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Irrigated Landscapes beyond Political Dynamics:

Long Term Water Management Strategies on the Miyānāb Plain of Khuzistan (Iran)

ABSTRACT

Past archaeological research in the fluvial landscapes of southern Iraq and southwestern Iran has suggested that the increasing consolidation of power under centralized territorial states set the stage for a remarkable expansion of irrigation infrastructure. The subject of Sasanian irrigation has been pivotal in this argument. Archaeologists have argued that the centralized power and bureaucratic apparatus of the Sasanian empire enabled the expansion of waterworks and intensification of irrigation agriculture on an unprecedented scale. After the Islamic conquest, the extensive Sasanian systems collapsed or declined, further confirming that the centralized power of states and empires enabled the construction and operation of the large-scale canal systems. A similar trajectory has been postulated for the irrigation history on the Miyanab: construction of a monumental canal system, the Gargar and associated headworks, under the patronage of the Sasanian state and an eventual collapse of irrigation after the conquest.

The Miyānāb is the agricultural hinterland of the historic town of Shushtar, a city famous for its ancient waterworks, which were inscribed as a World Heritage site in 2009. Nevertheless, little is known about the construction date, subsequent developments, and in some cases, even the function of these monuments. This dissertation presents a long term perspective on the history of settlement and irrigation on the plain. Insights from archaeology, texts, and remote sensing were combined in order to assess the impact of various factors contributing to changes in

the irrigated landscape, particularly, political dynamics. Some of the main results are summarized below.

This study demonstrates the strong continuity in irrigation strategies and practices on the Miyanab. Canal systems seem to have been developed gradually in the course of increasingly more complex actions of humans in channel straightening and expansion, building on the natural hydrology of an alluvial fan. Investment in canal system expansion appears to pre-date the Sasanian period. Sasanian irrigation projects were probably focused on the re-engineering of the historical canal head at Shushtar. This study demonstrates that imperial investments may not necessarily result in the structural transformation of the landscape. They may instead work to enhance the durability and increase the capacity of already existing infrastructure.

A main conclusion of this research is that the impact of the fall of Sasanian state on irrigation agriculture in the region may have been less pronounced than previously thought. Irrigation agriculture in the Miyanab does not seem to have changed notably in the Early Islamic period. In addition, the establishment of a new administrative province, ‘Askar Mukram, after the Islamic conquest points to new or increased agricultural investment in the buffer zone between the two pre-Islamic cities of Shushtar and Ahwaz. The strong continuity in irrigation and settlement patterns on the plain throughout the historical periods undermines the idea that central governments were directly involved in the management of irrigation. It is more likely that community participation around the economic and socio-political power of elites played a fundamental role in the construction and maintenance of irrigation infrastructure.

The present research makes a significant methodological contribution to the study of relict canal systems. It demonstrates that the relative dating of canal evolution is possible based on the internal analysis of the system and does not need to be tied to settlement pattern data. In

addition, detailed mapping and comprehensive study of canal systems can yield new information about the "features" of an system and the "functions" they perform. For example, it is argued that the Gargar canal did not play a role in the irrigation of the Miyānāb, as has been widely-assumed. Its purpose for the plain must be sought in other reasons, including flood control as well as industrial production and possibly waterborne transportation. In addition, this study highlights the complexity of human-water relationship in shaping fluvial landscapes. A wide range of human activities and natural processes seem to have worked in tandem in the formation of the Gargar canal that has been frequently considered the result of a short-term, planned project.

Finally, this research contributes to a demonstration of the limits of universal explanations. Until recently, the model of expansion and decline based on research in lower Mesopotamia had been considered applicable to the core areas of Near Eastern empires in Iraq and southwestern Iran. The trajectory of the Miyanab diverges from the widely-accepted rhetoric of Sasanian imperial expansion and post-conquest decline. Similar micro studies in other regions are needed in order to illuminate whether the trajectory proposed for the Miyanab is an exception or whether it represents a pattern that was more widespread.