Fluid Inequities: The Dynamics of Water Relations and Water Insecurities in Ceará, Northeast Brazil

By Cydney K. Seigerman

The COVID-19 pandemic underscores the ubiquity of water-related inequalities worldwide. Handwashing is key to prevent the spread of the COVID-19 virus, yet billions of people worldwide lack access to safe water or sanitation.[1] Climate change will likely exacerbate water-related problems, including water insecurity, and inequalities embedded in these issues.[2] Household water insecurity is defined as not having access to enough water of high enough quality to live a good life.[3] However, this definition limits approaches to water issues. Policy makers typically focus on technical solutions (e.g., building a dam) to increase water quantity or quality. Yet, technical solutions consistently fail to address the unequal, power-laden, socionatural (i.e., interrelated sociopolitical, technological, and ecological relations) relationships that perpetuate water inequalities.[4] The interactions between socionatural relations and local experiences of water insecurity remain poorly understood.[5] My research addresses this gap by examining the ways socionatural processes shape and are shaped by the lived experiences of water insecurity in the Jaguaribe Valley, Ceará, Brazil, an area with chronic water stress and socioeconomic inequality.

Research Approach

My research examines the particular ways the lived experience of water insecurity emerges through ongoing socionatural relations. The observable characteristics of water and water insecurity can be understood as particular embodiments of these intertwined relationships. I will study the lived experience of water insecurity and interrelated socionatural relationships through attention to livelihood and household activities, theatrical performance, water-related technologies, and hydrological processes. In consideration of current uncertainty of international research due to the COVID-19 pandemic, I have designed my research as two phases. Phase 1 will take place virtually from Athens, Georgia, while Phase 2 will be carried out in Ceará, Brazil.

During Phase 1, I will collect information from online newspapers, Cearense water agencies, and hydrological datasets to understand the socionatural relationships that co-shape rural livelihoods, water technologies (e.g., cisterns), and climate patterns. Concurrently, I will study "Dramaturgias da Água e da Seca" ("Performances of Water

Significance

- My research brings together cultural anthropology, theatre, philosophy of technology, and hydrology to expand knowledge of the lived experience of water insecurity and the socionatural relationships through which water insecurity emerges across the Jaguaribe Valley of Ceará.
- My research is premised on the inherent value of marginalized viewpoints of rural households in northeast Brazil. Through ethnography and collaborative theatre, I will work with households to make their water realities visible in broader water-security discussions.
- In collaboration with FUNCEME, the Cearense Meteorological and Water Resource Foundation, my research will inform current work in Ceará to develop more equitable, locally informed water policies.

and Drought") by the ensemble Pavilhão da Magnólia. Phase 2 will consist of in-person fieldwork in the municipality of Limoeiro do Norte in the Jaguaribe Valley. To study how water insecurity is embodied in everyday practices, I will interview rural households on their water practices and participate in homestays during the dry and rainy seasons. A quantitative household water insecurity survey will be carried out across Limoeiro to better understand regional patterns. Additionally, I will measure evaporation rates along the Jaguaribe River to examine socionatural relations hydrologically: evaporation is impacted by flow rate, which, in turn, is shaped by water policies, land use, and geohydrological conditions. Finally, I will work with Cearense theatre groups to co-create theatrical scenes with local communities, which will later be performed at state agencies to communicate local experiences of water insecurity.

Preliminary Findings

My dissertation research is informed by participation in several projects related to water management in Ceará, Brazil. From 2017 to 2018, I contributed to Projecto Adapta, an interdisciplinary project in collaboration with the Federal University of Ceará to assess water management in Ceará and São Paulo and funded by the Brazilian National Council for Scientific and Technological Development. In summer 2018, my fieldwork examined the types of technical information used to make regional water-management decisions in Ceará. I observed that while there has been an increase in local participation, state agencies continue to play dominant roles in decision-making processes. In summer 2019, I worked with researchers at FUNCEME to assess strategies for sustainable use of water resources in semi-arid areas. We used GIS methods to assess landscape features, conducted interviews, and did participatory mapping in a rural community in Quixeramobim, Ceará. We found that community members had minimal interactions with local government officials and depended mainly on household cisterns and a communal reservoir for water. In 2019, I also met members of Pavilhão da Magnólia, who introduced me to their project "Dramaturgias da Água e da Seca". The project, which was motivated by the 2012-2017 drought, promotes collaboration among actors, climatologists, and rural communities in Ceará.

A woman returns home after visiting a local reservoir in the sertão (semi-arid backcountry) of Ceará, Brazil. [Photo credit: Don Nelson]

Conclusion

By moving beyond static concepts of water security as water quality and quantity, my research will contribute to ongoing efforts toward more equitable water futures. The consideration of embodiment of water insecurity in everyday practices, hydrological processes, technology, and theatre will help bridge understandings of the diverse water insecurities in the Jaguaribe Valley and the socionatural processes that form part of these lived experiences. Community-based theatre is one of the ways I will engage with people in the Jaguaribe Valley during my fieldwork. Importantly, my work fundamentally values people whose experiences and knowledges are often marginalized in society. Greater attention to the lived experience of water insecurity can promote policies that better address water inequities at the local level. In conversations about water security, let's continue to think more critically about what we are trying to secure and the ways this security—or lack thereof—is embodied through lived experience.

Sources: [1] UN Water. 2020. unwater.org/water-facts. [2] Pahl-Wostl et al. 2013. Curr Opin Env Sust. [3] Cook and Bakker. 2012. Global Environ Chang. [4] Wutich et al. 2017. Water Security. [5] Jepson et al. 2017. Water Security.

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The Integrative Conservation PhD Program (ICON) trains agile scientists to address 21st century socio-ecological challenges. ICON is currently a degree option in the Department of Anthropology, Department of Geography, Odum School of Ecology, and Warnell School of Forestry & Natural Resources.