

SPECIAL SECTION: New Epistemologies of Water in India

Knowledge Others, Others' Knowledge: The Need for a New Epistemology of Water

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Abstract: This paper examines the ways in which knowledge about water has conventionally been generated by modern water scientists and illuminates how this approach leaves out the diverse “ways of knowing” water and how scientism creates a trap of concrete evidential certainty. Through the example of a failed conversation, it questions the basic epistemological underpinnings of understanding water in modern scientific inquiries—the means of knowing rivers, and how they conflict with feminist epistemologies and fail to account for the “knowledge others” and “others’ knowledge”. The paper concludes with observations on why we need new epistemologies of water in the Anthropocene.

Keywords: Water, Epistemology, Rivers, Feminist Methods, Scientific Methods

1. EPISTEMICIDE?

Social science researchers studying water are aware of the hegemony of western epistemology, particularly the limits of a singular “way of knowing” water. This western epistemology has shaped critical projects that involve managing, controlling, and modifying water. A growing body of literature argues that these projects are based on the contextually irrelevant experiences and perspectives of the West, and hence provide too few parameters or none at all, both analytically and conceptually. Thus, in the Global South, the challenge is to develop an anti-hegemonic ecology of knowledge that is free from the domination of western epistemology. To address this challenge, one must acknowledge the alternative ways of

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knowing water and living with it, and perhaps then understand the costs associated with this annihilation. According to a leading critical theorist, Boaventura de Sousa Santos, the mass extinction of non-western knowledges can be termed as “epistemicide”. In his landmark book, *Epistemologies of the South* (2014), de Sousa Santos establishes the parameters for a contemporary critical theory that considers the historical and analytical limits of Marxism and proposes an epistemology that is global, anti-colonial, anti-capitalist, and anti-patriarchal. In another article, de Sousa Santos (2016, 18) follows up on this argument and notes that awareness of this epistemicide encourages researchers to depart from the established, mainstream knowledge that derives from the Eurocentric tradition. Knowing that an epistemicide is in force can also lead researchers to undertake a crucial epistemological transformation that has the potential to reinvent social emancipation and sovereignty on a global scale. Finally, the understanding can also evoke plural ways of relating to nature that are not simply based on a scientific conception of the world. Much of this limited epistemology of water, as it is known, is propagated through tertiary education (and research) institutions, where pedagogy remains strictly discipline-based. Each discipline remains bound by its methodological imperatives and proposes a particular understanding of the subjects within their boundaries.

For a complex resource such as water, these limitations invariably invite reductionism, as each discipline examines different aspects of water, expecting to see the material in its entirety. Within this scenario, geography exerts a proprietary claim over the physical containers and carriers of water such as rivers, lakes, and other water bodies. Baghel, Stepan, and Hill (2017, 3) explain how “epistemic communities”—groups or networks of experts who share common norms, principles, and beliefs, causal credence, notions of validity, and strategies—have a common belief framework to explain the production of challenges. Epistemic communities primarily focus on transnational policymaking, international regimes, and expert groups using science and technology; they operate within a culture of metrics, models, projections, and warnings. The science-based epistemic community presents (and perpetuates) only a partial view of water and discusses its abundance and scarcity in terms of human security. Moreover, Baghel, Stepan, and Hill (2017) argue that there is “something distinct to water, to water experiences and water knowledges in Asia” (2). In addition to the distinctiveness of water as a resource, there is also an explicit recognition of the differences that “place” makes to knowledge. Social and feminist geographers have consistently argued that knowledge is placed in (and is defined by) its context. As Massey (2005) reminds us: “Without space, no

multiplicity; without multiplicity, no space” (9). It is this multiplicity of contexts that makes knowledges of water so special, and feminist voices contribute to the plurality of these knowledges. Based on my personal encounters working within and outside disciplinary boundaries, this paper uses two examples to analyse epistemicide in the context of water and ends with some thoughts on feminist epistemologies, which might be one of the “new” alternative knowledge forms in the Anthropocene.

2. KNOWING WATER, UNDERSTANDING THE EPISTEMICIDE

Even if the language and terminology remain different, the idea of an epistemicide is not new in water studies. It has been expressed differently elsewhere, for example, in Linton’s (2010) argument that “modern water” is a discursive construction that has helped harness and control extensive parts of the hydrosocial cycle. This acquisition, according to Linton, was accomplished through large hydraulic infrastructures including dam construction, wetland draining, irrigation engineering, and water diversion into the circulatory systems of urban centres. Schmidt (2017) calls this discourse of modernity “normal water”, that is, a discourse that repackages the political project of human adjustment into notions of adaptation that naturalize a certain way of thinking about water as the only possible option. Roberts and Philips (2019) argue that “water is not a neutral and external substance or object, but something that is inextricably woven into social, economic and political rationalities” (5). To understand water “as we make” meaning of it, Strang (2010) adopts an anthropological approach to explore communities’ relationships with water. This relationship develops through landscapes, cultures, religions, spirituality, as well as gender (Lahiri-Dutt 2006). The first effect of epistemicide, therefore, is the production of a number of geological, technical, and social ideas that conceptualize water as a *resource* that can, and should, be managed to follow an evolutionary model of postcolonial progress.

The second effect is the transformation of nature through science and technology. This is enabled by the discourse that supplies of water and solutions to shortages fall within the realm of science and technology, leading to an objectification and categorization of the natural world (Sjolander-Lindqvist 2005). Water, which was previously considered a part of nature, has now been transformed into an important urban commodity that can be engineered (Stuart 2007). These urban water supply systems and networks, Swyngedouw (2006) argues, “are the mediations through which the perpetual process of transformation of nature ... takes place” (106).

Nature is transformed into products to meet human needs, and market and regulatory mechanisms price these products for human consumption, which then enter the market as commodities (Bakker 2006). Scholars (for example D'Souza 2007) have emphasized this point in their study of dams and other colonial water infrastructure. This knowledge of water is walled in by scientism as a highly intellectualized, application-oriented and rationalized field where, as de Sousa Santos (2014) says, “the relation between knowing and acting has lost its general character and been reduced to the relation between knowledge validated by modern science and rational social engineering” (5). Outside of this wall, it presumes, lies the dark world of beliefs, faith, values, myths, and the world of the unsayable, where theory and practice are disentangled from each other. The example that follows exemplifies this point by showing how scientism becomes incapable of conversing with feminist epistemologies even if the scientists themselves want to include feminist visions in their work.

3. CONVERSING WITH RIVER BASIN MODELLERS ON GENDER

Established in 1916, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is Australia's national science agency and one of its oldest research organizations. In 2013, it initiated a research programme to generate tools and evidence to improve the management of several South Asian river basins. Funded by the Department of Foreign Affairs and Trade (DFAT) and CSIRO, the Sustainable Development Investment Portfolio (SDIP) project at CSIRO uses river system modelling to generate water development scenarios—an activity in which the CSIRO has had considerable expertise and strength. The aim of the SDIP is to increase water, food, and energy security in South Asian countries for the poorest and most vulnerable. With women being over-represented in the poor and vulnerable groups in the region, CSIRO needed a gender expert. But how does one even begin a conversation between natural scientists working on basin modelling and gender scholars working with social science tools and methodologies? Scientists dealing with the intricately complex river basins of South Asia had no robust methodological tools to integrate interdisciplinary pluralism and explain the sociocultural contexts within which the water is being allocated, shared, and used. To resolve this impasse, CSIRO took a big (and unprecedented) step by hiring an ANU-CSIRO joint appointee gender expert who would divide their time between my (social science) department in ANU (The Australian National University) and CSIRO. Under my mentorship, the appointee would help the scientists integrate gender into their areas of work. Being a feminist who

is not uncomfortable working with physical scientists, I was pleased to take on the project.

Sadly, in reality, this profoundly innovative initiative encountered several roadblocks and challenges. A series of multifaceted events are evidence of its slow and painful failure. The primary problem was of communication between vastly different disciplinary orientations. The gender expert, who had a strong background in the domestic decision-making research space, found it difficult to converse with the (mostly male) scientists, and vice versa. Did this failure occur because the project presented itself to these scientists as one of those much-maligned “add women and stir” type initiatives? Or are feminist approaches to knowledge inherently *different*?

Indeed, some branches of feminism rely on empiricism, or can confer with empiricists quite easily and confidently, as evidenced in journals such as *Feminist Economist* or in the innumerable mapping and quantitative works carried out by leading feminists. These are significant bodies of work that have used quantitative methods and conversed with the harder, physical sciences, have sensitized scientists, and made significant contributions to a feminist re-envisionings. On the other hand, some feminists have consistently argued that our task is not to follow established epistemologies, but to reject them altogether and adopt new methods and tools to change the existing (scientific) methods. Perhaps this second approach has more merit, given the assumed hierarchies between the social and natural sciences and within disciplines. These hierarchies of knowledge prevent the kind of conversation and integration in which their disparate epistemologies can meld with each other.

In this instance, the scientists’ disciplinary training equipped them to apply quantitative tools for river basin management at a macro level. These tools do not lend themselves to an understanding of gender roles and relations, which require going beyond the macro and focussing on the micro—the minutiae of interactions and dynamics within households and families and interpersonal as well as inter-community relations.

So how does one articulate the multi-directional relationship between rivers and human societies and integrate gender into the study of rivers and riverine communities? River scientist, Plewa (2010), presents rivers as part of the earth’s hydrosphere and as being determined by geology and climate, which in turn determine the river’s hydraulic properties and hence its channel mechanics and chemistry. The epistemic community of classical river scientists, therefore, teaches students that although rivers are inert parts of the physical environment, they are almost like organisms because of their life cycles. This way, a river is imagined outside of the human

domain (Lahiri-Dutt 1999). If humans were separated from the physical world, then the epistemology of geomorphology would be characterized by the separation of human elements from rivers. Lahiri-Dutt (2015) has discussed the consequence of considering fluvial systems as part of the larger environmental system, “a meaningful arrangement of things” (Schumm 1977, 2), a whole that is formed as the sum of many parts. This knowledge invisibilizes human lives, their histories, and their various social and cultural connections with rivers and exemplifies how epistemicide is legitimized through disciplinary edifices.

Castree (2005) argues that knowledges are “produced by myriad knowledge-communities who possess sometimes similar (and sometimes different) outlooks on nature” (xiv). Therefore, what we perceive as “societal” understandings of the natural world are actually “local” understandings that have emanated from their production sites to be considered as real, and hence valid, to different communities. According to Castree (2013), these sites are not only universities and research organizations, which have conventionally presented themselves as the principal knowledge communities of professional geographers.

People who create knowledge through their lives and day-to-day interactions with rivers are described by Castree (2013) as “epistemic workers”. These epistemic workers, through face-to-face and virtual interactions, comprise epistemic communities. These communities have more or less distinctive languages and ways of communicating. Lave (2015) argues that a new era of knowledge production is emerging in this manner. She suggests that in this knowledge regime, academia has significantly less clout than ever before. The knowledge claims that are broadly seen as legitimate are increasingly developed outside of the academy.

River scientists, who claim to be the primary community producing knowledge about rivers, have failed to produce holistic knowledge that shows rivers as products of human history, interferences, attachments, and imaginations. Without these humane aspects, our knowledge of rivers remains incomplete. More importantly, with the humane aspects, the kinds of nature knowledges that are produced would simply and truthfully depict things that scientism does not seem understand, recognise, or value. Ekers and Loftus (2012) underline this perspective and suggest that central to the making of nature knowledges are specific embodied practices across particular temporal and spatial conjectures that require a historicized and geographically rooted understanding of nature.

River scientists have tried to establish standardized, universal, and appropriate conditions and settings for the creation of water knowledge

that can be translated into a model that all knowledge production (and knowledge-seeking) can look up to. This knowledge yields empirical certainty and considers itself robust enough to effectively silence the sceptics or “non-believers” of this worldview.

Feminists question the presumed certainty of this approach by asking first if the sex of the knower is epistemologically significant (Code 1981) and second, how masculine and feminine needs, interests, rights, and water uses can be illuminated in a gender-differentiated form, across or as “stretching over” space. Commenting on the first, the masculine production of knowledge, Lorraine Code (2014) observes:

Any hint of relativism such as is implicit in the suggestion that sex—a non-intellectual, non-rational, individual characteristic of the putative knowers—could play a constitutive part in the production of knowledge threatened to undermine the founding principles of ‘the epistemological project (9).

Questioning the sex of the knower could problematize knowledge and subjectivity, shifting the focus to what Haraway (1988) considers “situated knowledges”—knowledges that allow an examination of multiple intersections of subjectivity and positionality and their epistemological implications—and questions the “credibility, marginality, epistemic responsibility and the politics of testimony” (Code 2014, 10). This is a simple but first step in understanding differences in epistemologies; in the story narrated above, it was not always men who failed to understand the roles that gender could play in the lives of riverine communities.

As noted, some feminists reconcile the difficulties of conversing with natural or harder sciences by adopting different forms of empiricism. They present numbers, numerical data, and measurements, and maps as accurate and scientific evidence. Indeed, this was possibly what might have been envisaged by CSIRO at the outset. Therefore, instead of a *gender expert*, what they truly required was an empiricist who can deal with sex-disaggregated social, economic, and related data, and incorporate them into river basin modelling data of water-flows, sediment load, rainfall, and so on. However, is this co-option of sex-based social-economic indicators into the measurement and modelling work of the predictive sciences a solution? The feminist philosopher of science, Sandra Harding, in her influential book *The Science Question in Feminism* (1986) opposes these attempts and argues that feminist standpoint theory rather than feminist empiricism actually offers “strong objectivity”. Feminist standpoint theory unfurls a more inclusive and just scrutiny than older conceptualizations of objective analyses and addresses the historical-material diversity from which knowledge is produced by women and men. The feminist water scholar Zwarteveen

(2006) outlines similar difficulties during her attempts to engage with irrigation engineers in a conversation on gender. She claims that the masculinity of the creators of water knowledges is responsible for the difficulties in finding novel ways of understanding and explaining the concept of water.

Returning to the story told above, was this initiative slated to fail because of the predictable collision of the two epistemologies? Would it have been better not to mention gender at all in CSIRO's project? We now know that funding agencies feel compelled to "mainstream" gender in each area of their work, and funding imperatives might have pushed CSIRO to even want to integrate gender into the work of their river scientists. We also know that sometimes well-meaning initiatives such as this one lead to disastrous results (Eerdewijk and Davids 2014), failure of projects (Staudt 2003), unintended consequences (Walby 2005), and, most importantly, a depoliticization (Brouwers 2013) and instrumentalization of feminist politics that is at the heart of mainstreaming gender (Daly 2005; Mukhopadhyay 2014). On the other hand, is it not also true that the effort to integrate gender is better than not trying it at all?

The most significant challenge for the present discussion is that many disciplines in the social and natural sciences that analyse water as a resource frequently tie water management problems to a society-nature dualism (Schmidt 2017). This dualism is no longer tenable, yet our discipline-based knowledge production has not yet facilitated the kind of boundary transgressions or co-production of knowledge that was envisaged when mainstreaming gender in the work of scientists (Barry and Born 2013). Addressing this problem, Jasanoff (2004) invokes the need for a generative discourse on the role of science and technology in society, because they are interwoven with the meanings, values, and power in considering a critical inquiry on water. Further, contextual hybridities are described by Jasanoff (2004) as the "rambunctious storyline of modernity", because they refuse to conform to "any singular narrative of enlightenment, underlining how nature, knowledge, institutions, and identities are co-produced, and showing how other ways of knowing water can contribute to alternative and expanded knowledges of water" (3). No certitude exists within this flux. Jasanoff (2004) argues that the "familiar ingredients of modern life continually rearrange themselves in unpredicted patterns, creating rupture, violence, and difference alongside the sense of increasing liberation, convergence, and control" (13). The truth of this statement becomes evident in considering the implications of the story narrated here.

4. CONCLUSION: NEW WATER EPISTEMOLOGIES FOR THE ANTHROPOCENE?

What could be the implications of this epistemicide in our relations to water in the Anthropocene? We are now living in a time when humans are considered as a force of nature in a geological sense, thereby conjoining nature and humans in ways that enable an immediate co-production of each other. How do we think about water epistemologies in these times? In situations like this, “traditional disciplinary discourses fall short” (Mehta, Huff, and Allouche 2019, 223). It falls upon each discipline to reimagine itself, to increase the porousness of its borders to encourage cross-fertilization, and to inspire younger generations of scholars to think more independently whilst also collaborating with others, thus developing an anti-hegemonic ecology of knowledges that are liberated from the domination of western epistemology. Growing evidence shows that conventional epistemologies based on the certitude of accurately measuring, modelling, and consequently, controlling water bodies are not working. Perhaps this realization should help us chart our future course, particularly in the countries of the Global South, as against western epistemology-based visualizations of water.

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