



# Waterscape: a perspective for understanding the contested geography of water

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The waterscape is a perspective that has captured the imagination of diverse scholars interested in the interaction of water and society. This includes the way water travels in time and space and is shaped by culture and geography. In this article, we pay particular attention to the study of the waterscape in the political ecology tradition. Scholars following this tradition have placed strong emphasis on understanding the role of power and the contested nature of water in diverse rural, urban, and periurban landscapes. The article provides a brief account of the main strands of literature and serves the purpose of an introductory overview of the waterscape for beginners. We focus both on major works that have helped define the waterscape as a perspective in political ecology and recent studies on the role of unequal power and gender relationships, informal water practices, and local water flows such as ponds and wastewater. © 2017 The Authors. *WIREs Water* published by Wiley Periodicals, Inc.

## How to cite this article:

*WIREs Water* 2017, e1210. doi: 10.1002/wat2.1210

## INTRODUCTION

The waterscape perspective comes from a tradition in political ecology which recognizes that nature and society do not exist separately. Instead, society and nature are always intertwined to produce hybrid socrionatures, and this has an influence on the way political ecology scholars examine a range of different landscapes such as cities, rural landscapes, agricultural drylands, or forests.<sup>1–3</sup> Similarly, the cyborg analogy is often used to explain that humans are part of a cyborg world that has no clear boundaries between society, nature, technology, and culture.<sup>4,5</sup>

Following this tradition, scholars interested in the political ecology of water have tried to overcome the nature/society divide.<sup>5</sup> In Swyngedouw's seminal paper on the water history of Spain, the waterscape is foregrounded as a perspective for understanding that water and society is deeply intertwined.<sup>5</sup> For

Swyngedouw, the Spanish waterscape reflects the intricate ways in which nature and society are 'fused together in a way that renders them inseparable,' producing water as a 'restless hybrid.'<sup>5</sup> Studies that focus on waterscapes are therefore sensitive toward the dynamic processes through which water as socio-nature is continuously reworked, including its various flows and uses.<sup>6</sup> Much of the motivation to combine societal and nature dimensions of water has been driven by the need to understand complex interdependent water challenges associated with access and distribution, climate uncertainty, pollution, and increasing water demands associated with urban and agriculture expansion.<sup>7,8</sup>

The very use of the term waterscape often has different meanings and can be traced back to a range of literatures such as architecture and planning.<sup>9</sup> In this article, we focus specifically on the use of the term waterscape in political ecology scholarship while recognizing that political ecology itself represents a diverse body of knowledge that has blurred boundaries.<sup>10</sup> The article is therefore pragmatic in describing some of the key contributions by water scholars in expanding the term and operationalizing it in different studies around water and society. This

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Conflict of interest: The authors have declared no conflicts of interest for this article.

also means that we do not view the waterscape as a holistic theoretical framework for conducting research on water–society relations. Instead, we prefer to present the waterscape as a perspective, valuing its fluidity and openness to further development and refinement as well as different types of analyses.

In this article, we explore major works and how their insight has helped define the waterscape as a perspective for combining societal and natural understandings of water. Subsequently, we explore contemporary interpretations of the waterscape, including the role of unequal power and gender relationships, informal water practices, and local water flows such as ponds and wastewater. Lastly, the conclusion summarizes the article, mentioning that the waterscape as a perspective is useful for critical water research focusing on water- and society-nuanced interactions.

## WATER AS A HYBRID CONSTRUCT: THE CENTRALITY OF POWER

Work that surrounds the waterscape has been pioneered primarily by social scientists, human geographers, anthropologists, and environmental historians associated with political ecology.<sup>11</sup> The engagement of different disciplines from the humanities reflects, in part, a reaction to narrow technoscientific representations of water that focus on economic, biophysical, and engineering dimensions but ignore questions that concern social power and political economy. Research around the waterscape also reflects a concern about the absence of historical–geographical struggles in analyses of water and a plea of the humanities for greater sensitivity toward how water–society relations become embodied in particular landscapes.<sup>5</sup> In this context, waterscape research has played an important role in reshaping water debates and has

helped guide scholars from a variety of disciplines to better interrelate these different dimensions of water.

The waterscape has been influential in water research; however, it is by no means the only perspective proposed for conducting research on water and society. For example, the hydro–social cycle and hydro–social territories are also gaining rapid recognition in the political ecology field.<sup>5,12</sup> The important point is that these different perspectives should be viewed as complementary and even mutually reinforcing as they have the same roots in political ecology. Nevertheless, some differences do exist between these perspectives. The hydro–social cycle is much more concerned with the cyclicity of water as it travels through the social and water domains, while hydro–social territories are concerned with the multiscale nature of hydro–social relations and their politics.<sup>12–14</sup> Furthermore, hydro–social territories are outcomes of human imagination, social practices, and related knowledge systems.<sup>13</sup> The strength of the waterscape is that it brings into focus the geographical situatedness of these relations and provides ample scope for detailed empirical observation, using rich ethnographies and detailed case studies.

Table 1 highlights what could be viewed as ‘classics’ in the waterscape literature in political ecology; the table also includes the contemporary interpretations with their geographical scope and focus of analysis, also discussed in more detail in the following section.

Swyngedouw uses the term waterscape to foreground that water has a certain fluidity that makes it distinct from other types of natural resources. As a result, water cannot be fully captured by natural laws; neither can it be described entirely as part of a social process. Water is constantly in flux, thereby perpetually shifting through physical geographies (i.e., water moving on the Earth’s surface) but also cultural, social, and symbolic landscapes.<sup>5,19</sup> In other

**TABLE 1** | The Waterscape and Related Concepts, Their Geographic Scope, and Focus

Concepts	Study	Geographic Scope	Focus
Waterscape	Swyngedouw (1999) <sup>5</sup>	Country (Spain)	Water modernization
	Sultana (2011) <sup>15</sup>	Country (Bangladesh)	Groundwater contamination
	Kooy (2014) <sup>16</sup>	City (Jakarta)	Informality of urban water supply
	Mehta & Karpouzoglou (2015) <sup>17</sup>	Periurban area (Ghaziabad)	Water services fragmentation
Hydro–Social Cycle	Linton & Budds (2013) <sup>12</sup>	Conceptual	Water’s social nature
	Budds (2009) <sup>14</sup>	Country (La Ligua River Basin, Chile)	Politics of water policy
Hydro–Social Territories	Boelens et al. (2016) <sup>13</sup>	Conceptual	Control of water through political–geographical interactions
	Ioris (2016) <sup>18</sup>	Country (Peru)	Water scarcity shaped by social relations

Source: Prepared by authors.

words, a waterscape represents a ‘liminal landscape’ always, fleeting, dynamic, and transgressive.<sup>20</sup> This work on the waterscape<sup>20</sup> upholds the relational character of water and keeps open the ontological question of what water is. The waterscape challenges the hegemonic position of Western science, largely predicated on hydrology, in defining and researching water and begins to create momentum for alternative ontologies.<sup>20</sup>

Scholars use the waterscape to address central concerns in political ecology such as ‘who controls, who acts and who has the power.’<sup>5</sup> Elaborating upon work that surrounds the production of nature<sup>21</sup> and the production of space,<sup>22</sup> the waterscape foregrounds the dialectic relationship of capitalist development and the production of unequal socio-natures.<sup>23</sup> Water reforms such as those that involve water commodification and privatization are viewed as inherently contested and imply changes in access and control of the resource but also the contents of water rules and rights.<sup>24</sup> Consequently, weaving into analyses questions around water access and control, especially in the Global South, means that how water services are managed and organized are not purely based on technical water reform agendas; they are deeply politicized and inherently contested.<sup>25</sup>

The waterscape intends to bring attention to complex and often subtle ways in which unequal power relations surface. For instance, the influential study of Karen Bakker<sup>7</sup> on urbanization and water privatization shows how privatized water supply ‘networks’ unfold at the level of city landscapes. Cities are comprised of pipes conveying water to customers; taps are political artifacts; privatized water supply networks are implicated in a politicized process that reconfigures not only water supply regulation and the urban waterscape but also the entitlements of water supply users and the power relationship between rich elites and the poor.<sup>7</sup> These ‘situated power relations can swirl out [...] upward from the scale of the body to the political ecology of the city and the global scale of uneven development.’<sup>7</sup> Such power relationships are therefore a distinctive feature of understanding the waterscape, and the role of power asymmetries represent a strong influence over the circulation of water.

## PLURALIZING THE WATERSCAPE: EXPANDING TO OTHER ISSUES AND PROBLEMS

Water research that draws upon the waterscape perspective has expanded to more nuanced water user

interactions. For example, Cornea, Zimmer, and Veron<sup>26</sup> discuss the waterscape in terms of a ‘plurality of urban ecologies.’ In doing so, they turn their analysis to the ‘non-networked urban waters’ that are also part of the waterscape of cities.<sup>26</sup> They focus specifically on how various ponds are governed in a small city of West Bengal, India using the term ‘pondscape.’ Pondscales are constituted through a plurality of interactions across different water bodies. In other words, ponds are more than just a source of water; instead, they represent a ‘composite resource’<sup>26</sup> shaped by the everyday micropolitics of state and nonstate actors.

Contemporary studies often depart from the traditional concern around piped water network dynamics<sup>25</sup> to expose other meanings, social relations, and modes of water access. For example, Ranganathan<sup>27</sup> explores the practices of water entrepreneurs in Bangalore city and unfolds the nexus of thugs, politicians, and the state (water department employees) in the production of the postcolonial urban waterscape. Her work describes the expanding role of ‘water mafias’ and their success in making and breaking the boundaries between formal and informal water supply provision, backed by politicians. On the contrary, Kooy<sup>16</sup> illustrates that informal water practices are not the failure of state or the technology but a specific mode of urbanization—created historically through different cycles of development and political processes.

We observe an interest in unraveling the various social identities that people mobilize, which complicates the more static separation between rich and poor water users. A range of different identities are now being documented and theorized. More focused attention is placed on the gender dimension in the production of the waterscape.<sup>28,29</sup> Sultana<sup>15</sup> situates the emotional suffering of women caused by arsenic groundwater contamination in the highly unequal rural waterscape of Bangladesh. Her study explains how women occupy a special position in the waterscape, particularly in terms of their vulnerability as they are often overburdened with the emotional labor and stress of accessing clean water and systematically need to resort to contaminated water sources, propelling vicious cycles of exclusion and marginalization. Truelove draws upon a feminist political ecology lens that focuses on the subjectivity of water and proposes a more nuanced analysis of the gendered dimension of water-related inequalities,<sup>29</sup> elaborating a relational view of power that goes beyond labor and capital to articulate complex (constitutive) power relationships formed around water.

Karpouzoglou and Zimmer<sup>30</sup> use the term ‘wastewaterscape’ to develop a stronger connection between the waterscape and wastewater politics. In this work, another side of the waterscape that is often overlooked by water scholars is revealed whereby the use of water and its discharge as wastewater is inherently political and entails endless negotiations to dispose of wastewater between citizens and municipal government bodies. They argue for a fuller understanding of the socionature of water as it occurs not only through production, and consumption, but also through its disposal as waste.

Studies that attempt to incorporate water and society interactions in dynamic periurban landscapes also generate interesting implications for the waterscape. Mehta and Karpouzoglou,<sup>17</sup> drawing on empirical research in periurban Ghaziabad, India, argue that any analysis of the periurban waterscape from either an ‘urban’ or ‘rural’ vantage point can obscure its unique functions and intensities. Instead, the distinctive form of territoriality that shapes the formation of periurban areas requires an entirely different understanding of how waterscapes are produced or contested.<sup>30</sup> This is also because of the power relations that are played out between new actors occupying periurban spaces.<sup>17,31</sup> These power relations are positioned within historical power imbalances as well as emergent neoliberal processes that are shaping urban and periurban planning discourses beyond water.<sup>31</sup> The prominence of middle-class esthetics and values, as well as planning logics connected to reimagining cities as ‘world class,’ are intertwined with new understandings of the waterscape.<sup>32–34</sup>

## CONCLUSIONS

In this article, we have provided an overview of a range of ways in which the waterscape as a perspective is used by water researchers for understanding water–society relations. The overview depicts a rich canvas of applications across a variety of problem settings and issues around water, including the production of the waterscape at the scale of the city or country and also everyday practices and the micropolitics of negotiating water flows that occur between

citizens, civil society, and the state. Swyngedouw uses the waterscape to explain that water has a fluid nature, and therefore, its interactions with the cultural, political, social, and symbolic environment are more complex and nuanced. This waterscape perspective raises questions around ‘who controls, who acts and who has the power,’ and other political ecology scholars since then reflect upon these questions to explain the dialectical relationship of capitalist development and the production of unequal socionatures. Water reforms such as privatization, which inherently raise similar questions of access and control, can also be explained using the waterscape perspective.

The article has highlighted ways in which contemporary studies are branching out to other domains and problem areas in efforts to pluralize the waterscape. Scholars bring more focused attention to local-level political interactions between state and nonstate actors. Furthermore, there is an interest in exploring a range of water relations beyond traditional piped water supply. The importance of informality and gender as unique features of understanding water–society relations are highlighted but also unexplored water bodies such as ponds and wastewater. The article has further highlighted the implications of waterscape research once extended to periurban landscapes, an area of study traditionally not connected to political ecology.

With the short overview of the above classic and contemporary studies, we conclude that the strength of the waterscape perspective lies in expressing water–society relations according to their different geographies. Furthermore, the waterscape perspective connects more strongly with qualitative methodologies, including rich ethnographies and detailed case studies that make it suitable for conducting critical water research. In many ways, therefore, the waterscape is still an evolving and relatively nascent strand of political ecology that holds great promise for future water research and can support water researchers in their efforts to move into deeper and more systematic accounts of water–society relations. This overview should provide a good starting point to initiate research in this direction.

## ACKNOWLEDGMENTS

Timothy Karpouzoglou thanks the UK Research Council NERC/ESRC/DFID ESPA program (project NEK010239-1, Mountain-EVO) for funding received as part of his postdoctoral research. Sumit Vij would like to thank the Himalayan Adaptation, Water and Resilience (HI-AWARE) consortium under the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAS) for funding his doctoral studies.

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