically advanced tool much earlier. Through these methods, the earliest settlements in the lowlands

could be dated to the very end of the Late Neolithic period (Oates 1968, 2013; Pournelle 2017; Ur 2017). For those interested in the Sumerian Neolithic, there was not much to deconstruct.

Nor did the prevailing paradigmatic discourse stimulate any critical reflection on the prevailing notion of a unified, monolithic Late Neolithic. Adopting a long-term, systems perspective on human evolution, many scholars contrasted the Late Neolithic "package" as an undifferentiated analytical entity with what came before (the Pre-Pottery Neolithic), and what came afterwards (the Chalcolithic or Ubaid period; see Redman 1978). The Late Neolithic *system* mattered more than its internal variability. Others sought to identify broad-brush distinctions between northern and southern Mesopotamia. For example, Late Neolithic settlement across Upper Mesopotamia was seen as limited to areas where rainfed agriculture was possible (Redman 1978: 188). This contrasted with site patterns left by the earliest settlers of the Mesopotamian lowlands, who assumedly already had made use of irrigation (Oates 1973). A static and essentialist perspective on the Late Neolithic prevailed.

Ismail Hijara was among the first to focus systematically on Late Neolithic settlement in northern Mesopotamia with a chronologically differentiated framework. He extensively reviewed the Halaf sites in Iraq documented by the Iraqi State Department (Directorate General of Antiquities Baghdad 1970, 1976). To this material, Hijara applied Mallowan's classic tri-partite chronology, which derived from the excavations at Tell Arpachiyah (Mallowan and Rose 1935). Mallowan had distinguished between Early, Middle, and Late Halaf, to which Hijara added a Halaf-Ubaid Transitional (HUT) stage (Hijara 1997). Using his settlement data, Hijara (1997) was also able to identify important regional contrasts in site density and organization in the Halaf period. While Hijara was completing his *magnum opus*, several new survey projects had begun targeting the Upper Mesopotamian Late Neolithic. In northern Syria, the University of Amsterdam's survey of the Balikh Valley was a ground-breaking and pioneering project (Akkermans 1993, 1999; Wilkinson 1996, 1998). The Northern Jazira Project soon followed this, investigating the steppe across the border with Iraq (Campbell 1992; Wilkinson 1990).

These pioneering projects were soon followed by several survey projects that investigated Late Neolithic settlement across the arid steppes of northern Syria and southeastern Turkey (Becker 2004, 2015; Kozbe 2013; Le Mière 2000; Lyonnet 2000; Nieuwenhuyse 2000; Nieuwenhuyse and Suleiman 2016; Nieuwenhuyse and Wilkinson 2008; Tekin 2017). Extensive surveys also targeted the Upper Mesopotamian Euphrates Valley. Several teams investigated this area over some decades and used different methodologies to identify and sample sites (Algaze, Breuninger, and Knudstad 1994; Algaze, Hammer, and Parker 2012; Geyer and Besançon 1997; Geyer and Monchambert 1987, 2003; Kohlmeyer

1984, 1986; Wilkinson, Peltenburg, and Wilkinson 2016). Walter Cruells has usefully brought together the available evidence for the Late Neolithic in the Syrian Euphrates Valley, applying periodizations derived from recent excavations in the region (Cruells, Molist, and Tunca 2004); Tekin (2017) has done similarly helpful work for the Turkish Upper Tigris Valley. A dedicated focus on Late Neolithic settlement patterns continues today in the mountainous Iraqi Kurdistan region (Altaweel et al. 2013; Gavagnin, Iamoni, and Palermo 2016; Morandi Bonacossi and Iamoni 2015; Nieuwenhuyse, Odaka, and Mühl 2016; Nieuwenhuyse, Akkermans et al. 2016; Saber et al. 2014; Tsuneki et al. 2015; Ur et al. 2013).

At present, these various projects have not settled on a uniform, mutually agreed-upon terminology for culture-historical periodizations or their ceramic indicators. However, they all attempt to isolate the Late Neolithic period as well as its complex subdivisions. They also place a sorely needed emphasis on more-rigorous analytical procedures for studying and publishing the collected surface materials, namely, the ceramics. This is crucial to validate the chronological attributions and allows for closer peer scrutiny (Ur 2010). For the first time, these projects allow researchers to identify changes in the use of the landscape *during* the Late Neolithic, and can take into account variability in geography, demographics, and subsistence.

It is important to emphasize that these new, targeted surveys did not focus on the Late Neolithic period only because their analytical research questions stimulated them to do so. Rather, a growing number of new excavations guided these research questions, which were stimulated by the establishment of clear, radiocarbon-dated chronological frameworks for the period (Akkermans 2014; Campbell 2017; Cruells 2017; Cruells, Faura, and Molist 2017; van der Plicht et al. 2011). This facilitated the fine-tuning of the available culture-historical frameworks and the identification of several well-dated, but short-lived ceramic horizons (Akkermans 1989, 1993; Bernbeck and Nieuwenhuyse 2013; Campbell 1992; Cruells 2017). In combination with advances in survey methodologies and interpretation (Ur 2010; Wilkinson 2000), these factors made the study of the Late Neolithic landscape conceptually more interesting and methodologically more feasible. Indeed, they provided an almost irresistible research goal for Upper Mesopotamian prehistorians.

Therefore, it would appear that settlement patterns across the area should be quite well known. At the same time, however, scholars have become much more critical in their assessment of the analytical potential of prehistoric survey data. A far from exhaustive list includes the following theoretical and methodological issues. First, interpretations of the Late Neolithic landscape rely on an established framework of the prehistoric ceramic evidence. Notwithstanding recent progress, much important work lies ahead, as the ceramic-technological background of key pottery types remains obscure in many cases. It is very difficult to classify

fragmented surface material using traditional culture-historical frameworks, which are based primarily on the art-historical analysis of shape and the decoration of complete vessels (Nieuwenhuyse 2000). Useful innovative approaches include the "Working Typology" first developed by Tony Wilkinson and expanded by Jason Ur (Ur 2010: appendix B, Wilkinson 2000), which identifies periods on the basis of ceramic traits that have at least some degree of scholarly consensus. A crucial aspect of future survey periodizations should be the attempt to anchor them within locally well-documented sequences (Akkermans 1993).

Further, Late Neolithic sites appear to be considerably less visible than those from other periods. Late Neolithic sherd densities typically rank as very low, posing pertinent questions of site definition and site formation (Nieuwenhuyse and Wilkinson 2008: 274–76; Ur 2010: 59, 93–95). Significant erosion and sedimentation during the Holocene has transformed much of the earlier landscape, potentially burying small Late Neolithic sites or even destroying them entirely. As an example, site densities in the Syrian Euphrates Valley rank suspiciously lower than those observed in other parts of the region. Peter Akkermans (1999: 526–27) has attributed this to the application of survey procedures insufficiently sensitive to small, inconspicuous prehistoric sites or to strong Holocene erosion and sedimentation characterizing the river valley; a combination of those factors is also likely. Another example comes from western Syria, where intensive surveying failed to identify Late Neolithic sites. Local farmers bulldozing part of the Sarut River terrace in order to level the field for agriculture uncovered the large seventh-millennium site of Shir (Bartl and Haidar 2008; Bartl, Farzat, and al-Hafian 2012). The adoption of systematic surveying techniques has certainly had a positive impact on the study of later prehistoric settlement, but further refinement is still needed. For example, a stronger emphasis on field walking designed to detect small, inconspicuous sites typical for the period holds great promise (Gavagnin, Iamoni, and Palermo 2016; Niknami, Nikzad, and Alibaigi 2013; Nishiaki 2000).

Scholars attempting to apply fine-tuned chronological schemes derived from stratified excavations to the thinly scattered, highly fragmented surface material that is typical for the Late Neolithic period risk the utter fragmentation of their data. In an insightful critique of Late Neolithic settlement studies, Stuart Campbell (1992) proposed a somewhat simplified chronology for the Halaf period, which several projects subsequently followed (Becker 2015; Kozbe 2013; Nieuwenhuyse 2000). Jason Ur (2010) also has adopted a scheme that is less differentiated than stratified sequences would allow, dividing the Late Neolithic into two main periods called "proto-Hassuna" (Period 1), and "Halaf" (Period 2). With its generous chronological resolution, several survey projects in Iraqi Kurdistan have adopted Ur's solution. Figure 2 shows the more detailed temporal boundaries used in the present article. Based on key changes in the pottery, this scheme

Table 1. Provisional Late Neolithic chronology for Upper Mesopotamia, outlining broad ceramic developments. (After Bernbeck and Nieuwenhuyse 2013, table 1.1.)

14C	Archaeological periods	Broad ceramic characteristics
5300–5100	Halaf-Ubaid Transition (HUT)	Gradual demise of painted Fine Ware ceramics; general consensus on a gradual transition yet very poorly understood.
5900–5300	Halaf I –Halaf II	Ceramic assemblages dominated by painted Fine Ware ceramics; strong stylistic similarities over large distances, yet also increasing evidence for localized practices in production and consumption; various chronological subdivisions certainly possible yet poorly understood.
6100–5900	Hassuna/Samarra (northern Iraq); proto-Halaf (northeastern Syria); Transitional (Balikh); Mezraa IIB (Turkish Euphrates); Halula IV (Syrian Euphrates)	The ascendance of various painted Fine Wares; coalescing stylistic horizons in the painted Fine Wares, yet localized practices in production and consumption.
6250–6100	archaic Hassuna (northern Iraq); proto-Hassuna (northeastern Syria); pre-Halaf (Balikh); Mezraa IIA (Turkish Euphrates); Halula III (Syrian Euphrates); Rouj 2D (Northern Levant); Transitional (Domuz)	Ascendance of decorated ceramics; increase range of uses for pottery vessels; gradual disappearance of White Ware.
6700–6250	proto-Hassuna (northern Iraq, northeastern Syria); Early Pottery Neolithic (Balikh); Halula II (Syrian Euphrates); Mezraa IIC/Akarçay II (Turkish Euphrates); Rouj 2b–c, Shir I–VI (Northern Levant); Ceramic Neolithic (Domuz).	Pottery becomes firmly establish; diversification and increase of range of uses for ceramic vessels; emergence of plant-tempered pottery; emphasis on plain pottery vessels; local variation but emerging similarities; stone vessels and White Ware in addition to pottery.
7000–6700	pre-proto-Hassuna (Khabur, northern Iraq); Initial Pottery Neolithic (Balikh); Transitional (Turkish Euphrates); Halula I (Syrian Euphrates); Rouj 2a (northern Levant)	Introduction of ceramic containers; pottery vessels few in number and (presumably) limited to a restricted set of uses; emphasis on pottery with a mineral temper; significant regional variation but also emerging supralocal groupings; stone vessels and White Ware in addition to pottery.

identifies shifts in the quantities of pots in daily use, in the composition of the ceramic assemblage, and in the amounts and types of decorated pots (summarized in table 1).

Crucially, site distribution data on its own is hardly sufficient to reflect the complexities of Late Neolithic settlement. Ideally, this information should be integrated in a rich narrative that also includes in-depth, multidisciplinary studies of excavated settlements. For the later seventh and sixth millennium (the pre-Halaf and Halaf stages), we have reasonably secure information regarding village lay out, subsistence, as well as ritual and social organization (see the contributions in Nieuwenhuyse et al. 2013). However, for the earlier parts of the seventh millennium (the Initial Pottery Neolithic and Early Pottery Neolithic stages), the available information remains much more fragmented. Most of the recent excavations need more time to be fully published and digested.

At the Adoption of Pottery in the Initial Pottery Neolithic, ca. 7000–6700 BC

Interestingly, the introduction of pottery for making durable, portable containers in Mesopotamia around ca. 7000 cal. BC—the start of the Late Neolithic—may or may not have been associated with an abrupt change in settlement densities and site locations. To a large extent, this association depends on the definition of what constitutes a "Late Neolithic" site, and on the interpretation of exactly how, when, and why pottery containers became adopted across Upper Mesopotamia. These issues continue to invite considerable debate (Le Mière and Picon 1999; Nieuwenhuyse and Campbell 2017; Tsuneki 2017).

Recent studies have demonstrated that the earliest ceramic horizon in Upper Mesopotamia (here called the Initial Pottery Neolithic, ca. 7000 to 6700 cal. BC) was characterized by very low quantities of fragile and mineral-tempered ceramics (Le Mière 2017; Le Mière, Merle, and Picon 2018; Nieuwenhuyse, Akkermans, and van der Plicht 2010; Odaka 2017; Cruells 2017; Cruells, Faura, and Molist 2017; Tsuneki et al. 2017). These properties make it incredibly difficult to detect Initial Pottery Neolithic sites in regional surveys. Indeed, the few examples known so far all constitute *excavated* sites, where the rare, fragmented pottery sherds could be collected from stratified contexts. These sites all fall within major and perennial water courses in the northern parts of the Euphrates, Balikh, and Khabur Valleys, as well as in the northern Levant (Le Mière 2017; Le Mière, Merle, and Picon 2018). The semi-arid steppes between these valleys have not yielded any Initial Pottery Neolithic sites at present.

The Balikh Valley arguably ranks among the most thoroughly surveyed prehistoric landscapes in the wider region. If one took the ceramic evidence as a direct reflection of the spread of early Pottery Neolithic populations, a flourish-

ing PPNB society witnessed an abrupt abandonment of almost the entire valley during the Initial Pottery Neolithic phase. In this period, settlement "contracted" to the northern parts of the valley (Akkermans 1993: 170–72, 1999; Akkermans and Schwartz 2003: 110–11). This was followed by a partial return of the population during the Early Pottery Neolithic (scenario #1). Just four Initial Pottery Neolithic sites are known (fig. 2). Most Late Neolithic sites are located north of the present-day 220 mm isohyet, suggesting climatic factors affected these demographic fluctuations and settlement preferences. In short, this scenario envisions dramatic demographic upheavals around the time that people adopted pottery. Akkermans has pointed out the intriguing parallels with contemporaneous site abandonment in the southern Levant, the so-called *hiatus palestinien* (Akkermans and Schwartz 2003: 110–11).

Alternatively, the adoption of pottery containers and the subsequent integration of the new craft in society may have played out differently across different PPNB communities (scenario #2). In the Balikh Valley, the new and exotic containers are known to be of a nonlocal origin (Le Mière, Merle, and Picon 2018). Also at Shir, in the northern Levant, the earliest ceramics at the site may have been imported from elsewhere (Nieuwenhuyse 2009a). Through networks of exchange, their mobility may have carried connotations of prestige and ritual (Nieuwenhuyse et al. 2010). Local communities likely differed in the degree to which they could (or wanted to) participate in the social, economic, and ritual networks through which these containers traveled.

In the Balikh Valley, slips or red-painted motifs on a light-colored background frequently decorated the early pottery. In the northern Levant, the earliest ceramics were dark colored and burnished, perhaps emulating polished stone vessels (Le Mière, Özbaşaran, and Picon 2017). The visually conspicuous, small, and open containers may have had ritualized uses; they were available only in tantalizingly small numbers. At this stage, the more utilitarian roles of pottery in facilitating bulk storage, or a sustained shift to cooked food were not (yet) relevant drivers of consumption (Nieuwenhuyse and Campbell 2017; Tsuneki 2017). The practices that these small and delicate containers facilitated may not have been important to each and every Neolithic community. Some may even have consciously rejected the novelty and the practices associated with these new objects (Bernbeck 2010, 2017). At the Neolithic village of Bouqras on the Syrian Euphrates, it is significant to note that pottery was not adopted before the later part of the seventh millennium (Akkermans et al. 1983).

If the partial adoption of pottery containers is accepted as a possible factor, then the limited spread of Initial Pottery Neolithic sites could indicate that only some of the communities in the northern parts of Upper Mesopotamia gained access to these early ceramic containers. In this scenario (scenario #2), practices involving the use of ceramic containers did not spread much further south during

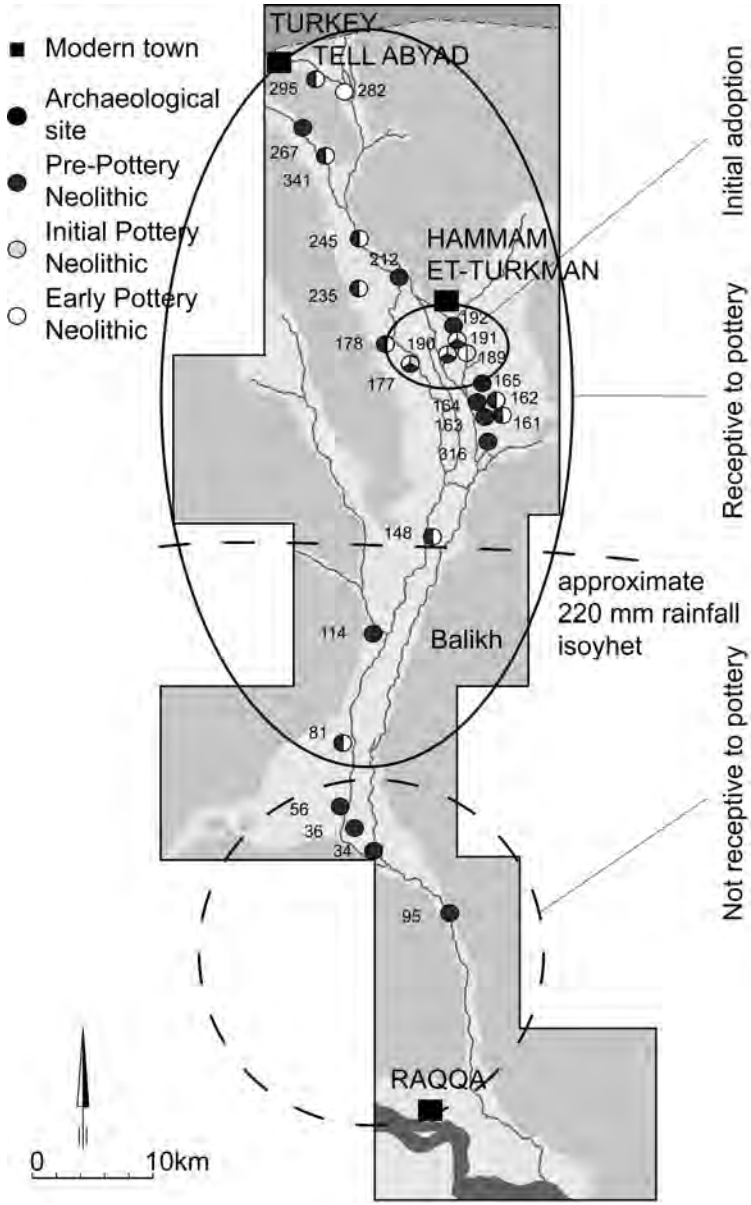

Fig. 2. The distribution of Pre-Pottery Neolithic, Initial Pottery Neolithic, and Early Pottery Neolithic sites in the Balikh Valley. Initial Pottery Neolithic sites: No. 177, Tell Damishliyya; No. 189, Tell Sabi Abyad I; No. 190, Tell Sabi Abyad II; No. 191, Tell Sabi Abyad III. Other sites: No. 245, Tell Assouad; No 148, Tell Mounbateh. After Nieuwenhuyse 2018: pl. 31.

the initial stage of the Late Neolithic. In the Balikh, the potter's craft appears to have spread gradually over several centuries, when Late Neolithic communities across the valley began to produce coarse undecorated pottery locally during the Early Pottery Neolithic phase (fig. 2). Even then, ceramics may not have reached each and every village. Neolithic sites in the southern part of the Valley have so far not yielded ceramics from this early period. Either these sites were abandoned around 7000 BC (after the PPNB period; scenario #1), or these Neolithic groups maintained an aceramic life long after the availability of pottery (scenario #2). In the latter scenario, notwithstanding the fairly dramatic and recent developments in pottery typology, settlement patterns may have been relatively stable.

In the Balikh, it is still difficult at present to establish the extent of the settlements at the few Initial Pottery Neolithic sites known. However, there is reason to believe that it was quite limited, with free-standing buildings comprising only a small portion of the low mounds. This left large areas open for waste disposal and the construction of fireplaces. The area of occupations at each site may have covered around 0.25 to 0.5 ha, suggesting that the local population comprised small and dispersed groups (Akkermans 2013a). In this respect, the early seventh-millennium sites in the region were barely different from those of the preceding PPNB period. In addition to the limited size, the characteristic "pairing" of sites, with two, sometimes three dispersed sites clustering in favorable locations, formed another link with the PPNB (Akkermans 1993).

Settlement continuity is observed in the architecture as well, such as at the mounds at Tell Sabi Abyad. Characteristic were free-standing, rectilinear buildings up to 10 × 7 m in extent, that were distinctly tripartite in layout. Each rectangular building comprised a relatively wide central hall flanked by parallel rows of narrow but long-drawn rooms along each of the long sides, usually with a smaller cubicle at the rear end (Akkermans 2013b; Akkermans and Brüning in press). Usually, the buildings were filled in to change them into "platforms" on which the subsequent building was reconstructed in almost identical manner and layout (fig. 3). This resulted in alternating building–platform–building sequences that grew upwards over several human generations (Akkermans, Brüning, and Kaneda 2011). Significantly, some of these sequences at Tell Sabi Abyad continued through the crucial Early Neolithic (or PPNB) to Late Neolithic (or Pottery Neolithic) threshold without interruption.

Settlement in the Early Pottery Neolithic, ca. 6700–6250 BC

Across Upper Mesopotamia and the northern Levant, the initial stage of the Late Neolithic was followed by several centuries characterized by coarsely made, plant-tempered wares. Following the nomenclature adopted at the site of Tell Sabi Abyad, where this period has been studied in greatest detail, this paper adopts the

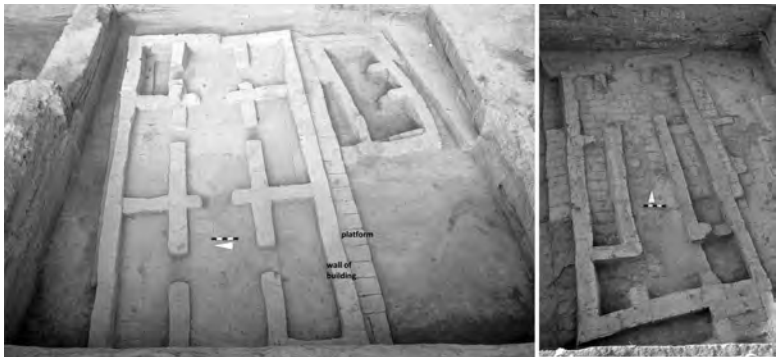

Fig. 3. Tell Sabi Abyad III. Examples of final PPNB to Initial Pottery Neolithic tripartite buildings erected on platforms. Left: A tripartite building dated to ca. 6900 BC. The platform below the building is clearly visible along the edges of the structure. Right: A tripartite building with long-drawn but narrow rooms, set on a platform, dated to ca. 7000 BC. The entrance to the building is on the short side from the north. ((Photographs by Peter Akkermans; courtesy of the Tell Sabi Abyad Archive.)

term Early Pottery Neolithic (EPN) period (Akkermans et al. 2006). At Tell Sabi Abyad, the EPN lasted from about 6700 to 6250 BC (Bernbeck and Nieuwenhuyse 2013: fig. 1.4; van der Plicht et al. 2011). The archaeology of this period in Upper Mesopotamia was still almost entirely unknown until about a decade ago (Le Mière and Picon 1999). Significant advances have occurred in the intervening time, but much of our knowledge remains limited to preliminary publications fresh from the field. The Upper Mesopotamian seventh millennium represents an exciting research frontier with immense interpretative potential.

This era was crucially transformative, as it saw the full uptake of containers made of pottery. Perhaps most importantly for this period, the quantity of pottery containers increased very significantly, albeit gradually, over several centuries. At the start of this phase, sherd densities typically were as low as those of stone vessels, yet by the end of the period ceramic sherds became the most numerous find during excavations (Nieuwenhuyse 2018b, 2019). Alongside this expansion, the craft changed qualitatively. Potters gradually improved their ceramic-technological expertise, developing the ware commonly known among archaeologists as "Coarse Ware." The potters increasingly tempered this with coarse vegetal fibres to allow the construction of containers of unprecedented size, volume, and weight. Such vessels now were produced in increasing amounts (fig. 4, top). The "jar" as a formal type, with a closed shape and carrying a distinct neck did not yet exist. Nevertheless, the increasing capacities of the pottery containers and the frequent application of plasters for reducing their porosity suggest that pots were increasingly adapted to bulk storage (Nieuwenhuyse 2018b).

Fig. 4. Seventh-millennium ceramic containers from Tell Sabi Abyad. Top: mid-seventh millennium (Early Pottery Neolithic period). Bottom: later seventh millennium (pre-Halaf period). (Photographs courtesy of the Tell Sabi Abyad Archive.)

The ubiquitous availability of strong, durable, yet movable pottery containers must have had far-reaching repercussions for subsistence and sociopolitical organization. However, we are still a long way from understanding the complex entanglements of humans and their material world in Upper Mesopotamia in the seventh millennium (Nieuwenhuyse in press, a, in press b). Pottery containers likely facilitated the collection of surpluses over longer stretches of time as

well as their strategic manipulation for social and political purposes. The spatial organization of the village changed over time, with large pottery containers increasingly set up inside and around the houses. The increased availability of pottery may have played a role in a trend towards subsistence "privatization" that some scholars have argued took place in the later Neolithic (Flannery 2002). It is probably not without significance that the practice of seals and applying seals was widely introduced at the end of this stage: another sign indicating privatization and the increasing role of personal property (Akkermans and Duistermaat 1997; Duistermaat 2013).

The breakthrough of creating strong, durable pottery containers comes as good news for modern surveyors, as it makes sites from this period much more visible. Indeed, settlements attributed to this period at first sight are more numerous than before. Several EPN sites have been excavated at present, most notably at Tell Sabi Abyad, Tell Halula, Mezraa Teleilat, Akarçay Höyük, Seker al-Aheimar, Ginnig, Tell el-Kerkh, and Shir (fig. 1). This is a welcome collection of evidence to draw upon, even if the evidence published so far often remains limited to documenting stratified ceramic sequences. Surveys in the northern Levant and along the course of the Euphrates River have yielded suspiciously few sites. Yet, geomorphological factors in these areas may be especially guilty of hiding or removing sites altogether (Akkermans 1999; Bartl and Haidar 2008).

However, it is interesting to note that the semi-arid steppes between the rivers have not produced any EPN sites so far (Becker 2015; Einwag 1993). On the northern Iraqi plain, only one site dates to this period, namely, the site of Ginnig (Campbell 1992: 114; Campbell and Baird 1990). The absence of sites is intriguing given the abundant presence of EPN sites in the Balikh Valley and, to a lesser extent, in the headwaters of the Upper Khabur. It is even more puzzling if one considers the abundant pottery (hence, site visibility) characterizing at least the final stages of the period. In the steppes, the effects of erosion and sedimentation would be less significant than in the river basins. Admittedly, modern economic development of this rural landscape may well have obliterated many small and inconspicuous prehistoric sites. It seems unlikely, however, that surveys on the Upper Mesopotamian steppes would have missed EPN evidence entirely, had it been there. This perhaps suggests that groups carrying EPN material culture had distinct site location preferences close to perennial water sources.

In this respect, the best-studied region so far is the Balikh Valley, where there are many EPN sites (fig. 2). Following the discussion of the Initial Pottery Neolithic above, various interpretations are possible for this pattern. Following one reading of the evidence, the spread of pottery accurately reflects populations and settlement inhabitation. The corresponding pattern would suggest a partial return of settlement in the valley after the "collapse" following the PPNB (Akkermans 1993). EPN groups situated their villages mostly in the northern, rain-fed

part of the valley, close to the river. With few exceptions, communities returned to much older locations, which their ancestors had already inhabited during the PPNB (fig. 2). In an alternative interpretation, one might envisage the progressive spreading of pottery during the EPN. Perhaps after a few pioneering Neolithic groups had adopted the new craft during the Initial Pottery Neolithic, several more communities in the Balikh in this subsequent stage were receptive as the craft crept south. Evidently, the two scenarios propose different conclusions regarding cultural and demographic continuity in the valley. At the well-researched site of Tell Sabi Abyad, settlement continuity is attested from the PNNB through the IPN, and into the EPN (Akkermans et al. 2006).

The Early Pottery Neolithic may have lasted for about half a millennium. The internal subdivisions of the Early Pottery Neolithic do not (yet) allow for a chronologically more fine-tuned settlement differentiation. This makes it difficult to assess the speed with which the potters' craft (or, alternatively, demographic expansion) advanced across the region. Significantly, pottery does not appear to have reached the Balikh-Euphrates confluence even at this advanced stage. It is perhaps most likely that sedentary groups did not permanently settle the southern part of the Balikh Valley. However, it cannot be excluded entirely that it was inhabited at this stage by groups still rejecting pottery (fig. 2). After all, much farther to the south along the Syrian Euphrates, the village of Tell Bouqras was still thriving without pottery; the earliest pottery from this site dates to the late seventh millennium BC (Akkermans et al. 1983). Sites in the Syrian interior, too, may have adopted ceramics much later (Akkermans and Schwartz 2003: 120–26).

Most Balikh sites dated to the EPN are small, measuring no more than a few hectares at the most. Significantly, *settlement* at these sites appears to have been even more restricted, often comprising only a small portion of each mound, leaving large open and unused areas. At Tell Sabi Abyad, the occupations dated between about 6450 and 6250 BC were only between 0.1 and 0.2 ha in extent, although the site as a whole probably had several contemporaneous but spatially dispersed communities. Community segmentation, it appears, was a central characteristic of Late Neolithic society in Upper Mesopotamia. All in all, late seventh-millennium settlement at Tell Sabi Abyad may have comprised perhaps 0.5 ha, distributed over a site covering 2 ha (fig. 5). The number of people living and working at these sites must have been very limited. Akkermans (1993: 172) has estimated the total population for the Balikh Valley in the EPN period at no more than roughly 350 to 650 individuals.

It appears also that the use-life of most EPN occupations was brief, lasting only two or three decades, or within the span of a single generation. The overall brevity of settlement is emphasized when taking into account that each of these twenty- to thirty-year phases comprised the entire cycle of local habitation: from

Fig. 5. View of the extensive excavations at Tell Sabi Abyad I, with house remains radiocarbon-dated to 6365–6335 BC, the final stage of the Early Pottery Neolithic period. (Photograph by Peter Akkermans; courtesy of the Tell Sabi Abyad Archive.)

its foundation and daily use, to its final abandonment, and lying empty for a sometimes prolonged span of time (Akkermans 2013a).

Spreading Out across the Steppe in the Pre-Halaf to Early Halaf, ca. 6250–5700 BC

Recent work has shown that the later seventh millennium was a period of profound cultural transformation (Akkermans et al. 2006; Akkermans 2013b; Nieuwenhuyse et al. 2016c; Nieuwenhuyse in press, a, in press b). How did this affect the Late Neolithic landscape? If one were to limit the discussion to the major river systems, the available evidence would suggest a reduction in sedentary settlement in the later seventh millennium, followed by a slow increase in the early sixth millennium BC. Rapid changes in the styles of decorated pottery are a hallmark of this period, allowing archaeologists to distinguish shorter time slices. In the valleys of the Euphrates, the Upper Tigris, the Balikh, and the Upper Khabur, sites dated to the pre-Halaf, Transitional, and Early Halaf (Halaf I) stages are relatively scarce. They are all situated in the northern parts of their respective valleys (Akkermans 1993: 172–79, figs. 5.3 to 5.5; Cruells, Molist, and Tunca 2004; Kozbe 2013; Nieuwenhuyse 2000; Nieuwenhuyse and Wilkinson 2008; Tekin 2017). Sites were mostly very small, not surpassing 1 or 2 ha in size; the occasional "central" sites reached a little more than 3.5 ha in size (Akkermans 1993: 191–203).

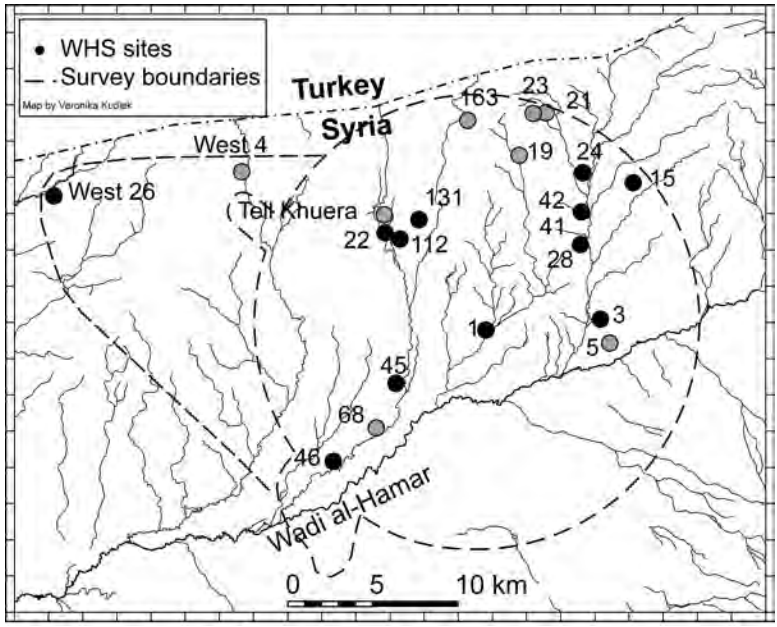

Fig. 6. Late Neolithic site distribution in the Wadi Hamar survey in northern Syria. Gray dots: sites dated to the Halaf I period. (From Becker 2015: Abb. 105; map prepared by Veronika Kudlek; courtesy of Jörg Becker.)

In these aspects, settlement within the valleys resembled that of the preceding, Early Pottery Neolithic.

However, if researchers broaden their geographic gaze to include the steppes *between* the major rivers and their tributaries, it becomes clear that an important change in settlement dynamics marked the turn from the seventh to the early sixth millennium. Intensive surveying of the Wadi Hamar region, situated between the Balikh and Khabur water courses, did not yield a single site dated to the seventh millennium or earlier (Becker 2015). The earliest sites in this region date to the early sixth millennium BC or Early Halaf phase (Becker 2015: 264, abb. 119). Low numbers of small-sized settlements characterize the Early Halaf period in the Wadi Hamar region (fig. 6). In the early sixth millennium, with the onset of the Halaf, settlement expanded as some communities fanned out into the steppe.

How did the small Late Neolithic communities survive this challenging landscape, and even flourish? We are much better informed regarding the constitution of these pre-Halaf to Early Halaf societies than about their seventh-millennium predecessors. The spread of settlement into the steppes formed part of a complex package of economic, social, and ritual changes that profoundly transformed Neolithic societies (Akkermans 1993; Akkermans et al. 2006; Akkermans

and Le Mière 1992; Akkermans and Verhoeven 1995; Akkermans and Duistermaat 1997; Nieuwenhuyse et al. 2016c; Russell 2010). Among other things, these changes include the full adoption of administrative systems involving stamp seals and abstract "tokens," the full domestication of aurochs, and, an intensified reliance on secondary products (Cavallo 2000; Rooijakkers 2012; Russell 2010). Significantly, the earliest known attestations of dairy residue in pottery vessels from ancient Mesopotamia date to this period (Evershed et al. 2008; Nieuwenhuyse et al. 2015).

Innovations in pottery containers contributed crucially to the success of these innovations, as pottery vessels became indispensable tools for cooking, storage and symbolic networking. Upper Mesopotamian communities in the later seventh to early sixth millennium introduced a range of mineral-tempered, burnished cooking wares (Le Mière and Picon 1991). Some of these appear to have facilitated dairy processing (Nieuwenhuyse et al. 2015). Excavated villages dated to the pre-Halaf and Early Halaf periods typically contain large numbers of pottery containers for bulk storage that come in a broad range of shapes and sizes (fig. 4, bottom). At Shir, Tell Sabi Abyad, and other later seventh millennium sites ceramic analyses show in detail how the formal type of "jar" emerged gradually out of earlier, predecessor vessels that still lacked distinct necks (Bader and Le Mière 2013; Nieuwenhuyse 2018b, 2019).

Finally, from the pre-Halaf period onwards, decoration adorned pottery containers. A broad range of decorative techniques and styles characterized Upper Mesopotamia, until these coalesced in the elaborated painted pottery style known to archaeologists as the Halaf ceramic tradition (Nieuwenhuyse 2007, 2013). Painted serving vessels became important props in symbolically charged commensality events: the "painted-pottery revolution" (Nieuwenhuyse 2009b) had begun. The adoption of pottery expressed social identities and it indicates intense social networking over vast distances (LeBlanc and Watson 1973). Archaeologists observe this interaction in rapid stylistic changes to the decorated ceramics that are surprisingly similar over large distances.

The role of the village changed accordingly (Akkermans et al. 2006). By the later seventh millennium, villages across the Upper Mesopotamian landscape emerged as focal points in a more mobile, semipastoralist economy (Akkermans and Verhoeven 1995; Verhoeven 1999). Characteristic were large, rectilinear "multiroomed buildings" that appear to have been used as collective store rooms for parts of the population not permanently residing within the village (Akkermans and Duistermaat 1997; Akkermans and Schwartz 2003; Duistermaat 2013; Verhoeven 1999). The exact shape and size of these buildings differed from place to place. At Tell Sabi Abyad, an extensive conflagration preserved several of these buildings remarkably well in the so-called "Burnt Village" (fig. 7; Akkermans and Verhoeven 1995; Akkermans 2014; Akkermans et al. 2012; Akkermans and

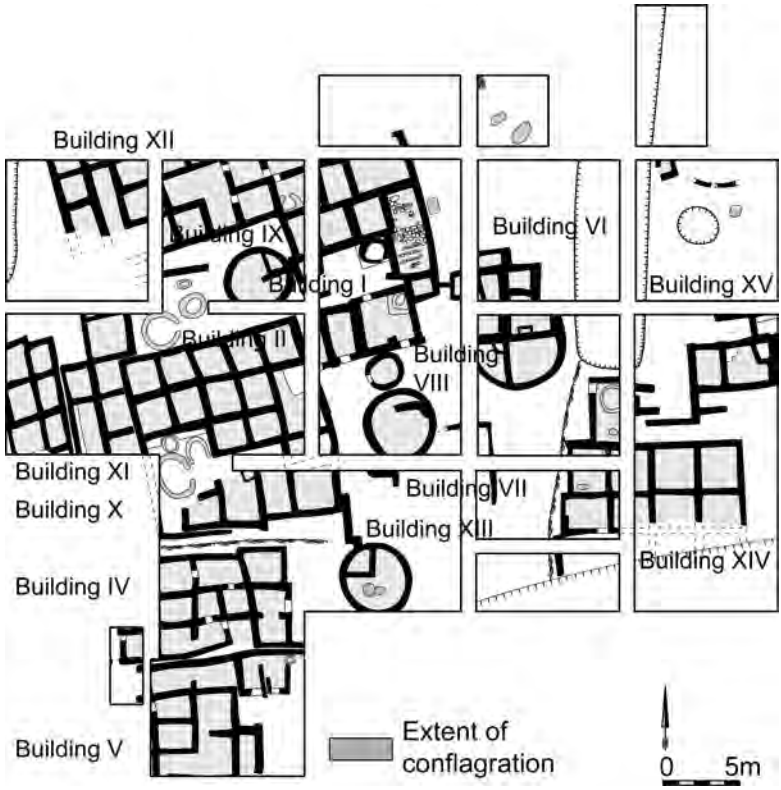

Fig. 7. Tell Sabi Abyad I, "Transitional" / "proto-Halaf" period. Plan of the so-called "Burnt Village" (Operation I, level 6). (From Akkermans 2014: 69, fig. 2.29; courtesy of the Tell Sabi Abyad Archive.)

Le Mière 1992). Similar buildings have been excavated at sites like Umm Dabbaghiya (Kirkbride 1975), Bouqras (Akkermans et al. 1983), and Tell "Ain el-Kerkh (Tsuneki et al. 2000). A remarkable multiroomed and collective building at Shir contained several huge pottery containers in situ (Bartl in press; Bartl and al-Hafian 2014). Smaller varieties of possible storehouses occur at the smallest, short-lived settlements as well, for example at Tell Boueid II (Nieuwenhuyse and Suleiman 2016), Fıstıklı Höyük (Pollock 2013), and Khirbet esh-Shenef (Akkermans 1993).

Characteristic of the many villages was their remarkably short-lived and highly mobile nature (Akkermans 1993, 2013a; Pollock 2013). Characteristic for Upper Mesopotamian settlement throughout the Halaf period, people moved around the landscape dynamically, founding new settlements, relocating to others, and abandoning them easily (Akkermans and Schwarz 2003: 150–53; Akkermans 2013a; Bernbeck 2013). Some scholars have attributed the extraordinary

geographic spread of the Halaf cultural tradition to precisely this propensity of Halaf communities to fragment so easily and start new settlements elsewhere (Breniquet 1996; Forest 1996). Residential flexibility made the best of a challenging landscape. These communities were flexible also in their subsistence methods. A considerable diversity characterizes the economic base of these steppe outposts. Some relied on a combination of agriculture and herding, but others seem to have relied heavily on hunting (Akkermans and Schwartz 2003). At some sites, wells have been documented (Campbell and Healey 2012; Wilkinson 1990).

At first glance, this whole package of change appears to synchronize well with the so-called 8.2 ka abrupt climate event. This has led to a lively debate on the possible causal role of climate change (Bar Yosef in this volume). Initially, scholars hypothesized that this short-lived climate anomaly only had disastrous repercussions on Neolithic communities that inhabited the already-marginal landscapes of Upper Mesopotamia (Staubwasser and Weiss 2006; Weninger et al. 2006). As empirical data regarding the life ways of Late Neolithic communities before, during, and after the event became more available, this grim view developed into a more nuanced perspective. There seemed to be evidence of rapid cultural change and adaptation rather than direct collapse (Akkermans, van der Plicht et al. 2010, 2015; Düring 2016; Flohr et al. 2016; Mottram 2016; Nieuwenhuyse et al. 2016c; Willet et al. 2016). Tell Sabi Abyad is one of the key sites for which scholars have repeatedly sought to demonstrate "abandonment" during the 8.2 ka climate upheavals (Bar Yosef in this volume). However, the strong evidence for settlement continuity at this site flatly contradicts this interpretation (Akkermans 2014).

Many of the cultural transformations observed in the archaeological record for the later seventh to early sixth millennium BC can be interpreted as adapting to climatic stresses (Mottram 2016). However, a closer look at the emerging data suggests a more complex picture. At Tell Sabi Abyad, several key "adaptations" may in fact trace their roots to stratigraphic levels *preceding* those synchronizing with the climate event. For example, the development of ceramic bulk storage containers was an innovation that gave a significant benefit in times of enhanced aridity; this container's development occurred long before the 8.2 ka climate event (Nieuwenhuyse 2019, 2018b). Rather than *causing* these cultural changes, the climate anomaly appears to have accelerated already existing trends that were entirely unrelated to climate change (Nieuwenhuyse et al. 2016c).

Site Expansion and Differentiation in the Later Halaf, ca. 5700–5300 BC

The development of settlement certainly did not stop after the Early Halaf period. Archaeologists have identified important changes taking place in the Middle-

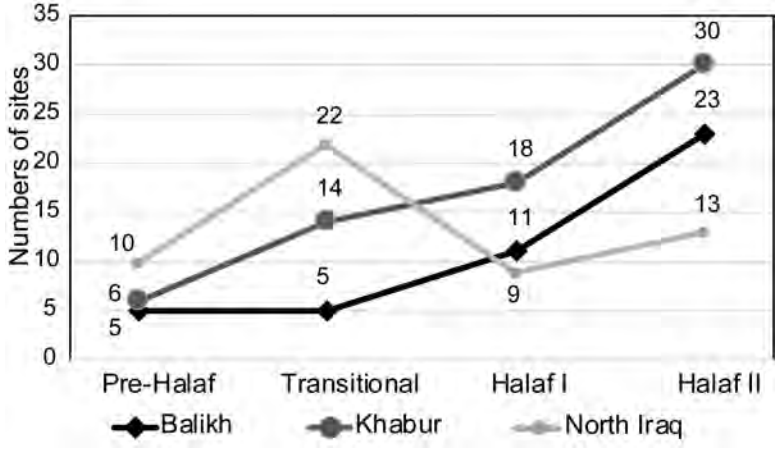

Fig. 8. Numbers of sites from the pre-Halaf (proto-Hassuna) through the Transitional (proto-Halaf) and Halaf I (Early Halaf) periods into the Halaf II (Middle–Late Halaf) period in three surveys in Upper Mesopotamia. (Data retrieved from Akkermans 1993; Campbell 1992; Nieuwenhuyse 2000.)

Late Halaf stage (or Halaf II). These include a surge in the quantity, geographic expansion, and increased organizational complexity of sites. These trends at end of the Halaf period already may have laid the foundations for the settlement organization of the succeeding Ubaid period (Trentin 2010). However, considerable regional differentiation may have existed and much uncertainty remains about the link between these two periods.

Across the Upper Mesopotamian steppes, surveys attest to increasing numbers of sites dated to the Middle-Late Halaf period (fig. 8). The quantity of sites doubled both in the Balikh Valley and in the headwaters of the Upper Khabur (Akkermans 1993; Nieuwenhuyse 2000; Nieuwenhuyse and Wilkinson 2008). Figures for the total area inhabited increased as well during the Halaf II in both of these areas. Nevertheless, these statistics should be treated with due caution because many of the Halaf II sites belong to the category of small, short-lived settlements typical for the period. As a result, the high site numbers may not reflect the actual situation; they almost certainly mask frequent relocation during the period (Akkermans 1993: 183). In northern Iraq, the overall trajectory seems to have been somewhat different. The later seventh millennium may first have seen an increase in site numbers followed by a reduction in the early sixth millennium, or Halaf I period. Yet, site numbers slowly were creeping up also in this region in the later sixth millennium, during the Halaf II period (Campbell 1992: 110–24). Davidson (1977: 87) suggested that population numbers in Upper Mesopotamia for the later Halaf (ca. 5500–5300 cal BC) reached levels similar to today. While

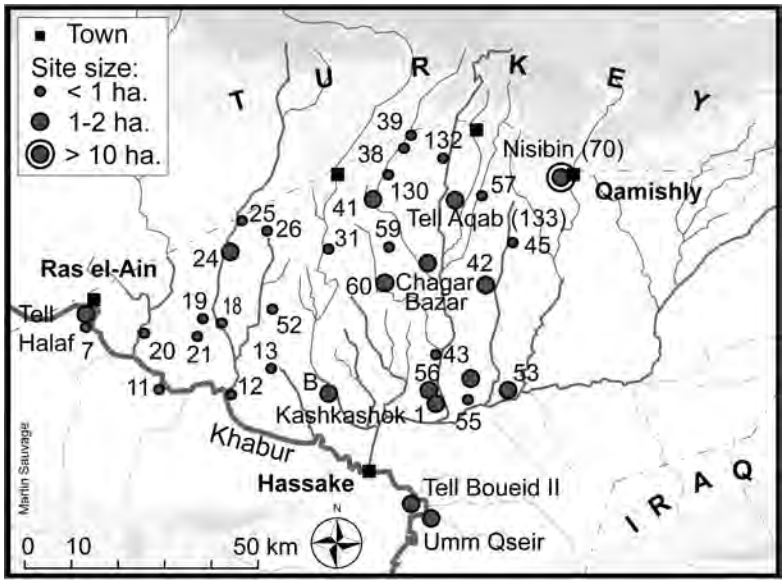

Fig. 9. Middle-Late Halaf (Halaf II) site distribution in the Khabur headwaters in north-eastern Syria. (From Nieuwenhuyse 2000).

this seems quite hyperbolic, it is safe to argue for a general but gentle increase in population in the later Halaf.

At the same time, settlements spread southwards towards the drier parts of the region. In the Upper Khabur, settlement shows an even distribution across the region for the first time (fig. 9), with a few new hamlets founded along the southern extension of the Middle Khabur River (Hole and Johnson 1987; Nieuwenhuyse 2000; Nieuwenhuyse and Suleiman 2016). There is now unequivocal evidence for sites also in the southern half of the Balikh Valley, extending to the Euphrates confluence (Akkermans 1993: 179–83). Several Halaf II sites have been identified along the course of the Euphrates River in Turkey and Syria (Cruells, Molist, and Tunca 2004; Robert 2010). In the semi-arid expanses between the perennial water sources, the Halaf II also is well attested. In the Wadi Hamar survey, all sites with evidence for occupation during the Halaf I period also were inhabited in the Halaf II period. Several new sites were founded during the Halaf II period (Becker 2015: 263–65).

Intriguingly, aspects of Halafian life ways may have spread amongst neighboring groups by emulation in this phase. At Tell el-Kerkh in the northern Levant, the Halaf I (Early Halaf) stage already shows evidence for the emulation of Halaf ceramic styles. Local potters copied Halaf forms and painted designs in local Dark-Faced Burnished Ware, decorating their vessels with pattern burnish-

ing (Tsuneki et al. 2000). As another example of the uptake of Halafian culture, the later Halaf community at Tell Kurdu in the Amuq shifted to using homemade Halaf Fine Ware (Özbal and Gerritsen 2013). In Iraqi Kurdistan, on the eastern margins of the Upper Mesopotamian world, Halaf "influences" in ceramic style occur for the first time in the Halaf II period (Hijara 1976, 1997; Nieuwenhuyse 2018a; Nieuwenhuyse et al. 2016a; Nieuwenhuyse and Robert in press).

Archaeologists have proposed a wide range of explanations for the spread of Halafian life ways. Earlier approaches suggested prehistoric migrations of a single Halaf "people" from some hypothesized "home land." A more nuanced perspective on demographic factors suggested the continuous geographic spread of small communities through continuous splitting and "budding off" of egalitarian-minded Halaf communities (Breniquet 1996; Forest 1996). Other interpretations emphasized the spread of pottery rather than people. Pottery styles may have spread because of changes in marital patterns (Forest 2013), ceramic exchange (Davidson 1977; Davidson and McKerrell 1976, 1980; Le Mière and Picon 2008; Spataro and Fletcher 2010), a reorganization of pottery production by emerging elites (Watson 1983), or a new role for painted pottery as a facilitator of social emulation (Nieuwenhuyse 2007). As the different perspectives make clear, the debate is vigorously ongoing.

Furthermore, it is in the Halaf II period that differentiation in site size first becomes more clearly visible. Throughout the Halaf period, the majority of sites detected in surveys remained mostly small to very small, reaching 1 ha at the most. Halaf sites only occasionally have evidence for an extent between 1 and 4 ha in size, perhaps suggesting a weakly developed settlement size hierarchy (Akkermans 1993). These larger Halafian sites show a location preference close to perennial water sources; thus far, the more arid Wadi Hamar has not revealed any evidence for sites over 2 ha (Becker 2015: 265: abb. 120). In the later stages of the Halaf period, a few sites reached unprecedented proportions of over 10 ha, with some even growing to as much as 20 ha in size. Each major river system contains at least one truly large Halafian site. In the Khabur headwaters, this would have been Tell Nisibin (KS 70; fig. 9). In the Balikh Valley, the largest known site was Tell Mounbateh (Akkermans 1993: 199–203). The list includes Tell Zeidan on the Balikh-Euphrates confluence (Stein 2009), Tell Kazane near Urfa (Bernbeck, Pollock, and Coursey 1999), and Takyan on the Silopi Plain of eastern Turkey (Algaze, Hammer, and Parker 2012). Large Halaf sites existed in the western part of the Halaf cultural world as well, such as at Tell Kurdu (Özbal and Gerritsen 2013), and Domuztepe (Campbell and Fletcher 2013).

However, fierce debate surrounds the interpretation of these Halaf II "mega sites." Where they large and densely packed, population centers? In southeastern Turkey, the large sites of Domuztepe on the Kahramanmaras Plain and Tell Kurdu in the Amuq would indeed appear to constitute examples of large, densely

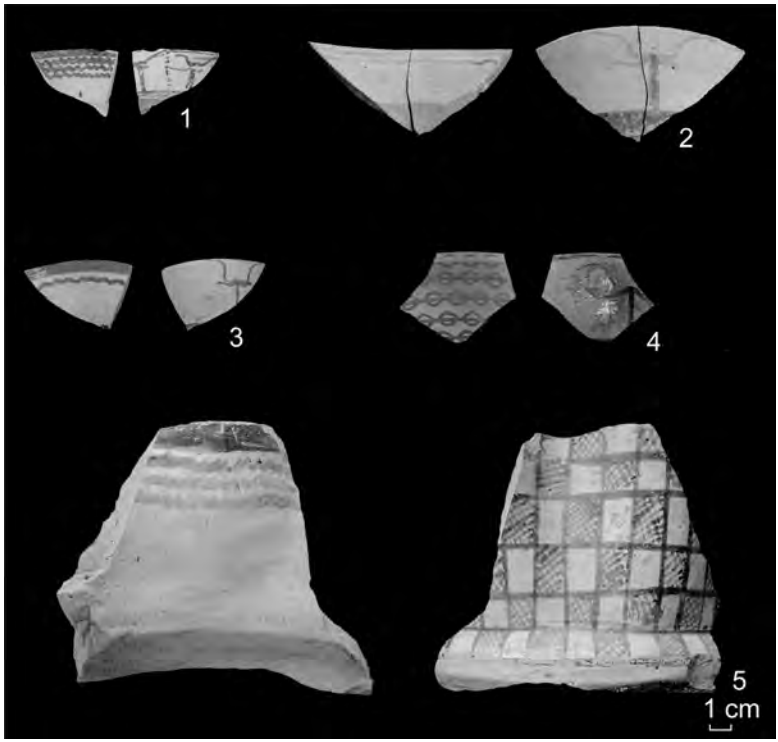

Fig. 10. Middle–Late Halaf (Halaf II) painted Halaf Fine Ware ceramic serving vessels from Tell Sabi Abyad. (From Nieuwenhuyse 2018: pl. 14.2; courtesy of the Tell Sabi Abyad Archive.)

built sites. Both sites were inhabited over long periods of time by considerable numbers of people (Campbell and Fletcher 2013; Fletcher 2016; Özbal and Gerritsen 2013). In these places, local groups adopted "global" (i.e., Upper Mesopotamian) forms of commensality as reflected in the painted pottery (fig. 10); in terms of their agglomerated spatial organization they inhabited villages with a rather "Anatolian" flavour (Nieuwenhuyse 2016).

In contrast, regarding the evidence from the Upper Mesopotamian steppes, Peter Akkermans (2013a) has argued persuasively that site size in this area does not equal settlement size, and that population estimates are easily inflated. Contrasting dramatically with Early Chalcolithic villages in Anatolia such as Çatalhöyük-West (see Rosenstock et al. in this volume) or Hacilar (van Dam in this volume), Halaf villages in the Upper Mesopotamian steppes typically included large amounts of open space (Akkermans 2013a; Pollock 2013). Taking the dynamism of frequent relocation into account, the Halafian "mega site" can be explained as the palimpsest of small-scale settlement shifting over favorable spots in the local landscape across several generations (Akkermans 2013a).

Understanding settlement organization at the very end of the Halaf period remains a genuine challenge. Most archaeologists now would subscribe to the view that the transition from the Halaf to the Ubaid period was a process of cultural change rather than a complete break (Breniquet 1996; Campbell and Fletcher 2010). Yet, a "Halaf-Ubaid Transition" (HUT) remains virtually invisible in settlement studies (Akkermans 1993: 183–86; Iamoni 2016; Mühl and Nieuwenhuyse 2016; Nieuwenhuyse 2000). To a very large extent, this may have to do with the present inability to identify the properties of the Halaf-Ubaid ceramic transition. In spite of these obstacles, profound changes seem to have transformed the social landscape at the end of the Halaf period. For the Balikh, Akkermans (1993: 186) has reconstructed a process of increasing contraction and centralization to fewer numbers of larger sites. This laid the foundations for the ensuing Ubaid period.

Concluding Remarks

The end of the Late Neolithic period saw the clear establishment of the "advanced farming village" (Redman 1978: 177). This completed a process of settlement consolidation that had roots stretching back over two millennia into the Pre-Pottery Neolithic. By the end of the sixth millennium BC (the Halaf period), large and small villages dotted the landscape, supported by agriculture and herding practices. Innovations in container technologies, the intensified exploitation of secondary products, and the establishment of vast social networks connecting dispersed communities across Upper Mesopotamia facilitated this site distribution. Although the cultural transition to the Ubaid remains poorly understood at present, it seems safe to state that in the Late Neolithic the foundations were laid for the growth of complex societies during the Ubaid and Late Chalcolithic.

Yet to see this "accomplishment" as little more than the inevitable "end product" of the agricultural revolution would be overly simplistic. Based on the evidence from surveys and targeted excavations, the long-term development of settlements appears to have been nonlinear and uneven. Importantly, individual subregions offer varying amounts of evidence for the spread, densities, and roles of settlement. Given this state of affairs, it would be premature at this stage to put too much emphasis on discrepancies in site patterning identified by surveys using diverse scales, different methods for identifying and sampling sites, and different procedures for analyzing materials.

Nor did the Late Neolithic "package" establish itself overnight, taking almost two millennia of slow, incremental change to occur. Episodes of accelerated change punctuated this period, such as the profound set of transformations characterizing the end of the seventh millennium BC. Widely used terms such as the Neolithic "revolution" convey a false sense of emotional excitement and a

subjectively experienced understanding of change that is wholly inappropriate to most of the Late Neolithic context (Akkermans and Schwartz 2003). Finally, we must be aware of the danger of teleological reasoning. Simply because archaeologists may, retrospectively, trace the roots of later, historic societies to innovations first experimented with in the Late Neolithic, does not mean that Late Neolithic groups purposely worked their way towards these later accomplishments. The establishment of successful village farming societies across the Upper Mesopotamian steppes was an unintended consequence of innovations presumably made for entirely different reasons.

Above all, a reading of the Late Neolithic settlement evidence brings into relief the point that settlement data on their own remain little more than dots on maps. These silent distribution plots begin to speak only when contextualized in thick descriptions of prehistoric societies. This contribution has pointed out several instances in which the understanding of site distribution patterns rests on a proper understanding of underlying socoeconomic factors, such as the early stages of the Late Neolithic, or the appearance of "mega sites" in the later Halaf. High and low site numbers for specific subperiods invite widely divergent explanations depending on the broader interpretation of Late Neolithic societies. Several decades ago, Akkermans (1993: 4) bemoaned the serious deficiencies in our understanding that exist at virtually every level of investigation. Notwithstanding the unprecedented recent advances made in the archaeology of Late Neolithic societies in Upper Mesopotamia, much exciting work lies ahead of us.

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