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Hein, Carola; D'Agostino, Matteo; Donkor, Carlien; Sliwinska, Zuzanna

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Editorial Issue 1/2024

Rivers as Connectors of Culture and Nature

Carola Hein, Matteo D'Agostino, Carlien Donkor and Zuzanna Sliwinska

Taking an integrated approach to problems involving water, culture, heritage, and sustainable development can be especially complicated depending on the water body at stake. Oceans, lakes, rivers and canals all require specific approaches. This issue of *Blue Papers* takes particular interest in rivers as agents of interaction between water and land, culture and nature, and as carriers and connectors of multiple, often very different challenges.

Rivers have been key to the development of human society and settlements for thousands of years. In many environments they have made human survival possible. They have linked settlements with one another and connected inland areas with major oceans (Hein 2020). The relationship between rivers, cities and surrounding landscapes is multifaceted and has evolved over time. Rivers have always played important roles in freshwater provision, sewage disposal, irrigation, transportation and defense. They have been important in leisure and spirituality. People have often shaped rivers to serve particular needs. The many functions of rivers are reflected in the diversity of values attached to them, the narratives that celebrate them and the conflicts that can arise from river restoration and water management programs. The urgent need for more attention to rivers was highlighted also at the UN Water 2023 conference through calls for transformative, socially and culturally inclusive approaches to rivers (PortCityFutures 2023).

As important arteries connecting the sources of rivers to the sea, rivers also link multiple challenges along their routes. According to the United Nations Environmental Program, 80 per cent of rivers in the Asia-Pacific region are polluted from rapid industrialization and urbanization, affecting water quality and the health of water-dependent communities (Idrica 2023). Pollution caused by human activities moves together with river flows across regions contributing to 95 per cent of the plastic polluting the world's seas and oceans (Asia Geographic 2021). Extreme environmental pollution has inspired river cleanup programs, such as in the Sakubva River and the Nile in Africa (River Cleanup 2024) and the Rhine in Europe. At the same time, nations like New Zealand, India and Canada have been recognizing the legal rights of rivers as political subjects (O'Donnell and Talbot Jones 2018; Berge 2022).

The ecological crisis river ecosystems face today is exacerbated by the effects of climate change. Droughts and floods threaten natural and cultural heritage, urban landscapes and ecosystems. Increased awareness of the relevance of rivers for human survival has prompted riverfront regeneration programs worldwide. Examples of growing interest in riverfront reconstruction include the dismantling of the highway and the opening up of the Cheonggyecheon stream in Seoul, the use

of quays in Paris as a city beach in the summer months and the revitalization of the waterfront of the Dutch town of Alblasserdam (Landscape Architecture Foundation n.d.; Geiling 2014; Den Boer 2021). River curves through the landscape are being recreated as part of nature-based solutions to environmental problems and climate change. The Dutch Room for the River program (Rijkswaterstaat n.d.), for example, aims to give the river more room to avoid flooding.

This complex intersection of ecological and climate crises that characterizes many rivers worldwide calls for comprehensive risk assessments and planning approaches that are reflective of the different interests at stake. They need to recognize the values of indigenous knowledge systems and learn from traditional human-nature connections related to sustainable river ecosystems (United Nations n.d.). Careful management of riverscapes and riverfronts can activate different values and interests to re-establish, including often lost societal and cultural connections with nature and water (Wantzen 2023).

Volume 3 Number 1 (2024) of *Blue Papers* engages with many challenges faced by rivers and riverscapes across various contexts and continents. The 18 articles included in this issue address the ingenuity of traditional water management systems, challenges of waterfront development projects in river and coastal areas, the complex institutional systems managing transboundary river basins and natural areas, and the need for new approaches that tackle multiple challenges at once. Together, the contributions emphasize the importance of adopting comprehensive value-based perspectives from the past to the future, especially during ecological and climate crises, in traditional and innovative water and heritage management approaches.

Part I presents value-based concepts by outlining the challenges and opportunities of attending to both water (especially rivers) and heritage to strengthen the safeguarding of environmental functions at the base of Indigenous living systems and contribute to mitigating global climate challenges. Katherine A. Daniell and Bradley Moggridge discuss cultural heritage as a repository of knowledge and inspiration for future innovative solutions, using sustainable water management practices in the Australian Budj Bim Cultural Landscape as an example. Heritage, natural and cultural, tangible and intangible, is threatened by changing water patterns. Vanessa Ziegler, Christa Reicher, Stefan Greiving, Carola Neugebauer and Christoph Klanten delve into this complex relationship, offering guiding principles to strengthen the resilience of built heritage against climate-related risks. Following riverfront developments, Maia Brons explores the multifaceted nature of post-industrial rivers, using the River Lee in East London as a case study to investigate the interplay between regeneration efforts, environmental challenges and the potential for sustainable integration in urban landscapes through the lens of mobilities. Martijn R. Manders takes a similar stance, addressing the challenges and opportunities that climate change and changing water levels have brought to river-related cultural heritage and the potential threat to river-based lifestyles. Yixin Cao offers a potential answer to such threats, proposing a new approach to reintegrating urban rivers as green-blue infrastructure and reviving river culture and river values in contemporary cities. The role of values in finding a better balance among the aims and interests of different actors is at the heart of the contribution by Matteo D'Agostino and Carola Hein, who explore the meaning of diverse values – social, cultural

and ecological – in water resource and heritage management. They propose moving beyond a focus on technological and economic factors toward value-based approaches. Rivers flow into seas and oceans, creating deltaic environments with specific challenges and water values. Simon Richter tackles this discussion by focusing on the latest Dutch spatial planning policy, “Water en Bodem Sturend” (Water and Soil as Governing Principles), which integrates ecological and climate considerations. In his second contribution, Martijn R. Manders touches on the compounding effects of sea level rise on marine processes, emphasizing the need for a multidisciplinary investigation to understand the complex dynamics affecting underwater cultural heritage in coastal areas. The last two contributions of Part I take a broader approach and consider the laws and governance frameworks in force to protect the natural resources of Latin America, with their vast impact on global climate dynamics. Veronica G. Donoso and Christa Reicher emphasize the necessity of expanding protected areas and bolstering law enforcement in the Amazon region to address deforestation, safeguard natural and cultural heritage and mitigate the impacts of climate change. Finally, Emily V. Bell and Bruno P. Puga close this section by discussing the challenges and opportunities of implementing a socio-ecological approach to conservation and resilience in the Pantanal region – a conservation area spanning Brazil, Bolivia and Paraguay – considering its polycentric governance context, lack of clear rules and strategies, and capacity issues across different scales.

Eric Luiten and Lea Kayrouz open Part II with a study of the revitalization of the historic Dutch Waterline, a flood defense system repurposed through a multi-stakeholder effort. The project was taken as an example of the professional education course “Water Systems Design: Learning from the Past for Resilient Water Futures” (TU Delft n.d.). Another participant in the course, Rodrigo Lilla Manzione, used the value case approach to propose the concept and deployment of a “watermark” – a recognizable landmark that can engage the local community, particularly young people, in valuing water resources and developing sustainable solutions for managing the water of Ourinhos, Brazil. The section continues with case studies at the intersection of urban identity and climate resiliency. Nanco Dolman and Johan Verlinde revisit Rotterdam’s historical response to water-related challenges, emphasizing its current adaptation efforts through the Weatherwise Program and the development of a blue-green sponge city model to achieve sustainable development goals in the future. Carlien Donkor, Agnese Bavuso Marone and Allegra Aprea present their case on reviving a historic water-based identity amid urbanization and climate change. In their Milanese Navigli project, they propose water-heritage-inclusive urban visions that reintegrate hidden waterways into the city’s modern water system to restore Milan’s historical identity as a “city of water.” Also addressing communal identity loss, Francesca Savoldi examines the impact of coastal changes and large infrastructure projects on community identity and sociability, using the example of Pra’, Italy, to illustrate how constructing a port terminal has led to a local maritime community becoming detached from the sea. Similarly, Kristiāna Ustuba investigates the dilemma of protecting a cultural landmark – the military fortification complex in Liepāja, Latvia – from rising sea levels and coastal erosion while preserving its significance as both military and cultural heritage, exploring challenges and possibilities for protection and preservation. The last two contributions of this volume focus on the ingenuity of traditional water systems and the struggle of local communities facing new economic, political and touristic trends. Cristiana Strava illuminates efforts to preserve and revitalize the tra-

ditional khettarat system in Marrakech, Morocco, highlighting its importance for sustainable water management and equitable development in arid regions globally. Sarra Ben Youssef highlights the role of traditional rainwater harvesting systems, such as the majel in Djerba, Tunisia, in addressing acute water stress and promoting sustainable water management practices while questioning the compatibility of heritage-focused tourism with these objectives.

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