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Comment on hess-2021-7

Matteo Settura (Referee)

Referee comment on "From mythology to science: the development of scientific hydrological concepts in Greek antiquity and its relevance to modern hydrology" by Demetris Koutsoyiannis and Nikos Mamassis, Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-7-RC1>, 2021

I find authors' point extremely commendable, as I hold that it is necessary to curtail the habit of discrediting philosophical and scientific theories of the past. Unfortunately, this habit has spread among many workers in the field of science, and particularly among those who have no comprehensive knowledge of the historical context and of the epistemological presuppositions of such theories. In this view, the article meritoriously contributes to debunk the erroneous prejudice by which History of Science is often considered as something irrelevant to scientific activity.

That is exactly why I think that the kind of exposition they have chosen, which resembles a survey or a general overview, may not be the most viable. I think that the article would gain incisiveness and efficacy if it were led by a *fil rouge*, a common thread. In other words, I would ask authors to identify one or more concepts defining Ancient Greeks' epistemological approach to Hydrology and refer to it/them throughout the text.

It could be done answering questions such as: how did Aristotle get to his solution of the problem of the Nile's overflowing? what does his strategy tell us about "observation", "experience", "deduction/induction" in the field of Hydrology? or, more generally, what could ancient Greek philosophers (with their successes and their errors) teach us about our "modern" epistemological approach in Scientific Hydrology? In short, some of their results were good, others were not; but what about the path and the principles by which those results were obtained? These are just a few hints to point the way. I'm not saying that this insight is entirely absent from the text, but I feel the lack of a pregnant conceptual framework. In my view, this is the most important. Otherwise, there is a danger of losing the plot in accumulating detail-problems and issues.

As for the epilogue, it advances an extraordinarily strong conclusion, claiming that the real opposition is not between science and authority, rather between science and public acceptance. However, I think that authority has, and it has always had, a decisive role in

influencing the public acceptance, as the latter can never be considered spontaneous. In this context, the term "authority" does not refer to real individuals (Aristotle, Plato, or their alleged followers), rather to a set of principles which organise the way of acquiring and transmitting knowledge. Insofar as authority is an epistemological structure, a form of knowledge, the fact that a single claim by Aristotle was not accepted for a long time does not mean that we should dismiss the opposition between science and authority as a category to interpret the history of science.

I appreciated the authors' writing, as I found it vivid and not devoid of a certain irony.

511: Strabo

622: Del moto e misura dell'acqua - italic