The archaeology of the first farmer-herders in Egypt : new insights into the Fayum Epipalaeolithic and Neolithic

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1. Introduction

1.1. Present state of knowledge regarding the origins and development of farming and herding in Egypt

The beginning of farming and herding in the Eastern Mediterranean in the Early Holocene has drawn a great deal of archaeological interest. The transition from the Palaeolithic foraging way of life to the Neolithic food producing way of life and associated changes in society and culture has been regarded as a revolution, and many studies have attempted to answer how and why Palaeolithic foragers abandoned their traditional way of providing subsistence by developing or adopting farming and herding. In contrast, little is still known about the transition process in Egypt due to the lack of sufficient data.

Nevertheless, Wetterstrom has summarised the information available to her in the early 1990s about the Late Palaeolithic-Neolithic human occupations in the Egyptian Nile Valley, and has argued the transition process in detail (Wetterstrom 1993). Her article which was originally published in English was later translated into French (Wetterstrom 1996), and it is probable that her article was read by many people who were concerned with this topic. Indeed, her article has been repeatedly cited as an authentic source of information in other scholarly articles and even in some recently-published general books about the origins of food production (*e.g.*, Barker 2006; Bellwood 2005). There is little doubt that her article had a great impact on readers regarding the ideas about the transition from foraging to farming and herding in Egypt. Her article was certainly innovative in terms that she not only described a series of facts concerning Late Palaeolithic, Epipalaeolithic and Neolithic subsistence on the basis of archaeological evidence obtained in the Nile Valley, but also attempted to answer how and why farming and herding started in the Nile Valley. However, her article included many unsubstantiated assumptions.

She assumed that even though Epipalaeolithic foragers in the Nile Valley had a seemingly successful subsistence, (1) people would have continually suffered from serious food shortages caused by the annual Nile floods which could fluctuate from year to year and over time, sometimes causing disastrous inundation but other years failing and leading to equally disastrous drought, (2) people would have adopted wheat/barley farming and sheep/goat herding from Levantine farmers-herders to mitigate the food shortages and to augment the variety of staple food, (3) people would have thought that the most attractive feature of farming and herding was their predictability rather than their productivity, (4) people would have gradually rejected foraging because it was not compatible with the emerging trend toward sedentism caused by the adoption of farming. I found it hard to accept her assumptions, because she did not refer to ideas obtained through anthropological studies on foragers since the 1960s and archaeological research in other regions at that time. Therefore, I thought that the beginning of farming and herding in Egypt had to be reconsidered in the light of more sound theories and models as well as new archaeological data. This is the primary reason why I decided to embark on new research.

Ethnological research on foragers has revealed many unexpected and intriguing facts since the 1960s. Until then, it was widely believed that foragers were always starving and spent much time foraging food whereas farmers were wealthy and stable, and enjoyed much leisure time. However, ethnological studies have revealed that even foragers who inhabited

marginal areas did not always suffer from food shortages because they relied on a wide variety of wild plants and animals, and could usually manage to find something edible. It is recognised that the farming and herding way of life is much less stable and subject to environmental changes because it depends on only a few domesticated plants and animals which are vulnerable to climatic fluctuations. Furthermore, it has also been recognised that foragers as a rule spent less time procuring food than farmers did (*e.g.*, Lee 1968; Sahlins 1972). Accordingly, the common belief that foragers are always starving and the farming and herding way of life is stable is no longer viable and cannot easily be applied to the past. Whereas Wetterstrom refers to the broad-spectrum subsistence strategy in Late Palaeolithic and Epipalaeolithic Egypt, she does not give convincing evidence of starvation at the end of the Epipalaeolithic period. Her assumption that Epipalaeolithic foragers in the Nile Valley would have continually suffered from food shortages caused by recurrent failures of Nile floods is doubtful given the presence of aquatic resources in the Nile as well as wild plants and animals in the Nile floodplain. She seems to overestimate the effects of the Nile flood failures.

The second question about Wetterstrom's assumptions is whether Epipalaeolithic foragers in Egypt had no means other than to adopt farming and herding to mitigate food shortages if they were actually faced with seasonal and/or long-term food shortages. In case of seasonal food shortages, they could have migrated, or have stored surplus food when available and have depended on the stored food during the season of hunger. This would have been a realistic solution in generally resource-rich environments of the Nile Valley. Although she refers to the archaeological evidence of the making of dried fish at Late Palaeolithic sites in Middle and Upper Egypt, she does not seem to regard it as important. However, the significance of food preservation and storage among ethnographic foragers has been discussed elsewhere (*e.g.*, Testart 1982), and should not be ignored even in prehistoric contexts. In case of long-term food shortages, the people could have moved on, or have curtailed their numbers by the regulation of population such as abortion, contraception and infanticide. Therefore, it can be said that the adoption of farming and herding is not the sole solution.

Wetterstrom's assumption gives rise to a question as to under what conditions farming and herding were introduced. It has been argued that wild food resources were constantly so rich and reliable in the Nile Valley that the inhabitants of the Nile Valley had failed or resisted the introduction of foreign domesticates for a long time, but it has hardly been explained why domesticates were adopted in the Nile Valley at long last (Butzer 1976: 9; Hassan 1984a: 222; Wenke 1990: 377). She seems to think that farming and herding must have been adopted under conditions of food shortages. In fact, many archaeologists working in the Near East and elsewhere concur that the food shortage caused by various reasons may have resulted in the initiation or adoption of farming and herding. However, some scholars are of the opinion that it was too risky for Epipalaeolithic foragers to attempt a new subsistence regime under conditions of starvation because if it failed, the situation would deteriorate and lead to fatalities (*e.g.*, Gould 1985: 431; Hayden 1990: 35, 57). It has been reported in Near Eastern archaeology that there was no evidence of food shortages at the transitional period from foraging to farming in the Middle Euphrates and thus the beginning of food production was not inevitable (Moore 1989: 629). In short, farming is not necessarily adopted under conditions of food shortages. Even though her assumption of occasional food shortages cannot totally be rejected, a possibility of the adoption of farming and herding under good conditions should also be considered in Egypt.

The third question about Wetterstrom's assumption is whether farming and herding are predictable. She uses the term 'predictable' as meaning that Epipalaeolithic foragers, who introduced domesticates, could control the location and size of crops and livestock and the time of sowing in response to the vagaries of

the annual Nile floods. However, it does not follow from her assumption that farming and herding are predictable because the growth of crops and livestock is at the mercy of natural conditions like fluctuations in the annual Nile floods. If an unusually low flood did not supply enough water to the field of crops and pastures along the Nile in summer, or if extreme heat wave arrived in early spring, they could not thrive at all without irrigation facilities. It was not until irrigation facilities were introduced in the Predynastic or Early Dynastic period that people could somehow control the growth of crops and livestock. Therefore, it can be said that farming and herding could never be predictable at the beginning of their introduction.

On the other hand, it is widely accepted that well-developed farming and herding are far more productive per unit area than foraging. This is undoubtedly the most attractive feature of farming and herding. Thus, it seems more likely that Epipalaeolithic foragers in the Nile Valley would have introduced domesticates because of their productivity rather than their predictability. However, it is uncertain whether the human population in Epipalaeolithic Egypt had increased so excessively that it required more productive subsistence. The possibility of such a population increase in this period has been suggested without giving any archaeological evidence (Clark 1971: 71-74; Clark 1980: 578-579). Population pressure has been argued as the prime mover at the beginning of farming (*e.g.*, Cohen 1977; Rosenberg 1990) or as a favourable precondition for the beginning of farming (*e.g.*, Hassan 1981: 219; Price and Gebauer 1995: 7; Redding 1988; Keeley 1988), but it cannot presently be concluded that population increase was the sole reason for the adoption of farming in Egypt. Other reasons must also be sought.

The fourth question about Wetterstrom's assumption is whether foragers in the Nile Valley were not sedentary before the adoption of farming. She seems to repeat the idea that sedentism became common in Egypt long after the adoption of farming (Wenke 1989: 138). However, the causality between farming and sedentism has long been a focus of debate in archaeology. There are examples of sedentism before the beginning of farming in prehistory, whereas examples of sedentism after the beginning of farming are also known in archaeology and ethnography (*e.g.*, Flannery 1973; Kelly 1992; Rafferty 1985; Testart 1982). Scholars who have expertise in sedentary foragers of the Natufian in the Levant suggest that sedentism may have been realised in the Nile Valley before the introduction of farming from the Levant (Bar-Yosef and Meadow 1995: fig.3.5). Therefore, the context of the introduction of farming in Egypt deserves careful re-examination.

The last questions about Wetterstrom's argument are who were the agents of the diffusion of wheat/barley farming and sheep/goat herding from the Levant to Egypt and who was responsible for the adoption of farming and herding in Egypt. Although gradual infiltration of a small number of Levantine drifters and refugees into Egypt over hundreds of years and peaceful mix of the Levantine people and local foragers in Egypt have been suggested (Hassan 1984a: 222), she does not mention these questions as if these do not matter at all. On the other hand, the diffusion of farming and herding from the Near East to the European continent has been well studied. Already in the early 1990s, it has been argued that 1) indigenous foragers in coastal regions of Mediterranean Europe might have willingly adopted domesticated sheep from the Near East without causing any remarkable changes in the local culture of those regions, and 2) farmers might have firstly immigrated to sparsely-populated regions of Central Europe and then inhabitants of coastal regions might have gradually adopted farming from the farmers, though there seem to have been conflicts between them (Donahue 1992). It has been said that unlike modern examples of colonialism, prehistoric farmers did not invade densely-populated regions and did not displace or enslave indigenous foragers but tended to colonise sparsely-populated regions. Furthermore, it has also been suggested that farming was likely to be adopted willingly by

knowledgeable indigenous foragers through direct or indirect contacts with farmers (Gebauer and Price 1992; Headland and Reid 1989; Spielmann and Eder 1994). Therefore, the scale, places, process and reasons of the contact between Levantine farmer-herders and Egyptian foragers should be important research topics, no matter what were the reasons for the adoption of farming and herding in Egypt.

1.2. Aims of research

As demonstrated above, another reason for the poor state of knowledge regarding the beginning of farming and herding in Egypt may be that Egyptian archaeology in general has traditionally lacked cross-cultural and anthropological perspectives (O'Connor 1997; Trigger 1979; 1997). As a consequence, it has failed to explain the characteristics of the beginning of farming and herding in Egypt on the basis of not only comparisons with other cases in different times and regions, but also references to anthropological perspectives and various explanatory models. It is common for scholars studying the beginning of farming in Europe, for instance, to refer to various perspectives and models regarding the beginning of farming as well as current research in the Near East and elsewhere (*e.g.*, Bogucki 1999; Gebauer and Price 1992; Hodder 1990; Price and Gebauer 1995; Price 2000; Thorpe 1996), but this has not always been the case with scholars dealing with the same topic in Egypt. In the studies of interregional contacts and dispersal of farming and herding, Egypt has been isolated even in the Eastern Mediterranean. As several proceedings of international conferences and workshops on the beginning of farming clearly demonstrate, Egyptian case studies have not appeared at all and have not contributed to the understanding and model-building of the beginning of farming in a worldwide perspective (*e.g.*, Anderson 1999; Cappers and Bottema 2002; Cowan and Watson 1992; Harris 1996; Price and Gebauer 1995).

Through the examination of previous studies on this topic, I have felt it indispensable to know more about current studies in regions other than the Nile Valley, and to compare the situations. Even within Egypt, much information regarding human occupations of desert areas far away from the Nile Valley in the Early-Middle Holocene, which was scarcely referred to by Wetterstrom, became available in the last decades. It has also been revealed that domestication of cattle began independently in Egypt and that domesticated sheep/goats were diffused from the Levant to Egypt earlier in date than previously believed. This information must be taken into consideration.

Furthermore, it is necessary to learn about theories, models and perspectives which have been employed in other regions, in order to enable their application to the study of Egypt. Although I have presented Wetterstrom's study as a first step toward developing a new idea about the beginning of farming and herding in Egypt, it is far from satisfactory in terms of the examination of various models. The adaptation model, which emphasises food shortages caused by environmental changes or population increase as the reason for the beginning of farming and herding, has been the most traditional model. In addition, the biological model, which emphasises symbiosis between humans and plants and regards farming as unintentional consequence of the symbiosis, has been put forward since the 1980s (*e.g.*, Harris 1989; O'Brien and Wilson 1988; Rindos 1980; 1984). The socioeconomic model, which focuses on the affluence and complexity of foraging societies revealed by ethnographic and ethnological studies and considers human ambition to acquire status and power by using domesticates as the reason for the beginning of farming and herding, has also been eloquently advocated (*e.g.*, Bender 1978; Hayden 1990; 1992; 1995a).

Moreover, following the recognition of the period of worldwide cooling and drying of climate called the Younger Dryas before the onset of the Holocene, attention to climatic and environmental disruptions in the argument of the beginning of farming in the Near East has revived since the early 1990s (*e.g.*, McCorriston and Hole 1991; Moore and Hillman 1992; Wright 1993). This has boosted attempts to

reconstruct climatic and environmental changes in the Eastern Mediterranean and Africa by assembling various data. While climatic and environmental deterministic arguments tend to neglect to explain human motivations behind efforts to cultivate wheat and barley or to keep sheep and goats, other research has centred on evolutionary changes in the cognitive abilities of modern humans and has explained how such developments may have been related to the development of early farming and herding (Mithen 1996). Consequently, the historical contingency of the beginning of farming in the Holocene has become emphasised in association with the evolution of behaviourally modern humans (*e.g.*, Layton 1999; Richerson *et al*. 2001; Sherratt 1997). This trend seems to suggest that the application of the concept of the structural history to archaeology, which has been discussed mainly in the studies on the rise and fall of regional societies in later prehistory and history (Bintliff 1991), can also be considered in the study on the incipient social complexity of foragers and beginning of farming and herding in prehistoric Egypt.

Therefore, the first step of my research is to set out a framework which covers the long-term history of subsistence change in a wider geographic scale while putting Egypt into the Near Eastern and northeastern African context and the Early-Middle Holocene context, both of which must have offered constraints and possibilities for the beginning and diffusion of, and the adoption or rejection of farming and herding. Then, the second step is to consider how and why wheat/barley farming and sheep/goat herding were diffused and adopted in Egypt when they were from an anthropological point of view, through referring to the models regarding the beginning of farming and herding. In so doing, a new synthesis concerning the diffusion and adoption of farming and herding from the Levant may be developed, and the structure and contingency at the beginning of farming and herding in the Eastern Mediterranean may be illustrated. This would be a contribution to be made by fairly isolated Egyptian archaeology towards the understanding of world prehistory.

Whereas the contributions of archaeobotany and zooarchaeology have been significant in the debates concerning the beginning of farming and herding in Egypt, it has been observed that the study of material culture, especially lithic artefacts, has not contributed to such debates (Hassan 1986a: 73). In Egyptian archaeology, the understanding of technology from an anthropological point of view has been a neglected area of study. Therefore, my research will focus on lithic artefacts. The main body of this research will attempt to demonstrate how the study of the beginning of farming and herding in a particular region of Egypt benefits from such anthropological understandings.

The following chapter will begin by elaborating on my research orientation, and will summarise the spatial and temporal scale which is dealt with in this research. I will review recent studies on climatic changes in the Eastern Mediterranean and northeastern Africa in the Early-Middle Holocene, and mention the present state of knowledge and ignorance concerning the beginnings of farming and herding in the Near East and northeastern Africa.

Then, the focus will shift to the Fayum where the best data regarding the beginning of farming and herding have so far been obtained. Chapter 3 will describe the background to new research in the Fayum. Chapter 4 will describe explanatory and predictive models concerning the transition from foraging to farming and herding, and will examine the applicability of the models to the Fayum case study in more detail. Chapters 5, 6 and 7 are based on the latest field research in Fayum. Chapter 5 will describe a new field survey and a spatial analysis of archaeological remains, and Chapters 6 and 7 will discuss the subsistence and mobility strategies of Fayum Epipalaeolithic and Neolithic inhabitants through lithic studies. Chapter 8 will discuss the diffusion process of domesticates from the southern Levant and look for lithic evidence for the interaction between the southern Levant and Egypt. Throughout Chapters 6, 7 and 8, the data about lithic artefacts obtained through literature study, museum

research, and fieldwork are the primary sources of argument. Chapter 9 will summarise the results of this research.