



Interactive comment on “Endogenous change: on cooperation and water in ancient history” by S. Pande and M. Ertsen

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Response to reviewer Majed Akhter

Maurits Ertsen and Saket Pande

The review of Akhter is well appreciated for its in depth discussions on the type of argument possible in a type of paper we aim to write, and its kind word on the relevance of our work. His major comments focus on the use of our case studies and what claims can be made based on them. Although we do not fully agree with his exposition of the relation between case studies and theory as such, his three categories of use for case studies are welcome ways of exploring the use of case studies we would like to pursue in the paper.

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Our overall aim is to see where a perspective of endogenous change will bring us when trying to understand societal arrangements over time in relation to water. Therefore, we test the perspective in the paper, with a positive attitude in the sense that we hypothesize that endogenous change occurred (see also our other comments to reviews). Testing a theory (that may lead to the rejection, or not, of the hypothesis that endogenous change occurred) on one case study can be useful to discover how concepts can be made operational and what type of data can be employed, but cannot say anything on whether a theory holds per definition. That was our main reason to use at least two case studies. While the Hohokam case study may appear weak, additional analysis (that we will provide in our revised version) reveals the advantage of performing both the case studies in a comparative setting. We did not observe a breakdown of a cooperative structure at low levels of scarcity in both the case studies. Scarcity was a manifestation not only of hydroclimatic conditions but of endogenously driven societal complexity (such as population growth as well). We also do not witness the emergence of cooperative structures at the scales of the study areas under decreasing scarcity conditions or at high levels of scarcity. In both the cases, cooperative structures appeared at the scale of the study area (the rise to maturity or quasi-statehood) under increasing scarcity conditions. In both the cases the cooperative structures collapsed under relatively extreme water scarce conditions. Thus, we claim that we find evidence the supports the regularities predicted by the theory in both the cases.

What we think we can claim for both cases is that in the Indus and the Hohokam societal growth can be found in times of relative water scarcity. Societal growth – in terms of spatial expansion, increasing societal complexity found in settlement patterns and settlement hierarchy and assumed to need increased cooperation – seems to have been threatened up to societal collapse – better said societal change towards less large-scale arrangements – when scarcity increased further. In the Hohokam case, alternating flood and drought periods (hydroclimatic stochasticity), in addition to endogenous growth in societal complexity that includes population growth, seem to have been important too. Based on these results, we decided to include the two cases, as

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these appear to be in line with our main argument, while offering at the same time such specific results that further testing of the theory of endogenous change would be useful.

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