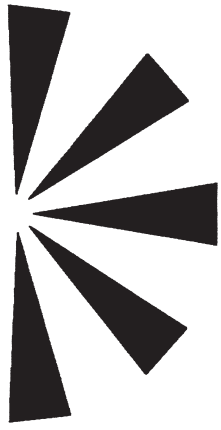

VIEWPOINTS

Discussion of topical issues
in urban morphology

Natufian pre-urban morphology of the Near East

Arthur Krim, Boston Architectural College, 320 Newbury Street, Boston, MA 02115, USA. E-mail: arthur.krim@the-bac.edu
https://doi.org/10.51347/UM25.0006

The origins of pre-urban forms of the Near East can be traced to the prehistoric Natufian culture (15,000–10,000 BP/Before Present) (Grosman, 2013). During this period at the end of the Pleistocene glacial era, prehistoric cultures of the Near East began working with architectural forms in the limestone caves of Palestine (Israel), Jordan and Syria. While primitive in construction, the Natufian culture created a pre-urban morphology of circular huts clustered in caves and open-air sites during the transitional period from a hunting and gathering economy to fully-realized agricultural villages of the Neolithic period.

In addition to the stone architecture, there were other innovations in permanent settlement traits in the Natufian period of the Near East. Most distinctive were serrated flint sickle blades used for cutting wild grasses of the Mediterranean mountain slopes, a signature of pre-agricultural activity. Also distinctive to the Natufian were formal burials in defined cemeteries with burial goods of seashells and other art ornaments of Natufian design. While there was no clay pottery, there were handcrafted basalt cups and bowls (Bar Yosef, 2016). These innovations combined to form a sedentary culture in favourable sites of the Near East during the climatic optimum of the post-glacial period (Bar Yosef, 2016).

El-Wad

The first discovery of the Natufian culture was made in 1928 by Dorothy Garrod (1892–1968), who was working for the British School of Archaeology in the Palestine Mandate (Israel). Garrod explored a cave site at Shukba in the Judean Hills west of Jerusalem on the Wadi en Natuf, finding distinctive sickle blades of pre-agricultural form, naming the new culture 'Natufian' after the site location (Garrod, 1932, p. 261). At the same time, Garrod's colleague Charles Lambert was working at the limestone caves of Mount Carmel near the port of Haifa, where railway workers were quarrying for the new harbour pier (Weinstein-Evron, 2009). At the prehistoric cave of Mugaret el-Wad, Lambert found a 'massive stone wall' roughly laid with limestone blocks forming an entrance terrace to the cave that contained evidence of Natufian occupation (Garrod, 1932, p. 258). Lambert and Garrod immediately spoke with authorities to halt the quarrying, and began a systematic excavation of the El-Wad cave site in 1929 (Weinstein-Evron, 2009). Garrod (1932, p. 268) estimated the age of Natufian culture at El-Wad to be pre-Egyptian between 4000 and 5000 BC. Other Natufian cave sites were also found nearby on the western flanks of Mount Carmel facing the Mediterranean Sea at Nahel Oren and Kabera, forming a core of Natufian culture in Palestine (Garrod, 1937).

After the Second World War, the cave at El-Wad became a key site of Natufian culture with several further excavations. The most recent, by Mina Weinstein-Evron, explored the interior cave finding evidence of circular stone hut foundations and formal burials as a 'Natufian hamlet' or base

  ISSN 1027–4278

camp (Weinstein-Evron *et al.*, 2013, p. 88). The original terrace stone wall was revealed to have two sections of Early Natufian date, calculated by Carbon-14 dating at 16,639 BP, set in the Epipaleolithic period, far older than the pre-Egyptian age estimated by Garrod (Weinstein-Evron *et al.*, 2013, p. 91). Though of primitive construction, the terrace wall and circular hut foundations are evidence of a purposeful Natufian architecture that established the intent of a pre-urban settlement form. From Weinstein-Evron's excavation evidence, the Israel Department of Antiquities nominated the Mount Carmel Caves as a UNESCO World Heritage Site, which was accepted in 2012 (UNESCO, 2012).

Other cave sites

Beyond the Natufian discoveries of Mount Carmel, other Natufian cave sites were discovered in the post-war period. Among the most significant was Hayonim Cave in the hills of Western Galilee east of Haifa, discovered in 1965 by Ofer Bar-Yosef (Bar-Yosef and Goren, 1973). Dated to 12,360 BP, the cave contained six circular stone 'dwelling structures' clustered together, with burials found within the circular foundations similar to the arrangement at El-Wad (Belfer-Cohen, 1988, p. 297). Belfer-Cohen has concluded that Hayonim Cave was a Natufian 'cemetery' of long-standing ceremonial occupation and significance, thereby combining both dwelling and burial in the same space (Belfer-Cohen, 1988, p. 307).

Similar Natufian cave hamlets were found in northern Syria at Dederiyah Cave by a Japanese-Syrian team in 1989 (Nishiaki *et al.*, 2017). Dated to 14,000–13,000 BP of Early Natufian age, the interior cave contains six roughly circular limestone foundations set in subterranean form overlapping each other under an open-air 'chimney' (Nishiaki *et al.*, 2017, p. 9). The site location of the Dederiyah Cave in northern Syria, near the Euphrates Valley, raises questions of an independent Natufian development in the Northern Levant. This parallels development in the core area of the Southern Levant around Mount Carmel for cave hamlet settlements (Belfer-Cohen and Goring-Morris, 2014). The Euphrates Valley emerged as an early innovation centre at open sites such as Mureybet and Jerf al-Ahmar for the transformation from circular to rectangular form during the pre-pottery Neolithic (PPN) era (Krim, 2018).

Ain Mallaha

The shift from interior cave hamlets to open-air villages in the Early Natufian period is highlighted by the discovery of the spring at Ain Mallaha (Eynan) by Lake Hula in the northern Jordan Valley of Israel. It was first noted by French archaeologist Jean Perrot (1920–2012) under the support of the Israel Department of Antiquities in 1951 as a *gisement natufien* (Perrot, 1952, p. 251). Initial excavation during 1955–6 revealed *plein air* circular limestone foundations of living floors 3–7 m (10–22 ft) in diameter with Natufian burials and basalt vases of skilled design (Perrot, 1957, p. 294). Full excavation in 1959 exposed three levels of 'large curvilinear stone houses', published in 1960 with diagrammatic plans of the circular stone foundations (Figure 1) (Perrot, 1960, p. 15). Perrot concluded that Ain Mallaha was 'a new form of permanent settlement', establishing the pre-urban form of villages in the Middle East (Perrot, 1960, p. 22).

Continued excavation at Ain Mallaha since 1996 under François Valla has established the form and dating of the site. A schematic reconstruction of the village plan displays a double row of twelve round *abris* (shelters) set on the hill slope below the spring of Ain Mallaha (Valla and Bocquentin, 2008, Figure 2). Further reconstruction of Shelter 131/51 by Gil Hakley and Avi Gopher from the post-held beams shows a sophisticated architectural design with a 'well defined plan' of straight roof beams were set around the curvilinear stone foundation, likely to have been covered with a flat roof of reeds and grasses from Lake Hula (Hakley and Gopher, 2015, p. 6). Moreover, recent Carbon-14 dating confirms an Early Natufian age at 14,326 BP, contemporary with cave sites at El-Wad and Dededriya (Valla, 2020; Valla *et al*., 2013, p. 295).

Other open-air sites

A similar open-air Natufian site was found in 2008 at Jeftelik in the Homes Gap of Syria, near the famous Crusader castle of Krak des Chevaliers. Discovered by a Spanish-Syrian-Lebanese team, the excavated site revealed an overlap of three subterranean structures made of undressed basalt stones settlement on a hilltop above the Janoubi River on the Lebanese border. Carbon dated to 12,000 BP, the Jeftelik site confirms that the open-air form of Ain Mallaha had diffused north

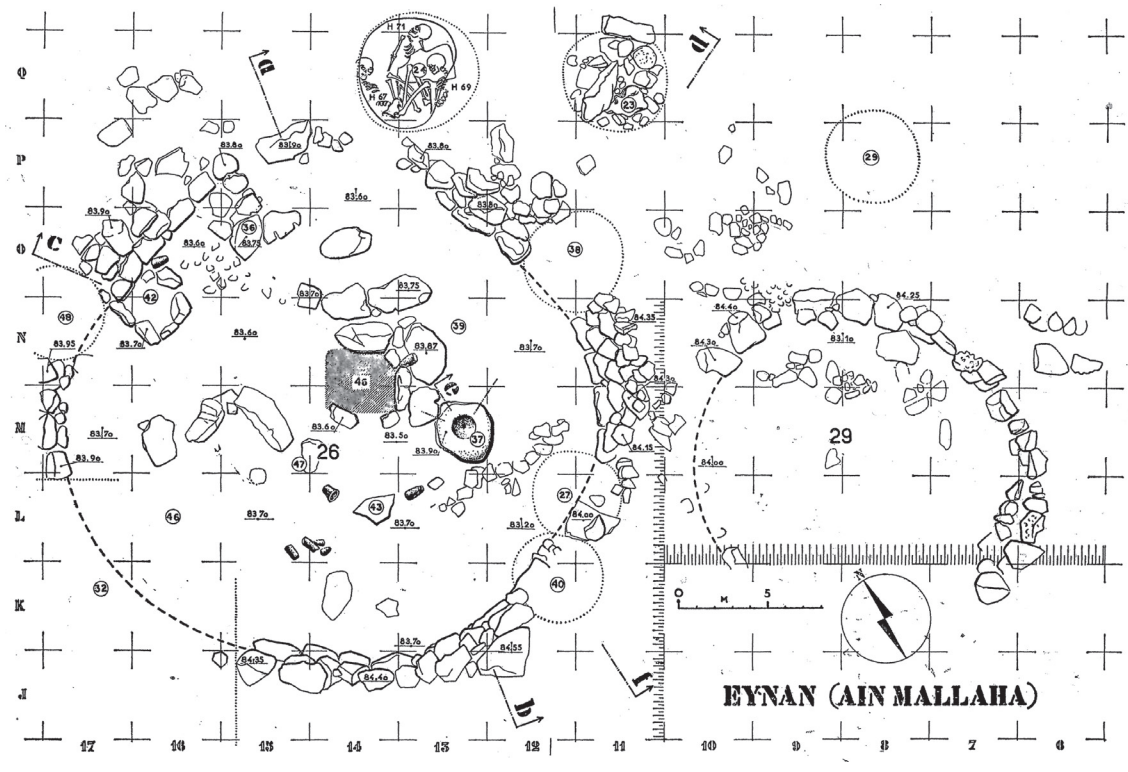

Figure 1. Natufian structures 26/29 at Ain Mallaha (Enyan), Israel, *c.* 14,300 BP after Perrot, 1960 (source: Valla, 1975, 2020).

of the Jordan Valley into north-west Syria by the Early Natufian period (Rodriguez *et al*., 2013, Figure 8).

Other open-air Natufian encampments have been found on the margins of the Jordanian desert. Among the most important is Beidha, north of the ancient city of Petra, inscribed as a World Heritage Site by UNESCO. The Beidha site was discovered in 1956 by Diane Kirkbride, working for the Jordan Department of Antiquities, in the sandstone cliffs of Wadi Araba and described as a Neolithic 'village'. It consisted of a cluster of subterranean Natufian circular structures surrounded by a sandstone wall (Commer, 2003; Kirkbride, 1966). Carbon dated to 12,910 BP by Brian Boyd, the site was originally in the forested zone of Mediterranean climate, but was later abandoned by 8,500 BP due to desertification of the area (Boyd, 1989).

A second important open-air Natufian site has been found in the Azraq Basin east of Amman, Jordan. Originally discovered in 1975 by A.N. Garrad and N. Stanley Price for a survey of the Azraq National Park oasis, the team found a cluster of 'hut circles' constructed of volcanic basalt (Copeland *et al.*, 1975, p. 114). A more detailed survey was conducted by Tobias Richter excavating the settlement site at Shubayqa around a former lakebed (Richter, 2014). Carbon dated to 14,500 BP, three overlapped circular structures were found with subterranean basalt foundations and flagstone pavements (Richter, 2014, p. 31). Along with Beidha, these open-air sites indicate that permanent Natufian settlements were possible at the margins of the Jordanian desert under favourable climatic conditions.

Pre-Natufian hunting camps

Pre-Natufian open air hunting camps of the Epipaleolithic period have also been found in the Azraq Basin. Located in the western quadrant of the oasis, the site of Kharaneh IV – discovered in 2008 by Lisa Maher and Tobias Richter – has been Carbon dated to 19,400 BP, some ten thousand years before the Neolithic period (Maher *et al*., 2012). Two oval hut structures without permanent foundations were excavated, indicating a reed- or grass-built structure, probably using vegetation

from the marshes or lake bed of the Azraq oasis. A second, more impressive, pre-Natufian Epipaleolithic camp site was exposed at Ohalo II on the south-west shore of Lake Kinneret (Sea of Galilee), Israel by Dani Nadel during a drought in 1989 (Hershkovitz *et al.*, 1995). Covered again with rising water, the site was re-exposed in 1999 revealing a cluster of six oval grass huts set in hollow depressions, Carbon dated to 23,000 BP (Nadel *et al.*, 2004). Ohalo II was presumed to be a lakeside fishing village, explaining its permanent site, using reeds and grasses from the shoreline marshes on the Sea of Galilee. Both Ohalo II and Kharaneh IV demonstrate that the formative layout of pre-Natufian camp sites was already established by 20,000 BP with favorable water sites in the Epipaleolithic period, well before the development of stone-foundation architecture.

Summary

The innovation of circular stone architecture in the Early Natufian period *c*. 14,000 BP prompted a continuous elaboration of pre-urban settlement form in the Near East. It eventually formed the full flourishing of the Neolithic rectangular mud brick village by 8 500 BP as at Çatalhöyük in Turkey (Krim, 2014). The origin of the circular stone foundation has been proposed by Ingrid Swinnen as the 'prehistoric tent hut', as with the 20,000 BP hunting camps at Ohalo II and Kharaneh IV (Swinnen, 2014, p. 43). The use of stone boulders as a construction technique can be traced to examples such as the terrace retaining wall at El-Wad cave at 16,600 BP. The significant transformation occurred with the choice of open-air sites such as Ain Mallaha at 14,300 BP, where extensive clusters of circular stone houses were built in aligned rows below the spring, forming a true village. Other Natufian developments include the construction of an enclosed stone wall at Beidha, and the rectangular division of interior space as at Mureybet and Jerf al-Ahmar in the Euphrates Valley at 10,500 BP (Swinnen, 2014, p. 44). The innovation of the subdivided circular stone cells proved to be the trigger in the shift from circular to rectangular Neolithic settlement form in the Near East, diffusing south from the Euphrates to the original Natufian core in the Jordan Valley at Jericho by 10,000 BP (Swinnen, 2014, Note 7). The summary result was the establishment of the classic Neolithic village form as defined by Robert Braidwood (1952) at Jarmo, Iraq by the fourth millennium BP. The evolution of pre-urban settlement from the Natufian wall at El-Wad to the mud brick village at Çatalhöyük spanned some 10,000 years from the Epipaleolithic Natufian to the Neolithic period, from circular to rectangular form that laid the basis of true urban cities of the Near East in Mesopotamia and Egypt.

References

Bar-Yosef, O. (2016) 'Multiple origins of agriculture in Eurasia and Africa', in Tibayrenc, M. and Ayala, F. J. (eds) *On human nature* (Academic Press, Cambridge) 297–331.

Bar-Yosef, O. and Goren, N. (1973) 'Natufian Remains in Hayomin Cave', *Paléorient* 1–1, 49–68.

Belfer-Cohen, A. and Goring-Morris, N. (2014) 'North and South-variable trajectories of the Neolithic in the Levant', in Finlayson, B. (ed.) *Settlement, survey and stone* (Ex Oriente, Berlin) 61–71.

Belfer-Cohen, A. (1988) 'The Natufian graveyard in Hayomin Cave', *Paléorient* 14, 297–308.

Boyd, B. F. (1989) *The Natufian encampment at Beidha* (Aarhus University Press, Aarhus).

Braidwood, R. J. (1952) 'From cave to village in prehistoric Iraq', *Bulletin of the American Schools of Oriental Research* 124, 12–18.

Commer, D. C. (2003) 'Environmental history at an early prehistoric village: Beidha, in Southern Jordan', *Journal of GIS in Archaeology* 1, 105–15.

Copeland, L., Garrad, A. N. and Stanley-Price, N. P. (1975) 'A survey of prehistoric sites in the Azraq Basin of eastern Jordan', *Paléorient* 3, 109–26.

Garrod, D. (1932) 'A new Mesolithic industry: The Natufian of Palestine', *Journal of the Royal Anthropological Institute* 62, 257–69.

Garrod, D. (1937) *The stone age of Mount Carmel, excavations at the Wady el-Mughara* (Claredon Press, Oxford).

Grosman, L. (2013) 'The Natufian chronology scheme – new insights and their implication', in Bar-Josef, O. and Valla, F. R. (eds) *Natufian foragers in the Levant* (International Monographs in Prehistory, Ann Arbor, MI) 622–37.

Hakley, G. and Gopher, A. (2015) 'A new look at Shelter 131/51 in the Natufian site of Eynan (Ain-Mallaha), Israel', *Plos One* 10, e0130121. https://doi.org/10.1371/journal.pone.0130121

Hershkovitz, I., Speirs, M. S., Frayer, D., Nadel, D., Wish-Baratz, S. and Arensburg, B. (1995) 'Ohalo II H2: a 19,000-year-old skeleton from a water-logged site at the Sea of Galilee, Israel', *American Journal of Physical Anthropology* 96, 215–34.

Kirkbride, D. (1966) 'Five seasons at the pre-pottery Neolithic village of Beidha in Jordan', *Palestine Exploration Quarterly* 98, 8–72.

Krim, A. (2014) 'Excavating the origins of urban form: Çatalhöyük', *Urban Morphology* 14, 81–2.

Krim, A. (2018) 'The origins of urban rectangular plans in the Near East', *Urban Morphology* 22, 73–5.

Maher, L.A., Richter, T., Macdonald, D., Jones, M. D., Martin, L. and Stock, J. T. (2012) 'Twenty thousand-year-old huts at a hunter-gatherer settlement in eastern Jordan', *Plos One* 7, e31447. https://doi.org/10.1371/journal.pone.0031447

Nadel, D., Weiss, E., Simchoni, O., Tsatskin, A., Danin, A. and Kislev, M. (2004) 'Stone Age hut in Israel yields world's oldest evidence of bedding', *Proceedings of the National Academy of Sciences* 101, 6821–6.

Nishiaki, Y., Yoneda, M., Kanjou, Y. and Akazawa, T. (2017) 'Natufian in the north: the late Epipaleolithic cultural entity at Dederiyeh Cave, northwest Syria', *Paléorient* 43, 7–24.

Perrot, J. (1952) 'Nouvelles decouvertes en Israel', *Syria* 29, 294–306.

Perrot, J. (1957) 'Le mesolithique de Palestine et les recentes decouvertes a Eynan (Ain Mallaha)', *Antiquity and Survival* 2, 91–110

Perrot, J. (1960) 'Excavations at 'Eynan ('Ein Mallaha) preliminary report on the 1959 season', *Israel Exploration Journal* 10, 14–22.

Richter, T. (2014) 'Margin or centre? The Epipalaeolithic in the Azraq oasis and the Qa'Shubayqa', in Finlayson, B. and Makarewicz, C. (eds) *Settlement, survey and stone* (Ex Oriente, Berlin) 27–36.

Rodriguez, A. C. R. R., Haïdar-Boustani, M., Urquijo, J. E. G., Ibáñez, J. J., Al-Maqdissi, M., Terradas, X. and Zapata, L. (2013) 'The Early Natufian site of Jeftelik (Home Cap, Syria)', in Bar-Yosef, O. and Valla, F. R. (eds) *Natufian foragers in the Levant* (International Monographs in Prehistory, Ann Arbor, MI) 61–71.

Swinnen, I. M. (2014) 'Curvilinear domestic structures in the prehistoric Eastern Mediterranean', *Akkadica Supplement* XII, 43–70.

UNESCO (2012) 'Sites of human evolution at Mount Carmel: the Nahal Me'arot / Wadi el-Mughara Caves' (https://whc.unesco.org/en/list/1393) accessed 16 November 2020.

Valla, F. R. (1975) *Le Natufien: une culture préhistorique en Palestine* (J. Gabalda, Paris).

Valla, F. R. (2020) Re: Ain Mallaha, email to A. Krim, 15 June.

Valla, F. R. and Bocquentin, F. (2008) 'Les maisons, les vivants, les morts, le cas de Mallaha (Enyan), Israel', in Cordoma, J. M. (ed.) *Proceedings of the Fifth International Congress on the Archaeology of the Ancient Near East* (UA Endiciones, Madrid) 521–8).

Valla, F. R., Khalaily, H., Samuelian, N., Bocquentin, F., Bridault, A. and Rabinovich, R. (2017) 'Eynan (Ain Mallaha)', in Enzel, Y. and Bar-Yosef, O. (eds) *Quaternary of the Levant – environments, climate change, and humans* (Cambridge University Press, New York): 295–301.

Weinstein-Evron, M. (2009) *Archaeology in the archives: unveiling the Natufian culture of Mount Carmel* (Brill, Boston).

Weinstein-Evron, M., Kaufman, D. and Yeshurun, R. (2013) 'Spatial organization of Natufian el-Wad through time: combining the results of past and present excavations', in Bar-Yosef, O. and Valla, F. R. (eds) *Natufian foragers in the Levant: terminal Pleistocene social changes in Western Asia* (Berhahn Books, New York) 88–106.

Is climate a modifier and shape-giver in urban morphology?

David Chapman, Department of Civil, Environmental and Natural Resources Engineering, Luleå University of Technology, 971 87 Luleå, Sweden. E-mail: david.chapman@ltu.se
ORCID: https://orcid.org/0000–0002–6957–0568
https://doi.org/10.51347/UM25.0007

The definition of 'urban morphology' is contentious. Some seek a broad definition, while others promote greater focus to consolidate understanding (Kropf and Malfroy, 2013; Oliveira, 2016). The perspective considered here seeks to add to this discussion by asking whether climate is a modifier and shape-giver in urban morphology.

The aim is to increase debate around the place of climate in the study of urban form, rather than addressing other physical or biophysical