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Notes and Discussions

Water Cultures, water knowledge, water conflicts: Rethinking water in the early modern period. Some notes from the Water Cultures Conference

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INTRODUCTION

In 2021 the United Nations World Water Development Report (WWDR 2021) begged the question of what it meant to discuss the value of water, and what water was worth. The report distinguished between a market value, that is a monetary worth of water, a use value, otherwise said 'utility', which, as the report goes, «can be very different from the market price» and, finally, the «importance» of water, that is «the appreciation or emotional value we attach to a given good or service»[1]. Separating between different value domains allows to acknowledge that the process of water evaluation is not an abstract one, but is rather very bound to specific localities, scales, as well as cultural and emotional dimensions. However, the question of the value of water is far from being a thing of the present. In his lecture course in public economy (1769) at the Palatine Schools in Milan, the reformer, theorizer of the abolition of the death penalty, the Marquis Cesare Beccaria, developed a theory of market value based on the assessment of offer and demand for specific things (*cose*) and goods (*merci*). In such a theory, water and its counterpart, air, figured as common things (*cose comuni*), available in great quantities, and definitely essential to human survival[2]. And yet, Beccaria did not accord water and air any monetary value. The reformer was not alone in this take. In his treatise *Della Moneta*, the Neapolitan ambassador in Paris, political economist Ferdinando Galiani had claimed something similar. He argued that rarity and utility were two essential key factors in establishing value, and concluded that, for this very reason «water and air, most useful elements to human life, do not have any value, because they lack in rarity»[3].

Beccaria's long-term collaborator and at-times enemy, the civil servant Pietro Verri also addressed this question in his *Meditazioni sull'economia politica*

[1] *UN World Water Development Report 2021. Valuing Water* https://www.unwater.org/publications/un-world-water-development-report-2021 (05/2024)

[2] C. Beccaria, *Gli Elementi di Economia Pubblica*, *Scritti economici*, a cura di G. Gaspari, Mediobanca, Milano 2014, p. 305.

[3] F. Galiani, *Della moneta*, Nella Stamperia Simoniana, Napoli 1780, p. 28. Galiani and the other authors mentioned in this introduction feature in footnote n. 1 at p. 305 of Gaspari's critical edition of Beccaria's economic writings (see above).

(1769/1771), highlighting how the «need for something» was not enough to attribute value. He claimed that, even though «there is nothing we need more than water and air», precisely for this reason water and air did not have any value[4]. However, the question of the value of water and air went beyond Italy and Lombardy. Back in early 18th-century France, the Director of the Royal Bank in Paris, John Law, had similarly maintained that «water is of great use, yet of little value, because the quantity of water is much greater than the demand for it», while the Scottish Adam Smith would later comment that «nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it»[5].

The present note will investigate different ways to understand water in the early modern and modern periods, by taking inspiration from the recent conference *The Water Cultures of Europe and the Mediterranean, 1500-1900*. Held in Venice on the 13th, 14th and 15th September 2023, the conference was organised by the ERC project *The Water Cultures of Italy 1500-1900*'s team, composed by Principal Investigator David Gentilcore, together with Gaia Bruno, Oscar Schiavone, Rachele Scuro, Salvatore Valenti, and myself. Given the multiplicity of research questions and methodological approaches mobilised by the conference participants, this paper is of course not an exhaustive review of how various strains of historiography have rethought key questions of the early modern period through the lens of water studies, but will rather offer a series of glimpses into macro areas. For the purpose of this note, I have divided these macro areas into 'Water knowledge', 'Water Cultures', 'Water conflicts'. These clusters correspond to the various panels of the conference, and are of course not separated from each other, instead presenting many points of contact, in terms of themes and methodology. Due to constraints in space and the expertise of who is writing, not all sessions of the three-day conference have been given equal attention, despite being all included in the discussion.

WATER KNOWLEDGE

As Peter Burke highlights in his book *What is the History of Knowledge?*, it is difficult to define what knowledge is. We should, at least, use the plural «knowledges», in order to highlight that there might be different modes to produce information concerning the external world[6]. We might advance a similar claim for water, which has been the object of multiple scientific understandings, theories and practices, from neo-Hippocratic revivals in the Cinquecento, to the application of the laws of mechanics to make sense of water flows, to Joseph Priestley's and Antoine-Laurent de Lavoisier's chemistries in the 18th century. With regard to the 18th century, the examination of water represents a significant example of changes in scientific understanding, notably illuminating the adoption of Lavoisier's chemistry in Italy. An important case study which testifies to the increasing presence of Lavoisier's chemical framework in Italy in the 1790 is represented by the Piarist from Rome Bartolomeo Gandolfi. Chair in Experimental Physics at the Sapienza since 1792, Gandolfi left us hundreds of lectures notes. Gandolfi's notes underscore the importance of systematising knowledge of water through the use of Lavoisier's chemical framework, 'dissecting' water into its elemental components. However, chemical analysis of water predated Lavoisier's 'new chemistry'[7].

One of the panels of the *Water Cultures Conference*, dedicated to the theme of *mineral waters* shed light on these questions. More specifically, historian of chemistry Armel Cornu addressed the rise of mineral springs in France, and in the town of Vichy in particular, between the 17th and 18th centuries, making the study of mineral waters a case to enquire into local economies and models of profitability. In the same panel, Michael Zeheter took the audience further in time, at the end of the 19th century, exploring how producers could market the same mineral water as a medical remedy against chronic medical conditions, and as a refreshing beverage. He also highlighted how this process was articulated from the point of view of consumers, and how it required new forms of quality assessment and product market regulation.

Keeping the focus on the mineral and chemical aspect of water, the panel *Thermal Waters* delved into the French and British spa cultures. Moving between the 17th and 18th centuries, historian of early modern medicine, François Zanetti, enquired into the state regulation of mineral waters in France. Initially overseen by the King's chief physician and subsequently by the *Société royale de médecine* (1778-1793) and the *Académie royale* (from 1820), Zanetti contended that physicians, known as *médecins intendants*, played a pivotal role in collecting information and generating knowledge about mineral

[4] P. Verri, *Meditazioni sull'economia politica*, Nella Stamperia dell'Enciclopedia, Livorno 1771, p. 26.

[5] J. Law, *Money and Trade Considered*, R&A Foulis, Glasgow 1750, p. 4; A. Smith, *An Inquiry into the Nature and the Causes of the wealth of the Nations*, edited by E. Cannan, University of Chicago Press, Chicago 1976 [1776], pp. 32-33.

[6] P. Burke, *What is the History of Knowledge?*, Polity Press, Cambridge 2016, pp. 6-9.

[7] Archivio Storico della Curia Generalizia dei Padri Scolopi di Roma, REG. L. – SC. 291, Fasc. 8.

waters through their visits to spas across the nation. Physicians also regulated the use and access to waters so as to lure patients in, thus casting doubts on their own credibility and objective judgement. Following Zanetti, English literature specialist Ursula Kluwick drew on 19th-century literary authors such as Jane Austen, Charles Dickens and Bram Stokers, and used their texts to unveil contemporary conceptions about non-human/human bonds, and in particular the water-human relationship. However, Kluwick went beyond a simple textual analysis, rather enquiring into what novels featuring spas and seaside resorts can tell us about evolving approaches to water and ways of seeing its affection on human bodies.

Moving to Atlantic islands and continental Europe, the session *Hydraulic Landscape* shifted the focus towards another kind of knowledge, the material, the practical, and the symbolic, exploring questions of water scarcity and at the same time problematising how institutions harnessed minor and neglected bodies of water. More specifically, global historian Laura Dierksmeier focused on the manifold responses of the inhabitants of the Canary Islands to water scarcity in the early modern period, with a special focus on the 18th century. During her presentation, she showed the audience a scaled-down model of the *destiladera canaria*, a small devise used for water purification and drinkability assessment, likely brought to the Canary Islands by African slaves. Dierksmeier's approach alternated between material culture, religious and social history, shedding light on the complexities of water rights in the Canary Islands, where hydraulic resources were kept under control by a small elite of 'water lords', who turned what used to be a public good into a commodity. Following Dierksmeier, historian of early modern Europe Mary Lindemann's presentation, bearing the evocative title of *Aqua incognita*, talked about the little waters of Brandenburg between 1660 and 1750. Lindemann contended that scholarship has examined large bodies of water thus far, leaving behind the unnamed streams and water channels which were however central to local economies and shaped their everyday life. Focusing on the watery topography of Brandeburg, she explored how 17th-century wars altered waterscapes, at the same time changing institutional takes to managing rivers, regulating water access and the maintenance of hydraulic infrastructures.

The session *Hydraulic knowledge* surveyed various water technologies in early modern Florence, Barcelona, Augsburg and Amsterdam. Art historian Anatole Tchikine recounted the discovery, in 1612, of a medieval aqueduct by Florentine public work officials, who were struck by its technical refinement, which challenged ideas of the primacy of an exclusively Renaissance knowledge of water infrastructures. In his presentation, Tchikine explained that this discovery did not happen in an urban space, but rather in what used to be a pilgrim route. He argued that this was a site of passage, a fact that – he claimed – facilitated the transmission, exchange and application of technical and artisanal knowledge, at the same time requiring the building of infrastructure to cater to the travellers' needs. Davide Martino shed light on how demographic growth in the early modern period fostered practices of hydraulic innovation in early modern cities such as Augsburg and Amsterdam. He also proposed to explore how hydraulic knowledge and innovations were not always embraced by local institutions, guilds and authorities, rather being sometimes outlawed and prevented. Martino used these two case studies to make a broader claim about the flaws of a historiography which seems to assume that knowledge exchanges are always successful. Finally, Santiago Gorostiza Langa took us to 17th-century Barcelona. A city affected by recurrent droughts, Barcelona relied on a network of city water officers who ensured urban water provisioning. By focusing on a rare source, *Le Llibre de les Fonts de la Ciutat de Barcelona* (The book of fountains of the city of Barcelona), Gorostiza analysed the role of water officers and of their knowledge in providing water services as well as establishing control on the city.

The panel *Underground Water* looked at two forms of water technologies, the use of wells on the elevated sand ground in Deventer, eastern Holland (Dániel Moerman), and the rediscovery of artesian wells and thus of technologies to harness water from the subsoil throughout Europe in the 19th century (Antonio Bonatesta). Finally, the session *Urban Waters* focused on ways of managing waters in urban milieus. Marius Mutz investigated the hydraulic knowledge exchanges in Dresden, at a time when no specialization existed in this domain (1500-1600), analyzing how water knowledge was circulated, negotiated, verified among multifarious actors, and applied to tasks such as the construction of water pipes and stream works or to more spectacular projects. Moving to northern Italy, Silvia Conca Messina made the case of the complex Milanese water network (*Naviglio Interno*) and of its manifold functions, from drainage to irrigation, industrial operations, trade and provisioning, looking at its evolution with respect to processes of administrative centralization from the 1750s to 1796.

WATER CULTURES

One of the key themes of the *Water Cultures* ERC project is to identify symbolic – religious, artistic, cul-

tural and political – responses to water and water uses from the early modern period to the contemporary era. The inclusion of cultural history to the study of water is key in that it allows to go beyond institutional and elite ways of understanding water, rather including the beliefs and narratives of more marginalized and subaltern social groups. Imaginaries of water have been at the center of philosophical and anthropological studies, from Gaston Bachelard's canonical, *L'eau et les rêves*, Gilbert Durand's *Les structures anthropologiques de l'imaginaire*, associating stagnant waters to death, Ernesto De Martino's essays on apocalypse and psychopathologies, where karstic visions of water fed the fear of death and disorder of rural communities, and, more recently, Veronica Strang, *The meaning of water*, which discusses the symbology inherent to institutional forms of water control[8]. The *Water Cultures* conference attempted to include panels which could reflect on the cultural dimensions of water.

On the first day, the panel *The Art and Theatre of Water* explored the aesthetic of early modern hydraulics in contexts as diverse as Genoa, the writings of the natural philosopher Giovan Battista della Porta, western and Islamic visions of garden hydraulics. Ana Duarte Rodrigues dug into the aesthetic impact of water in gardens, aiming to compare various water cultures across Europe from Al-Andalus to Renaissance Italy. Through this comparative analysis, Rodrigues went beyond evaluating water features in Mediterranean regions, rather investigating the distinctions, as well as continuities and interconnections between Islamic and western water traditions, gardens, cultures, and artistic expressions. Focusing on early modern Genoa, Ana Cristina Howie used Flemish painters Peter Paul Rubens and Anthony van Dyck's portraits of the city's nobility to underscore the importance that water had for Genoese elite audiences and to argue that these artists used aesthetic representations of the water element to demonstrate their skills. Finally, Sergius Kodera investigated Della Porta's approach to waterworks, highlighting how the natural philosopher repurposed and expanded his ideas and instructions on hydraulics and various fluids – water and wine – across numerous texts and contexts over several decades, starting from his *Magia naturalis* (1558) to his *De aeris transmutationibus* (1610).

The panel *Life and Death* went further into the cultural history of water, covering questions such as the connection between hygienist and water cultures in the 19th and 20th centuries, and the ways water was included into suicide narratives in 18th- and 19th-century England. In particular, Fabio Pruneri scrutinized how water access, and especially the presence of toilets, slowly became a common feature of the architectural plans for school building, intersecting with the hygienist movement and at the same time reflecting how physical cleanliness went hand in hand with ideas of morality and purity. Ella Sbaraini explored a different type of water symbolism, one connected to practices of suicide, especially by women in England between the 18th and the 19th centuries. Sbaraini claimed, relying on an analysis of 100 suicide letters, that bodies of water like the Thames were regarded as preferred locations for suicide, as drowning ensured death.

Moving back to the early modern period, the panel *Irrigation and Reclamation I* included two talks, by Alexander Andrew Hibberts and Caroline Murphy. Hibberts researched English Augustinian canons between the late medieval and early modern periods, showing how they were responsible for building drainage systems with multiple objectives, such as reclaiming marshlands, creating fish breeding ponds, and guarding against coastal encroachment. He argued that water extraction was not exclusively practical, but rather seen as a form of creation, turning wetlands into functional and fertile terrains, thus shedding light on the symbology of bodies of water. Focusing on early modern Valdichiana, Murphy looked at the Aretine secretary Baldassarre Nardi's manuscript *Discorsi intorno alla diseccatione delle Chiane* (circa 1600), a land-reclamation treatise addressed to the Tuscan Duchess Maria Cristina di Lorena. Murphy contended that, in this work, Nardi framed his take on early hydraulic practices in reason of state discussions, fusing these two traditions with insights from ancient and medieval geography and history.

Finally, the panel *Sacred Waters* looked at water in the context of prophetic narratives, religious rituals and political propaganda. In particular, Marios Hatzopoulos delved into the role of water in prophetic beliefs taking a 16th-century subterranean spring located outside the Byzantine walls of Constantinople – now Istanbul – as a case study. Believed by both Christians and Muslims to possess healing powers through its holy water, Hatzopoulos highlighted that, in the 16th century, this source was also associated with the continued existence of the Ottoman Empire, thus acquiring a political connotation. Focusing on Jewish magic, Andrea Gondos instead studied the various ways water was employed in Jewish books of secrets, uncovering its symbolic, ritualistic, and practical healing significance within Jewish communities in Central and Eastern Europe during the early modern era.

[8] G. Bachelard, *L'eau et les rêves*, Jose Corti, Paris 1942; G. Durand, *Les Structures Anthropologiques de l'imaginaire*, P.U.F, Paris 1960; E. De Martino, *La fine del Mondo*, Einaudi, Torino 2019, p. 93; V. Strang, *The Meaning of Water,* Routledge, London 2004.

WATER CONFLICTS AND RESILIENCE

Being the century of 'political economy', of a renewed meditation on wealth production, conservation, and increase, it is not at all surprising that the 18th century brought to the fore the question of water in relation to the question of monetary value, as we saw in the brief introduction to this note[9]. It is even less surprising that this quantitative value, in the cases mentioned in the same introduction, amounted to zero. In fact, consistently with the tradition of Roman law, in the 18th century, water was still conceived as a *res communis omnium*, literally a 'thing' common to everybody which could neither be attributed a price nor be exchanged. Together with other natural resources, water was at the centre of debates concerning the so-called *usi civici*[10]. Plunging their roots in the Middle Ages, the *usi civici* recognised the rights of local, especially rural communities to make use of natural resources such as acorns and fallen wood, as well as of common lands for pasturage. However, the *usi civici* increasingly became the target of the attacks of enlightened governments, starting from late 17th-century England, to 18th-century France, as highlighted by Marc Bloch in an old, yet canonical article on *individualisme agraire*, the Grand Duchy of Tuscany and the Duchy of Milan[11]. Recent studies on early modern Europe tell us that even though water per se could not be sold, it could still be the subject of the juridical institute of concession, which was usually in the hands of local institutions, under the control of a network of practitioners, from civil servants ensuring that individuals did not appropriate more water than what they had paid for, to fountaineers charged with technical intervention, and the maintenance and control of fountains and pipes to avert frauds[12]. This institute was especially key in areas characterised by dry climates and recurrent droughts, such as Spain, southern France and Italy, where societies had to create resilient strategies to tackle water scarcity and limit its disastrous impact on the economy, not only on agriculture, but also on manufacturing and flour provisioning, and, more generally, on the everyday life[13].

Many of the conference panels addressed controversies and environmental constraints in the use of water resources. The panel *Water Management* included a paper by Renato Sansa and Giannantonio Scaglione dedicated to the historically neglected region of Calabria, emphasising the presence of mills, as highlighted in archival sources, and showing how the region's inhabitants managed to negotiate access to limited water sources. Also with a focus on the South of Italy (Sicily), Daniele Palermo explored how the Messina plague epidemic of 1743 triggered institutional reflections on the management of stagnant waters, in the context of rice cultivation as well as flax production. Moving to northern Italy, Maurizio Romano and Claudio Lorenzini shifted the focus towards the dawn of industrialisation, looking at water conflicts surrounding manufacturing in Lombardy and Friuli between 1750 and 1850. The role played by water, and by rivers especially, in conflicts, was at the centre of the panel *Rivers and Wars*. Organised by Alice Raviola, and including Elisa Andretta and Massimo Galtarossa, the panel entirely focused on the role of bodies of water such as the Po, the Brenta and the Tiber in central and northern Italy in early modern war conflicts.

Looking at 17th- and 19th-century eastern Mediterranean, the panel *Waterworks in Ottoman Crete* explored continuities between the Venetian and Ottoman rules in terms of water engineering practices (Anna Androvitsanea), enquired into water rights at times of scarcity (Antonis Anastasopoulos), and shed light on waterworks as symbols of the ruler's legitimacy and political strength (Nicola Verderame). Finally, the session *Irrigation and Reclamation II* combined the study of water technologies with an exploration of how water management prompted a reconsideration of the notion of 'new lands' and intersected with concepts and models of sovereignty in the 17th century. In particular, John Morgan used legal disputes over «land supposedly won from the sea», to understand ways of knowing about the role of water in the landscape of early modern England, while Aneurin Merril-Glover looked at the symbology of the body and body politic inherent to discourses surrounding the drying of the Fens in the 17th century. Shifting to 18th-century Languedoc, Stéphane Durand recounted how the French Crown's engineers intervened in wet-

[9] This is of course a debated and widely researched topic, but I make reference to *The Economic Turn*, *Recasting Political Economy in Enlightenment Europe*, ed. by S. Kaplan and S. Reinert, Anthem Press, London 2019.

[10] M. Fiorentini, *L'acqua da bene economico a «res communis omnium» a bene collettivo*, «Analisi giuridica dell'economia» 1, 2010, pp. 39-78, and A. Dani, *Il concetto giuridico di "beni comuni" tra passato e presente*, «Historia et Jus», 6, 2014, p. 7, n.p.

[11] M. Bloch, *La lutte pour l'individualisme agraire dans la France du XVIIIe siècle. Deuxième partie: Conflicts et résultats. Troisième partie: la Révolution et le Grand Oeuvre de la propriété*, «Les Annales», 8, 1930, 2, pp. 511-556. See also L. Tocchini, *Usi civici e beni comunali nelle riforme leopoldine,* «Studi Storici» 2, 1961, pp. 223-266. More recently, see M. Tacca, *Pratiche di catastazione e riforme della maglia amministrativa rurale. Borgate e beni comuni nella Savoia del diciottesimo secolo*, «Quaderni storici», 1, 2021, pp. 173-196.

[12] On this, see the forthcoming *La Nature sous Contrat*, sous la dir. de T. Leroux et R. Morera, Presses Universitaires de Rennes, Rennes forthcoming.

[13] See *L'acqua. Risorsa e minaccia*, a cura di E. Bini, D. Carnevale, D. Cecere, FedOAPress, Naples 2023.

lands they had no experience about, and how their spatial planning shaped a public culture of water and was seen as a symbolic reinforcement of the state. Finally, in the panel *Supplying Water,* Matthjis Degraeve looked at the development of sanitary technologies such as the water closet in London, Paris and Brussel and at how their installation was socially contested between the 19th and 20th centuries, while Bob Pierik studied the intersection of cultural and seasonal rhythms in understanding practices of water access and water use in the western coastal Dutch Republic. In the same panel, Mathieu Torck looked at Iberian shipboard water supply during early modern transatlantic voyages, and unveiled how provisioning and storing sweet water relied on various forms of knowledge, from geography to chemistry, to material culture. Finally, Anna Speyart addressed the curious theme of snow in early modern Florence, looking at how this commodity catered for social, scientific and medical needs and required a whole new set of material practices, from harvesting to transportation and storage.

CONCLUSION

This note has been an occasion to think about the multiplicity of questions and methodological approaches surrounding the history of water at various historical times. The lectures of the three keynote speakers also reflected this array of views. The first keynote, Christopher Hamlin's talk discussed the longstanding relation of human societies with the water element, focusing on how various disciplines, most notably chemistry, bacteriology and epidemiology have attempted to formalize methods for identifying waterborne pathogens. Despite this effort, he argued, a unified vision of what constituted a water pathogen remained elusive up to the end of the 19th century, hence the provocative title of his talk, *Water and Anarchy*. On the second day, Petra Van Dam went through sections of her research project *Coping with drought*, held at VU Amsterdam. She described the project as a history of resilience and of how societies, in the low-lying Western Netherlands and the elevated areas of Eastern Netherlands, succeeded in sourcing water of different types (groundwater, rainwater, and surface water), and came up with concrete and creative solutions to the problem of drinking at times of water shortages. Finally, on the last day, Felipe Fernandez-Armesto's concluding remarks suggested that water studies have still much to offer and assess, not only for being at the core of some of the key problems of our present times, but also in terms of historical scholarship. In particular, Fernandez-Armesto indicated four future themes to investigate, that is, the purpose and possible uses of rain, the Classical tradition, Christian and religious traditions, waterways and the sea. As the 19th-century poet Andrew Arnold – cited by Hamlin in his lecture – wrote in the poem *Dover Beach* (1851), it is precisely water and its sounds to reveal what it means to be in this world, trapped as we are in «the turbid ebb and flow of human misery»[14].

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[14] M. Arnold, *Dover Beach*, in *Poetical Works of Matthew Arnold*, London Macmillan & Co and New York 1891, p. 226.