



We All Need Water

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Water is essential. Our bodies share with earth's surface roughly the same proportion of water. Yet more than ever before, many of the world's peoples are challenged by dwindling water resources, which lessens easy accessibility, and/or results in contaminated water, both of which limit its utility for daily (drinking and bathing) and weekly (washing) necessities. Although we have existed for several million years with virtually the same chemical consistency of water that our hominid ancestors drank, the big question today is whether there is sufficient water for a global population of increasingly more people, many more, than once migrated and, for thousands of years, settled over the earth's vast land masses. Ninety-seven percent of the earth's water is salty and two percent is frozen in ice and snow – but this is changing. For the one percent that is left, we use two-thirds for the practice of agriculture, which our species created. No other species has a food production system that requires that much water.

As anthropologists, we are a discipline that molds its activities around uncovering the concerns of diverse communities. Given research styles that place us “among the people,” we are privileged to learn the inside story that otherwise is not easily accessible to other disciplinary methods. Although we self-criticize our efforts in “telling the results” to an audience who mostly is ourselves, many anthropologists find venues and disseminate their ideas outside the disciplinary communication channels of our customary journals. Public media is one path for sharing ideas and the results of field research. Online creative commons journals are another such venue with the potential for a global audience and easy access to non-professionals. Community forums and activist meetings are two additional ways to share our activities. Finally, we can share ideas and strategies with our students, or co-workers on or off the campus, where we work or regularly visit.

My editorial concerns a global issue, increasingly and persistently present in today's world, namely, what can we contribute to the present situation of dwindling water resources. Barbara Kingsolver [1] recently wrote on the concerns over water for our crowded world and referred to “the myth of the Earth's infinite generosity”. These concerns become considerable in varied places, and ultimately affect the people who have long formed the heart of our field research. What have we as anthropologists contributed to this issue of accessible, sustainable water sources for the many peoples that populate Planet Earth?

Considering the importance of water to our (outlier) species, I wondered how much attention has been generated by anthropologists on issues of concern over global-local water resources. Through Anthro Source I conducted a search with 33 major anthropology journals, ranging alphabetically from *American Anthropologist* through *Visual Anthropology Review*, covering the years, 1950 through 2014. I used the search-term *water*. Based on a total 215 “hits” from many different authors (only two authors were listed twice) I found publications on dwindling water resources, local-regional struggles to resolve water scarcity, and large-scale encroachment by trans-national companies, among others. One-third (75/215 or 34.9%) were from the flagship journal, *American Anthropologist*. Similar to the reader, I recognize that electronic “hits” might not truly focus on the concern of interest. From titles it was obvious that some publications were focused on interpretive essays, concerned with cultural representations related to water rather

than management principles, or they were reviews for books and films about water.

So, I conducted an advanced search with Wiley Online Library, asking for ‘water’ in Abstract, ‘water’ in Keywords, and ‘ethnography’ anywhere in the publication, and a second search where I substituted ‘anthropology’ for ‘ethnography’. The first search yielded 22 “hits” with one journal that was replicated from the Anthro Source search (above), and the second search yielded 135 “hits,” where eight journals were duplicated from the original search through Anthro Source (above). The rest were journals from assorted disciplines, whose authors, interestingly, mentioned “ethnography” and/or “anthropology” for one reason or another at some point in the article. Some in fact were professionals trained in anthropology, who were distributing their study results or discussion overviews to an audience of non-anthropology specialists.

After this dual effort, I had the impression that the output of anthropologists in the literature has been minimal. Authors were not repeated in results from my search, which was one clue to infrequent efforts, rather than commitment to water issues. That the years between contributions were scattered was another clue. Finally, the numbers themselves were over-estimates, as a sizeable proportion was focused on concerns other than water resource management or water scarcity, or any number of related issues.

I am no stranger to water issues, although I recognize that I am not an expert. My dissertation fieldwork was conducted among an indigenous people of a coastal hamlet in lower Central America, whose contemporary generation was the first to be raised with a community water system comprising underground plastic tubing. Natural water was the traditional source. Small settlements originally developed around places where underground springs exuded water. These were safeguarded. Nearby families shared access. The introduction of an underground water system required that individuals learn how to repair pipelines in a place where people had not worked previously with glue or plastic, and never included such materials among household supplies. I assisted with occasional repairs. Twice when it was required my contribution was digging to uncover the tubing, while those with tubing expertise fixed the leaks.

I recall my time as a Peace Corps Volunteer in Ecuador of South America, living in a large lowland town a short distance from the coast. The population was growing and occasionally the water system broke down. While company technicians were fixing water lines, everyone in town came to a water station to fill buckets, bottles, pots, canisters and

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jugs. What I most remember was how some came on foot; a few came on bicycle; and some came in motor vehicles—some new, some not so new. Social privilege made no difference. Everyone awaited their turn, talked while they waited, before they filled containers, and left. Water should generate that kind of communalism more often. We all need water.

I was raised on the Gulf of Mexico in what once was a fishing village that became a small city inclined to flooding with *tropical storms* and *hurricanes* with corresponding property damage. I recall the debates reported in newspapers and public media on coastal land-fills that often generated shifting shorelines. I witnessed the consequences. Landfills extended the land base into the gulf or inland bays, and in the process, the gulf currents shifted, and waterfront properties and public beaches were affected. Some property owners lost land. Other property owners gained, which included public beaches enjoyed by residents and tourists alike. At the municipal beach where I worked one summer, this meant that the shoreline became distanced from services, such as rest rooms, showers, refreshment stands, and the parking lot. True, there was more space for rest and recreation activities, but the longer distance walking back to secure those services was considered inconvenient by some individuals.

Some of my experience with water issues is related to anthropology. Extended ethnography with farm workers has compelled me to continually reflect on the importance of water for workers who labor in agriculture. I think of “The Children were Victims,” for example, the first essay in Tomás Rivera’s *And the Earth Did Not Swallow Him* [*Y No Se Lo Tragó la Tierra*] [2], where he writes on the implications of “thirst” for those who work in the fields (see also Martínez [3] ; Duke [4]. I recall publications on “water” by four faculty members from two schools that were alma mater for me. Bill Dermin and Anne Ferguson [5] examine the central role of water issues within the intricacies of political-economic processes in Zimbabwe, and Linda Whiteford and Scott Whiteford [6] gather together a collection of multi-disciplinary essays in a co-edited volume, where water management is examined with equal attention to health and sanitation activities. Already we have an example in this creative commons journal of Som Prasad Khatiwada [7], who examines a case study of socio-political processes affecting Koshi River, the largest of three rivers that flow across Nepal and India. He correctly recognizes the importance of research that includes information on local topography and river hydraulics, as well as the cultural processes that support or challenge political decision-making by commissions and committees (for decision-making processes in the United States, see Rodríguez [8]). At the national level with responsibility for a large population, decision-making may rely on a *calculation grammar* that factors-in a political-economic investment in human rights to water that merges with feasible large-scale distribution costs (for examination of a country-wide system, see Ballesterio [9]).

To turn the question on myself, how have I been involved in these issues? Recently I worked with Digital Natives for five years in southern Arizona. I taught science at a charter high school. Many readers will recognize the playful term, Digital Natives, which refers to young people who have grown-up with digital technology. Hence, the students were “native” to online social media and corresponding electronic technology. Some lessons for Advisory, many lessons in an Elective course, and portions of the core curriculum in Earth Science, Biology, and Health, revolved around water. Students had the opportunity to study water conservation, pollution, aquifer depletion, alternative water supplies (especially in the southwestern United States), rainwater harvesting, desalination technologies, drought and glacial loss in

relation to climate change, among other themes. For Earth Science, for example, we reviewed implications on lifestyles, economic livelihood and settlements during the Little Ice Age. For Biology, we explored food cycles for life forms that live in/around tidal waters. For Health, we studied the body’s need for water (or other liquid forms such as soda, as the drink that some students preferred) as well as a related need for sustaining the agriculture on which we rely for the foods that we eat. For Advisory and Elective courses, we completed computerized projects on bottled water in the industrialized world versus children and women spending considerable time “transporting water” to their homes and schools with inevitable socio-emotional consequences among other issues [10-12].

Although it had not been released when I was teaching high school students, *The Cherokee Word for Water* [13] is a student-friendly documentary film on a self-help project, where dispersed communities on the Cherokee Reservation in the state of Oklahoma worked together to construct an eighteen-mile pipeline, known officially as the Bell Waterline Project, that would provide a daily water supply to their homes and the local school. The concept of “community” (*gadugi*) is embodied in the title to the film. My awareness of this film came with my attendance at a Native American film festival one Sunday afternoon, where I watched two films and later listened to a four-person panel describe experiences in working on behalf of their Native American communities in the states of Arizona and Oklahoma. Films like this one I would bring to the classroom, whenever possible.

Another approach was having guest speakers in my classes. After attending a local conference, for example, I invited a teacher and his students to speak to one of my classes on the toxicity of local water. The teacher had worked with his students on contaminants (especially Trichloroethylene or TCE) “dumped” by the military in ditches and ponds following World War II in an area that was, at the time, isolated. As the city grew, housing developments were placed atop the ground near the dumping sites. No one knew the implications of TCE, but too many cases of childhood cancer led to an investigation and a long-time law suit. By the time his students spoke at the conference, they had developed detailed summaries and presented their work to the board of county commissioners. I wanted my students to recognize the possibilities for and value of research and ultimately appropriate outlets for dissemination. A second speaker whom I invited to another class had recently finished the graduate program in water ecology at a local university. Using cross-sectional maps, he explained the municipal water distribution system. One highlight was his description of having switched interests to where he eventually settled on water ecology. For high school students this was a great opportunity to hear firsthand about getting into and succeeding in college.

I recently attended three lively sessions at the 75th Anniversary Meeting of the Society for Applied Anthropology (Pittsburgh, PA), all of them focused entirely or mostly on water issues, namely, cultural considerations in water management [14], socio-political processes involved in decision-making for a common resource [14-16], the importance of water in maintaining both urban and urban populations [15,16], and community views of water access [14-16]. Researchers have been grappling with formulations that emphasize values and ethics among concerned parties and institutional incorporation of “the commons” as a viable management framework. Increased interest in water issues stems from decreasing resources, viewed variously as human-enhanced versus natural depletion, and/or institutional usurpation of water sources, such as rivers, lakes and aquifers.

Basically, I have found that my own life experiences, which includes ethnographic fieldwork inside and outside the United States, useful in working with high school students, as much as they were fascinated that I had an interest in anthropology. Most enjoyable for me were opportunities for project-based learning that focused on water issues with students whose familiarity with water issues centered on the surrounding southwestern desert environment.

Becoming involved in this issue, or any issue, does not have to take the contours of a research project. It is sufficient to increase student knowledge, and the public's awareness, of some key issues with which "we" in the form of future generations will need to meet the challenges of how to manage the Earth's water resources. If we can blend our research with the dissemination of results to the public, we can make a contribution. Both written and spoken communication can become effective tools.

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