Comments on Sterelny and Watkins

Ofer Bar-Yosef

The authors should be congratulated on their intention to produce a slightly different view on the establishment of Neolithic farming and herding communities in southwest Asia. The archaeological evidence concerning this subject was collected by numerous scholars during almost a century of field research, representing many different schools of research (European, American, Australian and five geographically local countries). The current text claims that employing Niche Construction Theory (NCT), a new 'cognitive developmental dimension of cultural niche', will achieve what other interpretations missed out. They argue against a linear model for explaining the origins and early development of agro-pastoral societies in general, yet provide a story of one-way trajectory for the Levant.

In describing the process of change from hunting and gathering societies to those whose economy is based on farming and herding, they correctly complain about the term Neolithization. This term was invented by European archaeologists and unfortunately was lately adopted by investigators in the Levant. One could simply refer to the named 'industries' or 'cultures' (there are hundreds of radiocarbon readings associated with particular archaeological entities) which date to this period (e.g., Belfer-Cohen & Goring-Morris 2011; Goring Morris & Belfer-Cohen 2011). Refusing to do so simply reflects the tendency to avoid recognizing archaeological entities as representing 'people with no names'. The fear of identifying actual human groups marks a major regression in the advancement of Stone Age research.

The narration on the behaviour of foragers begins by claiming that all past societies were 'mobile bands of fluid membership', a statement which raises the question of 'how do the authors know that this was always the situation from the deep Palaeolithic past (2.5 million years) through the emergence of sedentism some 15/14,000 cal BP in the Levant'? Clearly, we do not know. A glance at the relevant literature on the Upper Paleolithic of Europe, especially the central and eastern regions, would indicate that sedentism was a cyclical phenomenon also among foragers. Moreover the idea of 'history houses', developed by I. Hodder, can be traced back even to the Middle Paleolithic of the Levant. Permanent occupations in Kebara cave provide evidence for repeated sweeping of living floors, clearly indicating that what we observe in early Neolithic houses has deeper roots in human behaviour.

Moving to the Late-Terminal Pleistocene, one may wonder where the evidence is for a statement that 'groups began to concentrate on harvesting and storing nutritious seeds' during the Late Upper Paleolithic in the Levant. In addition, when people practise storage—why should they continue to be mobile? Recent farmers in the Levant practised anticipated short seasonal mobility between the hilly permanent villages, where plots of arable land were minimal but defence was a major concern, and seasonal fields in the coastal plain (Amiran 1953).

For the purpose of providing a new framework for what happened in the Levant from *c.* 21/22,000 through 10/9000 cal BP, the authors adopt the Niche Construction Theory. This is not the place to review this apparently new approach to what anthropologists have been doing, for several decades referred to as 'the anthropogenic affects on the environment', at the same time also stressing how the environment reacted to human activities. Originally, in examining the deep past the NCT was designed to uncover the 'co-evolutionary interplay between cultural practices and genetic selection processes. Earlier the gene-culture co-evolutionary models have also established the plausibility of a cultural group selection hypothesis ... The common element among these cases is that cultural processes change the human selective environment and thereby affect which geno-types survive and reproduce' (Laland *et al.* 2001).

The idea of an interaction between environment and human groups was already presented in writings concerning human evolution during the Pleistocene when climatic changes and thus environmental changes were thought to be determinants for survival and extinctions (e.g., Potts 1998). However, it is surprising that, since the first statements on NCT over a decade and half ago, the only examples for gene selection are related to sickle-cell anaemia and lactase persistence (Durham 1991). Both were the results of the spread of agro-pastoral societies. One may wonder why Palaeolithic examples are not presented. Obviously, it is easier to bring examples from the Anthropocene, including recent history concerning the

https://doi.org/10.1017/S0959774315000220 Published online by Cambridge University Press

destruction of the environments, the increase of CO_2, decimation of wild life and their impacts on biological and social aspects, than from the Pleistocene.

I fully agree with the authors, as well as many other scholars who study the learning/teaching processes (always with some oral explanations and gestures) among different current human groups (e.g., Hewlett *et al.* 2011), referring also to the role of apprenticeship as known from historical records. Replications of Middle and early Upper Pleistocene stone-tool techniques demonstrate that skill matters (e.g., Eren *et al.* 2011). I wonder why the authors suggest that it all began some 100,000–40,000 years ago with the so-called modern humans, *Homo sapiens*, and not before. Even a glance at the literature concerning the making of stone tools with the set of methods incorporated under the term 'Levallois technique' would indicate that it all started at earlier times, at least about 350/250,000 years ago. Therefore, teaching, learning and practising production of stone tools (the best preserved records from the Palaeolithic) began at an earlier age and the created mental template was kept within groups of populations who sometimes survived for many thousands of years. For example, the early Mousterian or 'Tabun D-type' tradition in the Levant, as more fully represented in Hayonim and Misliya caves, lasted for *c.* 80,000 years (from *c.* 250/220,000–160/140,000 BP: Valladas *et al.* 2013). During this time (4000 to 2000 generations) stone artefacts were made in the very same way. Examples of shorter time spans during the Terminal Pleistocene in the Levant demonstrate yet another persistence of tool-making traditions since 24/22,000 BP (e.g., Goring-Morris *et al.* 1998).

The paper is peppered with interesting statements concerning social and other issues that are archaeologically inaccurate or too general to be valid. The allotted space is not sufficient to comment on many of them, so I will refer to only a few of those.

Dunbar's suggestion of 150 people as the group size for constant communication is based on his British experience. Probably, in order to get comparative material he could conduct research among many *kibbutzim* in Israel to find out that the average number of members in each of these communities (with intense, in-group interactions) is in the range of 500–600 individuals of all ages, a group size similar to that indicated by the data collected by J. Birdsell among foragers in Australia (1968). Therefore, early Neolithic village societies could have sustained a large population before budding-off. The estimated ratio of people per hectare, based on various ethnographic examples from western Asia, is 150:1. Therefore, Neolithic sites of 3–4 hectares in size (and there are larger ones, known as 'mega sites') could accommodate 400–600 people. If ethnography rules, as the paper states several times, checking sites' sizes would be informative.

Unfortunately, the lack of references to the archaeological evidence seems to be a major weakness of the paper. A statement such as 'Archaeologists and other scientists concerned with the beginnings of agriculture and the Neolithic of southwest Asia have contextualized the Neolithic within a narrow prehistoric perspective that usually looks back no further than the Natufian of the last two millennia of the Epipalaeolithic period (Bar-Yosef 2001; Bar-Yosef 2011; Bar-Yosef & Belfer-Cohen 1989; Bar-Yosef & Meadow 1995; Cauvin 1994; Cauvin 2000)' is simply wrong. It does not stand the test of the archaeological literature when various papers clearly describe the 'relative population pressures' that evolved prior to the Natufian (that actually dates to 15,000–11,700 cal BP) (e.g., Belfer-Cohen & Goring-Morris 2011), or ignore the issue of physical conflicts and potentials for raids and even warfare (e.g., Bar-Yosef 2010).

The widely used generalizations about human behaviour concerning social organization, rituals, cosmology and belief systems is one of the main problems of this paper. A good example is the issue of Göbeklı Tepe, where, except for telling us that several communities were involved in first building and later burying the structures of this impressive ceremonial centre, they do not refer to the overall social structure. The comment by the late K. Schmidt that these shrines/temples cannot be built without some degree of coercion should be tested. A suggestion based on a non-linear evolutionary change in social organization raises the option that the culture of Göbeklı Tepe, economically based on cultivation or major intensification in harvesting wild cereals, was a chiefdom that failed (Bar-Yosef 2014a,b).

Finally, the summary of the paper reads as a narrative similar to those available in a good number of the current publications. Updated readers will wonder whether this long paper brings new understanding concerning the emergence of farming and herding societies in the Levant by using the NCT. If we accept 'the proof of the pudding is in the eating'—the answer is simply 'no'.

Ofer Bar-Yosef
Department of Anthropology
Harvard University
Cambridge, MA 02138
USA
Email: obaryos@fas.harvard.edu

https://doi.org/10.1017/S0959774315000220 Published online by Cambridge University Press

References

Bar-Yosef, O., 2010. Warfare in Levantine Early Neolithic: A hypothesis to be considered. Keynote paper with responses by 13 scholars. *Neolithics* 10/1, 6–10, 71–3.

Bar-Yosef, O., 2014a. Was Göbeklı Tepe Culture a chiefdom that failed?, in *Settlement, Survey, and Stone : essays on Near Eastern prehistory in honour of Gary Rollefson*, ed. B. Finlayson & C. Makarewicz. Berlin: ex oriente, 159–68.

Bar-Yosef, O., 2014b. Southeast Turkish Neolithic: A view from the Southern Levant, in *The Neolithic of Turkey, vol. 6*, ed. M. Özdogan, N. Balgelen & P. Kuniholm. Istanbul: Archaeology and Art Publications, 293–320.

Belfer-Cohen, A. & N. Goring-Morris, 2011. Becoming farmers: The inside story. *Current Anthropology* 52(Supplement 4), S209–S220.

Birdsell, J.B. 1968 Some predictions for the Pleistocene based on equilibrium systems among recent hunter-gatherers, in *Man the Hunter*, eds. R.B. Lee & I. DeVore. Chicago (IL): Aldine, 229–40.

Durham, W.H., 1991. *Coevolution: genes, culture, and human diversity*. Palo Alto (CA): Stanford University Press.

Eren, M. I., S.J. Lycett, C.I. Roos & C.G. Sampson, 2011. Toolstone constraints on knapping skill: Levallois reduction with two different raw materials. *Journal of Archaeological Science* 38(10), 2731–9.

Goring-Morris, N. & A. Belfer-Cohen, 2011. Neolithization processes in the Levant: the outer envelope. *Current Anthropology* 52(Supplement 4), S195–S208.

Goring-Morris, N., O. Marder, A. Davidzon & F. Ibrahim, 1998. Putting Humpty Dumpty together again: preliminary observations on refitting studies in the Eastern Mediterranean, in *From Raw Material Procurement to Tool Production: The organisation of lithic technology in Late Glacial and Early Postglacial Europe*, ed. S. Milliken. (BAR International Series S700.) Oxford: J. & E. Hedges, 149–82.

Hewlett, B.S., H.N. Fouts, A.H. Boyette & B.H. Hewlett, 2011. Social learning among Congo Basin hunter–gatherers. *Philosohical Transactions of the Royal Society B* 366, 1168–78.

Laland, K.N., F.J. Odling-Smee & M.W. Feldman, 2001. Cultural niche construction and human evolution. *Journal of Evolutionary Biology* 14, 22–3.

Potts, R., 1998. Environmental hypotheses of hominin evolution. *Yearbook of Physical Anthropology* 41, 93–136.

Valladas, H., N. Mercier, I. Hershkovitz, et al., 2013. Dating the Lower to Middle Paleolithic transition in the Levant: a view from Misliya Cave, Mount Carmel, Israel. *Journal of Human Evolution* 65, 585–93.

Comment on Sterelny and Watkins

Amy Bogaard

From affluent foraging to 'truly horrible' farming? A response

In this thought-provoking contribution, Sterelny and Watkins bring our attention to the dramatic creativity, cooperative projects and symbolic elaboration of the Neolithic transition in western Asia. Their aim is to situate the period 12,000–8500 BP, from the end of the Epipalaeolithic to the onset of the Pottery Neolithic, in a longer-term human evolutionary trajectory by foregrounding the cognitive dimension of the agricultural transition and using niche construction as a framework. Incorporating aspects of Sterelny's apprentice learning model (Sterelny 2012) and Watkins' work on the Neolithic as a cognitive revolution (Watkins 2004), the authors characterize neolithization as 'informational niche construction' accompanying the formation of larger co-residential communities and place special explanatory emphasis on external symbolic storage (Donald 1991).

As Sterelny and Watkins point out, the formation of increasingly large co-residential communities in western Asia was well under way before the emergence of farming. Andrew Sherratt (2007, 15) likened farming in the Neolithic to fossil fuel in the industrial revolution: it emerged as a 'calorific subsidy' but ultimately took the revolution in a new direction. My critique of the argument that Sterelny and Watkins develop is that it pays insufficient attention to the changing nature of early farming itself, choosing to tackle the 'informational' dimension without an adequate account of the ecological niche. The authors characterize their period of interest as 'before farming proper', by which they presumably mean before widespread

https://doi.org/10.1017/S0959774315000220 Published online by Cambridge University Press