The Desert Fayum in the twenty-first century

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From 1924–1928, Gertrude Caton-Thompson and Elinor Gardner surveyed and excavated Epipalaeolithic and Neolithic sites across the Fayum north shore in Egypt, publishing a volume entitled *The Desert Fayum* (1934). Since then, a number of researchers have worked in the Fayum (e.g. Wendorf & Schild 1976; Hassan 1986; Wenke *et al.* 1988; Kozłowski & Ginter 1989), and most recently the UCLA/RUG/UOA Fayum Project. The long history of research in the area means that the Fayum is a testament to changing archaeological approaches, particularly regarding the Neolithic. Caton-Thompson and Gardner's study is recognised as one of the most progressive works on Egyptian prehistory, and their research provided the foundation for many subsequent studies in the region (e.g. Wendrich & Cappers 2005; Holdaway *et al.* 2010, 2016; Shirai 2010, 2013, 2015, 2016a; Emmitt 2011; Emmitt *et al.* 2017; Holdaway & Wendrich 2017). A recent article in *Antiquity*, however, uses Caton-Thompson and Gardner's preliminary interpretations of their excavations at a stratified deposit in the Fayum, Kom W, to generate a series of speculative statements concerning agricultural origins in the region (Shirai 2016b). The majority of these statements are very similar to conclusions initially made by Caton-Thompson and Gardner in the first half of the twentieth century, and new data and theory needed to reassess earlier conclusions are not considered. Recently published studies concerning the Fayum north shore and adjacent regions provide a different view of the state of research in this region and the Egyptian Neolithic in general. Here we acquaint *Antiquity* readers with current archaeological approaches to the Fayum north shore Neolithic, with the intent of stimulating academic debate.

Debate

## Settlement pattern and subsistence

As many studies indicate, evidence for agriculture does not equal evidence for sedentism. Similarly, evidence for sedentism does not equal evidence for agriculture (e.g. Bar-Yosef & Belfer-Cohen 1989; Byrd 1989, 2005; Kelly 1992; Wengrow 2006). Determining

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whether Kom W was indeed a sedentary residential site (Shirai 2016b) depends partly on its contents—portable artefacts certainly—but also on the nature and frequency of any features that might imply the presence and form of structures. It further requires that Kom W be compared to other archaeological evidence on the north shore. Settlement pattern cannot be assessed on the basis of only one site. Equally, inferences about the existence of an agricultural economy must draw on evidence of what people ate (plant and animal products), in addition to other artefacts and features that aid with economic interpretations.

There is no evidence of domesticated grains at Kom W, the only evidence of which exists at the site of Kom K and the K pits, 8.35km away (Wendrich & Cappers 2005). Faunal remains suggest a focus on aquatic resources, with domesticated animals comprising a small component of the assemblage (Linseele *et al.* 2014). The presence of sickle blades and grinding stones may suggest that cereals were harvested and processed in the vicinity of Kom W, although the number of these artefacts is small and of course both may have been used for non-domestic plants.

Shirai (2016b) claims that the role of 'formal' tools (i.e. retouched tools thought to have been deliberately shaped) has been underplayed by recent research. The frequency of discarded curated tools (or other long use-life objects) correlates to some degree with time spent at a particular location (e.g. Shott 1989). This proxy, however, needs to be interpreted in relation to other datasets that are available. At Kom W, the chronology, the formation history, the range and number of pottery forms, and the frequency of stone artefact discard indicates how difficult it is to maintain an argument for continuous and intensive occupation, irrespective of how many people were involved (Wendrich *et al.* 2010; Emmitt 2011; Phillipps 2012; Emmitt *et al.* 2017). Even if the chronology of Kom W is taken to indicate a single continuous occupation phase spanning 300 years (Wendrich *et al.* 2010), the number of artefacts collected by Caton-Thompson and Gardner equates to the deposition of as little as one 'formal' tool every two years (less if multiple sickle blades were hafted to a single implement). Such a rate emphasises the issue with attempting to interpret either the intensity of occupation, or the significance of cereal agriculture from 'formal' tool numbers.

Recent re-evaluation of Caton-Thompson and Gardner's descriptions of Kom W (Emmitt *et al.* 2017), and of the observations made by Wendorf and Schild (1976), suggest that there were periods of site abandonment, with the depth and composition of deposits reflecting substantial wind erosion. It is, therefore, far from clear if Kom W represents the remains of a distinct occupation phase. Indeed, studies of material surrounding the site of Kom W (e.g. Barrett 2014) suggest that Kom W probably represents part of a wider set of material residues distributed across the landscape, and may be better characterised as a 'horizontal tell' (a term introduced by Wengrow (2006: 83); see also Phillipps *et al.* 2016). As Caton-Thompson and Gardner were unaware of the depositional history of Kom W, their collections were largely restricted to those from stratified deposits. Our extensive survey of the artefactual remains on the surface of Kom W (including artefacts derived from the backfill from Caton-Thompson's excavations that were not collected) allows us to estimate that there are approximately six million uncollected flakes, cores and 'informal' tools (Phillipps 2012). This quantity places any 'disregard' of 'formal' tools, which number only 163 (approximately 0.000003 per cent) from Caton-Thompson and Gardner's collections, into context (Shirai 2016b: tab. 1). These were not

only tools collected from the surface (which would not have been representative due to surface collection before Caton-Thompson's excavations), but from the entire stratigraphic sequence. More precise data from XB11, a location with deflated surface deposits of stone artefacts that we sampled, indicate that only 10 (or 0.3 per cent) of 3500 identified artefacts were 'formal' tools. These included axes, sickle blades and concave-based arrowheads (Phillipps 2006; Phillipps & Holdaway 2016). The activities of collectors since Caton-Thompson and Gardner's work have doubtlessly affected these artefact proportions. Despite this, it is very hard to imagine how 'formal' tools ever constituted more than a tiny proportion of the Fayum north shore lithic assemblages. There seems little reason, therefore, to return to the emphasis that earlier archaeologists placed on 'formal' *vs* 'informal' tools, which largely disregarded the latter in favour of the former. This is not to suggest that formal tools should not be studied, but rather that such studies should not focus on these artefacts in isolation.

One of the issues raised by emphasising 'formal' tools is the need to assume tool functions. Concave-based arrowheads, for example, are distributed in sites across the eastern Sahara (Holmes 1991; Warfe 2003). In some cases, they are associated with large-sized animals and in some cases they are not. As the arrowheads are easily transported, they could have been used in locations other than where they were found. Without independent evidence for their function, claims that they were used to hunt large animals with thick skins (hippopotamuses, in particular) are speculative. This claim probably originates from interpretations of Predynastic sites in the Nile Delta, where hippopotamus remains are abundant (von den Driesch & Boessneck 1985). The archaeozoological evidence from the Kom W site, however, shows that hippopotamus bone is rare (Linseele *et al.* 2014).

When interpreting settlement patterns, it is important to measure the actual movement of materials as a proxy for the movement of people, rather than assume logistical or residential mobility involving individuals or groups based on the identification of site types, such as villages (Close 2000). We have built on Close's studies by considering portable material culture (e.g. Holdaway *et al.* 2010; Phillipps 2012; Phillipps & Holdaway 2016). Results indicate movement among a number of locations in the Fayum north shore, including Kom W (Holdaway *et al.* 2016; Phillipps & Holdaway 2016). This range of research suggests that it is possible to discern complex regional mobility and settlement patterns, wherein separate locations on the Fayum north shore may indicate how mobility varied among different places and times within the same region. Different degrees of mobility combined with domestic plant and animal use is not unique to the Fayum; there is no reason to equate either or both of these with a lack of technological skill or expediency of tool production. Faunal remains from the Fayum north shore show a predominance of wild taxa (mainly fish), rather than domesticated resources. Seasonal peaks in the exploitation of these resources are probable, but these do not necessarily imply that people were absent in other periods (Linseele *et al.* 2014).

## Low-level food production

Caton-Thompson and Gardner's categorisation of the Fayum Neolithic as a village-based sedentary farming community made sense at the time. In the latter half of

the twentieth century, however, archaeologists recognised that the notion that food production and permanent settlement developed simultaneously was too simplistic to describe the range of variability found in archaeological and ethnographic examples of human-environment interrelationships. Smith (2001) coined the term 'low-level food producers' to describe the range of potential variability in the spectrum of subsistence economies—from full dependence on wild food resources through to >50 per cent dependence on domesticated plants and animals. Use of this term does not indicate a lack of emphasis on domesticated plants and animals; rather, it diverts away from the "dualistic epistemology" (Smith 2001: 2) between food procurement and food production, and allows for greater flexibility in describing subsistence economies.

In the Fayum, an agricultural economy was certainly established from the Middle Kingdom. In the early to mid Holocene, however, we struggle to find any evidence for large-scale dependence on domesticated plants and animals from south-west Asia at either Kom W or in other parts of the north shore (Linseele *et al.* 2014, 2016; Holdaway *et al.* 2016). Low-level food production provides an alternative means to conceptualise evidence that indicates a mix of wild and domestic species. The approach suggested by Shirai (2016b), which abandons faunal evidence in favour of a claimed relationship between 'farming' and the presence of 'formal' tools, seems of limited value. Sickle blades may indeed be associated with plant harvesting, perhaps including the south-west Asian domesticated grasses, yet there is no direct evidence for such an association. Comments by Shirai (2016b) that no fishing-related 'formal' tools are present, and therefore fish processing must have occurred with 'informal' tools, are simply speculative. Similarly, what type of 'formal' or 'informal' tools might be associated with livestock keeping, for which there is evidence in the faunal record? Archaeological studies of stone technology have shown the interpretational error of early twentieth-century views that economy and artefact form were directly related (e.g. Edmonds 1995: 9–17). Contemporary studies emphasise how artefact function cannot be assumed on the basis of morphology alone (Dibble *et al.* 2016). It seems to us that a more productive approach is to use the results from multiple strands of evidence to understand past economies.

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However tempting it is to speculate on the behaviour of past peoples, a rigorous method and explicit concern with the relationships between *all* material remains and the inferences we draw from them are necessary if we are to move away from anecdotally imagining the past based on a subjective selection of objects. The work of Caton-Thompson and Gardner (1934), while representing one of the best archaeological investigations of the early twentieth century and a landmark study on the middle Holocene Fayum, by no means offers the final word on the region. Their original publication has since been critiqued and corrected, revisited and revised (Wendorf & Schild 1976; Holdaway *et al.* 2016; Holdaway & Wendrich 2017). Although Caton-Thompson and Gardner's work in the Fayum was remarkable, the bulk of subsequent scholarship concerning the Fayum demonstrates the

need to use the latest data, methods and theory, and to move beyond speculation when revisiting their work.

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