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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

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morphological domestication, but domestication is a weak/delayed index of management practice (Zeder 2011). Early cultivation and herding are variously attested long before 'farming proper'; what kinds of relations did these activities promote, and at what point in the process of neolithization did they redirect the revolution?

The authors suggest that manual farming through this period would have been 'truly horrible' due to its high labour demands, raising questions of motivation which they proceed (quite ingeniously) to address. But what do we know about cultivation during the PPNA, when it first becomes archaeologically visible in multiple regions? It gave rise to an identifiable weed flora and to a certain abundance of cereal grains (including from storage contexts) and chaff (used at some sites as temper in building material) (e.g., Willcox *et al.* 2008). Further refinement in the identification of constituent weed taxa and their ecology is needed to reconstruct the type of habitat created and its management, but available weed ecological studies suggest that PPNA cultivation involved less soil disturbance than in subsequent phases (Bogaard 2005; Colledge 1998). It is increasingly apparent that early cultivators were willing to store their produce in facilities 'shared' to some extent across a wider community. Sterelny and Watkins make repeated reference to the 'communal stores' of Jerf and other Middle Euphrates sites in the later tenth millennium cal BC, and emphasize the 'complete trust' across the community that they imply. But the intensity of land management through this period, and its role in subsistence, may well have been limited. If we fast-forward to eighth/seventh-millennium Çatalhöyük, towards the end of the period discussed, there is clear evidence that an 'established' farming community was situated in a partly wetland landscape that restricted the scale of farming and herding, but enabled quite intensive foraging and hunting. Surely the choice faced by PPNA cultivars was not whether to abandon 'affluent' foraging (the authors cite Sahlins 1968 to characterize the alternative to farming) for the horrors of full-on subsistence farming, but rather to incorporate cultivation into a broader repertoire of subsistence practice. Moreover, the 'affluence' of Sahlins' high-mobility foragers was already lost to those communities that pursued relatively sedentary strategies in the tenth millennium cal BC. In the upper Tigris basin, contemporary sites such as Körtik Tepe lack strong evidence for 'pre-domestication cultivation' (Riehl *et al.* 2012) but nevertheless possess the distinctive paved bases of 'storage' structures situated outside dwellings (see www.kortiktepe.com). Sedentism and its investments required storage, and plants with a decent shelf life, whatever the type/degree of landscape management involved.

By the end of the late PPN sequence at Jerf, the 'communal' building lacked features that suggest storage functions: a simple benched room for meetings had replaced the multi-purpose storage-cum-ritual structures of earlier phases (Stordeur 2013). This change signals a key shift that must have been reiterated many times in early farming communities across the region: a tipping-point at which cultivators began to invest more labour in farming and to claim private ownership of the resulting produce. The considerable demands of intensive mixed farming, which variously emerged by the late PPN and into the PN (Bogaard 2005), were the eventual consequence of that ownership claim. This is the point at which farming practice and its potential intensification—not developments in cognition *per se*—changed the game.

In this perspective the monuments of Göbekli Tepe, to which the authors make frequent reference, are situated, crucially, in the very period when (pre-domestication) cultivation became widespread. Though often characterized as 'hunter-gatherer' monuments, Gobekli's early enclosures belong to a distinctive transitional phase in which sedentary foragers faced the stark trade-off between communal and private investment. It is telling that enclosure construction continued, on a reduced scale, well into the middle PPNB period, when farming had likely become more intensive than in the initial period of PPNA monuments (cf. Colledge 1998). As was the case later on in European neolithization, the emergence of insular, competitive households was a gradual, intermittent process (Halstead 2006).

The narrative that Sterelny and Watkins develop forms an excellent foundation on which to construct further aspects of the changing 'niche' of the early Neolithic. But by insisting on the primacy of cognition over ecology, they run the risk of losing the holistic framework that niche construction offers.

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Comment on Sterelny and Watkins

Stephen Shennan

This is a very stimulating paper, with which I find myself very much in sympathy. There are many aspects that could be discussed, but I will only focus on one, their theoretical framework.

It has been increasingly clear for quite a long time that understanding transitions to farming ways of life involves much more than the analysis of assemblages of plant and animal remains and whether they show indications of changed morphologies, though these topics still tend to dominate the literature. One of the first to propose the need for a new understanding was Ian Hodder, in his book *The Domestication of Europe* (1990), which proposed that the emergence of a set of concepts based around the symbolic importance of the house was a key driver for the appearance of farming and settled life, in contrast to the standard population pressure arguments of the time. Four years later, Jacques Cauvin's *Naissance des divinités, naissance de l'agriculture* developed a similar theme, arguing that the origins of agriculture should not be seen in environmental and ecological terms, but as resulting from a 'restructuring of the human mentality' involving the emergence of new religious ideas. It was this, in Cauvin's view, that made possible the development of a farming way of life. In the intervening period the discovery of extraordinary sites like Gobekli Tepe, dating to a time when the cultivation of cereals and the control of prey animals was just beginning, has only added force to such arguments.

When these ideas were first put forward they were rightly seen as the antithesis of the original ecological thesis of farming origins, in Hodder's case part of the challenge of post-processual archaeology to processualism. The paper by Watkins and Sterelny now offers a synthesis of these different perspectives which emphasizes the complex feedback relationships between what we categorize as social, cultural and economic practices and processes; population density and nucleation effectively remain prime movers, but in a much more complex set of feedback relationships than previous versions. The key to their synthesis is its framing in terms of niche construction, though,

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