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Colonization of the Tibetan Plateau, permanent settlement, and the spread of agriculture: Reflection on current debates on the prehistoric archeology of the Tibetan Plateau

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ABSTRACT

The current debate focuses on three main questions: "When did humans begin to colonize the Tibetan Plateau?", "When did humans come to live in permanent settlements on the Tibetan Plateau?", and "What is the earliest evidence for local agriculture"? This paper attempts to evaluate and comment on recent debating, further study should clarify the definition of the Tibet plateau with consideration of the ecological and cultural diversity, and should start from excavated sites with reliable context not only the profile samples or the prediction model.

1. Introduction

Compared to other parts of China, the Tibetan Plateau is an area where archeological research is rather weak (Aldenderfer and Zhang, 2004). Only very few sites have been excavated, so little progress has been made toward the understanding of long-term prehistoric developments in this region. Nevertheless, in recent years the prehistoric archeology of the Tibetan Plateau has attracted the attention of many scholars, the number of publications on this topic among influential international journals has increased, and the prehistory of the Tibetan Plateau has become a hot topic of discussion (Chen et al., 2015; d'Alpoim Guedes, 2015; d'Alpoim Guedes et al., 2015; Hou et al., 2015; Qiu, 2015). Generally speaking, the current debate focuses on three main questions: "When did humans begin to colonize the Tibetan Plateau? (Aldenderfer, 2003, 2011; Brantingham et al., 2007, 2013)", "When did humans come to live in permanent settlements on the Tibetan Plateau? (Chen et al., 2015)", and "What is the earliest evidence for local agriculture (Chen et al., 2015; d'Alpoim Guedes, 2015; d'Alpoim Guedes et al., 2014, 2015)?"

This paper attempts to provide a critical appraisal of these issues. It argues that while recent debating has shed light on a couple of key issues, the regional bias and the context of archeological evidence in these studies need to be reexamined with caution. The two editions of the three-step model proposed (Brantingham et al., 2007; Chen et al., 2015) have only local validity, both of them telling the story of the northeastern Tibet Plateau (NETP). The available evidence from northwestern Tibet hints that the first colonization of the Tibetan Plateau could be earlier than 15,000 BP,[1] and the earliest permanent settlements in southeastern Tibet Plateau (SETP) are earlier than 3600 BP. The dry-land agriculture of broomcorn and foxtail millet was sufficient to sustain early permanent settlements on the Tibetan Plateau from 5000–3600 BP. For a better understanding of the populating of the Tibet Plateau, it is important for future studies to clarify the concept of the Tibetan Plateau and to focus on archeological evidence with reliable contexts, not merely profile sampling and ecological modeling. Judging from historical texts and current agriculture density, Central Tibet (Yarlung Valley) is an important key area for unlocking the Gordian knot.

2. When did humans begin to colonize the Tibetan Plateau?

During the past few years, considerable progress has been made to understand the early colonization of the Tibetan Plateau. Especially P. Jeffrey Brantingham and his colleagues have conducted extensive research on this question focusing on the northeastern Tibetan Plateau (NETP) (Brantingham et al., 2013; Brantingham et al., 2007; Rhode et al., 2007; Yi et al., 2011). According to their work, the current evidence suggests that the history of human movement on the Tibetan Plateau goes back to before 15,000 BP at the latest. Based on evidence

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[1] All ages provided in this paper are expressed in calendar years before present (cal. BP).

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from the NETP, Brantingham and his colleagues established a model of a three-step process of early human movement onto the Tibetan Plateau (Brantingham et al., 2007, 2013); however, due to the limited fieldwork on which this model was based, there is a strong regional bias. Therefore, this model may explain developments in the Northeast, but may not be able to represent developments on the whole Tibetan Plateau (Lu, 2011). Although Selincuo in northern Tibet (Yuan et al., 2007), Xiadacuo in western Tibet (Lu, 2011), and other potential sites have not been directly dated, judging from their lithic technology (i.e., with biface and Mousterian-like assemblages, rather than blades or microblades) (Lu, 2011; Yuan et al., 2007), these sites possibly predate the main NETP sites. Future archeological discoveries on the northwestern part of the Tibetan Plateau will prove this point and there is other evidence for earlier colonization around the Himalayan region (Corvinus, 1990, 1991, 1995; Gaillard et al., 2011; Ganjoo and Ota, 2012). Recent genetic research complements the archeological evidence, showing that the earliest human movement onto the Tibetan Plateau took place prior to 30,000 BP (Qi et al., 2013).

3. When did humans come to live in permanent settlements on the Tibetan Plateau?

A paper published by Chen (Chen et al., 2015) proposes that the spread of humans onto the Tibetan Plateau during prehistoric times took place in a three-step process. In their model, the most crucial part is that around 3600 BP the spread of barley- and wheat-based agriculture from the northeastern rim of the Tibetan Plateau allowed humans to settle permanently on the Plateau.

The model of population movement employed by Chen (Chen et al., 2015) reflects the influence of the colonization model proposed by Brantingham et al. (2007, 2013). These two instances of migration – one early and one late – emerge from the lowlands of the Upper Yellow River region in Gansu, and proceed in a gradual mode of diffusion onto the Tibetan Plateau. Although Brantingham's three-step model attempts to explain the colonization of the Tibetan Plateau (Brantingham et al., 2007, 2013), Chen et al. (2015) adopted this three-step model to answer the other two questions: "When did humans come to live in permanent settlements on the Tibetan Plateau?", and "What is the earliest evidence for local agriculture on the Tibetan Plateau?" They essentially present a hypothesis of "migration from the lowlands to the uplands," suggesting that people who were used to living in the lowlands moved into the uplands for various reasons. In Chen et al.'s model (2015), in fact, more complex issues, such as the relationship between the agricultural population in the lowlands and the hunter–gatherers on the Tibetan Plateau, have virtually been ignored. An "upland–lowland model" such as this is also not limited to the NETP, but similar upland–lowland models are likely to apply to the southeastern and western part of the Tibetan Plateau as well. So the upper Yellow river is probably not the only homeland of these migrants. Of course, there must also be processes of migration from highland to lowland areas. An example is the process by which early agriculture was brought to the Chengdu Plain, a process involving Majiayao Culture people who moved from high altitude to low altitude areas (d'Alpoim Guedes, 2011; d'Alpoim Guedes et al., 2013). Chen's model entails the assumption that the relationship between highlands and lowlands is uni-directional, going from low to high. In fact, historical and anthropological data show that this picture is not entirely accurate (Zvelebil, 2009); and the role of hunter gatherers in the transition to agriculture on the Tibetan Plateau has not been fully recognized.

Questions regarding the earliest permanent settlements and the earliest agriculture on the Tibetan Plateau actually revolve around the same issue. As Chen's (Chen et al., 2015) research shows, after 3600 BP, the expansion of wheat and barley agriculture made permanent human settlement on the Tibetan Plateau possible. But could non-agricultural groups have lived permanently on the Plateau? There is no doubt that hunter–gatherers moved onto Tibetan Plateau by around 15,000 BP (Brantingham et al., 2007, 2013); the archeological evidence currently available shows that this kind of subsistence system was still common in most parts of the Tibetan Plateau around 2600 BP (Hudson et al., 2014). Although these hunter–gatherers had a high degree of mobility, we should not envision them roaming at altitudes of 4200 m only seasonally and returning to lower agricultural areas from time to time.

Although Chen et al.'s model is very inspiring, it simplifies the complexity of migration around the Tibetan Plateau and equates the appearance of barley production with permanent settlement. Both the long duration of hunter–gatherer tradition on the Tibetan Plateau and the role of millet crops in the early settlement of the Plateau need to be considered more thoroughly.

4. The advent of agriculture on the Tibetan Plateau

At present, discussions of the earliest evidence for agriculture on the Tibetan Plateau is hotly disputed, but the material available is rather limited. As far as the Tibetan Plateau itself is concerned, the sites of Chamdo Karuo (Committe of Culture Relics of Tibet Autonomy Region and Department of History, 1985), Lasa Qugong (Institute of Archaeology, 1999), and Changguogou (Fu, 2005) have furnished the most conclusive evidence. Among them, the most thoroughly researched site is Karuo.

Based on over 50 radiocarbon dates, the site can be dated to 5200–3500 BP (d'Alpoim Guedes et al., 2014). Excavation and other research conducted in 2012 have shown that the most notable character of the site is the multifaceted mixed subsistence practices associated with it (Gao, 2013; Li, 2007; Zhang, 2013). d'Alpoim Guedes (2015) argued that populations of Karuo foragers may have only become involved in small-scale cultivation of foxtail (*Setaria italica*) millet and potentially broomcorn millet (*Panicum miliaceum*). She argues it is likely that at least some of these grains were derived through trade. In fact, even though the site of Karuo lies in the area that – according to d'Alpoim Guedes' GDD model – is not suitable for growing broomcorn millet, especially in the middle phase of the occupation of Karuo, both foxtail (*S. italica*) and broomcorn millet (*P. miliaceum*) are found in archaeobotanical deposits at the site (d'Alpoim Guedes et al., 2014; Gao, 2013). A new phase of occupation at the site has been recognized through new radiocarbon dating and through new excavations carried out in 2012.This final phase the occupation of the Karuo site (3600–2900 cal. BP), corresponds to the widespread emergence of wheat agriculture on the Tibetan Plateau. During its last phase, the subsistence system at Karuo had already become a typical pastoral economy with sheep and goat (Huo, 1993). This may suggest that after 3600 BP, the degree to which wheat agriculture was adopted in various parts of the Tibetan Plateau still needs further consideration. Is wheat agriculture more easily adaptable to dry and cold climates as suggested by d'Alpoim Guedes (d'Alpoim Guedes et al., 2015)? Was planting this crop a conscious and active choice by the occupants of the Tibetan Plateau? Or did the expansion of a lifestyle reliant on herding (or even specialized nomadism) help enable people to conduct long-distance movement and trade, eventually enabling the spread of wheat agriculture onto the Tibetan Plateau? All of these are issues that need to be discussed further.

The most important paleobotanical evidence from central Tibet was found at Changguogou. Recent radiocarbon dating of carbonized wheat seeds from Changguogou suggest that wheat had arrived by 3400–3200 BP (Table 1). Additionally, the carbonized seeds retrieved from Kuoxiong site in Lazi County in 2014 provide a date of around 3200 BP (Wangdui, 2014). Based on the radiocarbon dates available at present, Chen's model is correct in suggesting that wheat agriculture had not reached the Tibetan Plateau until after 3600 BP. However their assertion that permanent settlement only occurred after this time does not appear to be true. Archeological evidence from the Tibetan Plateau, such as the sites of Karuo and Xiao'enda in the Lancang River valley and