Hormangan Site. New Evidence for Neolithic Occupations in the Southern Zagros, Iran

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The periods from 6300 until 5600 BCE in Fars region are known as the Mushki and Jari periods. Since the 1950s, and until recent years, a lot of discussion has evolved around the origins of these societies and their development (e.g. vanden Berghe 1951-1952: 54; 1953-1954; Fukai et al. 1973; Sumner 1977; Maeda 1986; Alizadeh 2004; Alizadeh et al. 2004; Nishiaki 2010a,b; Azizi Kharanaghi et al. 2013; Weeks 2013). However, a new cultural phase, known as Bashi, is proposed to be a transitional phase between the Mushki to Jari periods (Pollock et al. 2010). The architectural remains as well as geometric stone tools, wild animals' bones, particularly horses, are all indicating the existence of a seasonal settlement based on hunting in Tol-e Mushki which is transformed into a sedentary settlement with a distinct type of architecture and a subsistence based on agriculture in Tol-e Jari B (Nishiaki and Mashkour 2006). The distinct cultural phenomenon probably linked to Mushki period could have been caused by a sudden climate change (Weeks et al. 2006: 24; Nishiaki 2010a; Flohr et al. 2016). It is suggested that the weather became cold and dry for centuries, until around 6200 BCE when the conditions again improved (e.g. Clarke et al. 2004; Alley and Aguslsdotiir 2005). Furthermore, these climate changes have had direct influences on socioeconomic strategies of Neolithic societies in the Fars. However, the relationship between culture and climate is only one of the possible explanations for the observed cultural changes; more studies are needed. The majority of archeologists believe that severe climate changes following the 8.2 ka Event forced Neolithic societies to adapt to new conditions. It is possible that some of them migrated to regions with more tolerable conditions while others found alternative survival strategies such as hunting or food collecting instead of cultivating (Nishiaki 2010a). Intermountain valleys in Fars region are required to be studied precisely and extensively in order to achieve a more comprehensive understanding of this period. During a survey by the authors in 2015 in the Bavanat River Basin in northeastern Fars, the most prominent Neolithic occupation of the region was identified in Hormangan, a site first excavated in 2016.



Fig. 1 Location of Neolithic sites in Fars. (Map: M. Khanipour)

Hormangan Site

Hormangan is located west of Jeshnian (UTM: 39 R 741396 3377711) in the southern basin of Bavanat River, at an altitude of 2364 m a.s.l. (Figs. 1-2). The site was discovered during an archaeological survey conducted in the Bavanat district by M. Khanipour (Khanipour 2015: 156). The site is extending northsouth; its eastern parts were disturbed by agricultural activities. The first season of excavation took place for 45 days during March - April 2016. Major goals were: 1) to understand the settlement's stratigraphy, 2) its relative and absolute chronology, 3) to investigate the site's regional interaction, 4) retrieving faunal and botanical remains to reconstruct subsistence patterns, 5) to identify evidence of cultural and commercial exchange, 6) to identify site functions during the different occupations, and, in general, 7) to trace political and social evolutions.

In order to determine the site's extent, some fourteen 1×1 m test trenches were dug in the different parts of the mound, followed by the excavation of three trenches (8×8 , 5×5 , and 4×4 m). They reached depths of some 1 m, exposing cultural layers from the late 7th millennium BCE. As the test trenches revealed, the Neolithic village of Hormangan might have had a size of 0.5 ha.

After the removal of disturbed levels, Trench II exposed traces of a wall with several right-angled structures (Fig. 3). The walls were made of chaff tempered clay (*pisé*). There were also three eastward spaces, one with a width of about 220 cm and an unknown length; the other has the shape of a narrow corridor of about

1 m width and 6 m length. It contained traces of several hearths and ash deposits, indicating cooking places. The northeastern trench exposed walls meeting a main wall's construction and a floor of cobbles and clay. Stone walls with red-stained plaster appeared. A space with 150 cm width and unknown length resulted from destructions. Continued excavations revealed cultural deposits under this structure which included several ovens, burnt soil, ash layers *etc.*, altogether less than 30 cm thick. They indicate the existence of two settlement phases.

As mentioned above, the earliest phase revealed no architectural remains whereas the ovens and ash deposits indicate a seasonal occupation. The later phase included architectural remains, and indicates sedentary lifestyle in a permanent settlement. Excavations at Trench II revealed traces of walls including several spaces (Fig. 3). There has been also a space with architectural remains characteristic to internal walls, floors, and red ochre decorations; they occurred in the southeastern part of the trench, and next to the painted room of Trench I. Ovens, burnt soil, and ash deposits under the architecture of Trench II again indicate the two settlement phases.

Trench III exposed a burnt structure, with heavily burnt surfaces; a wall surrounded the burnt structure. It was nearly destroyed, only little remained at its south. Excavations around the structure revealed small *pisé* walls dividing spaces of special function. Considering all features and the discovered potsherds around the structure, one must assume that the structure was an open pottery kiln used to produce the local Hormangan wares (Fig. 4) (Khanipour 2017).



Fig. 2 Location of Hormangan site and Jeshnian village. View towards W. (Photo: M. Khanipour)



Fig. 3 Neolithic architecture at Hormangan. (Photo: M. Khanipour)



Fig. 4 The surface of the kiln and its wall remains. (Photo: M. Khanipour)

Findings

The discovered ceramics can be divided into the two general categories: 1) simple rough pottery with a mixture of straw, and 2) red or buff pottery with black or dark brown geometric motifs. All pottery is grass-tempered and not well-fired (Fig. 5). The observed motifs are geometrical which are comparable with ceramics from Tol-e Mushki (Fukai *et al.* 1973; Maeda 1986: 86), Tol-e Jari B (Nishiaki 2010b: 125), Tol-e Koshk Hezar (Alden *et al.* 2004: 32-34), Tol-e Bashi (Bernbeck 2010) and Tol-e Rahmatabad (Azizi Kharanaghi *et al.* 2013; Azizi Kharanaghi and Khanipour 2013).

The discovered chipped stone material includes blades, bladelets, cores, flakes, chips, geometric microliths and debitage (Fig. 6). These tools are comparable with tools discovered in Tol-e Bashi (Ghasidian *et al.* 2010) and Tol-e Mushki (Fukai *et al.* 1973; Nishiaki 2010a; Abe 2011) which are interpreted as late M'lefatian by Nishiaki. The changes in subsistence are also visible by the stone tools, like an increase of geometric microliths testifying the society's practice of a hunting economy. This subsistence phenomenon started in early sixth millennium BCE and stopped once the agricultural subsistence became established (Nishiaki in press).

The total number of 90 small stone and baked clay objects have been discovered on the surface of the site (Fig. 7). They can be categorized into rounded or spherical objects, cones, disk- and pyramid-shaped objects. Their function is not clear, and different interpretations are around for them (ear or nose plugs, tokens or even toys: Fukai et al. 1973: 57-63; Hole 1987: 53; Hori 1988-89: 36-37; Schmandt Besserat 1992; Bernbeck 2004). The only certain point is that these objects have been identified in many early villages from Jeiton in Turkmania, Sang-i Chaqmak and Sialk to Kur River Basin, in the Susiana Plain, Deh Luran, Mesopotamia and the Levant (Schmandt-Besserat 1992). The small clay and stone objects of Hormangan are mainly comparable with discoveries in Tol-e Mushki (Fukai et al. 1973), Tol-e Bashi (Pollock 2010: 182) and Kushk Hazar (Alden et al. 2004: 44).

A metal awl and several small metal pieces were discovered during the excavations; they propably are made from copper minerals; similar samples have been reported from the excavations in Tol-e Mushki (Fukai *et al.* 1973). In fact, these objects are very early examples of metal use. Metallographic studies would lead to better understanding of the early use of copper minerals in this region.

Several beads were found by sieving and excavating the surface soil. Grinding and crushing stones, the latter probably used for preparing red ochre, were also found.

Conclusions

The finds from Hormangan increase our knowledge about the material culture of Mushki period (hunting societies), especially with regard to pottery variability, chronology and site distribution. Information from the site, especially on the technical and cultural aspects of the Neolithic community including its pottery production, long-distance contacts, subsistence patterns, chipped stone inventory, provided a better understanding of the Mushki culture. Regarding climate changes during the seventh millennium BCE in Middle East, we observe alterations in settlement patterns in this period, also supported by evidence from other sites in Fars province.

The two recognized settlement phases might be an evidence for migration from the Kur River Basin to the Bavanat region during latter half of the 7th millennium, expected to be caused by climate change. The earlier phase is assumed to show a seasonal settlement (absence of architecture), represented by thin layers and several hearths. The later phase could be regarded as

a sedentary settlement with substantial architectural remains. The burnt structure was probably a primary open kiln which have not been reported from the Fars Neolithic sites yet. It should be noted, however, that the kiln existed contemporaneously with the site's later phase. By comparing the findings of this site with the sites of the Kur river basin (Tol-e Mushki, Tol-e Jeri, Tol-e Bashi, RahmatAbad and Kushk-e Hezar), the earlier phase of the site currently can be dated to between 6375 and 6200 BCE while the later phase has to be dated between 6200 to 6000 BCE.

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Fig. 5 Neolithic pottery from Hormangan. (Drawing: M. Khanipour)



Fig. 6 Selected chipped stone artifacts from Hormangan. (Photo: M. Khanipour)



Fig. 7 Clay and stone objects (token?). (Photo: M. Khanipour)

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References

Abe M.

2011 Geometrics from the Neolithic settlement of Tall-i Mushki, southwest Iran. In: E. Healey, S. Campbell, S. and O. Maeda (eds.), *The state of the stone. Terminologies, continuities and contexts in Near Eastern lithics.* Studies in Early Near Eastern Production, Subsistence, and Environment 13: 163-169. Berlin: ex oriente.

Alden J., Abdi K., Azadi A., Biglari F. and Heydari S.

2004 Kushk-E Hezar: A Mushki/Jari period site in the Kur River Basin, Fars, Iran. *Iran* 42: 25-45.

Alizadeh A.

2004 Recent archaeological investigations on the Persepolis Plain. *The Oriental Institute*. *News and Notes* 183: 1-7.

Alizadeh A., Zeidi M., Askari A., Niakan L. and Atabaki A.

2004 Excavations at Tall-e Bakun A and B, Jari A and B, and Mushki: Reconstruction of the prehistoric environments in Marv Dasht. *The Oriental Institute. Annual Report* 2003–2004: 94-106.

Alley R.B. and Agustsdottir A.M.

2005 The 8ka Event: Cause and consequences of a major Holocene abrupt climate change. *Quaternary Science Reviews* 24: 23-43.

Azizi Kharanghi M.H. and Khanipour M.

2013 New evidence from the Neolithic and Bakun period based on the third season of archaeological excavations at Tape Rahmat Abad, Pasargadae, In: M.H. Azizi Kharanaghi, M. Khanipour and R. Naseri (eds.), *Proceedings of The International Congress of Young Archaeologists:* 67-86. Tehran: University of Tehran Press.

Azizi Kharanaghi M.H., Fazeli Nashli H. and Nishiaki Y.

2013 Tepe Rahmatabad: a Pre-Pottery and Pottery Neolithic site in Fars Province. In: R. Matthews and H. Fazeli Nashli (eds.), *The Neolithisation of Iran – The formation* of new societies: 108-123. Oxford: Oxbow Books.

Bernbeck R.

- 2004 Archaeology in Iran puts perceptions in place. *The Daily Star, 21 January 2004:* 8.
- 2010 The Neolithic pottery. In: S. Pollock, R. Bernbeck and K. Abdi (eds.), *The 2003 excavations at Tol-e Baši, Iran: Social life in a Neolithic village*. Archäologie in Iran und Turan 10: 65-151. Mainz: Philipp von Zabern.

Clarke G.K.C., Levcrington D.W., Teller J.T. and Dyke A.S.

2004 Paleohydraulics of the last outburst flood from glacial Lake Agassiz and the 8200 BP Cold Event. *Quaternary Science Reviews* 23: 389-407.

Flohr P., Fleitmann D., Matthews R., Matthews W. and Black S.

2016 Evidence of resilience to past climate change in Southwest Asia: early farming communities and the 9.2 and 8.2 ka events. *Quaternary Science Reviews* 136: 23-39.

Fukai S., Horiuchi K. and Matsutani T.

1973 Marv Dasht III: Excavations at Tall-I-Mushki, 1965. Tokyo University Iraq-Iran Archaeological Expedition Reports 14. Tokyo: Institute of Oriental Culture of the University of Tokyo.

Ghasidian E., Azadi A. and Pollock S.

2010 Chipped stone artefacts. In: S. Pollock, R. Bernbeck and K. Abdi (eds.), *The 2003 excavations at Tol-e Baši, Iran: Social life in a Neolithic village*. Archäologie in Iran und Turan 10: 163-174. Berlin: Deutsches Archäologisches Institut.

Hole F.

1987 Archaeology of the village period. In: F. Hole (ed.), *The archaeology of Western Iran: Settlement and society from prehistory to the Islamic conquest:* 29-78. Washington D. C.: Smithonian Institution Press.

Hori A.

1988-89 Chipped stone artifacts from Tape Djari B, Iran. Bulletin of the Ancient Oriental Museum 10: 21-46.

Khanipour M.

- 2015 Descriptive report on the first season of archaeological survey in the central and Mazaijan district Bananat. (unpublished Ms)
- 2016 Description report on the first season of excavation at Hormangan site. (unpublished Ms)
- 2017 Fars regional interaction in the Pottery Neolithic based on Hormangan site excavations. Tehran: University of Tehran. Unpublished PhD Thesis. (in Persian)

Maeda A.

1986 A study on the painted pottery from Tepe Djari B. Bulletin of the Ancient Orient Museum 8: 55-86.

Nishiaki Y.

- 2010a A radiocarbon chronology of the Neolithic settlement of Tall-i Mushki, Marv Dasht Plain, Fars, Iran. *Iran* 48: 1-10.
- 2010b The architecture and pottery developments at the Neolithic settlement of Tall-i Jari B, Marv Dasht, Southwest Iran. *Archäologische Mitteilungen aus Iran und Turan* 42: 113-127.
- in press The development of Neolithic lithic industries in Fars, Southwest Iran. In: M.H. Azizi Kharanaghi, M. Khanipour and R. Naseri (eds.), *Proceedings of the international congress of young archaeologists*. Tehran: Iranshenasi Publisher.

Nishiaki Y. and Mashkour M.

2006 The stratigraphy of the Neolithic site of Jari B, Marv Dasht, Southwest Iran. *Orient Express* 3: 77-81.

Pollock S.

2010 Miniature cylindrical objects. In: S. Pollock, R. Bernbeck

and K. Abdi (eds.), *The 2003 excavations at Tol-e Baši, Iran: Social life in a Neolithic village.* Archäologie in Iran und Turan 10: 182-190. Mainz: Philipp von Zabern.

- 2010 The 2003 excavations at Tol-e Baši, Iran: Social life in a Neolithic village. Archäologie in Iran und Turan 10. Mainz: Philipp von Zabern.
- Schmandt-Besserat D.
- 1992 Before writing 1-2. Austin: University of Texas Press.
- Sumner W.M.
- 1977 Early settlements in Fars province, Iran. In: L.D. Levine and T.C. Young Jr. (eds.), *Mountains and lowlands: Essays in the archaeology of Greater Mesopotamia*. Bibliotheca Mesopotamica 7: 291-305. Malibu: Undena Publications.

vanden Berghe L.

- 1951-1952 L. Archaeologische opzoekingen in de Marv Dasht vlakte (Iran). *Jaarbericht Ex Oriente Lux* 12: 211–220.
- 1953-1954 Archaeologische navorsingen in de omstreken van Persepolis. *Jaarbericht Ex Oriente Lux* 13: 394–408.

Weeks L.

2013 The Neolithisation of Fars, Iran. In: R. Matthews and H. Fazeli Nashli (eds.), *Neolithisation of Iran – The formation of new societies*: 97–107. Oxford: Oxbow Books.

Weeks L., Alizadeh K. and Niakan L.

2006 The Neolithic settlement of highland SW Iran: new evidence from the Mamasani district. *Iran* 44: 1-32.

Pollock S., Bernbeck R. and Abdi K.