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Urbanism as technology in early China

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ABSTRACT

Sanxingdui in Guanghan, Sichuan and Yinxu in Anyang, Henan are two mid to late second millennium sites that are typically considered urban. What does urbanism mean in these two contexts given the varying amount of information known about these sites? Are their "urbannesses" comparable? This paper reviews attributes and concepts that are often equated with or seen as essential to urbanism and assesses their relevance to our understandings of Sanxingdui and Yinxu. Following Arthur (2009), urbanism is argued to be a technology in multiple senses of the word: on one level cities are a means of fulfillment of certain purposes, particularly related to economic and ritual relations among inhabitants; on a different level of abstraction, cities represent an assemblage of certain types of practices and components, and urbanism can therefore be considered a technological field. The nature of different cities within the realm of urbanism should be compared by examining the way in which the specific examples relate to four different aspects of urbanism as technology: Scale, Differentiation, Centrality and Performance. The comparison of Yinxu and Sanxingdui considers these two places through these four aspects. This approach to urbanism can be applied widely in the ancient and modern world.

1. Introduction

Sanxingdui in Guanghan, Sichuan and Yinxu in Anyang, Henan are settlement sites that were occupied during the late part of the second millennium BC and are typically considered urban (Fig. 1). Yinxu is understood to be the last capital of the Shang state, the first historically verified literate state in China. It is the place where Chinese archaeology began in earnest, with the long term excavations of the Institute of History of Philology of Academia Sinica starting in 1927 and then the successor Institute of Archaeology, now in the Chinese Academy of Social Sciences, after WWII. It is the early Chinese settlement for which we have the most information due to this long history of excavation and research. Sanxingdui, on the other hand, is a more recent focus of archaeological interest, only having been identified as a center of a complex polity after chance finds of ritual pits at the site in 1986. Being roughly contemporaneous with Yinxu, but located in a distant periphery of the region considered the core of Chinese civilization, Sanxingdui offers a relevant counterpoint to the nature of urban centers during this formative stage of Chinese civilization, although admittedly much less work has been done at Sanxingdui than Yinxu. That said, both can be considered urban places.

What does urbanism mean in these two contexts given the varying amount of information known about these settlements? Are their "urbannesses" comparable? By calling both places urban, or identifying them as cities, are we assigning them some sort of equivalence? Likewise, does such designation mean the same thing in both cases given the wide variety of opinions about what it means for a place to be urban? If the terms do not fit for one, the other, or both, are we denigrating not only these places as significant to longer term social processes, but also the assumed complexity and significance of the associated society? To answer these questions, we must first evaluate what urbanism means.

In this essay I argue that the concepts of "urban" and "city" are not exclusive boxes into which settlement sites should be fit when appropriate for the purposes of categorization. The identification of urbanness should not be an end in itself. Instead, I consider urbanism as a *technology*, following the work by W. Brian Arthur (2009). According to Arthur, the concept of technology has three levels of abstraction. On one level of abstraction, technologies are individual and specific means of fulfillment of certain purposes. Furthermore, they involve combinations of other existing technologies and rely on "natural phenomena." I consider how cities fit this level in relation to economic and ritual relations among inhabitants. Accordingly, a city can be considered an example of a specific technology that is the result of the combination of other technologies that use phenomena to achieve a purpose (or set of purposes – I discuss these several factors further below). On a different, somewhat broader level of abstraction, Arthur argues that technologies represent an assemblage of related practices and components. One might call this level of abstraction a technological domain, and I consider urbanism in light of this aspect of his definition. His third level of abstraction, involves technology writ large, and broadly encompasses the many realms of technology that make humans technological creatures.

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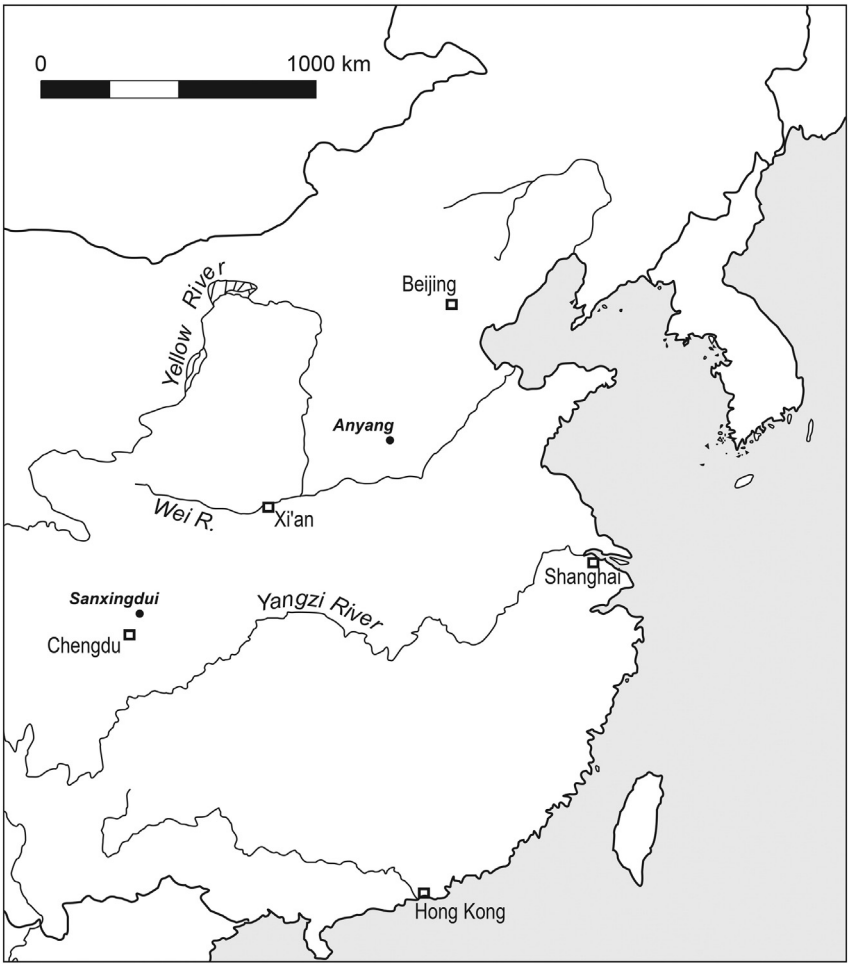

Fig. 1. Location of two sites discussed in the text.

Considering the cases of Sanxingdui and Yinxu through Arthur's technological lenses, these two settlements (cities) are the results of combinations of other technologies that develop in historically specific fashions. These developments build on a number of factors that Arthur outlines play important roles in the development of technologies of all types: chance events, problem solving, principles of cumulative prevalence, path dependence and lock-in. In the cases of cities, including Sanxingdui and Yinxu, these processes create places that are unique, and yet by examining these processes we illustrate an approach to urban contexts cross culturally. I argue that these aspects of the technology of urbanism coalesce into four categories: *scale*, *differentiation*, *centrality*, and *performance*, each of which incorporates certain elements of what cities are and what they do.

I will elaborate on these claims first by exploring Arthur's approach to the nature of technology as an analytical concept, and second through an overview of arguments about what is essential to urbanism, before turning my attention to the two sites.

2. Technology

For a succinct definition of technology, I follow Brezine, who proposes technology is: "A system of practices interrelating transformation of material resources, abstract and practical knowledge, social and political relationships, and cultural beliefs" (Brezine, 2011: 82). Technologies, according to this definition, are defined by the associated "practices" – the aspects of technology that involve the process of making or doing, the "transformation of material" – emphasizing that resources are vital and active, practices are formative, and that often (although not always) technologies are archaeologically visible, and the "interrelationships" that make clear that technologies cannot be understood without reference to their cultural, historical, and spatial context. These factors have been central to agentive appreciates to technology (e.g. Dobres, 2000, 2010; Lemonnier, 1992) in the tradition of Marcel Mauss (1935), who made clear that technological acts are *effective*, involving the acting by humans on matter, and *traditional*, shared among individuals who interact and are tied to one another in part through technological acts. Accordingly, technologies and the technological practices they entail provide the glues that hold together society and enable social relationships, institutions and economies to function. Technologies, therefore, while inherently defined by the "embodied experience" of "making and use" of things (Dobres, 2000: 9) [not to mention, I would argue, places, performances, and other sorts of technological manifestations], are also functional in that they serve a social purpose, albeit one that may not be intentional and is usually, if not always, fraught by a range of intended and unintended consequences.

Complicating things further, defining technology can be muddled because the term can be used effectively and meaningfully at several different levels of abstraction. The economist W. Brian Arthur elaborates on this multilayered, "fractal" nature of technology in his book *The Nature of Technology* (2009). For Arthur, technology can be defined on three different levels (2009: 28–29). First, "technology is a means to fulfill a human purpose." This purpose may be explicit and singular, or multiple and changing. Technologies can be processes or devices, simple, complicated, material, or nonmaterial. Second, technology can refer to "an assemblage of practices and components," such as "electronics" or "biotechnology." Elsewhere, he discusses this "type" of

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