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# Introduction – An Amphibious Anthropology: The Production of Place at the Confluence of Land and Water

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**Abstract:** Amid global climate change and an uneven global political economy that preys on natural resources, landscapes are reshaped at the confluence of land and water, concretely and abstractly. Focusing on the production of place, we suggest that at their point of convergence, there is relational ontology between land and water. This constitutive relationality is the basis of what we call an amphibious anthropology. By foregrounding temporality, movement, and ways of knowing, we aim to grasp the experience of places at the confluence of land and water and to probe into the specificities of life in such landscapes or into various amphibious anthropologies.

**Keywords:** water, place, landscape, temporality, knowledge

**Résumé :** Avec les changements climatiques et les inégalités de l'économie politique mondiale tirant profit de l'exploitation des ressources naturelles, les paysages formés à la confluence de la terre et de l'eau se redéfinissent de manière abstraite et concrète. En considérant la production des lieux, nous suggérons qu'à leur point de convergence se trouve une relation ontologique entre l'eau et la terre. Cette relationalité constitue ainsi ce que nous définissons d'anthropologie amphibienne. En mettant de l'avant la temporalité, le mouvement ainsi que différentes façons d'appréhender, de connaître ou de comprendre, nous tentons de saisir l'expérience plurielle des lieux à la confluence de la terre et de l'eau, et d'y examiner les spécificités de la vie et de l'anthropologie amphibienne.

**Mots-clés :** eau, lieu, paysage, temporalité, savoir/connaissance

## Introduction

Water scarcity and excess are universal human concerns. The desert landscapes captured by the closing photographs of this special issue are located in the southeastern corner of the Islamic Republic of Mauritania. Like any landscape, the desert is shaped by the presence and movement of water. And to the nomadic camel herders, life in the desert revolves around the search for water as their mobility is guided by the elusive presence of this life-giving liquid. Water used to be found in the scattered wells and springs governed by customs and cultural codes. But these movements are now disrupted. To the harshness of desert life, another layer of unpredictability and capriciousness is being added. As wells and springs dry up and people and animals find themselves increasingly unable to find water, a new sense of place emerges. In parallel, new institutional orders emerge as water is led through gigantic pipes from the Senegal River to the urban metropolis at Nouakchott. In this landscape, which has long been defined by the movements of men, women, and their animals, the changing patterns of water force the nomads of the desert to rethink their engagement with places.

In Mauritania, as in various part of the world, the landscape is redefined by the changing flow and quality of water. Across distinct geographical, social, political, and economic contexts, water and land enter in relational processes that have implications for the production of place. In positioning our analytical focus on landscapes that are redefined by a changing flow and quality of water, our goal in this issue is to understand how both of these elements are engaged in a mutually constitutive relationship and to examine the ramifications of this interplay for the experience of places. The questions we ask are: How does water relate to the social production of place; in which ways is the production of place shaped by the emerging forms of confluence between land and water; how does a landscape transformed by an altered

flow of water affect the sense of place; how does the convergence of land and water impact the functioning of social institutions; and, conversely, how do such institutions respond to the intermingling of land and water?

To answer these questions, this special issue suggests a framework for ethnographic explorations of how the production of place is shaped at the confluence of land and water. In doing so, we draw attention to the fact that, while our approach to an amphibious anthropology includes the component of land per se, or *terra firma*, it gives salience to more general and abstract forms of land such as place and landscape. As we see it, the convergence of land and water operates on concrete and abstract levels. At the material level, this occurs when land turns into water due to the rhythm of floods and erosion, as it does on the Ganges delta; where a place becomes increasingly vulnerable to glacier lake floods, like it is in the Himalayas; when the quality of underground water becomes redefined by the commercial exploitation of land; or when elements of the topographic landscape or specific areas become reservoirs of water. At the conceptual level, local ideas about water and related practices not only change alongside redefinitions of place by the state, by industrial actors, and by climate change or when the envisioned meaning and potential use of water become markers of collective identity, but also when the confluence of land and water develop within local cosmologies. We therefore aim to study the forms of interaction between land and water that have implications for the production of place, concretely and abstractly. As land and water meet, their quality becomes relational. Whether as new developments or increasingly as defining features of a place, these interactions shape peoples' everyday experience of a place.

Second, by "production of place," we paraphrase French sociologist Henri Lefebvre (1991), drawing from his conceptual approach to space to develop an approach to place (see also Kahn 2011). Rather than an entity that precedes culture, Lefebvre rethinks space as the product of a dialectical process between material and ideological dimensions or, in his analytical model, between the perceived space (*l'espace perçu*) and the conceived space (*l'espace conçu*), respectively. To appreciate the processual dimension of space, Lefebvre emphasises the need to understand the experience of space or the "lived space" (*espace vécu*), which, in his model, is the product of the interrelation between the perceived space and the conceived space. We use Lefebvre's model as a heuristic device rather than as a rigid framework. While we are less interested in analysing the structural forces that contribute to the production of space – which Lefebvre interprets from a Marxist perspective – we find inspira-

tion in this dialogical relation between material and ideological aspects of spatiality: to think of places as being redefined by the flow and quality of water. Water and land are different substances and are usually conceived through different frameworks – for instance, we do not normally think of land as having the same fluid qualities as water. We suggest that at their point of confluence there is relational ontology between land and water in the production of place, a process that in turn has implications for the experience of place. In other words, we ask how do material and conceptual qualities of land and water permeate each other to become mutually constitutive of place?

Third, to understand how the confluence of land and water may shape people's life experiences, we call for an "amphibious anthropology." Etymologically, the term *amphibious* comes directly from the Ancient Greek word *amphibios*, which refers to life (*bio*) that has the quality (*ous*) of operating on two sides (*amphi*), particularly in relationship to land and water. Intuitively, we think of humans as being at home on a solid surface and as having to adapt, sometimes uneasily, to the fluidity of water.<sup>1</sup> Thinking about how boundaries between water and land intermingle opens up questions about the experience and the perception of place. Although amphibious to some extent, humans are not as well adapted to life in water as are frogs, salamanders, and other amphibians or even human-made amphibious vehicles. By extension, an amphibious anthropology calls attention to the ways humans experience the concrete and abstract intermingling of land and water. The amphibious anthropology we propose, therefore, both focuses on specific ethnographic sites and constitutes an analytical approach for understanding the human relationship to water in the tradition of landscape theorisation.

While water and land have individually been the focus of various studies, concentrating mainly on social, cultural, and political dimensions, we believe that the confluence of land and water raises questions that call for further ethnographic and conceptual investigations. To explore these questions, it is necessary first to map out the categories of land and water to more clearly grasp what they encompass. Water is indispensable to life. On planet earth, water occurs in gas, liquid, and solid states. Our discussion is concerned with the latter two – more precisely, surface and underground liquid water and glacier ice. "Water," writes Veronica Strang (2006a, 70),

is characterized, above all, by its fluidity, transmutability, and omnipresence. It is always on the move, flowing, conforming to the shape of its environment,

evaporating and precipitating. Its form is equally inconstant: it can transform from ice to fluid, to steam and back again. It can be entirely invisible and transparent, or impenetrable and reflective. It shimmers with light and movement. It can be hot or cold, salt or sweet. It can offer life-giving hydration, amniotic support and comfort; it can overwhelm, burn, or freeze.

Questions about living with water and land have long been key topics of anthropological inquiry. In one of the foundational texts of the discipline, Malinowski (1984 [1922]) describes a world made out of water – the archipelago fundamental to the movements and exchanges of the Pacific islanders. What Malinowski's study tells us is that from an anthropological perspective, water is not just a resource; it is a substance that, in its many manifestations, connects distinct realms of social life (see also Orlove and Caton 2010, 401). It oscillates between nature and culture and can be both substance and symbol (Helmreich 2011). This oscillation is at work in the toxic fracking wells of Ohio (in the article by Anna Willow in this issue), the unruly Jamuna River controlled by supernatural beings (in the article by Naveeda Khan in this issue), the building of artificial glaciers in the dry highlands of Ladakh (in the article by Karine Gagné in this issue), the dug-out waterways and reservoirs of the Andes (in the article by Mattias Rasmussen in this issue), the parallel destructive forces of the Po Chhu River and the changing governance in Bhutan (in the article by Ben Orlove in this issue), or the disappearing waters of the Mauritanian Desert (in the article by Christian Vium in this issue).

Water must therefore be taken seriously as a substance that not only has material presence but is also tied to the social imaginary. Water has configurative, and, as some see it, agentive, power – water acts on society by overflowing or drying up and creating tensions and collaborations as it moves (Hastrup 2013b, 59–60). To Kirsten Hastrup, rivers, canals, and wells are different instantiations of such processes, where humans are both subjects and objects of water. The movement of water is both enabled and moulded by technologies and social powers, but it may also affect these ways of organising knowledge, power, and livelihoods. Land is equally ambiguous; as explained above, land not only refers to surfaces not usually covered by water but also encompasses such constructs as landscape and place. Land can be described by its geology and its topography. It can be a territory and, *ergo*, often becomes the subject of politics and political claims (Sack 1983). Whether a landscape or a terrain, land may also be understood as an amalgam of relational entities – as

*terra firma* that attains specific qualities in relation to the biophysical presence of water and its role as boundary marker.

As Karl Marx and later Karl Wittfogel wrote, “oriental despotism” hinges upon the idea that the power of kings derives from control over irrigation. Indeed, even outside this narrow framework, the agrarian question in its different iterations has long demonstrated how water management is intricately linked to the concentration of power.<sup>2</sup> But irrigation is not only a matter of power, the question of water management has formed an analytical point of departure for comparative studies between societies.<sup>3</sup> Understanding the social organisation of water can therefore generate insights about the place of humans in the environment and its link to social stratification.

Others have focused on the link between the social organisation of water as it is linked to political and religious life. For instance, J. Stephen Lansing's (1991) brilliant book on irrigated landscapes discusses the role of water temples. Lansing focuses on how the religious and the political are deeply entwined with a “humanized nature” and how productive and ritual relationships combine to produce an engineered landscape that both sustains the vital paddy rice production while being highly dependent on continued maintenance. In Bali, the Green Revolution of the 1970s drastically altered agricultural production by introducing new crops, policies, and pests. The water temples previously central to the social organisation of ritual and production were therefore rendered marginal, as new forms of knowledge and financial networks took over.<sup>4</sup>

Overall, many of these studies about water discuss landscapes – whether engineered, cultural, or institutional – as settings where the politics of water is played out and where institutions and crops set roots. Therefore, they are interested in the endurance of institutions, the patterns of production, the intersections between religious, political, and productive activities, and the local articulations to wider structures of power and commerce. In this collection, we pose a different set of questions. Examining the production of place where land and water converge, we seek to understand how the dynamics related to flows of water are constitutive of, and become enfolded into, landscapes. For the purposes of our discussion, land relates to landscape and, by extension, to the cultural production of place and to forms of belonging and attachment. In other words, we are less concerned with the physical land where vegetation takes root and more interested in the landscape in which societies evolve, as it is nurtured and disrupted by the changing flow of water.

## Conceptual Background for an Amphibious Anthropology

### *Space, Place, and Landscape*

Philosopher Michel Foucault (1980, 70) once lamented the devaluation of space, which, as opposed to time, a concept encompassing movement, fecundity, and life, was treated in his view as “the dead, the fixed, the undialectical, the immobile.” For Foucault, failing to account for the vitality and dynamic processes that characterise space means failing to pay attention to the processes, including the historical ones, that make space and that are, true to his philosophical approach, stamped by the mark of power. Since that time, critiques of analytical approaches to space have been further developed, and, today, the theorisation of spatiality now occupies a significant place in the work of anthropologists and geographers concerned with questions of power among a wealth of other subjects of inquiry.<sup>5</sup>

Amid this rethinking of place and its production, authors adopting phenomenological approaches have stressed that in parallel to processes of deterritorialisation and the impact of translocal power, matters of localities nonetheless remain central to people’s experiences and worldviews (see Basso 1996; Escobar 2001; Raffles 1999). Thus, the cultural construction of places is an intrinsic feature of the creation of a sense of place. In the words of Christopher Tilley (1994, 18), who is often credited with having introduced phenomenology to the study of archaeology, “place is an irreducible part of human experience, a person is ‘in place’ as much as she or he is ‘in culture.’” Phenomenological approaches to place continue to be developed within a growing body of work on landscape. In this literature, scholars give centrality to local perspectives, revealing how landscape constitutes a fundamental feature of people’s existence, thus transcending the representational character of former approaches and moving away from notions of “framing convention” (Hirsch 1995, 1; see also Bender 2002; Cosgrove 1998; Hirsch and O’Hanlon 1995; Ingold 1993; Schama 1995; Thornton 2007).<sup>6</sup> Overall, the literature on the humanity of landscapes and on space and place calls on scholars to more carefully consider the dynamics at play in the production and experience of place, including questions of political economy and cultural processes (see Low and Lawrence-Zúñiga 2003).

Feminist human geographers – most notably Doreen Massey (2005) and Sarah Whatmore (2002) – have treated the production of space as a complex composite of socio-political and biophysical processes, or “hybrid

geographies,” in Whatmore’s words. Here, the boundaries between nature, technology, and society are not a given but, rather, produced in encounters between different ways of perceiving and acting upon natural and social orders. Space is seen as dynamic, situated, and changing rather than static, neutral, and permanent. These reflections provide fertile ground for the investigation of the coproduction of water by human and non-human actors, where spiritual beings, biophysical processes, and invisible particles profoundly alter human engagement with places (Willow, Gagné, Khan, and Orlove in this issue).<sup>7</sup>

Hence, as much as water has multiple ontologies, being both border and resource, territorial, and biopolitical, landscapes mean different things to different peoples across time and space (see Barnes and Alatout 2012). Like space, landscape and place are relational, situated, and always subjective. As Massey (2006) makes especially clear, landscape, space, and time permeate each other. In a sense, the contributions in this special issue address the challenge she puts forward: How to define movement in relation to an ever-changing space? Drawing from these reflections, we seek to examine how landscapes are experienced, perceived, and acted upon – how they are knowable – in light of the movement of water, which becomes formative of the production and experience of place. In the case studies presented in this special issue, water is pivotal to changing landscapes. Looking at how water and its movements are constitutive of places is, we argue, a distinct way of, to paraphrase Massey, “imaging space” anew.

### *Water*

From earlier studies in which water was the object of human action through to engineering on many different scales – from buckets, to irrigation systems, to dams – the values, meanings, and contested fields connected with water increasingly have received increasing scholarly attention (for recent reviews, see Orlove and Caton 2010; Rasmussen and Orlove 2014; Hastrup 2013b; Barnes and Alatout 2012). Human actions, it can be argued, are increasingly understood as being done *with* water rather than *to* it (compare Bender 2002, S104), so that human action in relationship with water is understood to be embedded in particular times and places. Rather than provide an extensive review of approaches to water developed by social scientists in the text that follows, we have instead chosen to highlight notable studies of water, in particular, those that adopt a political ecology perspective in emphasising the materiality and power relations of water as well as those emerging from a phenomenological and culturalist perspective

that focus on the relational process between the flow of water and the creation of a sense of place.

As a direct analogue to landscape, the notion of waterscape gained theoretical purchase with Erik Swyngedouw's (1999) seminal article on hydraulic landscape engineering and modernisation of Spain in the late nineteenth and early twentieth century. To Swyngedouw, waterscape is synonymous with water landscape. His work seeks to illuminate how water politics, water culture, and water engineering have worked together with water ecology and geography to produce the particular configurations of modern Spanish society. Here, the waterscape is a hybrid, a socio-nature produced at the crossroads between the materiality of water and the political and cultural practices that control its flow.<sup>8</sup> In short, the concept of waterscape, as it has been developed at the crossroads between political ecology and studies of science, is useful for grasping how places are produced in uneven encounters and how water distribution and equity (or lack thereof) are fundamental features of these encounters. Furthermore, the concept leads us to further nuance these questions by examining a variety of ways of knowing and interacting with water in different waterscapes.

Following the work of Swyngedouw, others have put forward alternative conceptions of waterscape by foregrounding culture and subjectivity. Veronica Strang (2004), who has conducted extensive work on water, approaches waterscape in a way that connotes with watersheds, seeing the contours and borders of landscape as being shaped by the movement of water.<sup>9</sup> Her approach to the sensory experience and generation of meaning related to water calls attention to the relationship between both engagement with water and the construction of social identity (Strang 2006b, 2009). Water, in both its material and metaphorical form, thus becomes a means for conceptualising identity as fluid. Strang's perspective on water in the emergence of cultural landscapes focuses on its role as a repository of meaning and a constituent of identity. This contrasts with approaches to landscape, place, and location that emphasise the everyday politics and interactions surrounding water. For their part, Ben Orlove and Steven Caton (2010, 408) define waterscapes as "the culturally meaningful, sensorially active places in which humans interact with water and with each other," whereas Amita Baviskar (2007, 4) emphasises the cultural politics that infuses waterscapes. Overall, these various conceptual framings emphasise how water is intrinsic to the production of place.<sup>10</sup>

In this collection, while Willow extends the waterscape underground into the Marcellus Shale, Gagné

includes the high altitude glaciers of Ladakh. In both of these cases, the waterscape is a contested repository of meaning. In fact, Willow suggests that environmental degradation has led to a conversion of what used to be a positive experience of place into experiences of alienation and grief – of "dysplacement." In the Andes and the Himalayas, where the co-authors of this article have conducted research, the flow of water, in its various forms, is intimately connected to cosmologies and knowledge about the origins, order, and dynamics of the world. Such places are therefore sites of encounters not only between land and water but also between human and non-human beings (see also de la Cadena 2015).

In Khan's article in this issue, this relationship becomes particularly evident as supernatural beings are experienced as the cause of children drowning in the treacherous waters of the Jamuna River. Water is intimately connected to the situated production of meaning and identity, rooted in particular places and connected to systems of knowledge (see also Gagné's article in this issue). In all places where people have maintained a long-standing relation to water and landscape – as the ethnographies of Dorset (Strang 2004), New Mexico (Rodriguez 2007), Egypt (Barnes 2014), and Ohio (Willow in this issue) demonstrate – the movement of water, whether defined by a shifting flow or a changing quality, is intimately connected to the production of place.

## **Toward an Amphibious Anthropology**

The literature on space, place, and landscape as well as on water reviewed above informs our approach to an amphibious anthropology, which aims to grasp how the confluence of land and water produces places and shapes human lives. More than mere backdrops, landscapes are deeply entangled with human activities and linked to the movement of water. Human engagement with place requires knowledge of these movements, which are, we argue, embedded in uneven epistemic hierarchies. As we move toward an amphibious anthropology, we go further into the relational ontology of land and water, their confluence being a particularly fruitful site for understanding the production of place. As we see it, time is a salient feature of place, whereas movement is a defining quality of water. At the concrete and abstract levels, land, as it becomes submerged in water, becomes movement and gets unsettled, whereas the temporal dimension of water crystallises as its flow demarcates space. In what follows, we consider movement as it happens in time and space, before inquiring into the connection between movement and the ways of knowing water.

## *Time, Space, and Fluid Movements*

By its very nature – its materiality and propensity to flow – water is always in motion. Even when it appears to be stable – in ponds or reservoirs for example – it leaks, evaporates, and filtrates. Movement necessarily happens in space and time. When water moves, it moves through both of these dimensions. Consequently, an amphibious anthropology that explores how to imagine landscape through the movement of water prompts us to pay attention to three particular features of place: its spatial dimensions, its temporal aspects, and how new forms of movement, coming about through the flow of water, affect the ways of knowing land and water.

Movement links the flow of water to a changing place. Our approach to an amphibious anthropology considers the movement of water within a landscape, which, despite many recent empirical and conceptual contributions, has generally been depicted as unchanging. An appreciation of temporality, in our view, is key to the assessment of change occasioned by this movement and its implications. Time is such a salient, yet commonplace, feature of human experience that, as Nancy Munn (1992) points out in her article on the cultural anthropology of time, it often dissipates analytically behind other anthropological objects of study with which it is enmeshed, such as political structure, kinship, or cosmology.<sup>11</sup> An attention to the confluence of land and water in the production of place brings into focus the often glossed over dimension of time. It also forces us to revisit commonly held assumptions about water, which is frequently taken for granted as an element of everyday life.

Yet, everyday uses of water, such as when we turn on a tap or buy a bottle of water to quench a thirst, are deeply imbricated in a complex array of knowledge and political and economic processes that change over time. Another element to consider, moreover, is that water is never pristine and its quality is, by and large, the result of human intervention. A closer look at the convergence of land and water therefore brings into focus the temporality of their interrelation – as places change over time, the human connection to water fluctuates. And as water transforms places in its changing flow, perceptions and senses of place are altered.

Phenomenological approaches to engagement with places, in the tradition of Martin Heidegger and Maurice Merleau-Ponty provide a productive standpoint from which to examine the temporal and experiential facets of the confluence of land and water. In his widely cited *Temporality of Landscape*, Tim Ingold (1993) analyses everyday involvement with the world, which connects people to the physical landscape. Although Ingold does

not pay particular attention to human engagement with water, his perspective is fertile in pondering the temporal dimension of the flow of water in a landscape and how this flow feeds into human experience of place. In many ways, the landscape that Ingold conceptualises is a narrative in constant development. Not only are landscapes simultaneously repositories of past events and memories, reflecting the passage of time itself, but their physical outlook also changes as humans dwell in places. In Ingold's model, engagement with places happens through bodily immersion, constitutes a mind-body experience, and implies spatial practices such as building and walking (see also Ingold 2000, 2007). The passage of time can thus be interpreted as a journey through the range of activities involved in engaging the world through labour and through building technologies – what he terms a “taskscape” (Ingold 2000, 196). The human body is thus embedded in the world through an organic process that implies its co-evolution with landscapes. Informed by these reflections and by the fact that, as Massey (2006) and Barbara Bender (2002) remind us, landscapes are always produced in uneven encounters, we want to emphasise that water plays an essential role in the processes that link landscapes and human bodies, something that takes place amid an imbalance of power and various social actors.

The role of water in the linking of landscape to bodies must be considered in light of the multiple temporalities of past, present, and future. The present is always shaped by its connection to the past and future. Water in landscapes is connected to both the long and short *durée*. Seasons are closely connected to the materiality of water and are a determining dimension of the ways that humans engage with landscapes (see Strauss and Orlove 2003). Seasonal variations, which are defined by the varying intensity of the flow of water in its many forms and human activity, constitute an example of the short *durée*. Water not only moves across the terrain, shaping activities along its course, but also changes its movements through the seasons. In northern Finland, the seasonality of the Kemi River is a key factor in both the production and the experience of place. The movement of water in the landscape, Franz Krause (2013) tells us, is therefore intimately connected to the perception of time (see also Minnegal 2009).

Over the long *durée*, landscapes have been seen as repositories of time where worldviews are archived through place names and building practices.<sup>12</sup> Oral history is key to understanding the evolution of beliefs and practices related to landscapes and water, which points to how cosmological worldviews are responsive to, and fluctuate along with, the changing flow of water (Khan

and Orlove in this issue; see also Paerregaard 2013). A consideration of the temporal variations in water management practices, moreover, provides insights into the entwinement of social and environmental change (Gagné and Rasmussen in this issue).

Changing water compels people to think about the future of a place. Visions and scenarios emerge, shaping how people engage with water and landscape in the present (Hastrup 2013a). For example, the control of water through large-scale infrastructure has been a way for nations to imagine their future and to assert the identity of a modern state (Baviskar 1995; Féaux de la Croix 2011; Folch 2013). In recent years, climate change has given rise to a concern for water supply issues, compelling people to search for solutions for a sustainable future (Gagné in this issue; Rasmussen in this issue). Recurring floods (Agrawala et al. 2003) and their increasingly potential occurrence (Orlove in this issue; Carey 2008), coastal erosion (Karlsson, van Oort, and Romstad 2015; Paolisso et al. 2012), and submersion with sea rise (Lazrus 2012; Rudiak-Gould 2013; see also Khan in this issue for a different kind of overflow) are emerging realities with which populations must cope in many parts of the world. Whether through a lack of water or its excess, the changing flow of water today forces people to reflect on the future in ways their ancestors likely never needed to. In the same manner, due to actual and potential contamination and pollution as a result of industrial and commercial exploitation of natural resources, the quality of water is increasingly becoming a source of anxiety about the future (see Willow in this issue; see also Rasmussen 2016; Urkidi 2010).

Thus, the confluence of land and water and its impact on the production of place brings to the foreground three points we aim to underline. First, as a result of either a changing quality or flow of water, or of changing places due to political, economic, or environmental factors, the processes that link peoples, places, and water often operate amid frictions between different actors and impact human bodies, both physically and psychologically. Second, the way people relate to water and places through practices and beliefs is not fixed; rather, it is enmeshed with political and economic processes, with environmental changes, and with local cultural dynamics that change over time. Moreover, these practices and beliefs are relational as a changing place may alter the way people think about water and engage with it and the other way around. Last, and along similar lines, the convergence of land and water denaturalises time and water. As its flow changes, water becomes an explicit dimension of the experience of a

place; conversely, focusing on the flow of water and concomitant changes in practices and perceptions makes explicit the historical processes that define places.

### *Ways of Knowing at the Confluence of Land and Water*

We have discussed how an amphibious anthropology pays attention to the ways water moves through both time and space. The movement of water, in addition, is connected with changes in the environment that involve various degrees of human action. Hence, dams, irrigation intakes, flash floods, glacial melt, and industrial waste are among the manifold cases of shifting water that require people to manipulate water and landscape in new ways. As water changes and moves under broader political, economic, and environmental processes, new ways of knowing and understanding the world emerge.

Arguing against essentialising depictions, scholars have extensively argued that local knowledge is neither static nor fixed in time and place. Yet, as Julie Cruikshank (2005) has convincingly argued through her work among First Nations communities in Canada, knowledge always emerges in encounters and yet maintains a localised character. Knowledge, in this view, is place bound and situated. The collection of articles in this issue brings to light how water-related knowledge regimes are susceptible to change as places are transformed through various processes. As several authors have noted, the bureaucratisation of places, the influence of the state, and the increasing technological manipulation of water often occur alongside parallel shifts in community organisation (see Gelles 2000; Trawick 2003). The increasing complexity of water management through technological means and its integration into large-scale projects inevitably fragment and compartmentalise water-related knowledge (see Mitchell 2002). Changes in water management must therefore be considered in light of their effects on people's connection to water.

How does knowledge about land and localities interact with knowledge about water? Here we consider two kinds of knowledge: the first produced by experts and emerging from scientific systems, the second local in nature and produced by communities through interaction with the environment over time.<sup>13</sup> At the confluence of land and water, expert and local knowledge interact as different social actors attribute different, and often contested, meanings to each element (see Gagné in this issue; Rasmussen in this issue). Scholars have demonstrated that the scientific paradigms that inform the production of knowledge about land and water are strongly connected to power (Goldman 2007; Mitchell 2002). From the colonial era of often ruthless exploitation of

natural resources, through post-colonial development and its aim to increase productivity, to the current neo-liberal era of privatisation of natural resources and the corporatisation of public water utilities, successive systems of scientific knowledge have long served an agenda oriented toward the transformation of places and the commodification of resources, such as water through classification, the production of data, and the use of specific discourses about nature. Through these successive paradigms, expert knowledge has been the dominant discourse through which “the truth” about nature is articulated and alternative views are easily dismissed because they deviate from “the facts” or they constitute emotional reactions based on inadequate information (see Willow in this issue). These tensions become salient at the confluence of land and water since both elements are understood through different systems of knowledge, which points to the need to better grasp the relational space between land and water.

For the past two decades, anthropologists have invited us to move beyond “nature” as a background and setting for “culture” and to rethink the anthropocentrism of their discipline (see, for example, Cruikshank 2012 for a brief intervention). Attention to the many ways in which water boundaries are drawn do indeed provide a crucial entrance point for considering the multiplicity of ways in which the earth is inhabited. Khan (in this issue) examines worldviews in which water is sentient. In her Whiteheadian analysis, she insists, however, that the ways that the char dwellers (flood plain sediments) of the Ganges Delta make sense of the world rest upon “experience and expression” and that human views on the supernatural change accordingly. The way that the river behaves is linked to the beings that dwell therein. Khan describes “more than ecological” forms of local knowledge, which hinge upon particular ways of making connections between the human and non-human entities of the worlds they describe. But, as she demonstrates, these connections are unstable, and non-local processes and actors can unsettle local beliefs and knowledge systems.

In initiating the interaction between different knowledge systems, the changing flow of water also compels the development of new forms of knowledge.<sup>14</sup> Jamie Linton’s (2010) idea of “modern water” shows how the particular view of water and the hydrological cycle that underpins conservation efforts are an abstraction couched in a specific Western scientific conceptualisation of water. This idea, in turn, opens up other ways of separating water from its contexts, such as commodification (Bakker 2003), virtualisation (Barnes 2013), and privatisation (Budds 2013) as well as diverse forms of grabbing land

and water, appropriating and circumscribing them with the backing of an environmental agenda (Benjaminsen and Bryceson 2012). A focus on the convergence of land and water highlights the ways in which dialogue between expert and local knowledge can be crucial for the implementation of natural hazard adaptation measures and risk reduction initiatives. In the Himalayas, for example, where climate change has significant implications for water flows, with both hydric stress due to glacier recession and the threat of glacial lake outburst floods due to warming temperatures, collaborative initiatives have emerged between local populations, the state, and international organisations (Meenawat and Sovacool 2011). Yet, as Orlove points out in this issue, the interaction between a population’s acute knowledge of a place and the knowledge of experts, particularly in relation to impending hazards, does not always reflect adequate consideration for local perspectives (see also Orlove 2009).

However, it should not be taken for granted that local populations invariably adopt sustainable water management practices. Increasingly bureaucratised and commodified landscapes may push local ethical considerations to the background. Moreover, in the face of growing concerns over an uncertain future, including water depletion and the sustainability of rural livelihoods under various pressures to embrace a new economy, local approaches to water do not necessarily translate into conservative practices or mobilised responses to climate change (see Gagné in this issue; Rasmussen in this issue). As well, as much as multivocality characterises places (Rodman 1992), divergent local perspectives on water exist, as several articles in this issue demonstrate.

Last, scholars have demonstrated how representations of landscape, places, their natural resources, and the people that inhabit them, albeit discursive in nature, have concrete implications for local populations.<sup>15</sup> These depictions may in turn be used by organisations with rhetoric that argues that communities impacted by altered water flow due to climate change must find their own solutions using their own local water management knowledge – when in fact, ironically, they hardly, if at all, contributed to the problems at hand (see Gagné in this issue). Corporations, on the other hand, capitalise on the lack of knowledge and uncertainty surrounding the impacts of natural resource exploitation on underground water to legitimise their activities (Willow in this issue). In sum, as the changing flow of water transforms landscape, different forms of knowledge encounter one another. We suggest that the convergence of land and water can become generative of conflicting and diverging representations and forms of knowledge, which



can in turn have detrimental implications for local populations.

### **Explorations in Amphibious Anthropology**

In mapping the relational space between land and water, we aim to illuminate the ways in which their interaction shapes the production and experience of place. Time and movement, we argue, define this relational space. Despite efforts to conceive of landscape as more than a backdrop to culture and society, and of places as “settings,” studies that give extensive consideration to human engagement with landscapes in a context of environmental change have only recently started to emerge (see Barnes 2014; Cruikshank 2005; Rasmussen 2015; Willow 2011 for recent exceptions). The articles assembled in this special issue are studying landscapes that are redefined by water that is changing, either in its flow or its quality. A focus on the movement of water challenges any attempt to fix these landscapes in time. This movement, in turn, intricately links the production of place to the past, the present, and the future, real or imagined. Last, our approach to an amphibious anthropology seeks to highlight that the confluence of land and water is also a site of convergence of different forms of knowledge, a convergence that again influences the production of place.

The *amphi* in amphibious implies connection and encirclement. In our discussion, it denotes a landscape’s ability to create links, its relationality, and its connectivity. In the cases we present, the boundaries between land and water are not given or absolute since their quality becomes relational. The interconnections between land and water, as well as their mutual constitution and coproduction, are fertile grounds for the study of processes of imagination and cultural identity that emerge amid the experience of specific places. The root word *bios* connotes with life and, for the purposes of our discussion, directs our attention to the ways in which the interconnections described above shape beings and livelihoods, entailing reflections on vulnerabilities, dangers, and uncertainties. The collection of articles presented in this issue may be seen as a series of vignettes that illustrate the specificities of life at the confluence of land and water or various amphibious anthropologies.

Willow examines rich ethnographic material in discussing the impacts of water on the intimacy of domestic space in the context of an expanding shale gas industry in Ohio, United States. As fracking raises potential health hazards of water consumption and knowledge on the question is contested, people are forced to rethink their relationship with the place they inhabit. In her con-

tribution, Willow demonstrates how activities within the land can “trouble” water in ways that go unnoticed by scientific studies.

Khan, for her part, focuses on how the temporal dimension of the interaction between land and water unfolds in the cosmology of silt island settlers on the Jamuna River in Bangladesh. Khan suggests a potential link between the changing flow of the river and the vanishing from local folklore of the mystical figures of Khidr and Ganga Devi. Drawing particularly upon A. N. Whitehead, the author traces the links between myth, women’s material experience of the river, and the river as a natural occurrence, thus opening up for a distinctive interpretation the workings of climate change and the changing nature of the river.

Focusing as well on a landscape increasingly defined by water scarcity, Gagné argues that the increasing presence of the Indian state in the region of Ladakh is coming to redefine water management in high-altitude communities in the Indian Himalayas. Gagné’s focus is on glacier-related practices and how they shift along with political processes transforming the region. Her article highlights changing conceptualisations of places and their implications for the way water is perceived and known. The author’s central argument is that these processes affect adaptation to water depletion in an era of climate change.

Rasmussen’s contribution explores the evolution of new ways of engaging with water and imagining the future as they emerge from changes in the physical and cultural landscape, as reflected by the widening figurative and real gap between glaciers and highland dwellers in the Andes. In discussing attempts to build water infrastructures, the author highlights different ways of engaging with and knowing water, examining their effects on the production of place in its intimate connection to imaginaries of the future.

Orlove’s contribution analyses the threat of glacial lake outburst floods in Bhutan in the Himalayas. Through an analysis of the 1994 and 2015 outbursts, his work demonstrates how people think about and engage with changes in their country. This raises questions about the role of the state in the production of place, the relationship between technologies and knowledge, and the ways in which water draws people and places together.

Last, in his intimate photo essay on pastoralists in Mauritania, anthropologist and photographer Christian Vium shows how these individuals find themselves and their animals in a constant and increasingly confusing and disorienting struggle to find water. The photos document these movements for water across the desert sands and trace the pastoralists as they ultimately end

up in the dry shantytowns of capital city Nouakchott. Here, they engage in a new way of navigating a landscape marked by the availability of water only in particular and highly intense sites.

In all of these cases – across different geographical terrains and cultural contexts – water and land enter into a relational process under broader political and economic processes or global environmental changes and either reconfigure places or impel people to think them anew. We do not contend that the selection of articles in this issue covers all of the possible ways land and water can intermingle in the production of place. The world today is increasingly redefined by global climate change, neoliberal processes, and an increasingly uneven global political economy that preys on natural resources. We therefore wish for this special issue to be a launch pad for the discussion and future integration of cases of amphibious anthropologies to rethink the implication of the confluence of land and water for the experience of place and the livelihoods of communities.

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## Notes

1 German philosopher Peter Sloterdijk has also proposed an amphibious anthropology. Revisiting Heidegger, Sloterdijk rethinks the human being as a creature that can readily move between elements. Partly as a critique of the earth-centrism of earlier philosophical approaches, he sees the “human animal” as an “amphibious creature” with profound ties to water: it can dive in and immerse itself, it can build islands to seek for peace and protection, and it can build bridges to connect and explore (ten Bos 2009). The amphibious anthropology of Sloterdijk is essentially philosophical rather than empirical and works on an abstract level to describe conditions of being. This is not the position we adopt. Our project is first and foremost an empirical, anthropological, and ethnographic one as we use

“amphibious anthropology” as a framework to understand the specificities of the human dimensions of the production of place where land and water meet.

- 2 For example, in Fredrik Barth’s (1996 [1959]) account of political leadership in the Swat Valley, the limits to irrigation have profound impacts on local political configurations.
- 3 For instance, Clifford Geertz (1972, 37), in his classic comparison between the wet and the dry, between Bali and Morocco, irrigated environments, in particular – and human transactions with the environment more generally – can be an apt starting point for socio-cultural analysis, just like kinship, village politics, child raising, or ritual drama can be. The human transactions with the environment – with land and water – therefore become a lens through which to understand cultural formations.
- 4 This also calls to mind more recent studies on the social changes produced by new ways of dealing with water according to shifting development paradigms. Wendy Espeland (1998) documents contemporary rational, institutional, and legal processes in Arizona in the wake of a dam construction threatening downstream lives and livelihoods; Akhil Gupta (1998) shows the profound social and environmental impacts of water management schemes in post-independence India; David Mosse (2003) discusses the decline of tank irrigation in south India by focusing on the role of institutions and changing social orders; and in the Andes, Paul Trawick (2003) traces the history of terracing and landscaping from the times of the Inca through the landed estates (*haciendas*) to the present, showing how new configurations of water management induced by state and non-state actors profoundly impact village life.
- 5 While geographers debunked assumptions about regions (Agnew and Duncan 1989; Nir 1990), anthropologists developed critiques of places conceived as ethnographic locales, as ideas (Appadurai 1988a, 1988b; Lawrence and Low 1990), and as metonyms to speak for an entire area (Fernandez 1988). These developments, as well as acknowledgement of processes of globalisation and deterritorialisation have also led to a rethinking of how places are constituted (Friedman 1994; Hannerz 1989), challenging the idea that localities are the sole repositories of socio-cultural production and leading ethnographers to rethink notions of identity (Gupta and Ferguson 1997).
- 6 We use the concept of landscape and place casually in order to describe socially constructed settings. We follow Setha Low and Denise Lawrence-Zúñiga (2003, 16) in seeing landscape as a productive concept “in accounting for the social construction of place by imbuing the physical environment with social meaning.”
- 7 Such perspectives have provided fertile analytical ground for understanding “socio-natures” and “hydro-social cycles” where worldviews, water practices, and water flows become intimately interwoven (Boelens 2014). In different but parallel ways in the tradition of science and technology studies, studies of urban waterscapes in Mumbai (Anand 2011, 2012) and on the Panama Canal (Carse 2012), as well as of attempts to claim the Egyptian Desert for agriculture (Barnes 2012), show how human technology and ingenuity combine with non-human processes to produce profound and often unintended changes in people’s livelihoods and engagement with the environment.

- 8 Erik Swyngedouw (1999) insists that the distribution of water is historically contingent and relies not only on biophysical availability but also on institutional and cultural arrangements related to water. Nature and culture, therefore, are deeply entwined. In this application, the concept of waterscape explicitly links water and social power relations by showing how their convergence combines to produce uneven social, economic, and ecological arrangements (see also Budds and Hinojosa 2012; Molle, Foran, and Kakonen 2012).
- 9 Veronica Strang (2005b) has been a strong proponent of an anthropology that seeks to understand how water is culturally meaningful and, indeed, productive of meaning. In her work on the Mitchell River in northern Australia, she describes how cultural visions of water are encoded with meaning connected with the production and reproduction of human society. She has done similar analytical exercises across various settings in Australia (Strang 2009) and in comparative perspective on Aboriginal Australia and Dorset, England (Strang 2005a).
- 10 Based on empirical material from Aboriginal communities in Australia, it has been argued that water places (such as a watering hole or a wetland) are both concrete sites of water in the landscape and symbolically dense sites of meaning (Gibbs 2009, 2014; Toussaint 2008).
- 11 Time remains an elusive concept. Scholars have discussed at length how space and time can be considered separately for analytical purposes, but must be considered together, as a unified space/time dyad, when we reflect on human experience (see Burton 1983; Hägerstrand 1975; Heidegger 1962).
- 12 This is a theme that has received considerable scholarly attention (Basso 1996; Feld and Basso 1996; Kahn 1990; Stewart and Strathern 2003)
- 13 This neat delineation should be treated with caution, however. Some authors have derided assumptions about the compatibility of both forms of knowledge (Nadasdy 2003); others have argued that they are mutually constitutive (Agrawal 1995) and that they intermingle with one another (Thornton and Scheer 2012). Importantly, local ideas seldom appear to have the same power and agency as their Western, expert counterparts in discourses about nature (Arnold 2006, 8; Escobar 1996, 1999).
- 14 Conservation practices entail particular ways of knowing water. To be sure, scientific systems have been harnessed to the exploitation of natural resources, but they can just as readily become the source of conservation practices (Grove 1995), and expert knowledge does play a crucial, if often ambiguous, role in the safeguarding of ecosystems affected by climate change (Walley 2004).
- 15 For instance, in *Tropics and the Travelling Gaze*, David Arnold (2006) argues that European representations of landscape in early nineteenth-century India – in travel narratives and botanical descriptions for example – were a means through which the colonial empire consolidated its power. Arnold's key point is that these representations informed a body of knowledge that underpinned subsequent interventions aimed at transforming and classifying tropical forests, not only for use by the colonial power but also for the development of science itself. See also Raffles (2002).

## References

- Agnew, John A., and James S. Duncan, eds.  
1989 *The Power of Place*. London: Unwin Hyman.
- Agrawal, Arun  
1995 Dismantling the Divide between Indigenous and Scientific Knowledge. *Development and Change* 26(3):413–439. <http://dx.doi.org/10.1111/j.1467-7660.1995.tb00560.x>.
- Agrawala, Shardul, Tomoko Ota, Ahsan Uddin Ahmed, Joel Smith, and Maarten van Alst  
2003 *Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans*. Paris: Organisation for Economic Co-operation and Development.
- Anand, Nikhil  
2011 Pressure: The PoliTechnics of Water Supply in Mumbai. *Cultural Anthropology* 26(4):542–564. <http://dx.doi.org/10.1111/j.1548-1360.2011.01111.x>.  
2012 Municipal Disconnect: On Abject Water and Its Urban Infrastructures. *Ethnography* 13(4):487–509. <http://dx.doi.org/10.1177/1466138111435743>.
- Appadurai, Arjun  
1988a Putting Hierarchy in Its Place. *Cultural Anthropology* 3(1):36–49. <http://dx.doi.org/10.1525/can.1988.3.1.02a00040>.  
1988b Introduction: Place and Voice in Anthropological Theory. *Cultural Anthropology* 3(1):16–20. <http://dx.doi.org/10.1525/can.1988.3.1.02a00020>.
- Arnold, David  
2006 *The Tropics and the Traveling Gaze: India, Landscape, and Science, 1800–1856*. Seattle, WA: University of Washington Press.
- Bakker, Karen J.  
2003 *An Uncooperative Commodity: Privatizing Water in England and Wales*. Oxford: Oxford University Press.
- Barnes, Jessica  
2012 Pumping Possibility: Agricultural Expansion through Desert Reclamation in Egypt. *Social Studies of Science* 42(4):517–538. <http://dx.doi.org/10.1177/0306312712438772>.  
2013 Water, Water Everywhere but Not a Drop to Drink: The False Promise of Virtual Water. *Critique of Anthropology* 33(4):371–389. <http://dx.doi.org/10.1177/0308275X13499382>.  
2014 *Cultivating the Nile: The Everyday Politics of Water in Egypt*. Durham, NC: Duke University Press. <http://dx.doi.org/10.1215/9780822376217>.
- Barnes, Jessica, and Samer Alatur  
2012 Water Worlds: Introduction to the Special Issue of *Social Studies of Science*. *Social Studies of Science* 42(4):483–488. <http://dx.doi.org/10.1177/0306312712448524>.
- Barth, Fredrik  
1996 [1954] *Political Leadership among Swat Pathans*. London and Atlantic Highlands. London: Athlone Press.
- Basso, Keith H.  
1996 Wisdom Sits in Places: Notes on a Western Apache Landscape. In *Senses of Place*. K. H. Basso and S. Feld, eds. Pp. 53–90. Sante Fe, NM: School of American Research Press.

- Baviskar, Amita  
 1995 *In the Belly of the River: Tribal Conflicts over Development in the Narmada Valley*, *Studies in Social Ecology and Environmental History*. New Delhi: Oxford University Press.  
 2007 *Waterscapes: The Cultural Politics of a Natural Resource*. Delhi: Permanent Black.
- Bender, Barbara  
 2002 Time and Landscape. *Current Anthropology* 43 (Supplement):103–112. <http://dx.doi.org/10.1086/339561>.
- Benjaminsen, Tor A., and Ian Bryceson  
 2012 Conservation, Green/Blue Grabbing and Accumulation by Dispossession in Tanzania. *Journal of Peasant Studies* 39(2):335–355. <http://dx.doi.org/10.1080/03066150.2012.667405>.
- Boelens, Rutgerd  
 2014 Cultural Politics and the Hydrosocial Cycle: Water, Power and Identity in the Andean Highlands. *Geoforum* 57:234–247. <http://dx.doi.org/10.1016/j.geoforum.2013.02.008>.
- Budds, Jessica  
 2013 Water, Power, and the Production of Neoliberalism in Chile, 1973–2005. *Environment and Planning D: Society and Space* 31(2):301–318. <http://dx.doi.org/10.1068/d9511>.
- Budds, Jessica, and Leonith Hinojosa  
 2012 Restructuring and Rescaling Water Governance in Mining Contexts: The Co-Production of Waterscapes in Peru. *Water Alternatives* 5(1):119–137.
- Burton, John W.  
 1983 Same Time, Same Space: Observations on the Morality of Kinship in Pastoral Nilotic Societies. *Ethnology* 22(2):109–119. <http://dx.doi.org/10.2307/3773574>.
- Carey, Mark  
 2008 The Politics of Place: Inhabiting and Defending Glacier Hazard Zones in Peru's Cordillera Blanca. *In Darkening Peaks. Glacier Retreat, Science, and Society*. B. Orlove, Ellen Wiegandt, and Brian H. Luckman, eds. Pp. 229–240. Berkeley, CA: University of California Press.
- Carse, Ashley  
 2012 Nature as Infrastructure: Making and Managing the Panama Canal Watershed. *Studies of Science* 42(4):539–563. <http://dx.doi.org/10.1177/0306312712440166>.
- Cosgrove, Denis  
 1998 *Social Formation and Symbolic Landscape*. Madison, WI: University of Wisconsin Press.
- Cruikshank, Julie  
 2005 *Do Glaciers Listen? Local Knowledge, Colonial Encounter and Social Imagination*. Seattle, WA: University of Washington Press.  
 2012 Are Glaciers Good to Think With? Recognising Indigenous Environmental Knowledge. *Anthropological Forum* 22(3):239–250. <http://dx.doi.org/10.1080/00664677.2012.707972>.
- de la Cadena, Marisol  
 2015 *Earth Beings: Ecologies of Practice across Andean Worlds*. Durham, NC: Duke University Press. <http://dx.doi.org/10.1215/9780822375265>.
- Escobar, Arturo  
 1996 Construction Nature: Elements for a Post-Structuralist Political Ecology. *Futures* 28(4):325–343. [http://dx.doi.org/10.1016/0016-3287\(96\)00011-0](http://dx.doi.org/10.1016/0016-3287(96)00011-0).  
 1999 After Nature: Steps to an Antiesentialist Political Ecology 1. *Current Anthropology* 40(1):1–30. <http://dx.doi.org/10.1086/515799>.  
 2001 Culture Sits in Places: Reflections on Globalism and Subaltern Strategies of Localization. *Political Geography* 20(2):139–174. [http://dx.doi.org/10.1016/S0962-6298\(00\)00064-0](http://dx.doi.org/10.1016/S0962-6298(00)00064-0).
- Espeland, Wendy N.  
 1998 *The Struggle for Water: Politics, Rationality, and Identity in the American Southwest*. Chicago: University of Chicago Press.
- Féaux de la Croix, Jeanne  
 2011 Moving Metaphors We Live By: Water and Flow in the Social Sciences and around Hydroelectric Dams in Kyrgyzstan. *Central Asian Survey* 30(3–4):487–502. <http://dx.doi.org/10.1080/02634937.2011.614097>.
- Feld, Steven, and Keith H. Basso, eds.  
 1996 *Wisdom Sits in Places: Notes on a Western Apache Landscape*. Sante Fe, NM: School of American Research Press.
- Fernandez, James W.  
 1988 *Andalusia on Our Minds: Two Contrasting Places in Spain As Seen in a Vernacular Poetic Duel of the Late 19th Century*. *Cultural Anthropology* 3(1):21–35. <http://dx.doi.org/10.1525/can.1988.3.1.02a00030>.
- Folch, Christine  
 2013 Surveillance and State Violence in Stroessner's Paraguay: Itaipu Hydroelectric Dam, *Archive of Terror*. *American Anthropologist* 115(1):44–57. <http://dx.doi.org/10.1111/j.1548-1433.2012.01534.x>.
- Foucault, Michel  
 1980 *Power/Knowledge and Other Writings 1972–1977*. C. Gordon L. Marshall, J. Mepham, and K. Soper, trans. New York: Pantheon Books.
- Friedman, Jonathan  
 1994 *Cultural Identity and Global Process*. London: SAGE Publications.
- Geertz, Clifford  
 1972 The Wet and the Dry: Traditional Irrigation in Bali and Morocco. *Human Ecology* 1(1):23–39. <http://dx.doi.org/10.1007/BF01791279>.
- Gelles, Paul H.  
 2000 *Water and Power in Highland Peru: The Cultural Politics of Irrigation and Development*. New Brunswick, NJ: Rutgers University Press.
- Gibbs, Leah  
 2009 Water Places: Cultural, Social and More-Than-Human Geographies of Nature. *Scottish Geographical Journal* 125(3–4):361–369. <http://dx.doi.org/10.1080/14702540903364393>.  
 2014 Freshwater Geographies? Place, Matter, Practice, Hope. *New Zealand Geographer* 70(1):56–60. <http://dx.doi.org/10.1111/nzg.12040>.
- Goldman, Michael  
 2007 How “Water for All!” Policy Became Hegemonic: The Power of the World Bank and its Transnational Policy Networks. *Geoforum* 38(5):786–800. <http://dx.doi.org/10.1016/j.geoforum.2005.10.008>.

- Grove, Richard  
1995 *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism 1600–1860*. Cambridge: Cambridge University Press.
- Gupta, Akhil  
1998 *Postcolonial Developments: Agriculture in the Making of Modern India*. Durham, NC: Duke University Press.
- Gupta, Akhil, and James Ferguson  
1997 *Discipline and Practice: “The Field” as Site, Method, and Location in Anthropology*. In *Anthropological Locations: Boundaries and Grounds of a Field Science*. A. Gupta and J. Ferguson, eds. Pp. 1–46. Berkeley, CA: University of California Press.
- Hägerstrand, Torsten  
1975 *Space, Time, and Human Conditions*. In *Dynamic Allocation of Urban Space*. A. Karlqvist, L. Lundqvist, and F. Snickars, eds. Pp. 3–12. Farnborough, UK: Saxon House.
- Hannerz, Ulf  
1989 *Culture between Center and Periphery: Toward a Macroanthropology*. *Ethnos* 54(3–4):200–216. <http://dx.doi.org/10.1080/00141844.1989.9981392>.
- Hastrup, Kirsten  
2013a *Anthropological Contributions to the Study of Climate: Past, Present, Future*. *Wiley Interdisciplinary Reviews: Climate Change* 4(4):269–281. <http://dx.doi.org/10.1002/wcc.219>.  
2013b *Water and the Configuration of Social Worlds: An Anthropological Perspective*. *Journal of Water Resource and Protection* 5(4):59–66. <http://dx.doi.org/10.4236/jwarp.2013.54A009>.
- Heidegger, Martin  
1962 *Being and Time*. New York: Harper and Row.
- Helmreich, Stefan  
2011 *Nature/Culture/Seawater*. *American Anthropologist* 113(1):132–144. <http://dx.doi.org/10.1111/j.1548-1433.2010.01311.x>.
- Hirsch, Eric  
1995 *Landscape: Between Place and Space*. In *The Anthropology of Landscape: Perspectives on Place and Space*. E. Hirsch and M. O’Hanlon, eds. Pp. 1–30. Oxford: Oxford University Press.
- Hirsch, Eric, and Michael O’Hanlon, eds.  
1995 *The Anthropology of Landscape: Perspectives on Place and Space*. Oxford: Oxford University Press.
- Ingold, Tim  
1993 *The Temporality of the Landscape*. *World Archaeology* 25(2):152–174. <http://dx.doi.org/10.1080/00438243.1993.9980235>.  
2000 *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. London: Routledge. <http://dx.doi.org/10.4324/9780203466025>.  
2007 *Lines: A Brief History*. New York: Routledge.
- Kahn, Miriam  
1990 *Stone-Faced Ancestors: The Spatial Anchoring of Myth in Wamira, Papua New Guinea*. *Ethnology* 29(1):51–66. <http://dx.doi.org/10.2307/3773481>.
- 2011 *Tahiti Beyond the Postcard: Power, Place, and Everyday Life*. Seattle, WA: University of Washington Press.
- Karlsson, Marianne, Bob van Oort, and Bård Romstad  
2015 *What We Have Lost and Cannot Become: Societal Outcomes of Coastal Erosion in Southern Belize*. *Ecology and Society* 20(1):4. <http://dx.doi.org/10.5751/ES-07050-200104>.
- Krause, Franz  
2013 *Seasons as Rhythms on the Kemi River in Finnish Lapland*. *Ethnos* 78(1):23–46. <http://dx.doi.org/10.1080/00141844.2011.623303>.
- Lansing, J. Stephen  
1991 *Priests and Programmers: Technologies of Power in the Engineered Landscapes of Bali*. Princeton, NJ: Princeton University Press.
- Lawrence, Denise, and Setha Low  
1990 *The Built Environment and Spatial Form*. *Annual Review of Anthropology* 19(1):453–505. <http://dx.doi.org/10.1146/annurev.an.19.100190.002321>.
- Lazrus, Heather  
2012 *Sea Change: Island Communities and Climate Change*. *Annual Review of Anthropology* 41(1):285–301. <http://dx.doi.org/10.1146/annurev-anthro-092611-145730>.
- Lefebvre, Henri  
1991 [1974] *The Production of Space*. Oxford: Blackwell Publisher.
- Linton, Jamie  
2010 *What Is Water?: The History of a Modern Abstraction*. Vancouver: UBC Press.
- Low, Setha, and Denise Lawrence-Zùñiga, eds.  
2003 *The Anthropology of Space and Place: Locating Culture*. Oxford: Blackwell Publishing.
- Malinowski, Bronislaw  
1984 [1922] *Argonauts of the Western Pacific*. Long Grove, IL: Waveland Press.
- Massey, Doreen  
2005 *For Space*. London: SAGE Publications.  
2006 *Landscape as a Provocation: Reflections on Moving Mountains*. *Journal of Material Culture* 11(1–2):33–48. <http://dx.doi.org/10.1177/1359183506062991>.
- Meenawat, Harsha, and Benjamin K. Sovacool  
2011 *Improving Adaptive Capacity and Resilience in Bhutan. Mitigation and Adaptation Strategies for Global Change* 16(5):515–533. <http://dx.doi.org/10.1007/s11027-010-9277-3>.
- Minnegal, Monica  
2009 *The Time Is Right: Waiting, Reciprocity and Sociality*. In *Waiting*. Ghassan Hage, ed. Pp. 89–96. Melbourne: Melbourne University Press.
- Mitchell, Timothy  
2002 *Rule of Experts: Egypt, Techno-Politics, Modernity*. Berkeley, CA: University of California Press.
- Molle, François, Tira Foran, and Mira Kakonen  
2012 *Contested Waterscapes in the Mekong Region: Hydropower, Livelihoods and Governance*. Sterling, VA: Earthscan.

- Mosse, David  
2003 *The Rule of Water: Statecraft, Ecology and Collective Action in South India*. Oxford: Oxford University Press.
- Munn, Nancy D.  
1992 *The Cultural Anthropology of Time: A Critical Essay*. *Annual Review of Anthropology* 21(1):93–123. <http://dx.doi.org/10.1146/annurev.an.21.100192.000521>.
- Nadasdy, Paul  
2003 *Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-State Relations in the Southwest Yukon*. Vancouver: UBC Press.
- Nir, Dov  
1990 *Region as a Socio-Environmental System: An Introduction to a Systemic Regional*, vol. 16. Boston: Kluwer Academic Publishers. <http://dx.doi.org/10.1007/978-94-009-0483-5>.
- Orlove, Ben  
2009 *The Past, the Present and Some Possible Futures of Adaptation*. In *Adapting to Climate Change: Thresholds, Values, Governance*. W.N. Adger, I. Lorenzoni, and K.L. O'Brien, eds. Pp. 131–163. Cambridge: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511596667.010>.
- Orlove, Ben, and Steven C. Caton  
2010 *Water Sustainability: Anthropological Approaches and Prospects*. *Annual Review of Anthropology* 39(1):401–415. <http://dx.doi.org/10.1146/annurev.anthro.012809.105045>.
- Paerregaard, Karsten  
2013 *Bare Rocks and Fallen Angels: Environmental Change, Climate Perceptions and Ritual Practice in the Peruvian Andes*. *Religions* 4(2):290–305. <http://dx.doi.org/10.3390/rel4020290>.
- Paolisso, Michael, Ellen Douglas, Ashley Enrici, Paul Kirshen, Chris Watson, and Matthias Ruth  
2012 *Climate Change, Justice, and Adaptation among African American Communities in the Chesapeake Bay Region*. *Weather, Climate, and Society* 4(1):34–47. <http://dx.doi.org/10.1175/WCAS-D-11-00039.1>.
- Raffles, Hugh  
1999 *“Local Theory”: Nature and the Making of an Amazonian Place*. *Cultural Anthropology* 14(3):323–360. <http://dx.doi.org/10.1525/can.1999.14.3.323>.  
2002 *Intimate Knowledge*. *International Social Science Journal* 54(173):325–335. <http://dx.doi.org/10.1111/1468-2451.00385>.
- Rasmussen, Mattias Borg  
2015 *Andean Waterways: Resource Politics in Highland Peru*. Seattle, WA: University of Washington Press.  
2016 *Reclaiming the Lake: Citizenship and Environment-as-Common-Property in Highland Peru*. *Focaal – Journal of Global and Historical Anthropology*, 74: 13–27
- Rasmussen, Mattias Borg, and Benjamin Orlove  
2014 *Anthropologists Exploring Water in Social and Cultural Life: Introduction*. *American Anthropologist* (Virtual issue). [http://anthrosource.onlinelibrary.wiley.com/hub/journal/10.1111/\(ISSN\)1548-1433/exploring-water.html](http://anthrosource.onlinelibrary.wiley.com/hub/journal/10.1111/(ISSN)1548-1433/exploring-water.html) (accessed 15 September 2016).
- Rodman, Margaret C.  
1992 *Empowering Place: Multilocality and Multivocality*. *American Anthropologist* 94(3):640–656. <http://dx.doi.org/10.1525/aa.1992.94.3.02a00060>.
- Rodriguez, Sylvia  
2007 *Acequia: Water Sharing, Sanctity and Place*. Santa Fe, NM: School for Advanced Research Press.
- Rudiak-Gould, Peter  
2013 *Climate Change and Tradition in a Small Island State: The Rising Tide*. New York: Routledge.
- Sack, Robert D.  
1983 *Human Territoriality: A Theory*. *Annals of the Association of American Geographers* 73(1):55–74. <http://dx.doi.org/10.1111/j.1467-8306.1983.tb01396.x>.
- Schama, Simon  
1995 *Landscape and Memory*. New York: Vintage Books.
- Stewart, Pamela J., and Andrew Strathern  
2003 *Landscape, Memory and History: Anthropological Perspectives*. London: Pluto.
- Strang, Veronica  
2004 *The Meaning of Water*. Oxford: Berg.  
2005a *Common Senses: Water, Sensory Experience and the Generation of Meaning*. *Journal of Material Culture* 10(1):92–120. <http://dx.doi.org/10.1177/1359183505050096>.  
2005b *Water Works: Agency and Creativity in the Mitchell River Catchment*. *Australian Journal of Anthropology* 16(3):366–381. <http://dx.doi.org/10.1111/j.1835-9310.2005.tb00317.x>.  
2006a *Aqua Culture: The Flow of Cultural Meanings in Water*. In *Water: Histories, Cultures, Ecologies*. M. Leybourne and A. Gaynor, eds. Pp. 68–80. Perth, Australia: University of Western Australia Press.  
2006b *Fluidscapes: Water, Identity and The Senses*. *Worldviews* 10(2):147–154. <http://dx.doi.org/10.1163/156853506777965802>.  
2009 *Gardening the World: Agency, Identity, and the Ownership of Water*. New York: Berghahn.
- Strauss, Sarah, and Benjamin S. Orlove  
2003 *Weather, Climate, Culture*. Oxford: Berg.
- Swyngedouw, Erik  
1999 *Modernity and Hybridity: Nature, Regeneracionismo, and the Production of the Spanish Waterscape, 1890–1930*. *Annals of the Association of American Geographers* 89(3):443–465. <http://dx.doi.org/10.1111/0004-5608.00157>.
- ten Bos, Rene  
2009 *Towards an Amphibious Anthropology: Water and Peter Sloterdijk*. *Environment and Planning, D, Society and Space* 27(1):73–86. <http://dx.doi.org/10.1068/d13607>.
- Thornton, Thomas F.  
2007 *Being and Place among the Tlingit*. Seattle, WA: Washington University Press.
- Thornton, Thomas F., and Adela M. Scheer  
2012 *Collaborative Engagement of Local and Traditional Knowledge and Science in Marine Environments: A Review*. *Ecology and Society* 17(3):8. <http://dx.doi.org/10.5751/ES-04714-170308>.

- Tilley, Christopher  
1994 *A Phenomenology of Landscape*. Oxford: Berg.
- Toussaint, Sandy  
2008 Kimberley Friction: Complex Attachments to Water-Places in Northern Australia. *Oceania* 78(1):46–61. <http://dx.doi.org/10.1002/j.1834-4461.2008.tb00027.x>.
- Trawick, Paul  
2003 *The Struggle for Water in Peru: Comedy and Tragedy in the Andean Commons*. Stanford, CA: Stanford University Press.
- Urkidi, Leire  
2010 A Glocal Environmental Movement against Gold Mining: Pascua–Lama in Chile. *Ecological Economics* 70(2):219–227. <http://dx.doi.org/10.1016/j.ecolecon.2010.05.004>.
- Walley, Christine J.  
2004 *Rough Waters: Nature and Development in an East African Marine Park*. Princeton, NJ: Princeton University Press. <http://dx.doi.org/10.1515/9781400835751>.
- Whatmore, Sarah  
2002 *Hybrid Geographies. Natures, Cultures, Spaces*. London: SAGE Publishing.
- Willow, Anna J.  
2011 Conceiving Kakipitapitmok: The Political Landscape of Anishinaabe Anticlearcutting Activism. *American Anthropologist* 113(2):262–276. <http://dx.doi.org/10.1111/j.1548-1433.2011.01329.x>.
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