

# The Role of Water in Production Processes in Antiquity

Elena H. Sánchez López

Water has been highlighted as a valuable natural resource and an essential element for life. Archaeological, historical and anthropological studies have analysed the water supply systems in different periods and regions. In this sense, the statement of the first paragraph in the Agenda about Water as one of the societal challenges for H2020 must be remembered: “(Water) has a wide range of applications in our daily life and it is a driver for economic prosperity. Water can be used for energy production and it is necessary for the development of industrial and agricultural activities” (Water JPI 2014).

According to this assertion, it is a fact that water is fundamental for the economic prosperity of any society, as it is vital in the development of many economic activities, both now and in the past. Nevertheless, studies about the past usually do not take into account water, further than analysing in some cases, the water supply systems. The uses given to this water, is rarely referred. Since most of the research topics have their roots in our daily lives and problems, this lack of interest can be related to the fact that, at least in the western world, water has not been a problem for the last decades. But in the past, in so arid areas as the south of Spain, the north of Africa or the Near East, it may have been a determinant issue.

In this line the objective of the Project *Agua y actividades económicas. Gestión y usos del agua en contextos productivos en el Occidente Mediterráneo durante la Antigüedad (AQUAECO)*, funded by the University of Granada (Spain), is to analyse the use of water in productive activities from Late Iron Age to Late Antiquity

Most production processes in the past required water. Sometimes it was one of the elements directly used in the making process, in other cases it was used for the cleaning of raw material or facilities, or it could be used as a source of power (in the case of watermills for example). Modern research has focused on the ancient hydraulic systems and their different parts, and on the water supply to the settlements and the water distribution within them, especially for Roman times. But how this water was used has rarely been analysed. Furthermore, while we have an understanding of the marketing of the main productions in antiquity thanks to archaeology and classical literature, very little research has been done about production processes themselves, and more specifically about which was the rule of water. In this sense, it is time to take into account another aspect on the water studies, its use in economic contexts.

In this sense Panel 3.19 within the 19<sup>th</sup> International Congress of Classical Archaeology, held in Cologne/Bonn (Germany) in May 2018, was entitled *The Role of Water in Production Processes in Antiquity*. Four papers were presented covering

the use of water in pottery, glass and metal production, construction and agriculture in Roman times and Late Antiquity.

The paper by Dr. Elena Sánchez (University of Granada) and Dr. Juan Jesús Padilla (University Complutense) combines ethnographical and archaeological data for reviewing the pottery production process analysing the role of water in each of the steps. Experiments carried on in collaboration with nowadays traditional potters allow a first quantification of the water needs of potteries and the conclusion that water was most probably the determining factor in the location of these workshops.

The contribution by Dr. Javier Martínez (University of Cambridge) analyses the role of water in construction activities, highlighting it was essential for the production of mortar, lime, bricks or plaster, and concluding that the study of the building activities must take into account not only the supply of ashlar, lime, *marmorae*, but also the water supply to the construction site, since for instance, mortars are made on site.

The work by Dr. Beth Munro (University College London) reflects on the usual presence of water related structures in late antique metal and glass recycling workshops. Since those were occupying pre-existing spaces, there is the possibility that their location in or near fountains, latrines, baths, or dining rooms with water features, was related to the common presence of recycling material in there. But there is also the chance that the location of those workshops was related with the actual presence of water, essential for their work.

The paper by Davide Gangale Risoleo (PhD student at the University of Pisa) analyses the water management in Roman villas, introducing a new approach that differs from the traditional ones focussing on decorative and symbolic uses (linked to the owner's prestige). In this case he reflects on possible productive uses of this water by trying to identify their archaeological and textual evidences.