ISSUE NINETEEN : FALL 2021

OPEN RIVERS : RETHINKING WATER, PLACE & COMMUNITY

SHIFT

http://openrivers.umn.edu
An interdisciplinary online journal rethinking water, place & community from multiple perspectives within and beyond the academy.
ISSN 2471-190X

The cover image of Santa Monica Pier is by Omar Prestwich.

Except where otherwise noted, this work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. This means each author holds the copyright to her or his work, and grants all users the rights to: share (copy and/or redistribute the material in any medium or format) or adapt (remix, transform, and/or build upon the material) the article, as long as the original author and source is cited, and the use is for noncommercial purposes.

Open Rivers: Rethinking Water, Place & Community is produced by the University of Minnesota Libraries Publishing Services and the University of Minnesota Institute for Advanced Study.

Editors

Editor:
Laurie Moberg, Institute for Advanced Study, University of Minnesota

Administrative Editor:
Phyllis Mauch Messenger

Media and Production Manager:
Joanne Richardson, Institute for Advanced Study, University of Minnesota

Contact Us

Open Rivers
Institute for Advanced Study
University of Minnesota
Northrop
84 Church Street SE
Minneapolis, MN 55455

Telephone: (612) 626-5054
Fax: (612) 625-8583
E-mail: openrvrs@umn.edu
Web Site: http://openrivers.umn.edu

ISSN 2471-190X

Editorial Board

Jay Bell, Soil, Water, and Climate, University of Minnesota

Tom Fisher, Minnesota Design Center, University of Minnesota

Mark Gorman, Policy Analyst, Washington, D.C.

Jennifer Gunn, History of Medicine, University of Minnesota

Katherine Hayes, Anthropology, University of Minnesota

Nenette Luarca-Shoaf, Lucas Museum of Narrative Art

David Pellow, Environmental Studies, University of California, Santa Barbara

CONTENTS

INTRODUCTION

INTRODUCTION TO ISSUE NINETEEN

By Laurie Moberg, Editor

The articles for this issue started to come together in the midst of the global pandemic, as our usual practices were upended, our concerns reprioritized, our social lives reorganized and often curtailed, our lives—both private and public—in a tumult. Even now, as we've moved past the initial phases of crisis and more of us have moved back into shared workspaces and participated in social gatherings, many uncertainties remain. As I read the early drafts of these thoughtful articles, I found them pulling me into a space for reflection. Rather than focusing on the challenges in this period of seemingly constant transition, these articles reminded me to slow down and remember the promise and possibilities of change. As my colleague and I discussed the thread that ties these pieces together, their common commitment to the potentials of shifting priorities, shifting perspectives, shifting landscapes, and shifting structures led us to our theme for the issue: shift.

In stream morphology, we understand that rivers are constantly in flux and that the shifts in a river's flow are created through the interactions of many environmental processes and conditions—influxes of water, eroding banks, and sediment load among others. Shifts in our social flows are similarly complex. In this issue of *Open Rivers*, the articles draw attention to shifts in myriad ways, from physical shifts in the landscape to reconsiderations of institutionalized practices

Santa Monica Pier by Omar Prestwich.

and the ways we do work to provocations for altering personal perspectives and commitments. In many cases, the articles each speak to more than one dimension of shifting at once.

Some of the articles explore changes in practice. The Tropical Rivers Lab, for example, demonstrates how lab members' scientific commitments are shaped by their own positionalities. Citing rivers as powerful conveners for relationships and research, the members of the lab reflect on their roles and priorities as researchers and simultaneously model a shift in how we think about the production of scientific knowledge: who can be considered a "scientist" and how do we do this work collaboratively?

Angie Hong discusses the effects of changes in her practice, explaining how she moved her work toward different kinds of communication strategies for community engagement and education with the East Metro Water Resource Education Program. Reciprocally, this work shifted her connection to people, place, and community. Lark Weller's article focuses on how she gradually refocused her water resources work as also anti-racism work. Her article, republished from an earlier issue of *Open Rivers*, explores Ta-Nehisi Coates' book *Between the World and Me* as a text that changed her perspective on her work and moved her toward different practices.

Other articles center shifting landscapes as the impetus for changes in perspective, understanding, and relationships to place. In an article republished from *Decolonization: Indigeneity, Education & Society*, Eleanor Hayman and her collaborators, Colleen James and Mark Wedge, center Indigenous languages and ways of knowing to discuss changing glaciers. They suggest that relationships between humans and nonhumans—people and glaciers in this case—have the potential to fundamentally reconfigure how we understand environmental problems, change, and possible solutions.

Focusing on a different landscape—that of the Hackensack Meadowlands—Evelyn Dsouza explores the tension between the mutability of the landscape and human strategies for documentation. Rather than immortalizing places in text, Dsouza considers the possibilities of a practice "of writing that actualizes, looks forward, and initiates into being." Joanne Richardson revisits her trip to the Old River Control Structure as a teenager, explaining how this visit shaped her understanding of the Mississippi River. While the Old River Control Structure is striving to prevent shifts in the flow of the river, Richardson details how her experience of it shifted her perspective and informed her ongoing studies and professional career.

Finally, the collection of readings in our In Review column offer readers resources that might shift our own perspectives. Recommended by members of the Water, Equity, and Justice Fellows cohort at the University of Minnesota, these resources point us to present problems, complex histories, and future possibilities.

Collectively, the articles in this issue invite us as readers to consider how we might shift our own practices, perspectives, and commitments—and to imagine and even embrace what the effects of those shifts might be. Enjoy.

Recommended Citation

Moberg, Laurie. 2021. "Introduction to Issue Nineteen." *Open Rivers: Rethinking Water, Place & Community,* no. 19. https://editions.lib.umn.edu/openrivers/article/introduction-to-issue-nineteen/.

DOI: https://doi.org/10.24926/2471190X.8378

About the Author

Laurie Moberg serves as editor for *Open Rivers: Rethinking Water, Place & Community* and as the project manager for the Environmental Stewardship, Place, and Community Initiative at the University of Minnesota. She earned her Ph.D. in anthropology from the University of Minnesota in 2018. Her doctoral research investigates recurrent episodes of flooding on rivers in Thailand and queries how the ecological, social, and cosmological entanglements between people and the material world are reimagined and reconfigured in the aftermath of disasters. In her work at the University of Minnesota, Laurie brings her ethnographic sensibilities, attention to story, and interest in human-nonhuman relations to questions of water and absented narratives closer to home.

FEATURE

REFLECTIONS ON NEGOTIATING THE SCIENCE-SOCIETY RELATIONSHIP TOGETHER

By The Tropical Rivers Lab [1]

Introduction & Process

At the Tropical Rivers Lab at Florida International University, rivers have convened us to think deeply about how to best understand them and apply that understanding towards their conservation and sustainable management. We explore different aspects of south Florida ecosystems, Amazonian riverscapes, and East African waters, with collaborations across the tropics. When we decide "how" to best understand rivers, it is not just about the scientific questions we ask, but also about where those questions come from, how we relate to them, and ultimately, how these questions mediate our role with society. Yet how we negotiate this relationship is different based on our identities, individual experiences, and values. Traditionally,

Daniela Daniele took this picture to show that her research interests began with the canal that flows behind her apartment. This semester she's defending her master's thesis on the historical ecology of the Miami River. Image courtesy of Daniela Daniele.

institutional science has not prioritized conversations that delineate what scientists' place and community are and how to engage with them at an individual or collective level. As a lab that works in so many places with so many people, we want to be intentional about creating space to discuss what these values, identities, and relationships mean to us and how pursuing science and research plays a role in creating them.

For this piece in *Open Rivers,* several members of the Tropical Rivers Lab discussed our work, its relationship to communities beyond academia—including but not limited to those situated where the rivers we study flow—and how we negotiate our own identities and roles in our personal and professional lives. From these conversations together, we discerned commonalities and considerations that connect us as well as differences in the perspectives we bring to our work. We expected this conversation to result in a diversity of ideas: after all, our lab is big (over 20 members!) and diverse, encompassing undergraduate and master's students, Ph.D. students/candidates, post-doctoral scholars, collaborators, and faculty. To initiate the conversation, four of us created and edited a survey on Google Forms that touched on different aspects of science, personal identity, and science-society relationships (you can view and fill out this survey if you'd like! Take the survey here.). Twelve anonymous members participated in the survey, and one of us collated the responses into groups of statements regarding three main themes: the roles that we take on, how our experiences and identities impact these roles, and our ideas about science-society relationships. We reviewed these responses and discussed them in depth at a zoom meeting with 13 participants from our lab. We further convened one-on-one meetings to identify the main points of discussion and create an outline. Five of us took on the responsibility of fleshing out the above ideas in the outline, and twelve of us reviewed the draft before sending it to *Open Rivers*.

Through our survey, we identified over 50 discrete roles that at least one of us took on. These roles ranged from personal to professional, describing occupations, group membership, national, racial, ethnic, or gender identities, relational identities (family, friends, human and more-than-human community), sexualities, political leanings, interests, religion, geopolitical status, and ideologies. Many of these roles when in conjunction are more than the sum of their parts and are indicative of full lives beyond our role as scientists (see Figure 1). These full lives in turn have their own relationships with rivers that act as intertwining elements for our identities. Studying the rivers ends up being just one way we relate to them. So, even if and when we no longer study rivers, rivers can be powerful conveners.

In this conversation, we discerned that how and when we take on the role of a scientist is negotiated from our positionality and our context, and what that means for the lab as a whole also requires negotiation. We present these reflections here with the hope that other groups take on these conversations and that we can continue these conversations privately and publicly (and if you want to write some thoughts for people to see, please click here!).

Science-Society Relationship on an Individual Level

At an individual level, our work (science) impacts our individual participation in society, making the discussion of "work-life balance" a common topic. How can we better balance our personal and professional lives to feel fulfilled in both? While taking a break from the stress of work is important and necessary, our personal identities are ever present in our work as scientists. These identities shape the foundations of our thoughts and impact our research (Rincy & Panchanatham 2014). These impacts may inform what questions we are interested in, how we interpret and answer

Figure 1. One of our lab's members, LuLu Lacy, is an artist. LuLu's relationships with non-humans and nature are important to both her art practice and her scientific endeavors. This painting, "dip my feet in the pond," explores the intimacy and secrets held between people and water. Image courtesy of LuLu Lacy.

those questions, and how we determine issues of importance. Being aware of our identities and how they impact our science is important to not only help avoid biases, but also to better understand our identities as scientists and the work we take on.

Not surprisingly, our individual identities have shaped the way we each conduct science as part of the Tropical Rivers Lab. Many lab members are drawn to research on riverine ecosystems that is action- and service-oriented, inclusive of diverse collaborators, and beneficial to local communities and underrepresented people. For instance, lab members have worked with local communities on issues pertaining to the impacts of dams in India and the Amazon Basin to advocate for better policy that represents local interests (for example, Jumani et al. 2017 in India, and Romero 2017 for decision-making mismatches between communities and international development organizations). Other lab members have studied the urban waterways of Miami, Florida, working collaboratively with community members to understand the meanings they ascribe to these waterways and to strive for management that is equitable and just. At a larger scale, we have worked to herald the importance of free-flowing rivers, recognition of tropical rivers as objects of conservation, and call for better understandings of human and social relationships with rivers (for example, Anderson et al. 2019).

For some lab members, the motivation to center our science around local needs comes from values adopted from our religions or cultures that emphasize charity, service, and justice, highlighting that rivers are part of the local and global community. Lab members recently participated in articulating a framework that centers how the rhythm of rivers is both created by and creates the rhythm of others' (both human and

Figure 2. Daniela Daniele took this picture to show that her research interests began with the canal that flows behind her apartment. This semester she's defending her master's thesis on the historical ecology of the Miami River. Image courtesy of Daniela Daniele.

non-human) lives. For example, the flood pulse of the Amazon influences celebration dates and sociality, and those celebration dates and sociality in turn mark the passage of time and anticipation that creates the relationship with and rhythm of the river (Harris, 1998). By centering rhythmicity, it is impossible to see how non-locals making decisions such as installing a dam and when to open and close flood gates could be just. Other lab members cite their belonging to historically excluded groups, such as people of color (POC), as a reason to study topics that allow them to "give back" to their own communities. Our identities have also shaped the physical systems and locations we are interested in. Several lab members are from, or have a strong connection to, the tropics and as a result are studying tropical ecosystems (see Figure 2). Other identities, such as being a parent, have impacted our lab members' interest in scientific topics and how to ensure the world is a safe and inhabitable place for future generations. Overall, we concur that science is personal.

Not only do our identities shape the science we do, but the way in which we claim our role as a "scientist." We collectively define a "scientist" as someone who participates in the "process" aspect of science (e.g., collecting data, posing hypotheses, etc.), and generally find ourselves in alignment with that definition. However, most of us would rather claim more nuanced scientific identities that reflect the expertise we have intentionally honed, which can be narrow, broad, static, or dynamic. For example, one graduate student identifies as an "adaptation scientist" as this title encompasses concepts such as transdisciplinarity and usability, which are not as widely emphasized in scientific research. In this context, transdisciplinarity means that adaptation scientists must work with community members in addition to academics from other disciplines, and usability means that the research must respond to community members' needs and be easily applied. Another group member identified as a "freshwater ecologist" early in their career. However, as their research interests broadened to encompass social science, boundary research, and stakeholder engagement, they now consider themself a "freshwater scientist." These definitions may seem like semantics to some; however, they help us as individuals to better understand the lens through which we conduct our work as well as the extent and transparency as to what we are not. For example, one member would call herself "interdisciplinary scientist with a background in ecology" to denote that she might be curious and know something about anthropology but is not trained in it. These definitions are part of our own personal and professional stories and can evolve as we explore new depths and horizons of science, society, and ourselves.

Science-Society Relationship as a Scientific Community

Adding to our exploration of personal dimensions above, we also discussed the societal obligations and political implications of being a scientist. These implications are presented from the perspective of a scientific community because the discussion extends to what the obligations are of scientists as a whole. Our conversation touched on important themes including basic versus applied science, the politicization of science, and the challenges and opportunities of community-based research. Reflecting the views of broader society, we were not in complete agreement on these issues, and this discussion will attempt to present the points where our multiple perspectives diverged and the areas where our perspectives coalesced around shared beliefs.

As several of us mentioned in our survey responses and discussion, the role of scientist comes with respect and power. Therefore, it is not surprising that many of us felt that in claiming to be scientists, we assume certain obligations

toward society. One set of these obligations was centered around concerns for good scientific practice and philosophy, including not pushing data to attain desired results and a commitment to truth. Another obligation we discussed was a focus on applied science; that is, science focused on practical outcomes that can be directly used by stakeholders and decision-makers. For example, four lab members are part of a large interdisciplinary team that is developing actionable conservation targets for freshwater ecosystems of the Amazon River Basin. While lab members highly support basic research, which is more focused on advancing scientific theory, many of us favor it being inspired by societal needs. We further agreed that both basic and applied science need to be communicated in a more accessible manner to the general public. Similarly, many of us feel an obligation to do research that benefits local communities or the most vulnerable sectors of society, and/or an obligation to address pressing global concerns, such as climate change,

Figure 3. Picture of Chicago Teachers Union (CTU) strike in 2019. Strikes are last-resort measures to force the decision-making structure to take seriously the demands of people who are not being included in the decision-making process. Unions in general have been one structural way to change how governance occurs by leveraging labor power. In the 2019 CTU strike, teachers demanded common-good changes in Chicago Public Schools, including more resources for bilingual education and houseless students. This is one example of actions that can influence decision-making without the requirement of specialized academic credentials (instead, valuing life experience and labor relations). Image courtesy of Natalia Piland.

in our research. Not everyone fully agreed with these ideas, with at least one of us stating that it is not necessarily a scientist's responsibility to engage in dialogue with the broader public about their work. Others suggested that while funding sources often come with attached obligations, such as scientific reports and peer-reviewed publications, or a focus on applied science, there may not be an overarching obligation to connect research with stakeholders and ensure that research is usable and sustainable in addressing long-term and holistic needs of local communities and decision-makers. Ultimately, we felt that the diversity in obligations could impact the types of collaborations and science on which our lab embarks.

These obligations are fundamentally rooted in scientists' role as an authority who guides society (Porter 2020). Historically, this position of scientific authority has been dominated by men with access to power (in the U.S., for example, white men) and as such, who the scientific community includes as scientists has political implications. For those of us who do not fall in that category, becoming a scientist through education and credentials can be a path to standing and respect that might be otherwise unfairly withheld. Group members described attaining a Ph.D. as a way to make people take them seriously and to force others to respect their knowledge and experiences. These strategies are not without their pitfalls, however. One group member described struggles to make themselves "palatable" within the world of academia by hiding parts of their identity, such as their sexual orientation, gender identity, religion, and/or spirituality to make others more comfortable and thus make sure they are listened to. Another group member said that attaining respect through credentials is a means of survival for women (including trans women), nonbinary folks and trans men, and people of color broadly in professional fields and societies that have historically disregarded their knowledge and experience— and often still do. However, the group member recognized that the emphasis placed on attaining academic credentials might be misdirected, and that the focus should instead be on dismantling or structurally changing our governance system so that academic credentials are not the only way to attain decision-making or decision-influencing power (see Figure 3). Do you attempt to succeed in a system not made for you, or do you fight to change the system? Many of us are attempting to do both.

Meanwhile, for those of us working in partnership with Indigenous communities or other vulnerable communities in the Global South, claiming the role of scientist for community partners can be a way to honor their contributions to research, shift where decision-making takes place, and align our research projects with the interests of communities most impacted by our work. Owning the scientist role for community partners could come in the form of using community-based or co-research designs (Kainer et al. 2009). Another form would be to give authorship credits to community members participating in research (Pinedo 2021), not only because they participated in the research but because as knowledge holders, they are authors of the research. Both of these strategies allow us to honor community members who may not be professional scientists or trained in Western science for their contributions, and to engage with other ways of knowing the world in complement to Western science. Several group members mentioned explicit support for such strategies, with one describing them as "giving people rights and participation they deserve" and another explaining their community-based scientific ideal as follows:

Scientific studies should be initiated by communities, conducted in constant communication/interaction with communities, and monitored/sustained (as appropriate) by communities long after the core scientific work is finished, however with technical assistance from scientists as needed.

In our discussions, we used the phrase "opening up the role of scientist" to describe this process

of allowing "non-credentialed" community partners greater recognition and responsibility in research projects. As mentioned above, many of us saw benefits in "opening up" science, but others brought up potential risks or dangerous side-effects of such an approach. Benefits included improvements in the relevance and validity of science through the inclusion of other knowledge systems (local, traditional, Indigenous, etc.) in research design, interpretation, and dissemination. These benefits may be especially pronounced if collaboration occurs during the initial stages of research design (Kainer et al. 2009). Additionally, because the word 'scientist' carries power and responsibility, it also offers the opportunity for community members to be empowered and feel greater responsibility for their role in the research endeavors that they choose to be a part of. This empowerment and sense of greater responsibility of community members can offer benefits to research projects, the community, and the individual.

Another set of benefits of "opening up" ideas of what constitutes science relates to justice and equity. Given global and sub-national inequities in access to scientific training (Pinedo 2021), "opening up" the role of scientist creates greater fairness in filling an important and powerful societal role. In addition, opening up science could provide a means of stopping the perpetuation of historical injustices. There is a long tradition among Global North scientists of recording and publishing Indigenous knowledge under the guise of "new discoveries" with no credit given to knowledge holders (Pinedo 2021). Thus, Indigenous knowledge holders have been made invisible in scientific practice. Opening up ideas of who can be a scientist and what knowledge constitutes science through measures such as giving authorship to community participants may provide us with a way to discontinue exploitative, unjust practices.

Living by these values and objectives comes with its challenges. Two challenges we discussed were about how doing this well requires constant reflection to make sure that knowledge of others isn't co-opted, and how making science more accessible might make it more accessible to people with poor intentions. These potential dangers had more to do with societal-level concerns around the politicization of science; by stretching what counts as "science," do we risk providing platforms for bad science? Do we mischaracterize and misuse other types of knowledge? How do we prevent gatekeeping, yet maintain rigorous scientific principles? For the first challenge, there are many examples where Indigenous or non-Western science has inspired theory in ecology, and may represent "knowledge assimilation," where this Indigenous or non-Western science is incorporated without citation, thus violating "knowledge sovereignty" (Norgaard 2014; Todd 2016). For example, many permaculture and sustainable agriculture techniques draw from centuries of Indigenous experimentation without authorial or material attribution. In effect,"opening up science" may imply "knowledge assimilation" where dominant science co-opts other knowledge systems, and thus any "opening up" requires intercultural and transdisciplinary dialogue and critique, and better relations (Liboiron 2021). For the second challenge, the COVID-19 pandemic has demonstrated how politicians can make public health matters into dangerous situations that benefit them by misapplying and or misunderstanding science. A Brazilian group member pointed to President Bolsonaro's support of controversial treatments as a misuse of science to make the pandemic seem like a smaller issue and thus encouraging people to continue working and consuming (Diaz 2021). The idea that we can all do our own research, while an idea that most of us agree with, can be dangerous if it is not clear that all science, Western or not, has its own rigor (Petersen 2021).

There are also practical challenges. Co-research approaches require reflection and many scientists do not prioritize this or do not feel they have been trained to take on these (often self-critical)

reflections. Furthermore, the current academic system does not consistently value trans- and inter- disciplinary approaches in many fields (in the form of employment opportunities, advancement, or resources). The extra knowledge, time, and long-term relationship building required provides a powerful disincentive, particularly in the academic sector where there is a lot of turnover. In terms of societal concerns with "opening up the role of scientist," one group member likened the problem to that of contemporary journalism, which has been made more democratic by technological advancements but with attendant new opportunities for misinformation and political influence. Other group members pointed out that misinformation is not a coincidence, and that the manipulation of both media and science is a political endeavor that could be counteracted by structural change that gives decision-making power to more people.

Where does that leave us? Flowing in our Future

The conversation will continue in our lab meetings and in one-on-one conversations. A next step is the creation of a lab book that outlines our values and principles, as well as the ways of conducting research to which the Tropical Rivers Lab aspires. A big inspiration in this process has been the Civic Laboratory for Environmental Action Research (CLEAR) lab, and we highly recommend their materials for inspiration on how to go about identifying and working based on collective values. Additionally, we hope to connect with other groups of researchers, practitioners, and people to better situate the research that we, as a lab, take on.

Achieving the community-based scientific ideal mentioned above is challenging, especially within the time frame of a research degree (master's or Ph.D.), or a short-term postdoctoral position. It requires establishing trust and deep relationship building, and it requires communities that are willing and have the capacity to engage in this iterative process. It is important to think about these things as a lab group so that these groups and leaders/collaborators can take responsibility for long-term relationships that are initiated and/or grown by individuals completing short-term research projects (see Liboiron 2021 for more discussion about how to sustain relationships in research). In our experience, many of us take on research in places where we already have community connections, something that brings us back to our initial point: who we are informs our scientific practice. Academia must also wrangle with the fact that there are many barriers in research positions that make it impossible to reach this ideal, from the many hats that academic researchers are expected to wear to the poor research resources to the time frames expected. One important thing to think about as we move forward is how to handle any disagreements. We thank *Open Rivers* for giving us the opportunity to think through our perspectives on science and society relationships from our individual stances via the written form—this opportunity has been one way for us to listen to each other and see how context matters. Finding different media through which to communicate (written, one-on-one and group meetings, and surveys) with different levels of anonymity allows for topics to be introduced and discussed respectfully and with responsibility to each other as lab members. Ultimately, it's a balance: we do not have to agree on everything, but we have to be able to listen to each other, think about where we are each coming from, and clearly define the objective of the research in question. For the Tropical Rivers Lab, this fluidity helps us change according to our interests and opportunities as scientists, and also according to our commitments to greater society.

Literature Cited

Anderson, E. P., S. Jackson, R. E. Tharme, M. Douglas, J. E. Flotemersch, M. Zwarteveen, C. Lokgariwar, M. Montoya, A. Wali, G. T. Tipa, T. D. Jardine, J. D. Olden, L. Cheng, J. Conallin, B. Cosens, C. Dickens, D. Garrick, D. Groenfeldt, J. Kabogo, D. J. Roux, A. Ruhi, and A. H. Arthington. 2019. "Understanding rivers and their social relations: A critical step to advance environmental water management." *WIREs Water* 6 (6).

CLEAR. 2021. *CLEAR Lab Book: A living manual of our values, guidelines, and protocols*, Vol. 3. St. John's, NL: Civic Laboratory for Environmental Action Research, Memorial University of Newfoundland and Labrador.

Diaz, J. 2021. "Brazil's Jair Bolsonaro Remains Defiant on COVID-19 and the Environment at the U.N." *NPR*, September 22, 2021. https://www.npr.org/2021/09/22/1039540502/brazils-bolsonaro-on-covid-environment-at-the-un.

Jumani, S., S. Rao, S. Machado, and A. Prakash. 2017. "Big concerns with small projects: Evaluating the socio-ecological impacts of small hydropower projects in India." *Ambio* 46:500–511. https://doi.org/10.1007/s13280-016-0855-9.

Kainer, K. A., M. L. DiGiano, A. E. Duchelle, L. H. O. Wadt, E. Bruna, and J. L. Dain. 2009. "Partnering for Greater Success: Local Stakeholders and Research in Tropical Biology and Conservation." *Biotropica* 41 (5): 555–562.

Harris, M. 1998. "The rhythm of life on the Amazon floodplain: seasonality and sociality in a riverine village." *Journal of the Royal Anthropological Institute* 4 (1): 65–82.

Liboiron, M. 2021. *Pollution is Colonialism*. Durham, NC: Duke University Press.

Norgaard, K. M. 2014. "Retaining Knowledge Sovereignty: Expanding the Application of Tribal Traditional Knowledge on Forest Lands in the Face of Climate Change." *North Pacific Landscape Conservation Cooperative Tribal Climate Change Initiative on Knowledge Sovereignty*. Portland, OR: North Pacific Landscape Conservation Cooperative. https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Final-Pt-II-RETAINING-KNOWLEDGE-SOVEREIGNTY-14tc3v2.pdf.

Petersen, S. 2021. "Wellness Mommy Bloggers and the Cultish Language They Use." *Harper's Bazaar*, August 26, 2021. https://www.harpersbazaar.com/culture/features/a36595860/wellness-mommy-bloggers-and-the-cultish-language-they-use/?utm_source=pocket_mylist.

Pinedo, X. 2021. Cambiar el paradigma: el conocimiento indígena en la investigación científica. *OjoPúblico*, August 9, 2021. https://ojo-publico.com/2936/el-conocimiento-indigena-en-la-investigacion-cientifica?fbclid=IwAR1KGLP4kRFq1WJ8GvOv6t_T7-TqBNPzkiW4bYN3m2M9ycxivUHwLw-mtv50.

Porter, T. 2020. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press. https://doi.org/10.1515/9780691210544.

Rincy, V.M. and N. Panchanatham. 2014. “Work Life Balance: A short review of the theoretical and contemporary concepts.” *Continental Journal of Social Sciences* 7 (1): 1–24.

Todd, Z. 2016. “An Indigenous Feminist’s Take On The Ontological Turn: ‘Ontology’ Is Just Another Word For Colonialism.” *Journal of Historical Sociology* 29 (1): 4–22.

Footnote

[1] The Tropical Rivers Lab is housed at Florida International University and can be found online at www.tropicalriverslab.net This paper was facilitated by Dr. Natalia C. Piland. Writing was carried out by (in alphabetical order by first name): Dr. Claire Beveridge, Lauren Emer, Mason Bradbury, and Tania Romero. The piece was based on anonymous surveys and a Zoom discussion attended by Brenna Kays, Dr. Elizabeth P. Anderson, Dr. Erin Abernethy, LuLu Lacy, Maria Pulido, Nadia Seeteram, Suman Jumani, and Dr. Thiago Couto, in addition to those already mentioned. The piece was then reviewed by all those mentioned, as well as Daniela Daniele and Juan Sebastian Lozano.

Recommended Citation

The Tropical Rivers Lab. 2021. “Reflections on Negotiating the Science-Society Relationship Together.” *Open Rivers: Rethinking Water, Place & Community*, no. 19. https://editions.lib.umn.edu/openrivers/article/science-society-relationship.

DOI: https://doi.org/10.24926/2471190X.8273

About the Author

The Tropical Rivers Lab is based at Florida International University. We conduct basic and applied research to support conservation and sustainable management of tropical rivers. The lab is led by our principal investigator, Dr. Elizabeth Anderson, and has an average of 12–15 members, ranging in academic levels from undergraduates to collaborating professors. We aim to understand freshwater ecosystems as social-ecological systems, and how these systems are being transformed by river alterations, climate change, human population growth, and introduced species, among others. We are committed to working with multidisciplinary teams and diverse communities to generate information that supports new conservation frontiers for freshwaters. Geographically, the lab’s work focuses on south Florida ecosystems, Amazon riverscapes, and East African waters. You can find more information at tropicalriverslab.net

FEATURE

FUTURE RIVERS OF THE ANTHROPOCENE

By Eleanor Hayman, Colleen James, and Mark Wedge

Note From the Editor

The stories we tell about water say a lot about what we value and how we understand our place and our relationships to these waters. These stories form a foundation for how we approach water, how we might envision solutions to problems, and how we might create change. The following article, originally published in a 2018 issue of Decolonization: Indigeneity, Education & Society*, offers stories of water and glaciers stemming from Tlingit and Tagish First Nation peoples. Eleanor Hayman and her collaborators, Colleen James and Mark Wedge, offer stories as a counterpoint to glaciology research that documents the rapidity of climate change and glacial shifts. Their stories denote relationships with glaciers as more-than-human*

A student researcher on the Juneau Icefield navigates between crevasses on the Llewellyn Glacier in northern British Columbia, Canada. Lingít Aaní, Tlingit traditional lands is a large but sparsely populated nation in this part of Alaska. Icefields are expanses of glacial ice flowing in multiple directions. Image by Allen Pope, NSIDC (CC BY 2.0).

others, as actors. Through the languages and oral histories, the authors demonstrate how "stories emerge from and are co-dependent with ecological processes" as a practice of what they call "slow activism."

We republish this article to share these stories, to share the values, relationships, and possibilities they offer. Perhaps by expanding the stories we hear and the stories we tell, we might also shift the foundations from which we envision the future and create change. Enjoy.

—Laurie Moberg, Editor

Future rivers of the Anthropocene or whose Anthropocene is it? Decolonising the Anthropocene!

> Glaciers, like stories told about them, are enigmatic. Surging glaciers, in particular, are sometimes solid, sometimes liquid, and always flowing. They are shapeshifters of magnificent power. Like tidal zones, they signify transitional spaces. Aboriginal elders who speak knowledgably about such glaciers refer to observing, listening and participating in ritualised respect relations with glaciers and go to great lengths not to disturb them. In northern Athabaskan and Tlingit traditions, the line between human and non-human beings is less distinct than some might imagine.
>
> Julie Cruikshank, 2005, p. 69

> Until the first half of the [eighteenth] century, the conventional wisdom of the earth sciences was that glaciers were static features, neither changing their position through time nor causing geomorphological effects in the landscape. It was not even generally accepted that the ice in a glacier moved.
>
> Peter Knight, 2004, p. 387

Introduction

One meaning of the word Tlingit is "people of the tides." Immediately, this identification with tides introduces a palpable experience of the aquatic as well as a keen sense of place. It is a universal truth that the human animal has co-evolved over millennia with water or the lack of it, developing nuanced, sophisticated and intimate water knowledges. However, there is little in the anthropological or geographical record that showcases contemporary Indigenous societies upholding customary laws concerning their relationship with water, and more precisely how this dictates their philosophy of place. It is in the Indigenous record, and in this case the Tlingit and Tagish traditional oral narratives, toponyms (place names), and cultural practices, that principles of an alternative ontological water (ice) consciousness can be found to inform and potentially reimagine contemporary international debates concerning water ethics, water law, water governance, and water management. This paper examines a Tlingit relationship with water and ice, informing the global decolonial water dialogue.

Tlingit and Tagish relationships with glaciers and their oral histories concerning glaciers reveal animated and spirited sets of nested geographies. This is insignificant contrast to the 2014 *Randolph Glacier Inventory* (RGI) which hosts computer readable profiles for all 200,000 glaciers on this planet. The RGI enables a more complete picture of how glaciers interact with climate change, sea level rise and fresh water (in)security, which is compelling. However, as future rivers of the Anthropocene, might not glaciers show us how human relationships with glaciers *and* glacial relationships with humans be equally critical as modes of enquiry and analysis, complementing the RGI remotely-sensed models of the last frozen tongues of the Pleistocene?

This paper showcases Tlingit perspectives on glaciers, which offer an alternative ontological awareness of glaciers as well as a nuanced Indigenous empirical scientific knowledge that moves away from the Eurocentric models of categorizing and understanding the natural world. In particular we introduce new concepts to further the (re)imagining of glaciers as offered here through a Tlingit clan oral history describing traveling under a glacier to find salmon, the Tlingit keystone species. We suggest that by thinking with water (glaciers), and searching for water-based or aquacentric histories, we can move away from land-biased or terracentric narratives which tend to be rooted in human exceptionalism (Gillis, 2015; Gillis, 2011 [1]; Rediker, 2012; Rediker, 2008). Put another way, we broaden the term 'terracentrism' to include a particular way of thinking that does not continue to privilege concrete, wooden, and static notions of both mapping and narrative that is worryingly human-centred (anthropocentric). This reflects, in turn, certain assumptions about the Anthropocene itself. Anthropologist Amelia Moore (2015) captures these assumptions succinctly: "the term [Anthropocene] represents another way to have a conversation about the breakdown of Nature and Culture that have historically shaped the Western worldview" (p. 1). Historian Keith Moser (2018) convincingly takes this further with a novel thought experiment that he argues "embraces the daunting challenge of trying to replace the traditional master narrative with a more biocentric approach to framing historical issues" (p. 1). We broaden the biocentric approach still further by utilizing earth jurisprudence global thinking for an Anthropocene where glaciers might have legal standing and are taken seriously as agents in and of themselves.

Whose Anthropocene is it?

Ways of dealing with the increasing uncertainty of these ecologically stressed times and multi-species extinction are products of what counts ethically in the Anthropocene. So, the question we consider the most fundamental is simply: Whose Anthropocene is it? How has it been defined, and who gets to own it? Historian Jason Moore (2014) makes the compelling argument for not the Anthropocene, but the Capitalocene and is worth quoting at length, as he too challenges and unsettles the Anthropocene project:

> The Anthropocene makes for an easy story. Easy, because it does not challenge the naturalized inequalities, alienation, and violence inscribed in modernity's strategic relations of power and production. It is an easy story to tell because it does not ask us to think about these relations at all. The mosaic of human activity in the web of life is reduced to an abstract humanity as homogenous acting unit. Inequality, commodification, imperialism, patriarchy, and much more (p. 2).

Clearly human histories are not the same or equal, and renaming the Anthropocene to the Capitalocene goes some way to (re)locate the current ecological violence, or specifically for this paper, our term 'hydrological violence' (Hayman with James & Wedge, 2017) in a particular history. The following section situates this collaborative water research philosophically and geographically, framed by Tlingit and Tagish understandings of and relationships with glaciers.

Tlingit and Tagish Voices

Yakgwahéiyagu is the Tlingit word for "the living spirit inside of all things (human, nonhuman, inanimate) that senses and feels the world around them" (Katzeek in Twitchell, 2016, p. 227). This paper puts into conversation the agency of glaciers—the future rivers of the Anthropocene—richly described within Tlingit and Tagish oral tradition in the circumpolar north, with other self-assumed narratives (rather speedily accepted voices) of the Anthropocene. These research-based understandings are part of ongoing collaborative ethnographic water research with the inland Tlingit and Tagish community—the self-governing Carcross/Tagish First Nation (CTFN)—in the Yukon Territory, Canada. These understandings come in two parts. Firstly, CTFN's traditional territory embraces the Southern Yukon Lakes, all of which are glacier fed, constituting the sacred headwaters of the 3,000-kilometer-long Yukon River. As the circumpolar north is being affected by global warming at twice the rate of other areas, the behavior of glaciers, and their impact on lake levels, is increasingly unpredictable. Secondly, glacial understandings are expressed through an ancient art of storytelling that articulates an intimate, animate, and ethical relationship with glaciers. Tlingit and Tagish narratives describe glaciers as sentient beings; glaciers that listen, glaciers that can smell, glaciers with attitude. The coastal and inland Tlingit and Tagish have lived for thousands of years with profound understandings of the agency of glaciers as perils to be crossed over and under, as treacherous but important ice corridors for travel and trade (Corr et al., 2009), as tremendous phenomena that surge, destroying villages, but also as holding within their being a significant archaeological record of the voices of the ancestors (see Appendix for Tlingit traditional oral narratives involving glaciers).[2] All these understandings reflect a close observation of earth's own time that inscribes the human and non-human, and not necessarily an earth scripted solely by humans. How might such a Tlingit and Tagish voice disrupt, defamiliarize, or redesign the very notion of the Anthropocene(s) by not simply "adding another fact to the narrative but changing our very ways of doing narrative?" (Colebrook, 2013).

The overall goal of this collaborative water research is to provide a framework to develop legislation for a CTFN Water Act rooted in Tlingit and Tagish Indigenous philosophy. A water declaration is currently being developed setting out core Tlingit and Tagish concepts and pedagogy arising from traditional oral narratives. In addition, aqua-centric Tlingit and Tagish counter-maps have been produced highlighting the aqua-centric place names of the region, in defiance of cartographic colonialism. These products provide a scholarly and ontologically powerful framework for the water legislation with the intention that this will be able to speak with and to Canadian water policies and governance strategies.

Héen and Modern Water

> When our ancient people talked about water, what the Western world calls H_2O, they would say '*Haa daséigu a tóo yéi yatee*,' 'Our life is in the water . . . Our breath is in the water.'
> Elder David Katzeek, Kingeisti Eagle Moiety, Shangukeidí Clan of Klukwan, Juneau, Alaska, November 2013

In the Tlingit language, water is *héen*. *Héen* is a fundamental tenet in Tlingit cosmology and a highly resilient counter-story to gendered, narrow, and essentialized readings of 'modern' water (Linton, 2014; Linton, 2010; Hayman, 2012). Drawing on critical Indigenous theory, ecofeminist work, as well as scholars probing the evolution of ethical relationships with water, we briefly review understandings of water, which builds into and supports our collaborative water research.

In cultural critic Ivan Illich's (1986) *H_2O and the Waters of Forgetfulness*, an incisive exposure of the dominant Euro-American contemporary myopic perception of water, Illich highlights water's problematic dualisms. Illich argues that

> water, throughout history, has been perceived as the stuff which radiates purity: $H_2O$is the new stuff, on whose purification human survival now depends. $H_2O$and water have become opposites: $H_2O$is a social creation of modern times, a resource that is scarce and calls for technical management (back cover).

Ecofeminist Greta Gaard (2001) takes another approach. Her work exposes water and wastewater dualisms. Gaard places this within the broader Western tradition of conceptually separating culture and nature, wilderness and civilization, male and female, etc. Ultimately these binaries produce a 'nature' that is severed from humanity. The normalizing tendency of these dualisms, and the consequent perception of water, is alarming. Consider our paradoxical acknowledgment that we are a part of nature, dependent on fresh water to live, and that global fresh water, as a whole system, is in a critical—if not irreparably damaged—condition.

To unpack water's dual nature(s), and to reveal the frameworks that sustain these perceptions, it is worth troubling the way in which the imaginary surrounding water is tied in part to the Western ideal of the feminine. Gaard (2001) for example makes a provocative link between the positions and treatment of women in Western culture and the treatment of nature (water). We argue that three mutually reinforcing mentalities sustain this gender-water bondage.

Firstly, the increasing technological manipulation of water and the ambitious water infrastructure provision to western European city households in the nineteenth century led to water's increasing invisibility and abstraction. In his book *What is Water? The History of a Modern Abstraction*, geographer Jamie Linton (2010) illustrates this by reflecting on how the "placelessness of modern water (perhaps best symbolized by the tap) is the transfer of water control to placeless discourses of hydrological engineering, infrastructural management, and economics" (p. 18). Cultural geographer Dean Bavington (2013) argues that the notion of passive, yielding (feminine) water has been constructed with the ideological footprint that it *needs* to be managed. Ecofeminism exposes concepts such as water as a passive (and invisible) resource, or as a part of a pristine nature. Indeed, it seeks to respond to the ingrained power of social creations of nature (water) that ossify various intersecting forms of oppression, whether of ethnicity, gender, age, or class.

In their provocative paper entitled "Environmental Orientalisms," anthropologists

Suzana Sawyer and Arun Agrawal (2000) seek to do just this. Sawyer and Agrawal expose a particular form of labeling within the colonial imagination. They note, for example, that "native topographies and peoples [were labeled] as feminine spaces to be violated," which "instantiated a sexual/racial hierarchy between colonizer and colonized" (p. 72). The environmental historian Donald Worster's (2006) concept of 'imperial water' bleeds into Sawyer and Agrawal's narrative of gendered and sexualized virgin territories (waters), revealing the core narratives of access to and control of water by colonial powers. The aspirations of settler colonialism, particularly Canadian settler colonialism, is the intention of 'civilising the Indian' and total assimilation into Canadian culture, which has been in play since the Indian Act of 1869.[3] By way of example, at the 1994 International Storytelling Festival in Whitehorse, Jessie Scarff, an Elder from Kwanlin Dun First Nation, told the story of forced Indian settlement removal from waterfront sites along the Yukon River in Whitehorse. Jessie used materials from the Yukon Archives in an ironic move to illustrate to her audience a deep rupture between the vision of two very different kinds of water—modern water and pre-modern (Tlingit) water.[4] Jessie selected an excerpt from the local newspaper, an October 22, 1915 article in the *Whitehorse Star* that states: "It is better for the Indians that they should be away by themselves and it is certainly better for the town that they be not camped so close to the source of public water supply" (Cruikshank, 1998, p. 152). In the *Whitehorse Star* article, the Yukon River is framed in terms of utilitarian, economic parameters. It is presented to the readers of the *Whitehorse Star* as primetime waterfront space that 'Indians' by their very presence devalue, and that Indians must also be located away from the source of public water supply. Racist dualisms of pure/impure reflect the fantasies and anxieties of a particular colonial imagination. This, in turn, constructs cultural identities and labels specific waters in particular and troubling ways for the Tlingit, Tagish and many other First Nation communities in the Yukon Territory. By reading at the intersections of both nature (water) and gender, fractures across new lines of race, class, and ethnicity can be illuminated.

We also look closely at glacial imaginaries taking these readings of modern water as a point of departure. In this so-called epoch of the Anthropocene and the associated choreography and politics of climate change, the question (or not) of governance, and in particular water governance, becomes increasingly polarized around these dominant assumptions of 'modern water' (Linton, 2010). Rethinking current models of and approaches to water governance through an Indigenous ontology that privileges relationships, reciprocity, and respect offers a powerful counter-narrative that can inform Euro-American approaches to law and governance—in effect a reversal or decolonizing of the colonial process. Furthermore, Indigenous water legislation showcased through contemporary formats and usages (such as our counter-mapping and water declaration) deepens and enriches global debates on ethical and philosophical approaches to water and, by extension, rivers/glaciers. By introducing the (radical) idea that such a Tlingit/Tagish Indigenous water legislation can behave as a model for Euro-American legal systems to readapt and reimagine relationships with rivers and glaciers, our approach brings different ways of thinking into conversation. By way of example of one such decolonizing conversation is the Whanganui River in New Zealand which recently achieved legal personhood status in the Whanganui River Claims Settlement Bill on March 16, 2017. The following week it was the Ganges and Yamuna Rivers that were officially awarded this status by the Himalayan state of Uttarakhand on March 22, 2017. These sets of narratives can be seen as part of the bigger project of earth jurisprudence. Decolonization theory and practice (that includes decolonizing water, decolonizing personhood etc.) are a crucial part of this project, and in the light of claims and assumptions about the Anthropocene, we argue

decolonizing the Anthropocene(s) is too. So far the Anthropocene is identified by its very singular history rooted in a fossil fueled imperialistic drive for control and power over resources (Wedge, personal communication, 15 August, 2014).

Perspectivism

Glaciers and rivers transcend academic disciplines, and we argue they are becoming increasingly autonomous philosophically as each glacier transforms/melts into rivers. Understood from a Tlingit and Tagish perspective, sentient glaciers have always been regarded as agents with authority and perspective. Brazilian anthropologist Eduardo Viveiros de Castro (2015) has coined the term 'perspectivism' to refer to this ontology. Viveiros de Castro's perspectivism and multinaturalism has been picked up by anthropologists such as Philippe Descola (2013), Bruno Latour (2013), and Julie Cruikshank (2012) in the circumpolar north, and we too use it to better showcase the Tlingit and Tagish ontology and relationship with water (glaciers) within a wider Indigenous context. Indigenous perspectivism aims to dissolve or go beyond the dichotomies of nature and culture. Indeed, for clarification, Viveiros de Castro's (2015) definition of perspectivism is worth quoting at length:

> The conception according to which the universe is inhabited by different sorts of persons, human and nonhuman, which apprehend reality from distinct points of view. This conception was shown to be associated to some others, namely:
>
> 1. The original common condition of both humans and animals is not animality, but rather humanity;
> 2. Many animal species [sic], as well as other types of 'nonhuman' beings, have a spiritual component which qualifies them as 'people;' furthermore, these beings see themselves as humans in appearance and in culture, while seeing humans as animals or as spirits;
> 3. The visible body of animals is an appearance that hides this anthropomorphic invisible 'essence,' and that can be put on and taken off as a dress or garment;
> 4. Interspecific metamorphosis is a fact of 'nature;'
> 5. Lastly, the notion of animality as a unified domain, globally opposed to that of humanity, seems to be absent from Amerindian cosmologies (pp. 229-230).

Perspectivism is good to think with in this paper. It works on an ontologically plural level without privileging one ontology. Western science and philosophy have extraordinary merits, but so too do the Tlingit and Tagish cultures. Perspectivism is about acknowledging worlds, and not worldviews, but it also supports the sort of shapeshifting understanding connected with water (glaciers) articulated in Tlingit and Tagish oral narratives. A Tlingit ontology, for example, acknowledges four ways that refer to 'spirit.' One of them, ***Yakgwahéiyagu***, is, according to coastal Tlingit elders, "the living spirit inside of all things (human, nonhuman, inanimate) that senses and feels the world around them" (Katzeek in Twitchell, 2017, p. 227). In many Tlingit and Tagish oral narratives, humans shapeshift into other animals, as much as animals disguise themselves as humans. However, what occurs frequently in these narratives is that humans ***marry*** bears, spruce trees and fire sparks, just for a few examples. This is so humans, through 'marriage,' have the opportunity to experience and understand other worlds.

Glacial Time: Speed Redefined?

Glacial time—the notion that everything unfolds in slow 'geological' motion—is still a well-used metaphor in archaeological circles. The environmental historian Rob Nixon (2011) might disagree. Nixon explains that "to render slow violence visible entails, amongst other things, redefining speed: we see the efforts in talk of accelerated species loss, rapid climate change, and in attempts to recast 'glacial'—once a dead metaphor for *slow*—as a rousing, iconic image of unacceptably fast loss" (p. 13). Global warming has been called a slow catastrophe, but feminist philosopher Donna Haraway (2016) uses the term 'accelerated,' problematizing the notion of speed. Glacial time which was once slow, is now fast. For the Tlingit and Tagish with their traditional, oral 9,000- year-old narratives—which are confirmed by geological (also volcanic), paleo-archeological (the ice patches in CTFNs traditional territory), and paleo-limnological (lake sediment cores) evidence—there is a well-documented history of specific geographical glacial surges and flooding events. Notions of time, and glacial time, are problematized by this rhetoric.

Nixon (2011) advocates a new form of environmental storytelling that counters the influence of the "instant spectacle" (p. 6). Tlingit narrative storytelling in this light might be considered as both a role model and an ethical forerunner of this register of environmental storytelling. Storytelling is a fundamental tenet in the inland Tlingit/Tagish cosmology. Indeed, stories themselves like glaciers/ice/rivers/water are deemed to have social lives and particular agencies. They circulate, they are transformative, and they are living (Wedge, personal communication, 17 August, 2014). Tlingit storytelling exposes a fundamentally different set of understandings about water and ice and relationships with water/ice bodies than the dominant Western paradigm that tends to support narrow, essentialized, and utilitarian assumptions about ice/water. How then does Tlingit storytelling destabilize, defamiliarize, and inform the dominant way of engaging with nature?

A Tlingit relationship with water can be traced through over 9,000 years of Tlingit oral tradition (in particular narrative storytelling) and is also reflected in the Tlingit place names around the Southern Yukon Lakes, over three-quarters of which are water-related. Coastal Tlingit place names are equally aqua-centric, as anthropologist Daniel Monteith's (2007) extensive empirical geological and coastal Tlingit place name linguistic research reveals. Place name research further evidences a highly sophisticated and deeply ecologically embraced coastal Tlingit philosophy confirmed by our own water research (Monteith, D., Cathy Connor, Gregory Streveler, and Wayne Howell, 2007).

According to ethnophysiographer Andrew Turk (2011) "language (as well as pictorial representations) provides the basis for understanding alternative worldviews, including cultural aspects of place" (p. 57). Anthropologist Thomas Thornton's (2008) research, for instance, reveals that the English name for Glacier Bay in Alaska defines just that—a bay with a glacier in it. In the coastal Tlingit dialect, it is *Sit' Eeti Geeyi*, (bay taking the place of the glacier), which describes the "geographical process of glacial recession and bay formation" (p. 81). Thornton (2008) lists two other hydrographical and geological related place names: John Hopkins Inlet, which in Tlingit is Inlet moves toward Mount Fairweather, and Hugh Miller Inlet, which is Where the Glacier Ice Broke Through (p. 81).

Our toponym research around the Yukon River headwaters has produced three original counter-maps. One 2D Tlingit and Tagish counter-map showcases the aqua-centric nature of these toponyms, whilst at the same time privileging

the Tlingit and Tagish making of place over the colonial version where most English toponyms are named after Anglo-American, white, male explorers and academics.[5] A second counter-map, something we call a "deep chart" (2017), utilizes the Google Earth platform to better represent both the Tlingit and Tagish oral traditions, a more complete description of aqua-centric toponyms, water sampling data, toponym photographs, audio files of Tlingit place names, remote sensing data, and a richer, deeper representation of the intersection of Tlingit and Tagish identities with the region through Tlingit and Tagish storied geographies.[6] What is revealing throughout this water research is the number of toponyms that are centered on movement, as well as the detailed empirical scientific knowledge embedded within them. A further unique feature is the acoustic ecologies knitted into place. For example, the toponym *Taagish* means the *sound* of the break-up of ice at Tagish. Further examples of glacial toponyms include *S'e Shuyee*, which refers to the drainage at the end of glacial mud, *A Shuyee*, which means the foot of the glacier, and *Sit' Heeni*, which means glacier creek.

Stories emerge from and are co-dependent with ecological processes, something that we (2015) call "slow activism." How might slow activism—this radical, powerful, and highly sustainable form of environmental storytelling—act as both a counterpoint to the dominant water (glacier) rhetoric, as well as a site of resilience to essentialized readings of water? We suggest that slow activism is one counter-story to Rob Nixon's (2011) slow violence. Slow activism centers on the enduring performances of Tlingit storytelling that are bound up in Tlingit oral traditions and the verb-oriented Tlingit language showcased by Tlingit place names that reflect geomorphological processes and cultural practices. "Slow" reflects an underlying resilience and adaptability (not unlike the core characteristics of water) within Tlingit oral tradition that does not pay homage to the Western capitalist anthropocentric logic of time-equals-money. It connects to a far older set of philosophies and relationships where qualities such as respect and reciprocity are privileged, which is evidenced in Tlingit storytelling. As mentioned in the previous section, many stories detail relationships, even marriages between humans and the more-than-human world. Some examples are "The girl that married a bear," "The man who married an eagle," "The woman who married a [spruce] tree," and "The girl who married a fire spirit" (Hayman with James & Wedge, 2017; Swanton, 1909, p. v-vii;). Other narratives emphasize the qualities and agencies of glaciers and rivers that are animate and able to animate surroundings. These aquafaces within a Tlingit cosmology are more like verbs than nouns and more process than product—something we (2015) understand as "narrative ecologies."

9,000 years of storytelling evolved a narrative tradition that has witnessed countless climate changes and has adapted accordingly (Cruikshank, 2005). At a time when many First Nations are struggling to retain identity and coherence in a rapidly changing world, it is the power of strong stories that offers a unique combination of knowledges for conflict resolution and survival (Wedge, personal communication, 2 February, 2014).

What do Glaciers do? Mystery and Uncertainty

As Knight's (2004) epigraph at the beginning of this paper reveals, glaciology, and in particular glacier science, is a relatively recent Western academic earth science that has emerged rapidly with developments in technology like satellite remote sensing. Glaciers are a critical part of complex global hydrological cycle(s) and are key players that affect and are affected by climate change. As Knight (2004) elucidates, "Climate controls a range of glacier characteristics including size, thermal and hydrological regime, movement and geomorphic activity. Glaciers

exert control over climate by affecting albedo, the surface energy balance and the composition and circulation of the atmosphere and oceans" (p. 389). Here glaciers are framed in terms of either collateral damage or orchestrating dramatic shifts in climate. Such descriptions are extraordinarily close, and yet also distant, from Tlingit oral traditions depicting glaciers. As anthropologist Julie Cruikshank (2011) notes, Tlingit understandings of glaciers are framed as inherently social spaces where "human behaviour, especially casual hubris or arrogance, can trigger dramatic and unpleasant consequences in the physical world" (p. 11). In contrast to an earth science reading of glaciers where the human is remarkably absent, a combination of both human and glacial agency within a Tlingit cosmology has profound implications. Community consultant Colleen James (25 August, 2013) has spoken clearly about the large animals and giant worms that are said to inhabit glaciers. If killed, these glaciers begin to melt. She also warns that if fat or grease are cooked close to a glacier, the glacier may surge and flood the valley downstream. Taunting, jeering, calling to, speaking carelessly about, or inciting a glacier to surge are also actions explicitly warned against.

These examples demonstrate how Tlingit oral traditions hold within them precise ecological knowledge about glaciers, flows, circulations, water, and water bodies, as well as protocol for valuing and respecting glaciers. When combined with empirical science, these oral traditions provide the core elements of glacial narratives that create a complex, sensory glacial imaginary (Cruikshank, 2005; Thornton, 2008). At a broader level, and like many glaciers themselves, dominant scripts about glaciers and rivers are in a state of flux. Melting glaciers, breaking pack ice, and dissolving ice patches are inscribing new imaginaries that alter archeological records, economic and mineral development possibilities, and, in the case of the arctic, national security concerns. The collision of very literal narratives with metaphorical ones provides the framework for complex and complicated cultural imaginaries like those we discuss in this paper.

Lastly, we put eco-critic Anne Milne's (2012) idea of "feral spaces" and anthropologist Anna Tsing's (2015) idea of "feral biologies" into conversation with Eleanor Hayman's (2012) idea of "feral waters" to denote and signify an aquatic positioning and situatedness of thought that draws on movements and moments to democratise water knowledges. We use 'feral waters' to open up spaces within and between the environmental humanities and natural sciences in a Western academic epistemology, but also—and more critically—to create spaces between Western science and Indigenous scientific ontologies. Sustainability science has arguably come closest to advocating a 'feral waters' method by attempting to redefine the concept of sustainability, moving it away from its current problematic, institutionalised definition to one that acknowledges both a deep past and the potential for a deep future (Senier, 2014). We seek to develop 'feral waters' as a framework that creates conceptual spaces and storytelling to formulate a new water consciousness and a new water culture that decolonises dominant understandings of water, thereby shifting how we think about the Anthropocene(s). Anthropocenic 'modern' waters are currently essentialised and often abstracted away from water knowledges and sciences whose default ontologies regard relationships with water as critical to survival and sustainable baselines to be respectfully and mindfully maintained.

Conclusion

The Anthropocene might be seen to facilitate certain histories and privilege particular narratives. But Jason Moore (2014) poses an important question:

> Are we really living in the Anthropocene, with its return to a curiously Eurocentric vista of humanity, and its reliance on well-worn notions of resource and technological determinism? Or are we living in the Capitalocene, the historical era shaped by relations privileging the endless accumulation of capital? (p. 5).

We argue that putting Tlingit and Tagish oral glacier narratives into conversation with Anthropocene/Capitalocene thinking is an important step towards reimagining nature/culture assemblages, and potentially introduces a different rhetoric, providing models for different potential futures.

The Randolph Glacier Inventory referenced at the beginning of this paper may become a defining mark of the Anthropocene/Capitalocene, but as Knight (2004) cautions, "our reconstructions of past glaciations remain tentative, our understanding of modern glacial processes incomplete and our modelling of their future unreliable" (p. 385).[7] Such narratives may paralyse and choke out other glacial narratives and the rivers they feed, but may also open the space for other equally legitimate definitions. Tlingit and Tagish oral narratives speak of glacial histories entangled with and negotiated by humans and bear witness to the uncertainty and unpredictability intrinsic to natural systems. These narratives expose not just a rich and historical glacial record laced with human-glacier encounters and possibilities, but also the intersections of people, places, identity, and language. As Cruikshank (2001) confirms, "Oral narratives have histories that capture some of the accumulating, vanishing, changing meanings associated with glaciers from the distant time of ice ages to the present era of parks, meanings that continue to be enmeshed in social worlds" (p. 382). As future rivers of the Anthropocene, glaciers seen through Tlingit oral tradition reveal a sedimentation of stories, palimpsests of memory, and a particular archaeology of water—essentially what we call a deep topography that is critical for understanding (and surviving) complex earth processes.

As the southern Yukon ice patches melt and continue to reveal a broad, sophisticated, and complex set of Yukon First Nation relationships with the iced north, and as glaciers thaw at an increased tempo, raising the water levels of the southern Yukon lakes, conflicting water/ice narratives will collide at ever-higher frequencies. The social life of ice (glaciers) articulated within Tlingit and Tagish oral traditions, coupled with current melting patterns, offers profound accounts of ancient multiplicities rooted in a storytelling culture that precedes much contemporary scholarly work. Thinking with glaciers as powerful actors in the forging of human and more-than-human identities can be viewed as an effort to re-imagine relationships with water and ice and depart from terracentric histories, and futures. We suggest that the slow activism embedded within Tlingit and Tagish glacial narratives has the ability to disrupt increasingly entrenched notions and narrow definitions of the Anthropocene(s) that reproduce a mono-cultural imaginary.

Appendix: Tlingit and Tagish Traditional Oral Narratives

"Travelling Under the Glacier" by Jimmy Scott James, December 10, 1950 [8]

A long time ago there are people, and they have no fish coming up. The salmon aren't coming up, and all the Indians are starving. What they do is a true story I am going to tell you.
And the glacier comes right across the river where the salmon used to come up. That's why the salmon can't go through. Below the glacier the salmon are there all the time. But these people don't know then. This happened up in this country. Then everybody is starving. It was summertime, I guess, but they are talking about it all the time. Everybody says, "You can do something, I guess, to break open that glacier?"

After that there are two old men, and they are going to die anytime soon. "Let's give up our lives for our own people are going under that ice in the boat." So those old men save the little children and help the country. The river goes under the glacier, and the old men put the boat in.

It is going to go under the glacier.

Then in the morning, "Well," they say, "now, we come." First the people all bring their clothes and their good stuff for their old people. They dress them up good. Everybody comes around like that to dress them like that.

Those [old men] are ready to go that day. Then one old man says, "That's all."

They painted their faces good. Now they get into the canoe. One is at the bow and one is at the stern. Then those two old fellows say, "We don't want you to hold our canoe. Let those little fellows do it. Let the little kids hold the boat."

And then they had a song for it. [Jimmy sings a song.] They have one song for letting the boat go under the ice. And when it floats out onto salt water, they have another song.

The first song has these words: "This little child is going to take my place after I die." [Jimmy pointed to three-year-old Ralph as he sang the song.]

"There's no more. Let the boat go now," they say. The two men tie their hair up on top of their head, and they tie the tops of green spruces to their hair. And they sail good under the ice. They just go like a shot. They go under the glacier.

Gosh, they say that they couldn't see anything! It is just dark. But they keep going just the same. Some places the ice touches one side of the boat. They expect any minute to be the end of their lives.

Finally, just at that minute, daylight comes to them, quick. They get through to the other side, and nothing happens. And they just look down where they have floated. Gee, you can see lots of salmon just below the glacier—red salmon and everything! They eat good now, I guess, those fellows.

And they are way out on the salt water, floating around for quite a while. They are just happy. "Well, let's have another song again," one of the men says. "Let's have another song where we came out here!"

Afterwards, whenever that man's people have a potlatch, they sing the song every time. They keep this song up in this country all over.

"That boat, it's coming through, and he sees the world again. When you come out, You're glad to see the world again."

That's why, whenever they have a big potlatch they sing the song. Everybody sings it, it doesn't matter who. [I asked which sib claims the song,

and Jimmy said that he would ask an elderly Kùkhhittàn woman whether the song belonged to the Kùkhhittàn or to Dakl'aweidí].

Afterwards, on the same day that they let the two men go through the ice, two young fellows run down on the glacier. It takes them two days to run down. And before they come there, they see smoke coming out below the glacier. And those young fellows come to the old men there. The two old men have everything there. They are packing up and drying the salmon. So the young fellows ran back and give the people a bunch of salmon. They dry a little bit of salmon, and the boys took it back for all the little fellows. And the people came back down the next day. They head back down over the ice. They walk there. Everybody goes over the glacier, and they all get there and dry fish, everybody. And after they dry it, they pack the fish back over and bring lots of fish over [the height of land]. After that, in the winter, there is lots of snow in this country. And in the springtime all the waters are running all over. All the rivers are high. And they jam up the glaciers where the salmon used to come up and break through the whole glacier. So after that, after the glacier is broken through, the salmon come right up the river the same way as they did before. And that is the end of the story.

Footnotes

[1] http://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCIQFjAA&url=http%3A%2F%2Fjohnrgillis.com%2Fworks%2Fbluehole2.pdf&ei=YdmhU8zRDdHQ4QTKnIDACw&usg=AFQjCNFyNdlKeDZ6H8HzFVOYopdS3TD1Mw&sig2=yncDegzgC8tb144VubPWew&bvm=bv.69137298,d.bGE, accessed 1 July 2018.

[2] For example ***Kwädąy Dän Ts'ìnchį*** or Long Ago Person Found. Discovered on a glacier in 1999 by three sheep hunters, ***Kwädąy Dän Ts'ìnchį*** is the oldest ice mummy so far found in North America. DNA testing has revealed relatives amongst both the coastal and inland Tlingit (Corr et al. 2008).

[3] See Ken Coates and Greg Poelzer's acknowledgment of a current dislocation in Canada in *An Unfinished Nation: Completing the devolution revolution in Canada's North* (2014), and particularly the 2016 report titled *Canadian public opinion on Aboriginal Peoples* [3] to see the division in opinion on a number of critical perceptual 'racial' issues). See the report here http://nctr.ca/assets/reports/Modern%20Reports/canadian_public_opinion.pdf, accessed 4 January 2017. Coates, K., and G. Poelzer(2014). An Unfinished Nation: Completing the devolution revolution in Canada's North. MacDonald-Laurier Institute. https://www.macdonaldlaurier.ca/files/pdf/MLIArcticDevolutionPaper04-14-webready.pdf, accessed 3 July 2018.

[4] As Cruikshank notes, archives are where white people go to learn about history (personal communication, 12 November, 2014).

[5] This digital map can be viewed online with these links: PDF version available at https://www.dropbox.com/s/aty0262uryivafz/CTFNposter_03_02_600dpi.pdf?dl=0 and http://documents.routledgeinteractive.s3.amazonaws.com/9781138204294/13_Figure2_CTFNposter_03_02_600dpi.pdf.

[6] Because the CTFN government is currently utilizing this deep chart within educational, cultural, and legal arenas, we must respect intellectual property protocols by keeping the map private. We regret that we cannot share it with readers.

[7] Knight's use of the word 'our' is as telling as the environmental glacial narrative he comments on. An inclusive 'our' begs the question, Whose Anthropocene is it?!, which is the subtitle of our paper.

[8] James, J. S. (2007). My Old People's Stories: A Legacy for Yukon First Nations. J. Cruikshank (Ed.) Whitehorse: Government of Yukon, Cultural Services Branch.

References

Bavington, D. (2013). Homo Administrator: Managing a Needy Nature. In T.Heyd (Ed.), *Recognising the Autonomy of Nature: Theory & Practice*, (pp. 121-130). New York: Columbia University Press.

Bond, J. (2004). Late Wisconsinan McConnell glaciation of the Whitehorse map area (105D), Yukon. In D.S. Emond and L.L. Lewis (Eds.), *Yukon Exploration and Geology*, (pp. 73- 88). Yukon Geological Survey.

Clague, J., J. Koch, and M. Geertsema. (2010). Expansion of outlet glaciers of the Juneau Icefield in northwest British Columbia during the past two millennia. In *The Holocene* Vol 20 (3).

Coates, K., and G. Poelzer. (2014). An Unfinished Nation: Completing the devolution revolution in Canada's North. MacDonald-Laurier Institute. https://www.macdonaldlaurier.ca/files/pdf/MLIArcticDevolutionPaper0
4-14-webready.pdf. Accessed 3 July 2018.

Colebrook, C. (2013). *The Anthropocene Project – An opening*. A dialogue with Cary Wolfe. Retrieved November 2013 from https://www.youtube.com/watch?v=YLTCzth8H1M.

Corr L., M P. Richards, C. Grierc, A. Mackied, O. Beattiee, and R. P. Eversheda. (2009). Probing dietary change of the Kwädąy Dän Ts'ìnchį individual, an ancient glacier body from British Columbia: II. Deconvoluting whole skin and bone collagen δ13C values via carbon isotope analysis of individual amino acids. *Journal of Archaeological Science*, *36*(1), 12–18.

Cruikshank, J. (1998). *The social life of stories: Narrative and knowledge in the Yukon Territory*. Lincoln: University of Nebraska Press.

_____. (2005). *Do Glaciers Listen? Local Knowledge, Colonial Encounters, & Social Imagination*. Vancouver: UBC Press.

_____. (2012). Are glaciers "good to think with"? Recognizing Indigenous environmental knowledge. *Anthropological Forum 22*(3), 239–250.

Descola, P. (2013). *Beyond Nature and Culture*. Chicago: University of Chicago Press.

Descola, P. and B. Latour. (2013). *Approaches to the Anthropocene: A Conversation with Philippe Descola and Bruno Latour*. Peter Wall Institute for Advanced Studies. Retrieved from https://www.youtube.com/watch?v=MDeGaYkhVSo 4 January 2017.

Gaard, G. (2001). Women, Water, Energy: An ecofeminist Approach. *Organisation & Environment 14*(2), 157-172.

Gillis, J. (2011). Filling the blue hole in environmental history. Unpublished paper and presentation at the Rachel Carson Center. Retrieved February 1, 2015, http://johnrgillis.com/works/bluehole2.pdf.

Gillis, J and F. Thorma. (2015). *Fluid Frontiers: New Currents in Marine Environmental History*. Winwick, United Kingdom: White Horse Press.

Haraway, D. (2015). Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin. *Environmental Humanities*, (6), 159-165.

_____. (2016). Making Oddkin in the Chthulucene. Lecture. Anthropocene Consortium Series. Retrieved from https://www.youtube.com/watch?v=fWQ2JYFwJWU&t=724s January 7, 2017.

Hayman, E. (2010). *Thinking water north of the future: An examination of the cultural perception of water, an eco-phenomenological approach*. M.Phil. diss., University of Central Lancashire, UK.

_____. (2012). Shaped by the Imagination: Myths of water, women and purity. In A.Kneitz and M Landry (Eds.). *On water: Perceptions, politics, perils,* (2) 23–33. RCC Perspectives. Munich: Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/perspectives/2012/2/article/shaped-imagination-myths-water-women-and-purity

Hayman, E. with C. James and M. Wedge. (2015). *Héen Kas'él'ti X_oo* (among the ragged lakes) – storytelling water, north of the future: collaborative water research with Carcross/Tagish First Nation, Yukon Territory, Canada. In S. Buechler and A. Hanson (Eds.), *A Political Ecology of Women, Water and Global Environmental Change,* 185-205. London: Routledge.

_____. (2017). *I yá.axch´age*? (Can you hear it?) or Marrying the water: A Tlingit and Tagish approach towards an ethical relationship with water. In R. Ziegler and D. Groenfeldt (Eds.), *Global Water Ethics*. Oxford: Routledge.

_____. (2017). A Deep Chart: The Aquaface of Deep Mapping. In *International Journal of History and Arts Computing 10*(1).

Illich, I. (1986). *H_2O and the waters of forgetfulness*. London: Marion Boyars.

Iovino, S. (2012). Steps to a Material Ecocriticism. The Recent Literature About the "New Materialisms" and Its Implications for Ecocritical Theory, *Ecozone*, *3*(1), 134-145.

Knight, Peter. G. (2004). Glaciers: art and history, science and uncertainty, *Interdisciplinary Science Reviews*, *29*(4).

Linton, Jamie. (2010). *What is Water? The History of a Modern Abstraction*. Vancouver: UBC Press.

McClellan, C. (2007). My Old People's Stories: A Legacy for Yukon First Nations. J. Cruikshank (Ed.). *Occasional Papers in Yukon History 5*(1-3), 257. Whitehorse: Government of Yukon, Cultural Services Branch. https://tc.beta.gov.yk.ca/sites/default/files/mcclellan-inland-tlingit-stories-part3-2007.pdf, retrieved 4 January 2017.

Monteith, D., Cathy Connor, Gregory Streveler, and Wayne Howell. (2007). Geology and Oral History—Complementary Views of a Former Glacier Bay Landscape, in Piatt, J.F., and Gende, S.M., (Eds.), Proceedings of the Fourth Glacier Bay Science Symposium, October 26–28, 2004: *U.S. Geological Survey Scientific Investigations Report 2007*-5047, pp. 50–53.

Moore, J. (2014). *The Capitalocene Part I: On the Nature & Origins of Our Ecological Crisis*. http://www.jasonwmoore.com/uploads/The_Capitalocene Part_I June_2014.pdf, retrieved 25 March 2017.

Moore, A. (2015). The Anthropocene: A Critical Exploration. In *Environment and Society: Advances in Research* (6)1–3. Berghahn Books. http://www.envirosociety.org/wp-content/uploads/2015/10/ARES-6-intro.pdf retrieved 1 July 2018.

Moser, K. (2018). The Sensorial, Biocentric Philosophy of Michel Serres and Michel Onfray: Rehabilitating the Human Body. *Pacific Coast Philology*. *53*(1) 92-110. Penn State University Press.

Nixon, R. (2011). *Slow Violence, Gender and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press.

Rediker, M. (2008). History from below the water line: Sharks and the Atlantic slave trade. In *Atlantic Studies*, *5*(2), 285-297.

Sawyer, S., and A. Agrawal. (2000). Environmental Orientalisms. In *Cultural Critique* (45), 71-108.

Senier, S. (2014). Decolonizing the Archive: Digitizing Native Literature with Students and Tribal Communities. In *Resilience: A Journal of the Environmental Humanities*, 1(3), University of Nebraska Press http://www.resiliencejournal.org/wp-content/uploads/2014/09/1.3_senier.pdf retrieved 18 January 2017

Swanton, J.R. (1909). *Tlingit Myths and Texts*. Government Printing Office, Washington.

Thornton, T.F. (2008). *Being and place among the Tlingit*. Seattle: University of Washington Press.

Tsing, Anna. (2015). Feral Biologies. *Paper for Anthropological Visions of Sustainable Futures*, University College London.

Turk, A.G. (2011). Exploring philosophy of place: Potential for synergy between phenomenology and ethnophysiography. In D.M. Mark, A.G. Turk, N. Burenhult, and D. Stea (Eds.). *Landscape in language: Transdisciplinary perspectives,* 47–72. Amsterdam: John Benjamins Publishing Company.

Twitchell, L. (2017). (Ed.) Tlingit Dictionary. Retrieved March 7, 2017. http://tlingitlanguage.com/media/dictionary.pdf.

Vivieros de Castro, E. (2015). *The Relative Native: Essays on Indigenous Conceptual Worlds*. Chicago: University of Chicago Press.

Worster, D. (2006). Water in the age of imperialism – and beyond. In T. Tvedt, and T. Oestigaard (Eds.). *A History of Water: The World of Water*, (3)5–17. London: I.B. Tauris.

This article is republished from Decolonization: Indigeneity, Education & Society, Vol 6., No 2, 2018, pp.77-92 under a Creative Commons license. Read the original article.

Recommended Citation

Hayman, Eleanor, Colleen James, and Mark Wedge. 2021. "Future Rivers of the Anthropocene." *Open Rivers: Rethinking Water, Place & Community*, no. 19. https://editions.lib.umn.edu/openrivers/article/future-rivers-of-the-anthropocene.

DOI: https://doi.org/10.24926/2471190X.8306

About the Authors

Eleanor Hayman, Management Consultant, Heritage, Lands and Natural Resources, Carcross/Tagish First Nation

Eleanor Hayman is a Management Consultant working with self-governing Carcross/Tagish First Nation (CTFN) developing Indigenous water legislation. Hayman's doctoral research focused on Tlingit and Tagish place names, and counter-mapping of the Southern Yukon Lakes, the headwaters of the Yukon River and CTFNs traditional territory. She has published with Colleen James and Mark Wedge on (global) water ethics, deep mapping, feminist political ecology, ecolinguistics, and decolonising water and personhood. Hayman's PhD is from the Ludwig Maximillian's University in Munich, Germany.

Colleen James, Daḵl'aweidí Clan of the Wolf moiety, Carcross/Tagish First Nation

Colleen James / G̲ooch Tláa (Daḵl'aweidí Clan of the Wolf moiety, Carcross/Tagish First Nation) is a grandmother, knowledge seeker, ceremonial leader, cultural and linguistic activist within the Tlingit and Tagish communities, but also further downriver in Inuit communities. James is an advocate of the Yukon River Inter-Tribal Watershed Council, specifically water, and specialises in healing and rehabilitation of Indigenous people to their cultures. She lives next to T'aslay Mené which is the Tagish name for Nares Lake, and is truly "part of the land and the water". James shares philosophy and wisdom wherever the opportunity presents itself.

Mark Wedge, Deisheetaan Clan of the Crow moiety, Carcross/Tagish First Nation

Mark Wedge / Aan Gooshú (Deisheetaan Clan of the Crow moiety, Carcross/Tagish First Nation, Yukon, Canada) is an Elder, knowledge keeper, ceremonial leader, cultural activist, social justice advocate and former Khà Shâde Héni (Chief) of Carcross/Tagish First Nation. Wedge has been involved in dispute resolution in both Canada and the United States, acted as Executive Director of the Council of Yukon Indians, and negotiator for various First Nations in asserting land claims. He provides consulting and training services to governments and organizations in Canada, the United States, Germany and New Zealand, currently in earth jurisprudence philosophies.

GEOGRAPHIES

A PLACE IN FLUX: MEMORY AND FUTURITY IN THE HACKENSACK MEADOWLANDS

By Evelyn Dsouza

From the middle of the Hackensack River, sweltering in the heat of an early summer day, I peered up at the New Jersey Turnpike from my seat on the pontoon boat. I usually see this place from the view of my own car—or occasionally, the train, from which an expansive view of the estuary is even easier to take in: billowing stands of common reed (*Phragmites*), glistening mudflats at certain times of the day, and looming cityscapes on the horizon. I'd never before found myself *in* the landscape quite like this, from the view of the water.

"Can you hold this?" Dr. Ildiko Pechmann asked me. The pontoon boat was owned and operated by the New Jersey Sports and Exposition Authority (NJSEA), which serves as the regional planning and zoning agency for the Hackensack

A sensor station overlooking the Hackensack River. Image courtesy of Evelyn Dsouza.

Meadowlands District. Four other interns and I were there to see the estuary firsthand, guided in part by Dr. Pechmann, one of the NJSEA's environmental scientists. Along the way, we'd stopped at one of the carbon sensors lodged in the river so that Dr. Pechmann could change its memory card. As I was sitting nearest to her, she handed me the old card while she replaced it with a new one. The little memory card seemed especially fragile as I was holding it there on the gently rocking boat; "Don't drop it!" I remember warning myself.

As a writer, I think a lot about the concept of memory. I held in my hand that day a small but rich record of environmental data, and as a humanities researcher about the Meadowlands, I'd been immersing myself in other kinds of kept memories before and after that day—those of library books and records in archives documenting the natural and cultural histories of the region.

The Hackensack Meadowlands, named for the primary river flowing through it, is the largest urban wetland complex in the northeastern United States (Tiner, Swords, and McClain 2002). It is the home of Berry's Creek, which contains mercury concentrations that are among the highest ever measured in a freshwater ecosystem (United States Department of Commerce, National Oceanic and Atmospheric Administration, and U.S. Fish and Wildlife Service 2014). Before settler colonialism, the area was a predominantly freshwater system, forested by Atlantic white cedars. Dutch settlers cleared the cedar forests and used dikes to drain the land, creating "meadows" of salt hay for harvesting—replaced, over time, by

A view of the Hackensack Meadowlands from Mill Creek Marsh, a nature preserve in Secaucus, New Jersey. Image courtesy of Evelyn Dsouza.

invasive common reed (Ceberio and Kase 2015). The American motion picture industry, which was once at home in New Jersey before it moved to Hollywood, would later use the backdrop of the Meadowlands as stand-ins for prairie scenes (Sullivan 1998). And through a mix of human and natural causes over time, especially the creation of the upstream Oradell Dam, the condition of the lower Hackensack River turned brackish.

The "Meadowlands" is in many ways, then, a human creation. Even still, its protection and recovery in recent decades has relied on familiar environmentalist and conservationist arguments about the surprising natural beauty and biodiversity of the place, especially its importance as bird habitat in the Atlantic Flyway. Although appreciation for the scientific and ecological value of wetlands has come a long way from the past, wetland ecosystems in this heavily urbanized coastal area need also to be able to thrive and persist under conditions of accelerated sea level rise. In a geography where space for landward retreat for the marshlands is limited and the marshlands would become inundated with increased saltwater, this ecosystem would no longer be able to sustain the same life or provide necessary ecological services. The rate of increase in the marshlands' surface elevation, however, is not enough to keep up with the predicted rise in sea level each year (Artigas, Grzyb, and Yao 2021).

The Meadowlands Museum, home of the William Carlos Williams Memorial Room. A red weelbarrow is placed outside the buidling. Image courtesy of Evelyn Dsouza.

After a long history of environmental abuse and in the face of continued present-day perils, the New Jersey Department of Environmental Protection (NJDEP) announced its plan this summer to nominate the entire lower region of the Hackensack River as a Superfund site (Hajna and Shinske 2021). Declarations like these, and the necessary remediation that ensues, do not happen in a vacuum. They are informed by decades' worth of data and research—by the things we carefully write and document.

As I'm always reminding my students, I see writing as, at its core, a technology—a tool for externalizing memory and experience. And if writing is indeed a technology, it is one that we will want to wield with precision and care, just as we would any other in the service of sustainable land-use decision-making. We will want to use it in ways that are flexible and responsive to changing circumstances.

I think a lot about the ways that writing has an effect of immortalizing the things we observe and then describe, however. The day I first visited the Meadowlands Museum, I remember lingering in the William Carlos Williams Memorial Room. Williams, who was born and died in the town of Rutherford, New Jersey, is one of the cultural icons of our region: the 20th-century American poet and physician most closely associated with the famous imagist poem "The Red Wheelbarrow." "[S]o much depends / upon // a red wheel / barrow," read the first two stanzas. A perfect example of a still life object in writing, isn't it? Meditative and intense. But do we inadvertently turn *places* into still life objects when we write about them?

The second time I went out on the pontoon boat, I met Terry Doss, the co-director of the Meadowlands Research & Restoration Institute (MRRI). (MRRI is the scientific branch of the NJSEA.) She told me about a competitive Environmental Protection Agency grant for which she and her colleagues had recently applied. The goal would be the restoration of Saw Mill Creek, one of the Hackensack's tributaries. I learned

A large stand of common reed (Phragmites australis) billowing in the breeze at a riverfront park in Secaucus, New Jersey.

that the channelization of the lower Hackensack and its tributaries was, of course, a human artifice—one that had caused the estuary to look more like a lake than a traditional tidal wetland. To increase the capacity of these wetlands to sequester carbon in its plant communities and its soil, restoration in the form of increased native vegetation in this area would be a vital approach moving forward (Fallon and Ford 2019).

When she spoke, I considered the expanse of water all around me—the view of the Meadowlands that I'd become accustomed to. I tried to picture, instead of the shimmering blue of the water reflecting the sky or the industrial gray of bridges, railroads, and high-rises surrounding us, dense enclosures of green and brown. Not all at once or even everywhere, but over time.

But how does a reality like that come into being? I've been paying so much attention to the way that writing memorializes and captures in time, but I'm finding my attention more balanced now by a dual consideration: thinking about the kind of writing that *actualizes*, looks forward, and initiates into being.

As I move forward with my own research in the fields of writing and technical communication, I continue to ponder some of the bigger questions that I've raised in this article. How do we document places without fixing them in time? How do we allow our collective understanding *of* those places to change and adapt over time, since places themselves are always in flux? As we continue to reclaim and develop methods for storytelling that lend themselves more to such a perspective, with more attention to both polyvocality and multimodality, I am curious to see how the story of the Meadowlands continues. Efforts to protect this region, like those announced by the NJDEP this summer, will always rely on a layered understanding not just of what this place *was*, or has been, but very much *could be*. "So much depends," indeed, on the ability of the Meadowlands and other urban wetlands like it to protect and improve water quality, provide vital and productive habitat, store carbon, and protect against floods and shoreline erosion (US EPA 2015). In turn, then, "so much depends" on the work of ordinary, mundane texts in this regard—site descriptions, inventories, logs in memory cards, grant applications. It is grueling and exacting, but urgent, and integrally connected with the fate of places themselves.

Acknowledgements

Thank you to the staff of the Meadowlands Research & Restoration Institute (MRRI) for teaching me, opening the doors of the archives for me, and inviting me on those wonderful boat tours, with special thanks to Dr. Ildiko Pechmann, Terry Doss, Dr. Francisco Artigas, and Cheryl Yao for our conversations. I am very thankful to the University of Minnesota's CLA Office of Research and Graduate Programs for their sponsorship of my summer internship, and to the Department of Writing Studies, especially my advisors Dr. Donald Ross and Dr. Daniel Card, for their ongoing support of my dissertation project. Thank you, also, to Tom Bivin at the Meadowlands Museum for the informative tour. Finally, I am especially thankful to the community of *Open Rivers*, especially Laurie Moberg, for your interest and support.

References

Artigas, Francisco J., Joseph Grzyb, and Ying Yao. 2021. "Sea Level Rise and Marsh Surface Elevation Change in the Meadowlands of New Jersey." *Wetlands Ecology and Management* 29 (2): 181–92. https://doi.org/10.1007/s11273-020-09777-2.

Ceberio, Robert, and Ron Kase. 2015. *New Jersey Meadowlands: A History*. Charleston, SC: The History Press.

Fallon, Scott, and Andrew Ford. 2019. "The Effects of Climate Change in New Jersey Are Already Here. They're Everywhere." *North Jersey Media Group*, August 23, 2019. https://www.northjersey.com/story/news/environment/2019/08/23/new-jersey-already-seeing-effects-climate-change/2069961001/.

Hajna, Lawrence, and Caryn Shinske. 2021. "NJDEP – News Release 21/P024 – Commissioner Latourette Announces NJDEP Will Pursue Cleanup of Lower Hackensack River as a Federal Superfund Site." New Jersey Department of Environmental Protection. July 23, 2021. https://www.nj.gov/dep/newsrel/2021/21_0024.htm.

Tiner, Ralph W., John Q. Swords, and Bobbi Jo McClain. 2002. "Wetland Status and Trends for the Hackensack Meadowlands." Hadley, MA: U.S. Fish and Wildlife Service.

Sullivan, Robert. 1998. *The Meadowlands: Wilderness Adventures at the Edge of a City*. New York: Anchor.

United States Department of Commerce, National Oceanic and Atmospheric Administration, and U.S. Fish and Wildlife Service. 2014. "Preassessment Screen Determination for the Berry's Creek Watershed, Bergen County, New Jersey." https://www.fws.gov/northeast/njfieldoffice/pdf/BCSA_PAS.pdf.

EPA (United States Environmental Protection Agency). 2015. "Why Are Wetlands Important?" Overviews and Factsheets. April 9, 2015. https://www.epa.gov/wetlands/why-are-wetlands-important.

Recommended Citation

Dsouza, Evelyn. 2021. "A Place in Flux: Memory and Futurity in the Hackensack Meadowlands." *Open Rivers: Rethinking Water, Place & Community*, no. 19. https://editions.lib.umn.edu/openrivers/article/a-place-in-flux.

DOI: https://doi.org/10.24926/2471190X.8297

About the Author

Evelyn Dsouza is a Ph.D. candidate in the Department of Writing Studies at the University of Minnesota, Twin Cities, where she also earned a graduate minor in natural resources science and management (NRSM). She is a resident of the New York City metropolitan area and was proud to serve this region as a former AmeriCorps New Jersey Watershed Ambassador. Today, she enjoys teaching first-year writing and technical and professional writing as she completes a dissertation that centers on the Hackensack Meadowlands. She can be reached at edsouza@umn.edu.

IN REVIEW

ON WATER, EQUITY, AND JUSTICE

By Kathryn Nuernberger, Henry McCarthy, Tyler C. Seidel, Jabari Jones, Amanda Lyons, and Verónica Cadavid González

Note From the Editor

In a recent article, Leah Thomas, founder of Intersectional Environmentalist—a climate justice resource hub and community bringing social justice concerns into focus in environmentalism—questioned "whether environmentalism can be truly effective if it continues to ignore those that are most vulnerable in our ecosystem and society." Her work calls for a shift in environmental thinking and work.

In early summer 2021, this call became a central part of the conversations and work of the Water, Equity, and Justice Fellowship cohort at the University of Minnesota (UMN). Sponsored by the UMN Water Council and the Institute for Advanced Study at UMN, a small group of people with varied disciplinary backgrounds, professional goals, and personal experiences convened to discuss their own work and its intersections with questions of water, equity, and justice. The conversations moved from practical mapping applications to changing disciplinary structures, from self-care to symbiotic relationships, from Indigenous

Image by Amy Humphries on Unsplash.

epistemologies to literature to human rights and beyond. As one of the facilitators for this group, I left the sessions with a long list of new resources to consult, with a wonderful set of collaborators with whom I will continue to engage, and with renewed commitment to the challenging work of intersectional environmentalism.

This fall I asked these fellows to contribute to this In Review column for Open Rivers *by sharing what they are currently reading and why it matters to them. Their responses, like our meetings, offer a robust and varied collection of resources that will, I hope, enrich your own reading lists. Enjoy.*

—Laurie Moberg, Editor

Kathryn Nuernberger on *The Edge of the Sea*

Lately I've been reading and rereading Rachel Carson's *The Edge of the Sea*. In this lyrical field guide to niche ecosystems along the Atlantic coast she attends to the beauty of each individual crab, shorebird, shrimp, algae, and clam, as well as to their beautiful interconnectedness. Many of the tide pools and marshes she studied while writing this book in the 1950s are now ringed by subdivisions or struggling to carry the burden of agricultural runoff and other pollutants that flow into them. But some creatures still scurry, for now, along the edges of the water that gives them—and us—life.

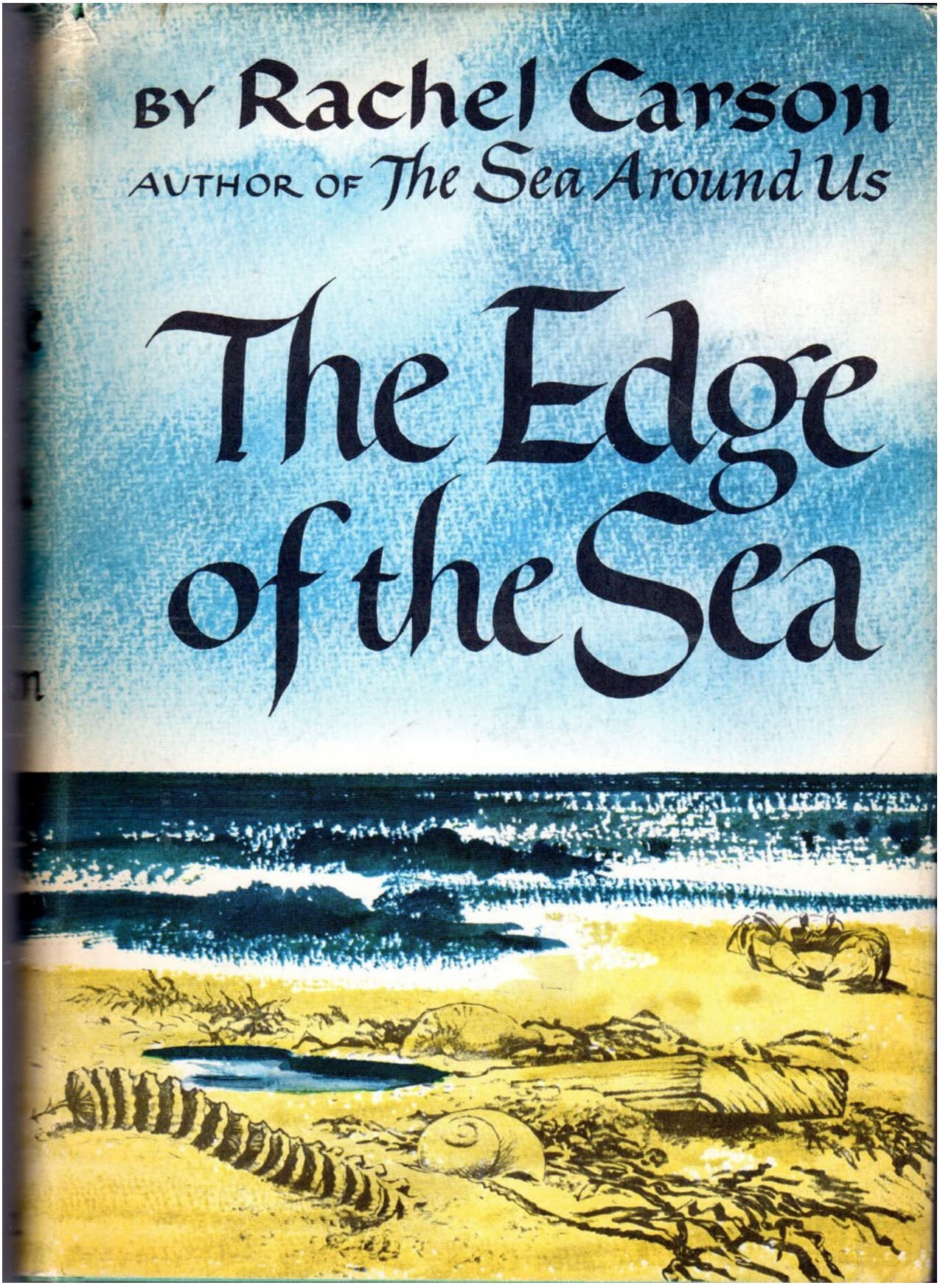
Carson, Rachel. (1955) 1998. *The Edge of the Sea*. Boston: Houghton Mifflin Company.

Henry McCarthy on *Imagine 2200: Climate Fiction for Future Ancestors*

I have been reading a curious and exciting collection of short stories called *Imagine 2200: Climate Fiction for Future Ancestors*. The collection is comprised of twelve stories, the winners of a climate-fiction contest held by Fix, the solutions lab offshoot of the environmental magazine, *Grist*. Individually, these stories immerse the reader in a future earth that feels both familiar and foreign. As a collection, these stories offer hopeful snippets of what life may look like some centuries from now. I usually find imagining the future to be a somber task; however, I have found encouragement and value from the stories in *Imagine 2200*.

One aspect of the Water, Equity, and Justice fellowship that I particularly enjoyed was the interdisciplinarity of the cohort. The conversations we had during the fellowship challenged me to move beyond the confines of my daily work subjects and engage with different resources and methods for exploring topics surrounding water. Discourse around climate change and water supply planning often feels dominated by data, its analysis, and the legitimacy of claims made through analysis and projection. While these aspects of the discourse are valid and important, it is refreshing to conceptualize a climate change future through imaginative and inventive literature.

Fix. 2021. *Imagine 2200: Climate Fiction for Future Ancestors*. Seattle: Grist Magazine. https://grist.org/fix/series/imagine-2200-climate-fiction/.



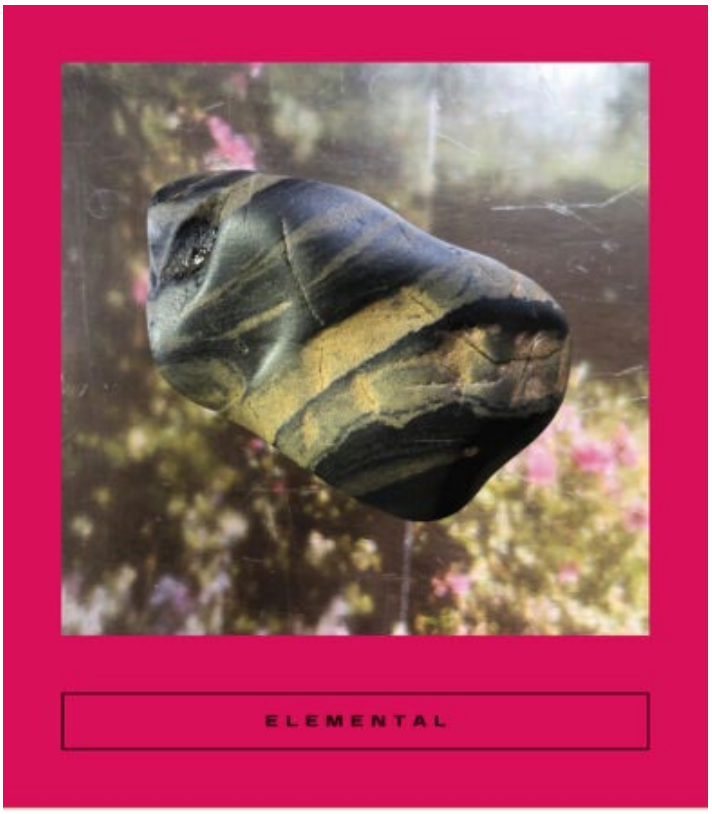
Carson, Rachel. (1955) 1998. "The Edge of the Sea." Boston: Houghton Mifflin Company.

Tyler C. Seidel on *Elemental: Earth Stories*

Elemental: Earth Stories is a collection of English-translated short stories from around the earth featuring brilliant native writers of Japanese, Polish, Kurdish, Hebrew and many more. The authors guide the reader through a journey of human experiences ranging from aging and disease, environmental destruction and research, and family and belonging. The writing styles of each author provide the reader a refreshing exposure to the peculiarities of navigating day-to-day living in an ever-changing world.

While the collective stories are organized according to new, active settings, it is this act of isolation and aggregation that revealed an additional setting not bound in pages. I felt that the atmospheric space of *Elemental*, be it through tone, page structure, or the pacing of the story helped situate me as a reader in the context of how the characters felt in their given environment. I was then able to appreciate more how this context exposed the inherent reality to their stories. I would argue that the environment in *Elemental* is not a passive character or simple setting in each story, but rather a directing force that enables characters to ground themselves across time as they reflect on their experiences and decide how to navigate their conflicts.

Elemental is a valuable piece of literature because it is a commentary on the complications of navigating a universality as entangled individuals and places. Before better appreciating the context of these stories, I could imagine it being tempting to focus on the internal motivations and interpersonal tensions between characters as a means of addressing a story's conflict. However, *Elemental* was an encouraging reminder to me of how appealing to more natural sources for insight can help to explain manufactured circumstances. In our real world in motion, with the moving stories of *Elemental*, I learned more about how the distance we put between ourselves, our planet, and pages obscures our experiences of being connected.



Coolidge, Sarah, ed. 2021. "Elemental: Earth Stories." San Francisco, CA: Two Lines Press.

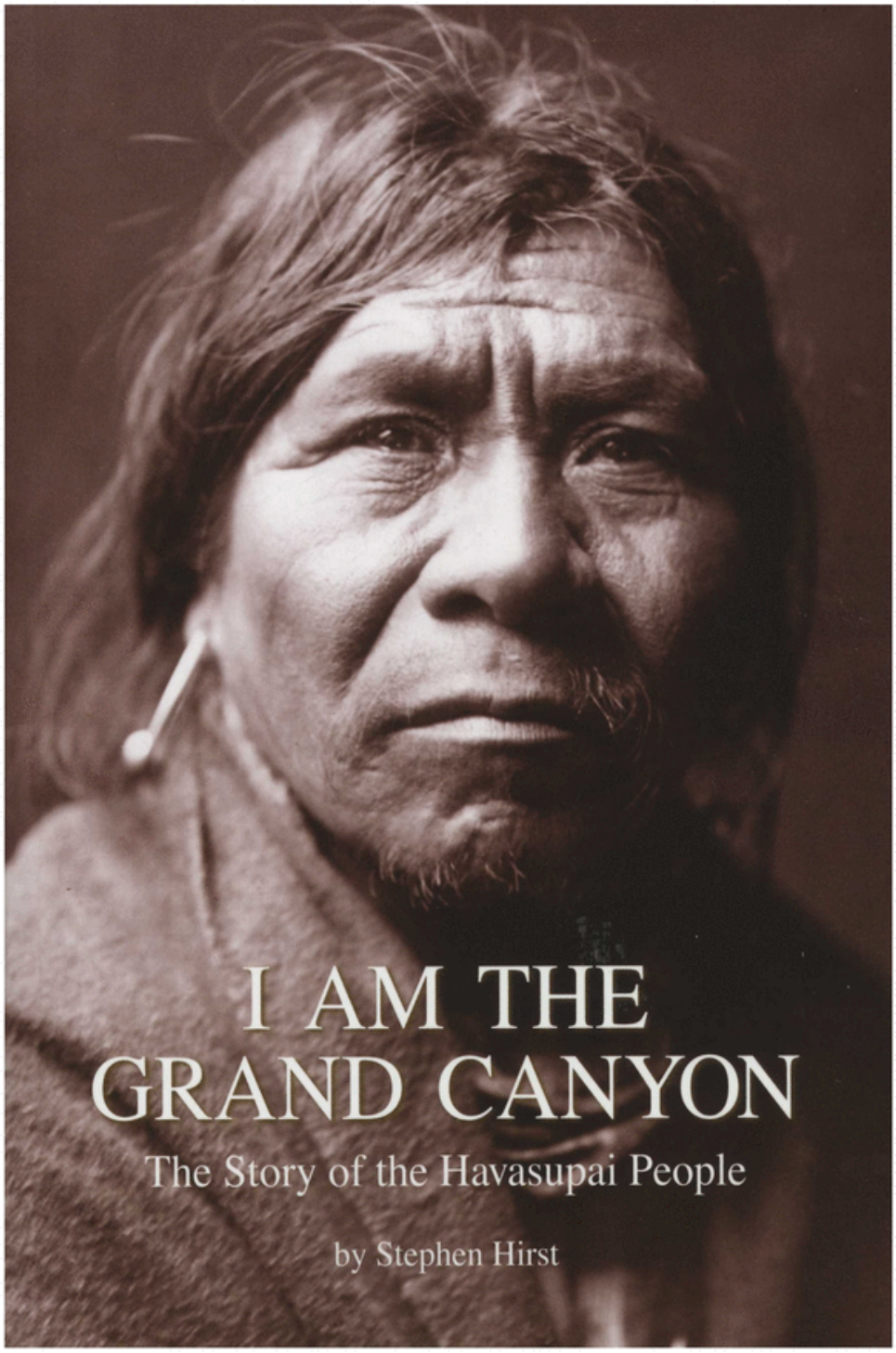
Coolidge, Sarah, ed. 2021. ***Elemental: Earth Stories.*** San Francisco, CA: Two Lines Press. https://www.twolinespress.com/shop/book/elemental/.

Jabari Jones on "Recognizing Geology's Colonial History for Better Policy Today" and *I Am the Grand Canyon: The Story of the Havasupai People*

I've been thinking a lot about positionality lately—the privileges, challenges, and responsibilities that I carry as a result of my various identities and roles (e.g., university employee, earth scientist, black man, cisgender man). These identities shape and are shaped by the systems and institutions that we interact with and benefit from, and so many of these systems are built from complex and unjust legacies. I want to highlight two sources that I have read recently that have allowed me to wrestle with these ideas.

The first piece is a recent *Eos* article by Maddy Nyblade, a graduate student in earth & environmental sciences at the University of Minnesota Twin Cities, and Jenn McDonald, a geologist at the Minnesota Geological Survey (MGS), that explores some of the early history of state-sponsored geologists in Minnesota. Geologic mapping—the practice of mapping the geographic extent and geologic relationship of different rock units—was used to characterize the landscape and to identify potential mineral resources throughout the U.S., often in conjunction with military expeditions. Locating mineral resources, defining transportation corridors, and locating viable farmland all led directly to land dispossession and removal of Indigenous peoples. These practices occurred in Minnesota as well, such as false claims of gold deposits in northern Minnesota that led to cessation of land by the Bois Forte Band of Chippewa. In addition to detailing history, the paper details the way that the MGS is considering this history in their current practice, including a new policy that gives tribes discretion about whether or not MGS conducts activities on reservation land and/or publishes data collected on tribal land.

The second source is a longer read called *I Am the Grand Canyon: The Story of the Havasupai People* ([1976] 2006), an ethnography written by Stephen Hirst. The book details the history and legal struggles of the Havasupai Tribe who live in and above the Grand Canyon. To pay mind to positionality, I want to note that the main text of the book was written by a white ethnographer in the 1970s, but the work seems to be well-regarded by the Havasupai Tribe, who hold the copyright on the book. The book details the Havasupai's decades-long legal struggle to retain and reclaim ownership of and access to their land as Grand Canyon National Park was established around them. Many forces worked against the Havasupai through the decades—railroad companies, the National Park Service, senators, presidents, and the Sierra Club. In spite of this opposition and the complexity of politics and economics around the Grand Canyon, the Havasupai were able to reclaim much of their land from the U.S. government with the passage of the Grand Canyon National Park Enlargement Act in 1975.



Hirst, Stephen. (1976) 2006. "I Am the Grand Canyon: The Story of the Havasupai People." Grand Canyon, AZ: Grand Canyon Association.

As an earth scientist who has done field work in national parks, both these sources force me to wrestle with the history of the institutions that I am part of and the way that their history continues to influence us today. They present a challenge to interrogate the context of the work that I do and to consider the responsibilities that I have as a result.

Hirst, Stephen. (1976) 2006. *I Am the Grand Canyon: The Story of the Havasupai People*. Grand Canyon, AZ: Grand Canyon Association.

Nyblade, M., and J. McDonald. 2021. "Recognizing Geology's Colonial History for Better Policy Today." *Eos: Science News by AGU*, September 7, 2021. https://eos.org/science-updates/recognizing-geologys-colonial-history-for-better-policy-today.

Amanda Lyons and Verónica Cadavid González on the UN Special Rapporteur on Water

When the human right to water was first clarified by the UN Committee on Economic, Social, and Cultural Rights in 2002 and then recognized by the UN General Assembly in 2010, the focus was squarely on access to safe drinking water. Since then, however, this increasingly codified human right has continued to evolve into a rallying cry for a wide range of movements seeking to emphasize water's deep connection with peoples' cultural identity, livelihood, and survival and to address the root causes of the degradation and exhaustion of freshwater resources and ecosystems around the world.

This evolution can also be traced in the work of the successive experts who have held the role of UN Special Rapporteur on the human rights to safe drinking water and sanitation.
Because it draws an important bridge between the international human rights framework and deep questions of water, place, and justice, we recommend to the readers of *Open Rivers* the first report by the newly appointed UN Special Rapporteur on water, Pedro Arrojo-Agudo. Arrojo-Agudo is a Spanish physicist and economics professor emeritus from the University of Zaragoza. In 2003 he was awarded the prestigious Goldman Prize for his impressive leadership intervening in Spain's water policy, especially around dams.
In his first report as UN Special Rapporteur, presented to the UN Human Rights Council in September 2021, Arrojo-Agudo announces his plan and vision for carrying out his UN mandate (2020–2023). He sets out a novel "socio-environmental approach to the human rights to safe drinking water and sanitation." This leads him to make an insightful diagnosis of the global water crisis from a human rights perspective and to establish concrete priorities for action on that basis.

Importantly, Arrojo-Agudo makes explicit the implications of the UN General Assembly recognizing water as a human right in 2010. Although priority is generally given to water for economic activities, the report notes that "the most important functions and values of water are not even substitutable or exchangeable for money." The consequence, for Arrojo-Agudo, of declaring water a human right is that:

> it is necessary to think of the value of water for public health and social cohesion; of the landscape and identity values linked to rivers and lakes; of the social, aesthetic,

> recreational and symbolic values that water has in different countries, cultures and world views; and of the functions of water in nature, sustaining biodiversity and projecting ecosystem services of vital importance for current society and future generations.

The Special Rapporteur thus concludes that an ethical hierarchy must be adopted that recognizes that the "essential priority is to support life and people's health and dignity."

After making this critical advance, the report identifies the current development model to be at the root of the global water crisis—namely because of the damage to aquatic ecosystems and the poverty, inequality, and discrimination the model ignores, sustains, and aggravates. The pandemic, climate change, and the commodification of water exacerbate these factors. In response, the UN Special Rapporteur sets out as priorities: (1) water governance that is truly democratic; (2) the centrality of ecosystems sustainability in the human right to water for personal, domestic, and productive uses; and (3) water as means to advance collaboration and peace.

For us, this evolution in human rights thinking and advocacy has direct application. As part of the Minnesota Human Rights Lab, we are researching two cases of peasant communities in Colombia who have sought to defend their rights in the context of the imposition of a mega-development projects—the case of the La Colosa open-pit gold mine in Cajamarca, Tolima, and the El Quimbo hydroelectric dam in Huila. In each case, the existing legal and political routes for opposition to or intervention in the project have been paved with insurmountable obstacles. The approach set out by the UN Special Rapporteur, which centers on sustainability, democratic governance, and an ethical hierarchy of priorities, opens a new and promising human rights agenda for diagnosis and action.

For additional information, see the official report from the Special Rapporteur to the UN Human Rights Council and a simplified presentation of the priorities and vision for his work moving forward.

Bibliography

Carson, Rachel. (1955) 1998. *The Edge of the Sea.* Boston: Houghton Mifflin Company.

Coolidge, Sarah, ed. 2021. *Elemental: Earth Stories.* San Francisco, CA: Two Lines Press.

Fix. 2021. *Imagine 2200: Climate Fiction for Future Ancestors.* Seattle: Grist Magazine. https://grist.org/fix/series/imagine-2200-climate-fiction/

Hirst, Stephen. (1976) 2006. *I Am the Grand Canyon: The Story of the Havasupai People.* Grand Canyon, AZ: Grand Canyon Association.

Nyblade, M., and J. McDonald. 2021. "Recognizing Geology's Colonial History for Better Policy Today." *Eos: Science News by AGU*, September 7, 2021. https://eos.org/science-updates/recognizing-geologys-colonial-history-for-better-policy-today.

UN Human Rights Council. 2021. *Report of the Special Rapporteur on the human rights to safe drinking water and sanitation, Pedro Arrojo Agudo.* UN Doc. A/HRC/48/50, July 5, 2021.

Recommended Citation

Nuernberger, Kathryn, Henry McCarthy, Tyler C. Seidel, Jabari Jones, Amanda Lyons, and Verónica Cadavid González. 2021. "On Water, Equity, and Justice." *Open Rivers: Rethinking Water, Place & Community,* no. 19. https://editions.lib.umn.edu/openrivers/article/on-water-equity-and-justice/.

DOI: https://doi.org/10.24926/2471190X.8339

About the Authors

Kathryn Nuernberger's current work-in-progress is *Intertwined: Reflections on Mutualism, Mutual Aid, and Ways of Being Together*. She is also the author of the essay collection *The Witch of Eye*, which is about witches and witch trials. Her poetry collections are *RUE, The End of Pink* and *Rag & Bone*. Her awards include the James Laughlin Prize from the Academy of American Poets, an NEA fellowship, and notable essays in the Best American series. She teaches poetry and nonfiction for the M.F.A. program at University of Minnesota.

Henry McCarthy is an environmental scientist in the Water Supply Planning Unit of the Metropolitan Council. In his position at the Council, Henry explores regional water supply challenges and patterns through spatial analysis (GIS), cartography, and design. Henry's work supports the Water Supply Planning Unit's role in ensuring a sustainable water supply for current and future generations through technical guidance and stakeholder collaboration. Before joining the Metropolitan Council, Henry graduated from Macalester College with a degree in geography and minors in environmental studies and data science.

Tyler C. Seidel is Hunkpapa Lakota (Standing Rock) and a first-generation student with a bachelor of science degree in biology, specializing in conservation and biodiversity. He is currently in the ecology, evolution and behavior Ph.D. program at the University of Minnesota Twin Cities where his dissertation research is focused on how aquatic and terrestrial ecosystems are connected through food webs in urban environments. His work has been supported by the National Science Foundation, has urged him to learn from the Institute for Advanced Studies, and has inspired him to build meaningful connections with local and international community advocates.

Jabari Jones, Ph.D. candidate in the Department of Earth & Environmental Sciences, studies how climate and land-use change affect river systems, critically evaluates the efficacy and value of field education in the geosciences, and links social and physical systems through research into environmental justice. Jabari's vision for interdisciplinary geoscientific research with tangible impacts aligns strongly with his teaching, volunteer efforts, and work towards community-driven research.

Amanda Lyons is executive director of the Human Rights Center at the University of Minnesota Law School. She is a specialist in international human rights law and advocacy, and her work looks at rights-based approaches to economic, environmental, and gender justice. Amanda earned her J.D. magna cum laude with a concentration in international human rights law from the University of Minnesota in 2009. Before returning to the U of M, Amanda worked for Franciscans International and the International Center for Transitional Justice (Bogotá, Colombia).

Verónica Cadavid González is a researcher of the Human Rights Center at the Law School and a master of human rights candidate at the University of Minnesota. From Medellin, Colombia, she holds a bachelor of laws and has worked as a researcher on armed conflict, human rights violations, and symbolic reparation within transitional justice. Verónica's work focuses on international law, advocacy, and civic space, particularly in economic, social, and cultural rights and applies a human rights lens to poverty, inequality, and access to justice for disadvantaged communities.

IN REVIEW

REVIEW OF *BETWEEN THE WORLD AND ME*, BY TA-NEHISI COATES

By Lark Weller

Note from the Editor

The views expressed herein are those of the author individually, not of the National Park Service.

First published in Open Rivers *Issue 12: Watery Places & Archaeology, here we republish Lark Weller's reflections on* Between the World and Me *by Ta-Nehisi Coates. In the article, Weller explains that reading Coates' book was spurred*

"Returning the River" by Molly Van Avery, Dameun Strange, and Michael Hoyt. Image courtesy of Michael Hoyt.

by a persistent question in her own work: how can water quality work also be anti-racism work? This is exactly the kind of perspective we need in environmental work (and beyond) if we are to, as Weller explains, "be accountable to, and held accountable by, others who share a commitment to a future with more equitable racial—and environmental—outcomes than the past."

Anti-racism work is, of course, ongoing. While Weller wrote for Open Rivers *in 2018 and Coates' book was first published in 2015, the questions, challenges, and provocations of both texts are as poignant now as they were then. With that in mind, we invite you to read (or reread) Weller's reflections as part of a practice to see ourselves, our work, and our relationships differently and to move toward being what Coates' calls "a conscious citizen of this terrible and beautiful world" (p. 108).*

—Laurie Moberg, Editor

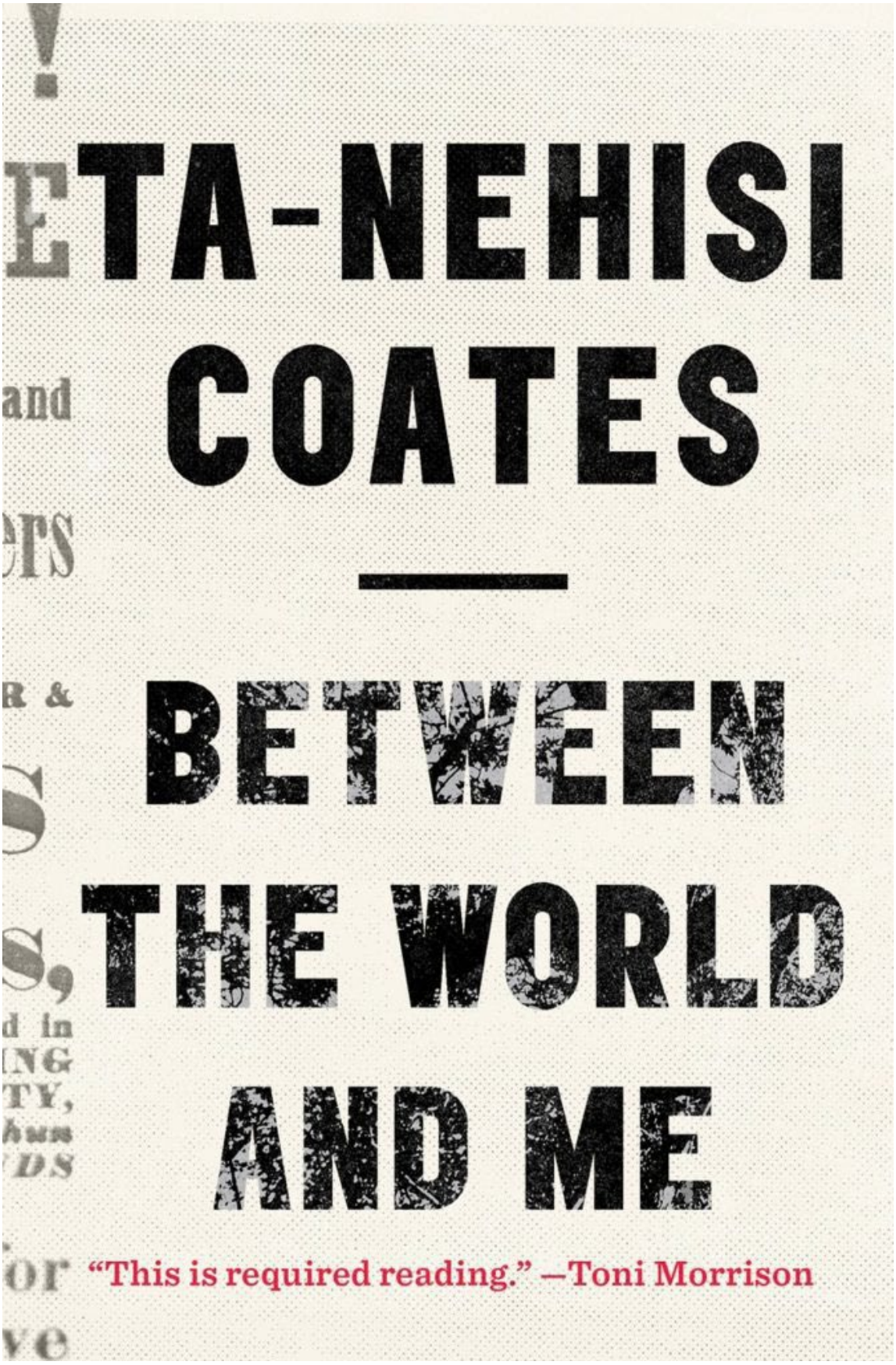
As the water quality coordinator for the Mississippi National River and Recreation Area (MNRRA) for nine years, I organized and hosted the Mississippi River Forum. A monthly informational and networking series, the River Forum was one of my more visible tasks. A fundamental organizing principle of this ongoing series was to bring together a disciplinarily diverse group of water resource practitioners and decision-makers for conversations with people beyond their typical working relationships. In hosting conversations with these interdisciplinary groups, I sought to explore water issues holistically together: how water was related to agriculture, to the economy, and to the social and political realms. I tried to bring together demographically diverse groups, too, and, given the makeup of "the environmental field," considered it a victory when as many series speakers were women as were men.

Most of us are aware of, and many have discussed, the lack of racial diversity within environmental professions—often regarded simply as a problem of optics. I began to realize that the whiteness of the room was not just an optics issue, but reflected a deeper problem in our work: we didn't seem to know how to have meaningful conversations with people who "don't look like us," or to recognize their experiences were often significantly different than ours. I wanted to move us toward more inclusive conversations, but didn't know where to start, in the context of the River Forum series. I didn't name it as such at the time, but I was no longer a water quality planner trying to apply an equity lens to the community conversations I'd been having all along. Instead, I was grappling with what it means to authentically make deeply inclusive principles central to what our community planning and water quality work, and conversations, should even be *about*. So, another way to put the question is: How (or can) water quality work be anti-racism work? Surely it can, but where to start?

I was learning that I, and most people in the United States, had been wildly mis-educated about race. I sought a **more accurate education** on this country's history and its creation of racial identities and experiences. I also searched for **tools to integrate that knowledge** so I could better recognize how that history has had an impact on my life and the lives of others. Finally, I searched for **actions** better aligned with my values (including professionally).

One of the books I read for guidance was *Between the World and Me*, by Ta-Nehisi Coates. Much has been made about Coates by white readers.[1] As a woman who identifies as white, I found that this book has shifted my perspective on my work as a water quality and community planner.

Between the World and Me is Coates' letter to his adolescent son, Samori—his attempt to communicate with Samori his own experiences in this country as a black man, as well to recognize the ways his son's experiences differ from his. It is part personal narrative, part national history,



"Between the World and Me," by Ta-Nehisi Coates.

part analysis of current national racial dynamics. Putting all of that together, Coates asserts that he and his son will always have to explore the same ultimate question: "How one should live within a black body, within a country lost in the Dream," in a nation built on separating black and Indigenous people from their bodies (p. 12).

This compact book is elegantly written. Coates clearly names racial practices that are designed to be nearly invisible, and consequences that are meant to feel natural, or so overwhelming that we convince ourselves they are insurmountable. He links these practices and consequences to the specific policies, decisions, and actions from which they stem, thereby illuminating a path to systemic racism that has been made difficult to see—especially for whites who benefit from the outcomes of these dynamics.

Coates details the role the streets of his upbringing played in defining his opportunities—and the difference between that and what white communities learned about *their* opportunities from the places in which *they* grew up. He walks his son through the realization that the city streets of his childhood—and the language of fear and power with which he learned to navigate them—were a galaxy away from the streets of "other worlds where children did not regularly fear for their bodies" (p. 20).

> In the evenings I would sit before [the] television bearing witness to the dispatches from this other world….That other world was suburban and endless, organized around pot roasts, blueberry pies, fireworks, ice cream sundaes, immaculate bathrooms, and small toy trucks that were loosed in wooded backyards with streams and glens. Comparing these dispatches with the facts of my native world, I came to understand that my country was a galaxy, and this galaxy stretched from the pandemonium of West Baltimore to the happy hunting grounds of *Mr. Belvedere*…. I knew that my portion of the American galaxy, where bodies were enslaved by a tenacious gravity, was black and that the other, liberated portion was not. (pp. 20–21)

Coates names educational infrastructure as another component of the equation keeping him and other blacks a safe distance from achieving the Dream.

> If the streets shackled my right leg, the schools shackled my left. Fail to comprehend the streets and you gave up your body now. But fail to comprehend the schools and you gave up your body later. I suffered at the hands of both, but I resent the schools more. There was nothing sanctified about the laws of the streets—the laws were amoral and practical…. But the laws of the schools were aimed at something distant and vague. What did it mean to…"grow up and be somebody?" … The world had no time for the childhoods of black boys and girls. How could the schools? (p. 25)

> I came to see the streets and the schools as arms of the same beast. One enjoyed the official power of the state while the other enjoyed its implicit sanction…. Fear and violence were the weaponry of both. Fail in the streets and the crews would catch you slipping and take your body. Fail in the schools and you would be suspended and sent back to those same streets, where they would take your body. And I began to see these two arms in relation—those who failed in the schools justified their destruction in the streets. The society could say, "He should have stayed in school," and then wash its hands of him. (p. 33)

For those looking for a more accurate telling of our nation's racial history, *Between the World and Me* is a solid guide—and, importantly, one told from the perspective of one whose ancestors have suffered under that history. The society Coates points to is where our national racial

history plays out in my professional sphere. "What any institution, or its agents, 'intend' … is secondary. Our world is physical….Very few Americans will directly proclaim that they are in favor of black people being left to the streets. But a very large number of Americans will do all they can to preserve the Dream…. 'Good intention' is a hall pass through history, a sleeping pill that ensures the Dream" (p. 33). Was my saying "I tried to invite diverse perspectives into (pre-defined) River Forum discussions" a "hall pass" through the reality that the discussions didn't include the wisdom of diverse experiences as they were being created?

What would a different path mean for my professional life? The primary shift this book helped me make in my perspective on my work is that the problem of a lack of diversity in our environmental professions is a symptom, not an outcome. It is a symptom of the fact that the lack of meaningful personal and professional relationships outside of the Dream is both a result of and a way to maintain the country's race-based inequities. Furthermore, I am struck by this realization: Unless—and *until*—white professionals like me allow ourselves to see, acknowledge, and *feel* the Dream's toll on Indigenous people and people of color, conversations about equitable water and community planning will remain limited to focusing on optics.

Maintaining whites' Dream has required that the mechanics of building it be difficult, if not impossible, to see—and certainly makes the human cost of the Dream unappealing and uncomfortable to acknowledge. It makes a perverted "sense" that those benefitting from this Dream have resorted to collective "unseeing" in order to psychically stomach their benefits. Coates calls this the "habit of jabbing out one's eyes and forgetting the work of one's hands" (p. 98). The ability of its beneficiaries to un-see the ways in which the Dream continues to break the terms of social contracts like "equal access to opportunity" has essentially enabled the survival of the Dream.

Coates elegantly ties white America's refusal to see how it has plundered entire generations of human beings to how it has likewise looted the natural world in service to its insatiable appetite. The "Dreamers have improved themselves, and the damming of seas for voltage, the extraction of coal, the transmuting of oil into food, have enabled an expansion in plunder with no known precedent. And this revolution has freed the Dreamers to plunder not just the bodies of humans but the body of the Earth itself" (p. 150).

As Coates states, perhaps the hope is "to awaken the Dreamers, to rouse them to the facts of what their need to be white, to talk like they are white, to think that they are white, which is to think that they are beyond the design flaws of humanity, has done to the world" (p. 146). The call to "awaken the Dreamers" is the mandate I now seek to follow in my work, as I attempt to meaningfully align values of human inclusivity more fully with that work.

To Samori, Coates counsels, "Do not struggle for the Dreamers. Hope for them….But do not pin your struggle on their conversion. The Dreamers will have to learn to struggle for themselves, to understand that the field for their Dream, the stage where they have painted themselves white, is the deathbed of us all. The Dream is the same habit that endangers the planet, the same habit that sees our bodies stowed away in prisons and ghettos" (p. 151). What might this struggle for wisdom look like in the work of a white water quality coordinator?

Since "hitting the pause button" on the River Forum series, I have helped bring training on facilitating inclusion dialogue to colleagues so we can seek greater understanding of these issues together. I have co-led a project (with partners including River Life) to identify institutional barriers to equity in water-related organizations. I have expanded my efforts to build a more respectful and inclusive National Park Service

as a facilitator, Women's Employee Resource Group leader, and by bringing employees' voices to agency decision makers. I have started to open my mouth more with colleagues about our need to ask different questions of ourselves—to look at ourselves differently, with fresh, clear vision—and have tried to bring similar questions to my role as a community planner as the park conducts long-term planning.

I like to believe that I aspire to "be a conscious citizen of this terrible and beautiful world" (p. 108). This requires that I know my own personal history, and my society's history, and requires me to swim upstream against the Dream's powerful momentum. It's a *swim* I have the accidental "fortune" of choosing whether or not to take. I can tread water (or get out of the water entirely) anytime I want, and I catch myself doing both all the time. I need to be accountable to, and held accountable by, others who share a commitment to a future with more equitable racial—and environmental—outcomes than the past. This will enable me to keep principles of racial justice at the foundation of conversations about what my (and our) work should even be. Realizing a future with such different outcomes will require deeper ways of working with and relating to each other—and (perhaps as importantly) to ourselves as individuals. Coates has given me clarity and language to more honestly see my place in this society, how I have gotten here, and the enormous human and psychological costs associated with keeping me and others like me comfortable. Though I struggle to know what to do next, I will never see my place in the world the same again.

Footnote

[1] My privileges and related experiences have shaped my perspective and how I interact with everything, including this reading. I hope any "misses" in what I share about my reading of Coates will become openings that lead me toward greater, shared understanding.

Recommended Citation

Weller, Lark. 2021. "Review of Between the World and Me, by Ta-Nehisi Coates." *Open Rivers: Rethinking Water, Place & Community*, no. 19. http://editions.lib.umn.edu/openrivers/article/review-of-between-the-world-and-me-by-ta-nehisi-coates-2/.

About the Author

Lark Weller is the Employee Engagement Coordinator for the National Park Service's Office of Relevancy, Diversity, and Inclusion (RDI). There, she works to help NPS improve its institutional equity, inclusion, and employee engagement. She was an employee of the Mississippi National River and Recreation Area (a unit of the NPS) for 13 years. Lark has a B.S. degree in agriculture, sociology, and anthropology, and a master's degree in urban and regional planning, both from the University of Minnesota.

PRIMARY SOURCES

MEETING THE ATCHAFALAYA

By Joanne Richardson

The Mississippi River flows mostly south from its most northern reaches in Minnesota through the heartland of the United States down to Louisiana and the Gulf of Mexico, collecting and distributing commerce and culture with a multitude of tributaries and distributaries. The river itself is dynamic and changeable, flooding, avulsing, and remodeling its banks and channels continuously. Tentatively held in place with levees, dams, and floodways, this dynamic river is held somewhat in check, allowing towns and farms to reach right to the river's edge, and providing some continuity and control for navigation of the famous river barges that carry a wealth of commodities up and down the river. All of this is largely contingent upon the success of a single series of floodgates and levees in Louisiana known as the Old River Control Structure that stands between the Mississippi and its near neighbor and distributary, the Atchafalaya, holding each to its own banks, meting out water between them and keeping the Mississippi flowing towards New Orleans, preventing that city from being stranded with a much-reduced trickle of a river. John McPhee, in his 1989 work The Control of Nature elegantly explains this storied structure that keeps the Atchafalaya River and the Mississippi River separate; otherwise the Mississippi would, in the way of rivers, change course and take the Atchafalaya's shorter, steeper path to the Gulf of Mexico.

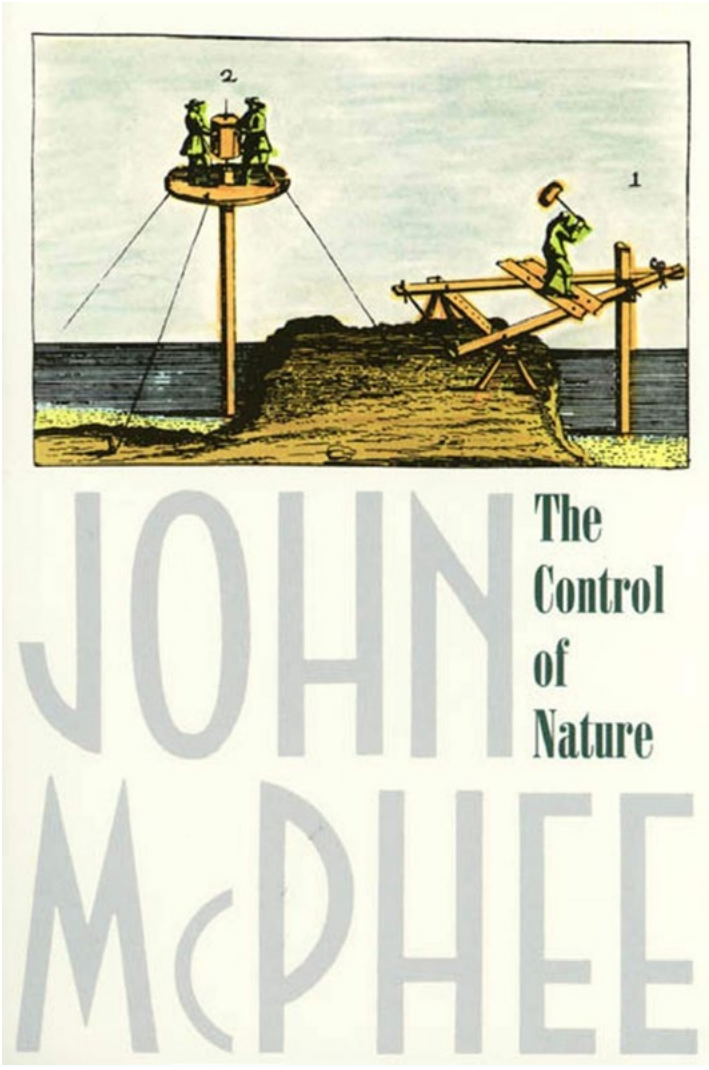
Jean Bonneville and Joanne Richardson at the Old River Control Auxiliary Structure in spring 1992. Image courtesy of John and Alta Fossum.

In the spring of 1992, I was seventeen years old and just about to graduate from high school. My best friend's parents had just read *The Control of Nature* and had decided that they simply must see the Old River Control Structure for themselves. Consequently, permission secured from my own parents, we all loaded up in their maroon minivan, and set off to go see for ourselves this feat of engineering.

I had taken no convincing to agree to come along. I spent my childhood trailing after my dad in the various landscapes of the United Kingdom and the United States inspecting the rocks and the hills and inferring what we could about the stories of the landscapes, my mum and brother solidly in tow, thinking about other things. I learned to love geology through these experiences and consequently, I've spent my life torturing people on car trips with Very Interesting Facts about the land we're driving through.

On this drive from Minnesota down to New Orleans, the tables were turned. This time, I was the listener, hearing all about the New Madrid Seismic Zone (and how to pronounce it correctly—MAD-rid) and how when the fault popped in 1812, the land boiled with sand and church bells rang as far away as Boston. The very river itself flowed briefly north. You can still see the sand blows to this day, lighter streaks and blobs in the fields, visible as you drive by.

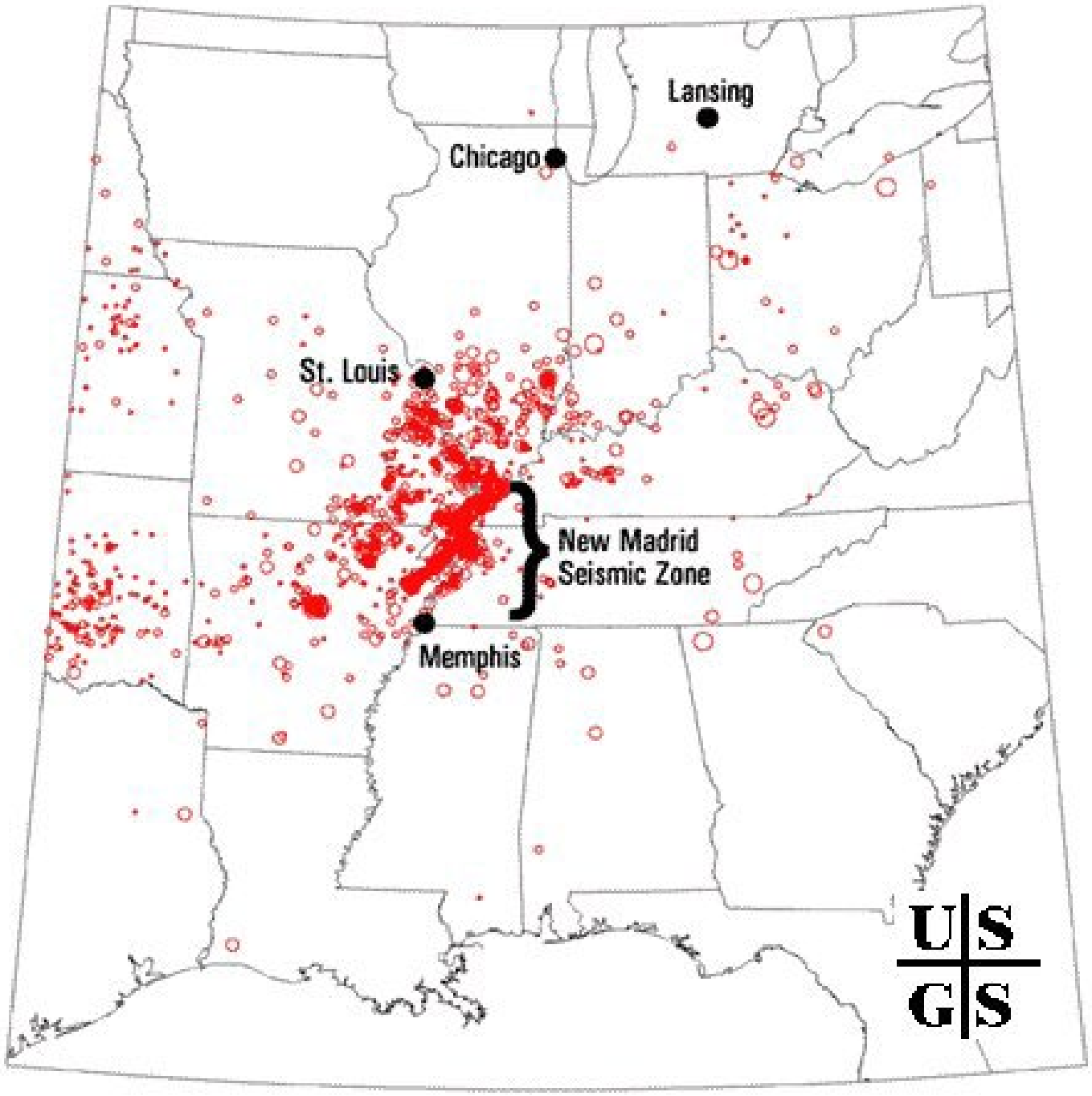
My friend's parents explained all about the Old River Control Structure and the US Army Corps of Engineers' attempts to keep the Mississippi and Atchafalaya rivers separate. Rivers avulse or change course frequently within their floodplains as erosion and deposition continually change and are changed by the flow of water. The Mississippi is known for its meander bends, caused by small variations in the flow of the river resulting in erosion at the outer edge of the bend where the water flows faster, and deposition on the inner bank of the bend where the water flows more slowly and sediment can drop out. These processes cause the great loops of river to wind their ways into deeper and more extreme s-curves. When the river erodes a path back to itself, oxbow lakes form in the abandoned loops and the process starts again. The Old River Control Structure exists to keep a meander bend of the Mississippi from joining with the Atchafalaya, which is at a lower elevation and would capture the flow of the Mississippi River, stranding New Orleans on high ground, and inundating the mouth of the Atchafalaya.



"The Control of Nature" chronicles three attempts (with varying success) to control natural processes. It is divided into three long essays, 'Atchafalaya,' 'Cooling the Lava,' and 'Los Angeles Against the Mountains.'

In my mind, the mighty Mississippi became fragile and tenuous, artificially held to higher ground while the Atchafalaya stormed away below, pulling on the land and the water to win this tug of war. Surely, I thought, it can't work?

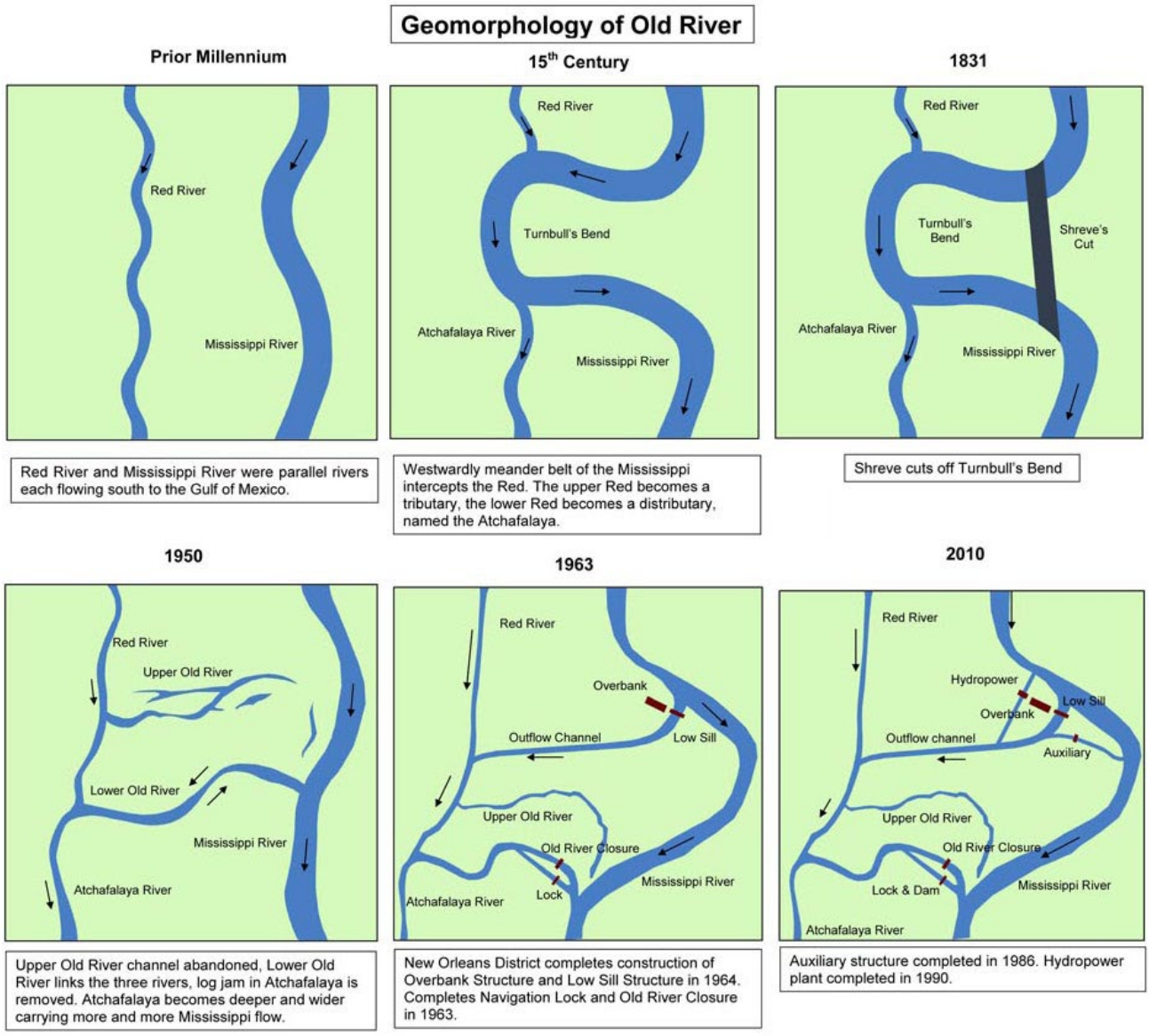
To this day, I've been convinced of the inevitable failure of the structure, certain that the Atchafalaya will win. Will the levees and floodgates breach? Will the water surge from the Mississippi River, and churn down the



The New Madrid Seismic Zone stretches roughly from St. Louis, Missouri to Memphis, Tennessee, roughly tracking along the path of the Mississippi River. Image via USGS.

Atchafalaya's steeper path, eroding, flooding, and dropping sediment in great new sandbars and mud flats? What of the people living in its inevitable way? What of the barges stolidly working their ways up and down the main channel? Currently, the Control Structure metes out the water, carefully balancing the two rivers, sending only 30 percent of the Mississippi's water westward down the Atchafalaya. What might the new ratio be? Shipping up and down the current industrial corridor of the Mississippi would be fouled by turbulent currents and dropping water levels. Will dredging be able to craft a new channel from the old, and restore the precarious balance? Will New Orleans be perched above a much-reduced river with ships and their industries stranded, the communities along the Atchafalaya inversely inundated? The structure of the very gulf itself would change with terrible rapidity, with devastating consequences for the people living there and the entire U.S. economy.

In 1992, we travelers did make it to the Control Structure and drove along a road precariously



This series of maps shows the formation of the Atchafalaya River and the construction of the Old River Control Structure in Louisiana. Image via USAC.

perched between the two waterways. With the Mississippi on one side, Atchafalaya on the other, the structures between them seemed insufficient to me—too small and too fragile. In my memory, the water swirls and pulls and gurgles on either side, and the very levees and structures themselves shudder and groan. We stood and admired the rivers, the structures, then beat a hasty retreat to more solid-feeling ground.

Curiosity temporarily sated, we finished our trek south in New Orleans, and I was struck again and again by the pull between two thoughts: New Orleans is high ground; New Orleans is low ground.

Approaching New Orleans, though I intellectually know that it is all low ground comparatively close to sea level, it felt like it was "up," having so recently seen the Atchafalaya, and knowing that it is lower and has a more direct route flowing down to the gulf. However, I was astonished when we were walking around in New Orleans, replete with beignets, and I asked where the river was and found that it was at the top of what looked like a hill at the side of the road. It seemed reckless and dangerous. And understandable. The levees keep the river out of the city, the Control Structure keeps the river from avulsing to the west. The bird's foot delta, formed by the

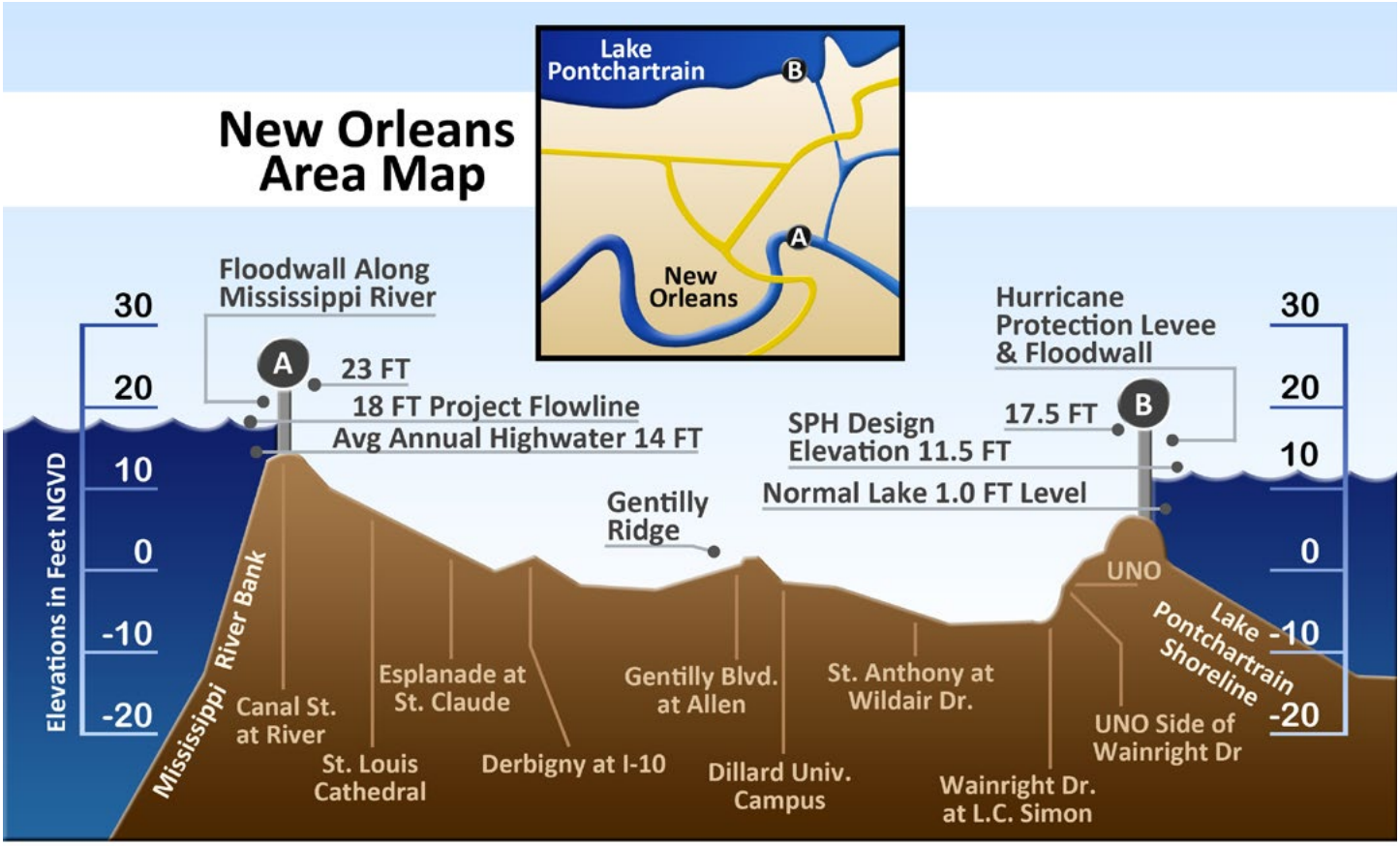
This photograph of the Old River Control Structure in Louisiana shows some of the intricate arrangement of floodgates and levees keeping each river to its course. This image was taken during the flood of 2011 and clearly shows inundation along the banks. Image by Tobin Fricke, via Flickr (CC BY-SA 2.0).

deposition of sediment at the ever lengthening and branching mouth, is longer by the year, but the marshes in the vicinity are starving for sediment that is now dropped on the riverbed and sent futilely into the gulf. If the levee fails, the city is inundated. If the Control Structure fails, the city is high and dry. If the delicate balance is maintained, the levees must get higher and higher, the bird's foot delta will get ever longer, the marshes will continue to starve, and the potential collapse of the system is yet more devastating to imagine. I kept my eye on the levee for the rest of our visit, imagining the story of the Dutch boy who put his finger in a dike to prevent a flood.

In due course we returned home and returned to our lives at the top of the river system. I'd nervously watch the news during each spring flood and wonder "Is this the year?"

In time, my academic peregrinations brought me to a study of geology itself. We learned about the New Madrid Seismic Zone, and I found it was shockingly helpful to have been there—to have stood on that very ground, to have seen the sand blows, and to have imagined the distance to Boston. Learning that the fault zone is the failure of an ancient rift that formed in the protocontinent Rodinia 750 million years ago, I felt personally connected to some of the most ancient history of our planet, and it was magical. I also felt the looming threat of it and was consistently reminded by my professors that what has happened can happen. The fault zone will inevitably quake again.

We also studied the Old River Control Structure. We learned in detail how rivers avulse across floodplains, and how the history of the hubris of



City of New Orleans Ground Elevations

From Canal St. at the Mississippi River to the Lakefront at U.N.O.

This diagram illustrates the relationship of New Orleans to the Mississippi River on one side and Lake Pontchartrain on the other. Image by Alexdi (CC BY-SA 3.0).

humans to try and control avulsion with levees and dams has so often led to tragedy. There is a saying about levees, that there are two kinds: those that have failed and those that are going to fail. My thoughts returned again and again to the experience of being between these two powerful rivers, and however the engineering may be impressive on paper, in real life it seems so small and fragile.

My continued fascination with the ways that the land frames the experiences of humanity led me, some years later, to the acquisition of a master's degree in landscape architecture where the readings from *The Control of Nature* popped up again and again in syllabi. We discussed why the Control Structure was at once an excellent idea, well executed, and how it is a potential point of failure propping up unsustainable systems. We discussed what else we could have done, would have done, how things might be different if it had never been built, and what may happen when or if it one day fails.

Then I found myself working in river studies at the University of Minnesota, high up on gorge walls above the very same Mississippi. Working with colleagues across a multitude of disciplines, I found again and again how this experience of standing on the fault zone and standing on

People relaxing on the levee itself during Algiers Riverfest, New Orleans, 2010. Image by Marie Carianna (CC BY-SA 2.0).

the levees became central to my life's work. It gave me a practical understanding of theoretical unknowns and gave me access to deep emotional memories of these special places, ranging from fascination and curiosity to trepidation.

With hope, I imagine a future in which the control structure becomes a joining of peers, rather than rivals, and that the New Madrid Seismic Zone releases its pressures with polite rumbles and not a mighty bang. I don't know what is going to happen, and I certainly don't know what to recommend. With regard to these two phenomena, I can only hope that should disaster strike, that we are ready and able to help all affected.

I am also convinced of the value of experiencing these landscapes first-hand. That simple road trip, now many years ago, has been such an unexpected lifelong gift of knowledge and memory, that it makes me hope that I can pass that gift onto the next generation. I wonder how my sons may react to standing on the fault zone and between the rivers? What will happen? Will they, as I did, feel the pull between the delicate balance we currently have and the potential of what the future holds? It's time, I think, for a long drive and another look.

This Landsat image shows the classic formation of the bird's foot delta as the Mississippi River makes its way into the Gulf of Mexico. Also visible is the Old River Control Structure to the north, and the Atchafalaya River to the west. For more information, visit https://landsat.visibleearth.nasa.gov/view.php?id=85519. Image by NASA.

Acknowledgements

The author would like to thank John and Alta Fossum and Jean Bonneville for the great adventure and extraordinary memories.

Recommended Citation

Richardson, Joanne. 2021. “Meeting the Atchafalaya.” *Open Rivers: Rethinking Water, Place & Community,* no. 19. https://editions.lib.umn.edu/openrivers/article/meeting-the-atchafalaya/.

DOI: https://doi.org/10.24926/2471190X.8355

About the Author

Joanne Richardson is the production manager for *Open Rivers*, and has a background in landscape architecture, geology, and computer science.

TEACHING AND PRACTICE

WATER? I'VE GOT A STORY ABOUT THAT

By Angie Hong

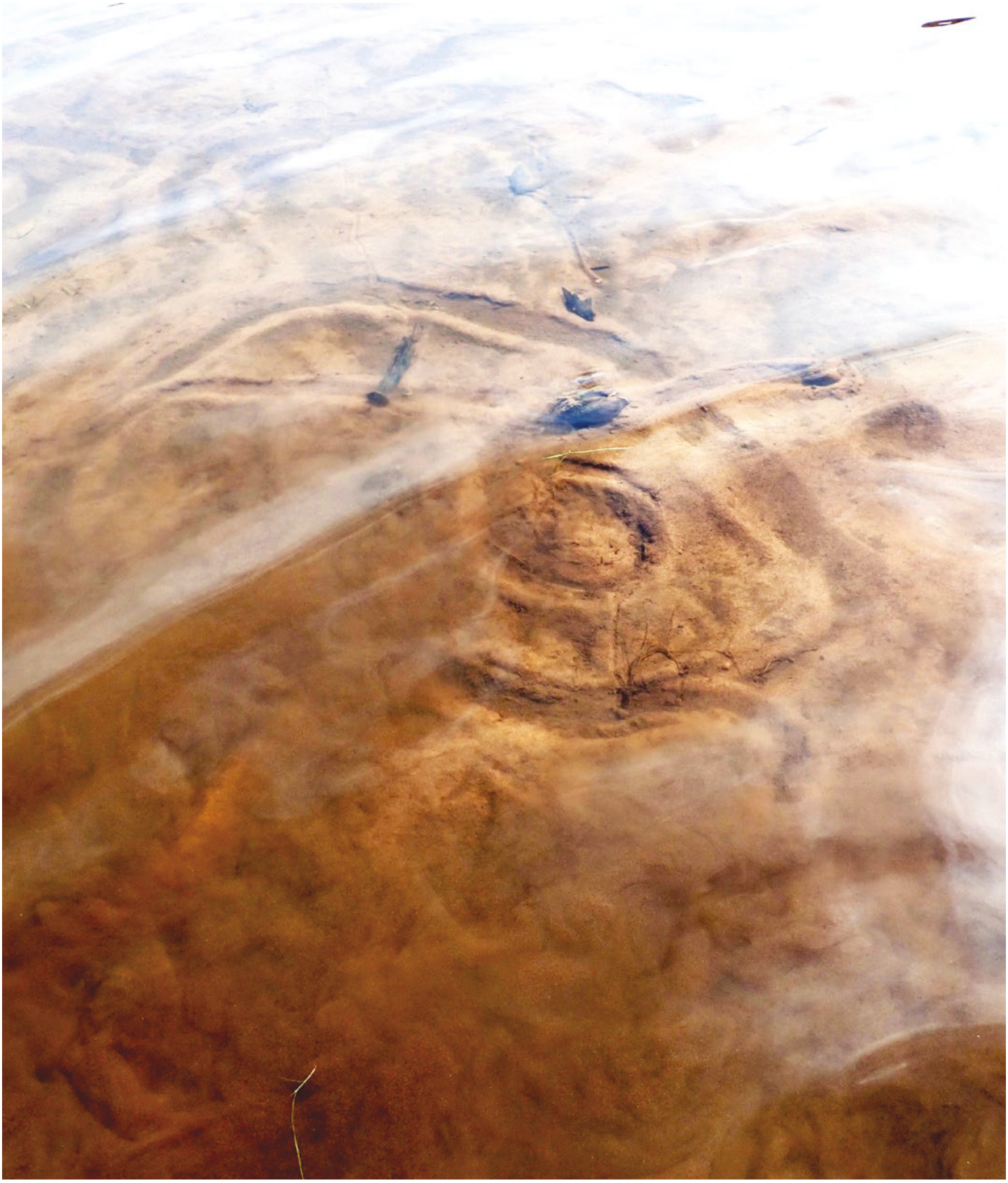
Beneath the clear brown water the mussel paused, resting softly on the sand. Behind it, a long arcing trail unfurled. Puff. The mussel exhaled, sending a small burst of water out of its body, and in doing so, it traveled one centimeter further across the river bottom. Rest, exhale, repeat. The water lapped gently against the sandbar and a heron glided across the water to perch on a snag. Rest, exhale, repeat. Overhead, the sun slid slowly down the sky and into the horizon. Hour by hour, the ribbon grew longer as the mussel in the river slowly, ever so slowly, traced its circles in the sand.

Tracing Lazy Circles in the Sand, Aug. 14, 2017

The first time someone suggested that I write a weekly newspaper column about water, I smiled, nodded, and mentally filed the suggestion away in the corner of my mind where I store mindless chatter and bad ideas. How much could there possibly be to say about water, and who would want to read about such a mundane topic?

A few months later, after having been persuaded otherwise, I sent my first few articles off to the Stillwater Gazette and other local papers. Did you know that you live in a watershed? Did you know that dog poop carries *E. Coli*? (Ho hum, I'm already yawning.)

St. Croix River in Stillwater, Minnesota, autumn 2020. Image courtesy of Angie Hong.



Native mussels in the St. Croix River in Minnesota create curving trails in the sand. Image courtesy of Angie Hong.

After a couple of weeks, however, I began to find my groove. I wrote about gardening, riding my bike, local volunteers, and recently completed watershed projects. The more I wrote, the more the words flowed, and I began to realize that water really does connect everything and everyone.

This year marks my fifteenth year coordinating the East Metro Water Resource Education Program and my fifteenth year writing weekly news columns about water—that's roughly 780 articles about anything and everything related to water, for anyone keeping track.

A multi-pronged approach to water education

When the East Metro Water Resource Education Program (EMWREP) was formed in 2006, the founding partners had three main goals: (1) educate the public and raise awareness about local water issues; (2) share resources to get the most value out of limited funding; and (3) improve collaboration between governmental entities in Washington County, Minnesota. The program launched with 6 local government partners and has since grown to 25, including Washington County, Washington Conservation District, all 8 watershed management organizations in the county, and 14 cities and townships.

Neighbors in Lake Elmo, Minnesota gather at an EMWREP-sponsored community event to learn about aquatic invasive species and landscaping practices to protect local lakes. Image courtesy of CleanWaterMN.org.

EMWREP uses a multi-pronged approach to water education that includes information and awareness-raising for the general public; guidance and motivation to help landowners complete clean water projects on their land; professional training for businesses, contractors, and municipal staff; and workshops for local decision-makers such as city councils, county commissioners, and watershed board members. Weekly newspaper columns are just one of many education strategies we employ, but they serve as a consistent connection that helps to amplify our educational messages and reach new people around the county.

More than one way to tell the same story

"Before I had grandchildren," says Nor Olson, "all of my pictures were of our prairie." We are standing in her kitchen, and Olson has just finished giving me a tour of her property, located in Stillwater Township just north of Silver Creek. When the Olson's bought their home a few years back, the land included an old farm field gone to weeds, as well as a rather large area of lawn surrounding the house. Having previous experience with prairies that she knew and loved, including 50 acres of land elsewhere in the township, Olson decided to bring the prairie to her new house as well. Now their home sits nestled between woods, a wetland and a few acres of prairie – a microcosm of the habitats found in the St. Croix Valley.

Looking for Low-Maintenance on a Large Scale, July 24, 2012

The best advice that I can offer to environmental professionals, volunteers, and advocates is to continue looking for new ways to connect with

Nor Olson stands in a restored prairie on her property in Stillwater Township, Minnesota. Image courtesy of CleanWaterMN.org.

the public. The vast majority of Minnesotans care deeply about the health of our lakes, rivers, and drinking water, but people connect with water and nature in different ways.

Over the course of a year, my weekly news column usually includes a variety of different story types:

1. **Informative:** Information about local topics of concern, such as stormwater pollution, lake water quality, and groundwater contamination
2. **How-To:** Guidance on household best practices, including gardening, lawn care, and invasive species management
3. **Success stories:** Individuals taking action to protect water, and partner-led projects
4. **Promotions:** Info about stewardship programs and upcoming events
5. **Nature recreation:** Stories that highlight local destinations and outdoor activities
6. **"Deep thoughts"**: Contemplations on our spiritual and emotional connections with nature

In addition to thinking of creative ways to package our water stewardship messages, we've expanded our virtual communications to adapt to the changing media landscape. Four of our local newspapers have gone out of business in the past five years, leaving an information gap in the most populated portions of our county. Meanwhile, social media platforms have surged in popularity. Publishing my weekly newspaper column on a WordPress blog site (www.eastmetrowater.org) makes it easy to include multimedia components, such as photos and video, and share the content via Facebook, Twitter, LinkedIn, and email.

Moonrise over a snow covered field at William O'Brien State Park in Minnesota. Image courtesy of Angie Hong.

I no longer think of a newspaper article as a stand-alone outreach tool. Rather, these articles are part of a comprehensive education package that might also include an in-person workshop, direct mailing to high priority landowners, a short video on TikTok, and a series of posts on Facebook and Instagram.

See video on native plantings on Tiktok.

Being brave enough to share myself

My job is to teach people how to keep water clean, and at times, that feels like a minor concern in the jumble of all that is happening. And yet, it occurs to me also that one reason we work so hard to protect our water and natural resources is to ensure that they are there to douse the flames when the world begins to smolder.

Finding Joy in the Snow, Jan. 15, 2021

Native mussel in the St. Croix River. The river supports 41 species of freshwater mussel, including several endangered species. Image courtesy of Angie Hong.

When I meet local residents, they often tell me that they feel like they already know me after reading my column for years. Though it can sometimes feel scary to share pieces of myself in a publication going out to so many strangers, I know that these personal stories also help me to connect with people who might not otherwise be interested in working with local government or reading about environmental issues.

As I look back at articles I've written over the years, it is as though my column is a personal journal, interspersed with links to cost-share grants and upcoming workshops. Among these tips and tales, there are stories that make me laugh, and others that make me cry. They track the changing seasons from one year to the next and mark our progress as local partners continue working to protect and restore lakes and streams throughout the county.

> The mussel's journey is both slow and long. As the curving path in the sand grows steadily longer, years turn into decades, and sometimes even a century. Answering machines give way to cellphones, and typewriters to computers. Past the river bluff, a prairie becomes a farm becomes a subdivision. Still the mussel carries on, carving circles in the sand. Rest, exhale, repeat.
>
> Tracing Lazy Circles in the Sand, Aug. 14, 2017

Recommended Citation

Hong, Angie. 2021. "Water? I've Got a Story About That." *Open Rivers: Rethinking Water, Place & Community*, no. 19. https://editions.lib.umn.edu/openrivers/article/water-ive-got-a-story-about-that.

DOI: https://doi.org/10.24926/2471190X.8255

About the Author

Angie Hong is the coordinator for Minnesota's East Metro Water Resource Education Program, a local government partnership with 25 members that is hosted by the Washington Conservation District. She holds a M.S. degree in natural resources science and management with an emphasis on environmental education (University of Minnesota Twin Cities) and a B.S. in zoology (University of Wisconsin-Madison). Prior to this position, she worked as a naturalist in the Twin Cities area. In her free time, she enjoys singing, competing in triathlons, and exploring the prairies, woods, and waterways of the St. Croix Valley. Follow her on TikTok @mnnature_awesomeness or read her tips and tales about keeping water clean at www.eastmetrowater.org