



Ottoman era railway bridge over the Lower Jordan River.
Photo Credit: Sharon B. Megdal, 2014.

Reflections: On Wicked Water Problems

by Sharon B. Megdal

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Although my spring -summer sabbatical lecture tour did not take place as planned due to COVID-19, I did deliver more than a dozen lectures and participated in several programs and interviews. My topic of wicked water problems was the most requested and one on which I will continue to focus. Not only does this topic afford me an opportunity to explore significant water challenges at varying geographic and geopolitical scales, it enables me to focus on the process for forging pathways to addressing them.

I begin my discussion of wicked water problems by citing Lisa Beutler's excellent 2016 [article](#), which was based on her keynote lecture at the Water Resource Research Center's 2016 annual conference. I encourage all to read her concise exposition. These quotations are particularly salient. "Lately, more and more water problems seemingly defy standard solutions. This typically occurs for four reasons: incomplete or contradictory knowledge, the number of people and opinions involved, the large economic burden, and the interconnected nature of these problems with other problems." Beutler points out that the necessary collaborations must involve more than water managers. She adds that "[i]nterdisciplinary collaboration that captures a broader knowledge of science, economics, statistics, technology, psychology, politics, and more is required..." to mitigate the negative consequences of wicked water problems. A key characteristic of wicked water problems, therefore, is that they are mitigated rather than solved, meaning that finding a pathway is the goal rather than trying to identify an ultimate solution. While partial or short-term solutions are implemented, the work continues.

Before fleshing out some examples, which I do not have space to do so in this essay, I point out the importance of context to analysis of wicked water problems. I often show a slide listing several of the factors that determine "on-the-ground" water policy and management. Among these are laws, regulations, and policies. The legal and institutional framework, including the degree to which decision-making is centralized, will be region-specific. Thus, maps always help clarify the geographic and geopolitical context for water issues of any kind, especially those that span

shared borders. In recent lectures, I have discussed four examples from the Colorado River Basin: overcommitment of groundwater in the Pinal Active Management Area; shortage of Colorado River flows relative to demands within Arizona and across the basin; limited consideration of water for natural systems; and the Navajo Nation's inadequate water infrastructure, which has been spotlighted by the COVID-19 pandemic. Additional examples of wicked problems I mention involve water in the Middle East and include Lower Jordan River flows and the Dead Sea, water and wastewater services, and water scarcity, particularly in Jordan. While many more wicked water problems can be identified – and I ask listeners to think about what water problems they would identify as wicked – these examples enable me to discuss factors that contribute to mitigating them.

Process is very important to the search for pathways to solutions, which are often common across the regions I discuss. Solutions include conservation, augmentation, reuse, water transactions, and other actions at individual, community, and regional levels. Partnerships are critical to developing information collaboratively so that the parties can be “on the same page”. Whether within states and regions, across states, or across national boundaries, *functioning* cooperative mechanisms are critical. I emphasize the word “functioning” because it is not enough to have cooperative mechanisms on paper. Effective partnerships are built on respect and trust. Trust depends on mutually respectful, positive collaborative experiences. Stakeholder involvement is key. We are definitely seeing more inclusive processes, yet there is often room for improvement. Though live streaming of meetings had been increasing before the COVID-19 pandemic, since the demise of in-person meetings, meeting virtually has become the norm. Interestingly, this situation has enhanced participation of stakeholders who may not be officially “at the table” or able to travel long distances to in-person meetings. Good communication of all kinds is imperative to identifying and understanding the potential of alternative actions that contribute to mitigating wicked water problems. Because there are no quick fixes, both patience and persistence are necessary when working on complex matters over long periods of time.

For many years, I personally have had the opportunity to share lessons learned – both good and sometimes not-so-good – across different geographic and sociocultural communities. I have organized sessions for cross-regional learning and sharing, including but not limited to the 2009 Arizona-Israeli-Palestinian Water Management and Policy workshop in Tucson, the 2016 Middle East visit of the International Boundary and Water Commission commissioners, the 2017 Tel Aviv joint American Water Resources Association – Tel Aviv University conference on wicked water problems, and the 2019 Tel Aviv conference panel on implementing technologies across borders. All of these events are chronicled in previous [Public Policy Columns](#) and [Reflections](#). During the 2019 panel, I asked panelists: What are the most important variables or factors that contribute to collaborating on implementing technologies across borders? Very high on their lists were functioning relationships. Several noted that being able to get to know your partners through sitting down together for meals fosters the friendships and relationships that can facilitate the work required to forge formal agreements. There can be peaks and lows. Identifying win-win opportunities can be difficult, and when working with neighbors of different cultures and languages, good communication, sincerity, and leadership are essential.

In her article, Lisa Beutler states, “Managing wicked problems is a new kind of work. It requires changing the questions, managing uncertainty, and creating resilience. It does not solve existing problems but instead drives to a desired future state.” Technology and economics are determinants of pathways to solutions, as are processes for working with and through stakeholders. Efforts to educate at all levels will contribute to identifying and evaluating options. Good work is continuing. But my recent webinar lectures on wicked water problems ([see, for example, my May 2020 WRRC webinar](#)) ended with this question, which is reflective of the COVID-19 times in which we live: When will we be able to meet and eat with our partners?



Addendum to my [Reflections: Time to Retire the Water Buffalo Symbol?](#) Please send your comments to me (smegdal@arizona.edu) by August 24, 2020. In September, I plan to share the very interesting feedback I've received.



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