



Toward a Research and Action Agenda on Water and Heritage? A First Attempt at Refining Terminologies, Concepts and Priorities

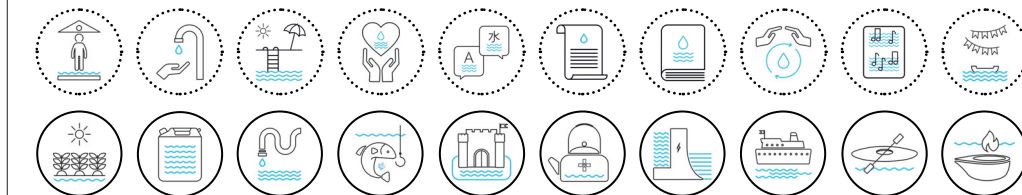
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Over the last several years, a variety of academic and professional partners have started to explore the relationship between water and heritage. A key challenge for communication and collaborative action in this important and growing field is a lack of shared terminologies, concepts and priorities. As water managers around the world look for inspiration from the past, heritage professionals focus on the protection of water-related sites and practices, historians explore continuities and spatial planners anticipate future needs. As a result, the future-oriented field of water management, the preservation-focused interests of heritage, and the analytical or design-oriented fields struggle to intersect, as do professional practice and academic analysis. A closer investigation of the respective interests and thematic foci of each group involved in the water and heritage field is much needed. Such an investigation needs to start with a clarification of goals, terms and concepts of both water and heritage in order to clarify different research agendas and to facilitate collective action.



KEY THEMES



< Fig. 1 The Fairmount Water Works in Philadelphia. A cultural heritage site at the nexus of water management, history and heritage (Source: SkipL, via Wikimedia Commons).

Blue Papers has set out to explore the multiple ways in which water systems, spatial and cultural practices intersect; it aims to use this exploration of the past and its heritage to facilitate sustainable development. The many different interests and themes in this field and the lack of shared terminologies and methodologies can hinder progress toward sustainable development. Mutual understanding of water, heritage and the impact of long-term development on the present and the future, requires careful reflection. It means, for example, analyzing historic practices for their future relevance, building upon traditional skills, promoting living heritage and protecting identity-strengthening heritage, thereby contributing to sustainable development.

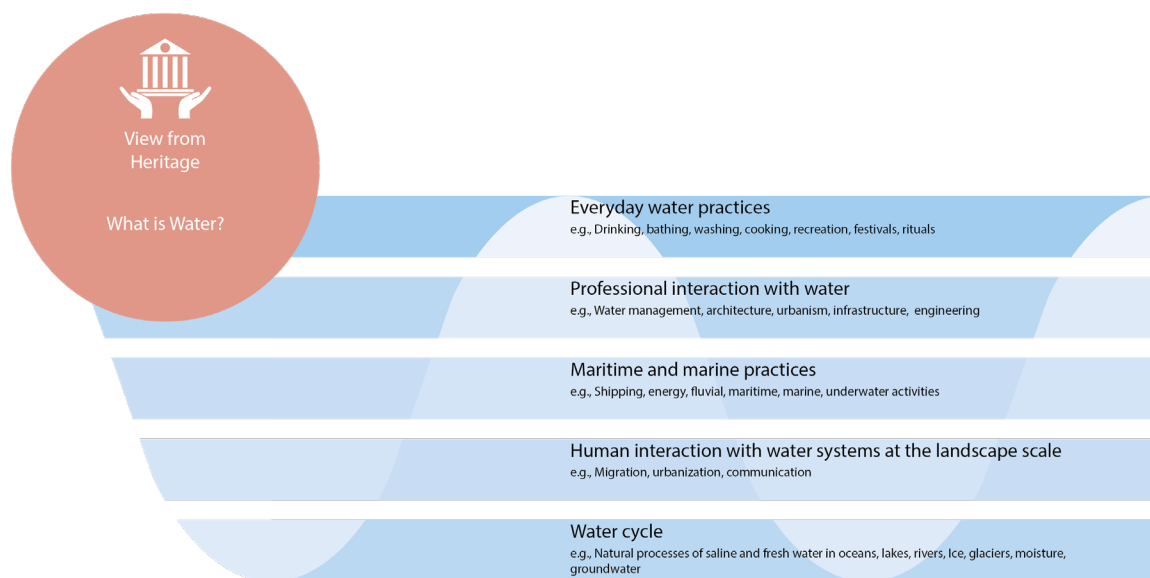
What we define as heritage also translates into the actions that we undertake in relation to heritage. Some elements of the past are worth preserving, others are ones we want to overcome. The more we talk about water management, the more we lose the idea of water values. To support the concept of Valuing Water (UNESCO 2021), analysis of water and heritage can help. It is therefore important to choose carefully the words associated with different types of heritage and the remnants of the past. This article aims to provide a first attempt at linking the two fields, turning its gaze from one field to the other, and ultimately adding an analysis of the different aspects of exploring water and heritage.

Such an approach aims to look at water as a natural and cultural system that has developed over a long period of time at the hands of multiple actors that include laymen and professionals: people have built structures, developed institutions and cultural practices for millennia to provide water for their daily needs, to use water to feed themselves, to live with water and to defend themselves against it. Water managers

have refined their practice over time, creating dikes and dams, pumping stages and hydro-energy plants. As technologies have evolved and the scales of water management changed, historic structures and practices have declined. Historic structures that were no longer deemed useful were adapted, abandoned, or demolished. Some of the historic water practices or management structures continue to function as part of a modernized system, others have been preserved for their historic or heritage value. They stand as reminders of human achievements of the past, of historic practices or knowledge.

The term water must be understood through the multitude of hydrological systems, through the multiple scales of flows, spaces, practices and cultures and it must be defined in relation to people and the ways in which they live. Historians and heritage scholars need to learn the language of water to communicate with others about the relation between water and heritage. The term heritage also deserves scrutiny, taking into account how it differs from history. Heritage is a contemporary concept. In its everyday use, people may use heritage to refer to any element that is of value to them, tangible and intangible. It is different from the concept of history and its relation to the present and the future merit close examination. History as a discipline focuses on the analysis of the past; its relationship with the present and the future is complicated. Only some historians are willing to connect past events and experiences explicitly to the present or future. This attitude is being challenged as evidenced in recent discussions (Steinmetz-Jenkins 2020; Miles 2022). We can't ignore the fact that the built environment in all its forms influences our behavior today and our plans for tomorrow.

Historical understanding of the systems in

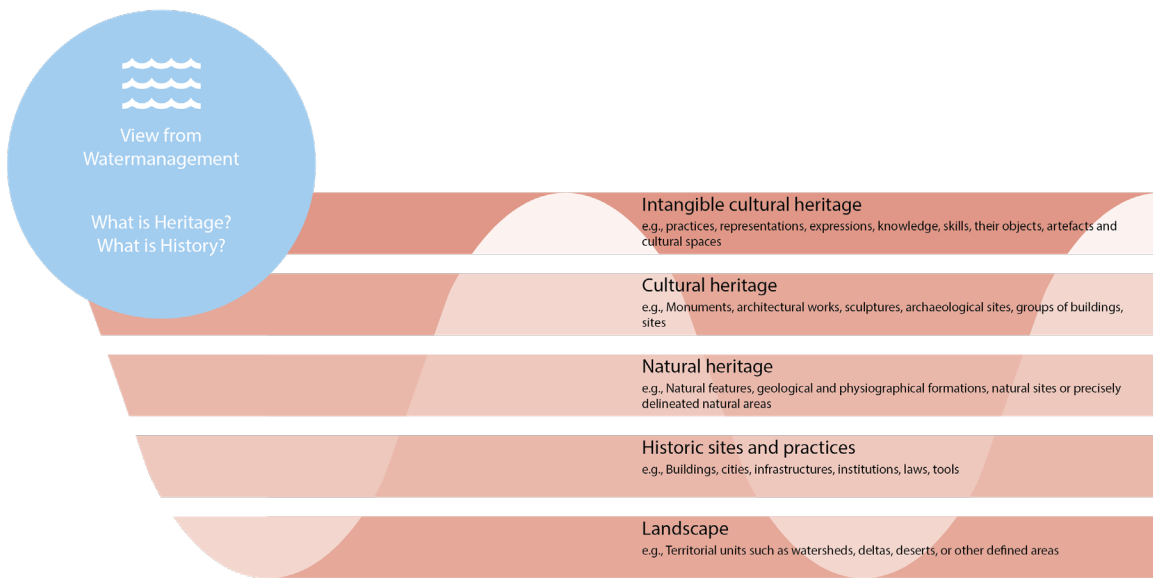


^ Fig. 2 The view from heritage: What is water? (Source: Carola Hein).

which water is embedded can help us reconceptualize and question contemporary systems and advise future design. Time is a key factor in all our actions. We need to act swiftly to address the future of water. Yet, our current problems are the result of past decision making and the failure to change. People lived sustainably with water for a long time because they did not have another choice. A long-term perspective on the past allows for assessment of systemic changes and affords a more comprehensive analysis and a better understanding of history and heritage in relation to water. To facilitate engagement among the various disciplines, even among related fields, water must become part of multiple conversations about history, heritage and culture. The following section therefore aims to disentangle the various notions of water, history and heritage.

Figures 2 and 3 aim to introduce key aspects of each field to the other, asking first: "What is water?" and then inquiring, "What is heritage?"

What is history?" They show that there are multiple aspects of water, heritage and history, which, when explored together, will require different types of interventions. For example, a UNESCO World Heritage property, by definition, requires protection, even when the properties of the site are only partly sustainable, or even require special investment. Other buildings and practices that are considered or even registered as natural, cultural or intangible heritage locally or nationally can invite actions of adaptation and re-use, and some of them can actively contribute to sustainable development. Other remnants of the past are important in terms of analysis, but are not ones to be continued. To build a research and action agenda for water and heritage we therefore must carefully analyze the different aspects and definitions of water and heritage, and their interlinkage. Figure 4 provides a first attempt at different categories of analysis and action in the broader field of water and heritage.



^ Fig. 3 The view from water management: What is heritage? What is history? (Source: Carola Hein).

Three examples give an idea of the breadth of the task of connecting water and heritage and the different activities that this entails. One is an example of a living heritage and the other of a past practice that we would like to overcome. The Wouda steam pumping stage in the Friesland region of the Netherlands, built in 1920, was designated a monument in 1988 and inscribed in 1998 as a UNESCO World Heritage property as an outstanding example of Dutch water management, hydraulic engineering and as an “exceptional witness to the power of steam in controlling the forces of nature” (UNESCO 2023a). With its free-standing chimney, it dominates the landscape and, as an example of the style of the Amsterdam School, it speaks to the Dutch context and the time of its construction. The pumping station can still be used, when needed, to drain inland waters. The Wouda pumping station stands as an example of water management-related cultural heritage. It represents the resilience required for living in the Dutch delta, yet, it is not an example for fu-

ture sustainable development because of how its pumps have been fueled: first by coal and then by heavy oil.

If the relation between water and heritage is evident in the example of the pumping station, in many other cases, the former function of the site has disappeared. The historic site of Kinderdijk, another World Heritage property, features windmills that have been used to drain Dutch polders (UNESCO 2023b). The site is a model for the entire landscape of the Netherlands, the outcome of hundreds of years of living with water and developing a water management system and related institutions, in which we have to position any new intervention. The Kinderdijk site is no longer active in the traditional way, but the message of water management-related heritage is still evident. While the site may have been historically environmentally sustainable (today the main water works are served by modern pumping stations), the life of a traditional miller and his family is not one that

many contemporary people would be willing to live, making the site less than ideal as an example of social sustainability.

In the two prior examples, it is easy to see what might be worth salvaging and appreciating. The relation between water and heritage may be less obvious as we consider topics as wide ranging as the use of specific building materials and the architectural design of houses as an adaptation to rain patterns and practices ranging from drinking water provision to irrigation, from industrial processes to leisure practices. Not all historic water systems are the result of water management and not all managed sites are worth preserving. The remnants of the chemical industry in Bitterfeld in Germany, for example, are the product of decades of storage of industrial waste in the ground and the leakage of chemical elements into the nearby river. Such remnants - we probably do not want to call them heritage - need to be cleaned up and not preserved.

For water managers, it is important to understand the concept of heritage as compared to that of history. The World Heritage Convention of 1972 (UNESCO n.d.) defines both natural and cultural heritage. Such definitions are based on the notion of outstanding universal value, a concept that goes beyond individual or local appreciation of historic buildings or practices. Article 2 defines “natural heritage” as:

“(1) natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; (2) geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; (3) natural sites or precisely delineated natural

areas of outstanding universal value from the point of view of science, conservation or natural beauty.”

Article 1 defines “cultural heritage” as:

“(1) monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science; (2) groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science; (3) sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view.”

More recently the notion of intangible cultural heritage has been added to the list of elements recognized as cultural heritage. According to the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO 2022), this includes

the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their

history, and it provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

Over the last few decades the concept of heritage has widened to encompass: a broader, more people-centered understanding of heritage as ICOMOS states in its Delhi Declaration of 2017 (ICOMOS 2017). While broader, this approach still involves challenges: Heritage sites may not be as strongly protected as before. Weakening the concept of heritage may make it more difficult to protect relevant sites. At a time of climate change-related transformation of water patterns, it is particularly important to reflect upon its impact on heritage. The presence of water can be the reason for the historical development of a site; it can also represent a threat, even if the site was originally built for water management purposes. Given that the original function of the site has largely disappeared, preservation is often costly and difficult. Making these sites relevant for water managers can lead to new solutions in both the field of water management and heritage protection. Historical analysis within the field of water management can help establish the framework for a more comprehensive reading of heritage in relation to water management.

History and Heritage for the Design of the Future

From the side of water management, the development of a sustainable water system is the primary task. Water managers aim to facilitate healthy and safe water management structures. At a time of climate change and sea-level rise, this is a challenge that can't be answered by the continuation of current practices. Water managers today are exploring historic systems

and management practices to find solutions for the future. Many are eager to better comprehend the complex tangible and intangible water systems of the past to glean lessons for the future. The ways in which traditional water management engaged ingeniously with natural local conditions, or used natural processes, including ecosystem services, to facilitate water management, can help address modern needs, even when the historic systems may not be able as such to serve modern cities, or, even when the historic systems are not preserved as such. Some water managers have an interest in what can be learned from the past, others may take an interest in preserving iconic buildings like the Wouda pumping station - yet, their focus is mainly on solutions for the present and future.

Water managers may see the past as stumbling stone, as an identity-creating agent, or as inspiration for the future. Many water managers deal on a daily basis with historic water systems, including their tangible and intangible aspects. They experience the positive and negative influence of decisions made often centuries in the past and they have to decide whether or not to continue along the same path. An old pumping house, a dike or a mill can, from that perspective, be an obstacle to innovation. If such structures are considered a hindrance, they are either demolished or they change ownership. A heritage designation of a historic monument may turn into a conflict between water and heritage professionals, between decision makers and citizens. Occasionally, the historic knowledge embedded in these sites inspires new solutions that are beneficial both for the water and heritage field. Spaces and practices from the past, such as large-scale dams, can also be impediments to a sustainable future and need to be assessed carefully. Inspiration from the past does not necessarily mean continuation of all systems.

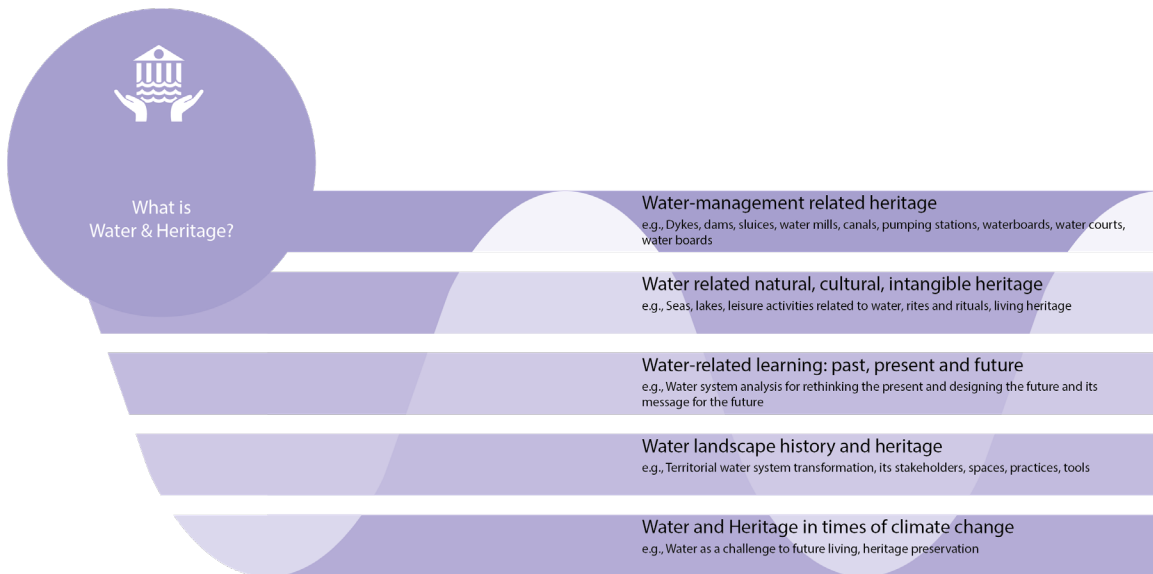
For local communities, historic water management systems may be more than inspirations; historical and heritage practices are in fact often key to local livelihoods. In large parts of the Global South, historic irrigation systems are integral to community survival. The appearance of large-scale public or private interventions can put entire communities at risk. For example, spate irrigation is still widely practiced in Pakistan (Nawaz 2022). While such practices are important for local communities, they may not be able to sustain larger communities. Understanding the practices of the past can also help sustain buildings and practices that have been collectively identified as heritage and worth preserving. Rather than relegating heritage sites purely to the domain of tourism, such an approach can go hand in hand with preserving heritage sites in line with sustainable development, and, more generally, rethinking heritage as part of everyday practices and community systems, as proposed by the UNESCO Historic Urban Landscape approach. Integrating heritage in contemporary systems, rather than excluding it, can be part of an ecosystem-based approach that is essential to solving the multiple water problems that we are currently facing. Careful analysis of historic water practices in light of social justice and gender must be taken into account when lessons are drawn for future management; these practices also need to be accounted for in heritage narratives and preservation efforts.

While heritage recognition allows for protection, it is not comprehensive and, often, does not inscribe historical sites into contemporary water management practices. To reconnect spatial, social and cultural practices of water and cultural heritage, politicians, practitioners and people need to look at their relationship through time. The water sector can benefit from a broader understanding of the social and

cultural implications of water practices of the past. Meanwhile, the heritage sector can benefit by adopting a more networked approach to heritage preservation and to sustainable development. The field of heritage is broad and diverse. Water management should find ways to contribute to heritage sites' protection, particularly, when the functional water system is at the heart of the heritage nomination, as in the case of Amsterdam's canal ring (UNESCO 2023c).

To effectively protect heritage sites and to meaningfully promote desirable water practices, it is important to encourage not only awareness but also to promote action that can help balance the different economic, social and cultural interests of diverse population groups and decision makers and facilitate a return to circular practices that were once more common. Such comprehensive practices toward water (and the environment more generally) have long been embedded in local social structures and cultures, including festivals. Celebrations for seeding or harvests were part of communal living. Paintings, songs and poems provide a cultural foundation for traditional circular practices, creating and reinforcing a mindset that supported spatial and social features. However, many important sites today are statically preserved as heritage sites and may appear only as burdens to the contemporary water management sector. They are not seen as promoting circular practices or as having any socio-cultural importance. Yet, in fact, heritage sites can contribute to promoting water awareness and contribute to better water futures.

To solve the many water problems that people are currently facing around the world, politicians, planners and citizens need an understanding of historic water systems. They also need to preserve heritage sites in ways that are compatible with sustainable development and,



^ Fig. 4 A first attempt at refining areas of research and action for water and heritage (Source: Carola Hein).

more generally, they need to rethink heritage as part of everyday practices and community systems. Understanding historic water systems through time does not mean that people should return to the past or that past practices can solve contemporary challenges (fig. 4). Lifestyles have changed and historic ways of doing things are often no longer acceptable. In the past, relationships between water and society were not perfect. But at a time of changing water patterns due to climate change – sea-level rise, flooding, new rainfall patterns, drought, etc. – it helps to understand how and why decisions were once made, how systems worked, and what impact historical transitions had, as well as to find ways to connect heritage protection to sustainable development. Such an understanding can facilitate the development of future water systems that work well with natural, social and cultural systems. To discuss water and heritage together means understanding the multiple dimensions that such a conversation

can take.

Conclusion

Traditionally, water was part of society and culture because it was necessary for survival and for the sustainable development of communities. Many unique water-related cultural artifacts are today recognized as cultural heritage. Historic lifestyles may no longer be meaningful today as such, but select elements and structures, when understood in their historical complexity, can provide useful insights for the future. Such analysis needs to be broad enough to acknowledge that exploitative practices can also spread from one (potentially sustainable) community to another, resulting in unsustainable or unequal practices elsewhere. Colonial practices stand as exemplary here.

Heritage preservation of formerly sustainable

systems may no longer produce sustainable practices, as physical structures and practices have become disconnected from their original function. To meaningfully address future sustainable development, we need to design future heritage, and make sure that heritage management is part of a pattern of behavior tied to sustainable development. This also means that water management should assure the inclusion of heritage sites in contemporary development, especially for use in education and the generation of water awareness. Through value-based goals, policies and institutions (SDG 5, 10, 16) through transformative actions [education, consumption/production and partnerships (SDG 4, 12, 17)] we can regain agency. We need to take advantage of the current diversity of interest in water and heritage, take it further and make it more productive through analysis and action.

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