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# Managing Urban Water Demand in Neoliberal Northern Mexico

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During the last quarter century, the focus of water management in many parts of the world has turned from increasing water supplies through the construction of large hydraulic infrastructure, to reducing demand for the liquid by users. New neoliberal water management strategies focus on recovering delivery costs from users, increasing the efficiency of water systems, and decentralizing maintenance and operation. In northern Mexico, this decentralized management of water is accompanied by educational programs designed to create a "water culture" based on shared environmental and economic values and surveillance of water use by schoolchildren. This article explores the quotidian dynamics of one such water culture program and locates these dynamics within larger processes of neoliberal water governance. A main argument of this article is that demand management depends heavily on interventions in culture and social relations.

**Key words:** water, neoliberalism, culture, United States-Mexico border

## Introduction

On June 4, 2000, the inhabitants of the city of Matamoros in the Mexican state of Tamaulipas saw the river upon which the city depends run dry. Matamoros and its surroundings are located in the delta floodplain of the Rio Bravo (called the Rio Grande in the United States), one of North America's great rivers. The United States-Mexico border region is defined by aridity and sustained periods of drought, but never before had anything like this happened. The city survived on water held in treatment reservoirs until more of the liquid was sent down the Rio Bravo, but the experience made an indelible mark on popular consciousness. Many people complained about the municipal water service, but most also said that water scarcity was an environmental problem that was the responsibility of the users to solve. They had a not-very-specific awareness that the region was experiencing a prolonged drought, but many explained the problem as wastefulness resulting from the lack of a "*cultura del agua*" (water culture.)

In 2004 when I spoke with the director of the municipal water company, the *Junta de Agua y Drenaje* (Water and Drainage Council) (JAD), he patiently told me about the

huge deficiencies in infrastructure and funding that made his job of providing water for the city's population extremely difficult. He also described how the scarcity of water in the Rio Bravo caused shortages in the city's supply. The JAD was moving slowly forward with a program to install water meters and enforce payments of water bills, but results were slow in coming. Despite these limitations, what the city had been able to do, he told me, was to implement a wide-reaching program to promote a "water culture" among the schoolchildren. Children are taught by this *Programa Cultura del Agua* (Water Culture Program) (PCA) the importance of conserving water and are trained to confront their neighbors who waste the water. These juvenile "water detectives" are empowered and encouraged to report water waste to the JAD, which in collaboration with the municipal police fines those who are responsible. "The children are our hope," said the director of the educational program.

In these pages, I discuss efforts to create a "water culture" in the border city of Matamoros, Tamaulipas, across the Rio Bravo from Brownsville, Texas. I begin with a review of anthropological and historical literature that describes the relation between culture, water management, and the formation of centralized power. I then discuss neoliberal ideals of privatization and decentralization of water management. I finish the article with an ethnographic discussion of the PCA carried out since 1999 by the JAD in Matamoros, Tamaulipas. I show that the PCA has enjoyed some success in its efforts to recuperate costs of water provision and increase efficiency by placing these responsibilities on the users. However, the cultural project of managing demand also involves a strategy of decentralized surveillance and policing of water use that

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provokes tensions between the JAD and the population and risks undermining environmental goals over the long run.

### Water, Power, Culture

The cultural response to water scarcity has emerged in Mexico since the 1980s, a historical context in which large investments in storage and conveyance infrastructure are often not a feasible option for the actors that have traditionally directed the social use of water in Mexico. Gone is the largesse of the mid-20th century, during which the export agriculture and industrial growth of the *milagro mexicano* (Mexican miracle) and then the subsequent petroleum boom provided so much financial liquidity that up to 15 percent of the national budget could be channeled to the government's water agencies (Orive Alba 1970). The economic crisis of the 1980s led to structural adjustment, guided a neoliberal strategy of diminishing and privatizing state functions. Mostly gone, too, is the modernist confidence in grand hydraulic works as the solution to risk and the road to prosperity (Aboites 2000). After more than a century of building large dams and canals, the best sites for such works are already occupied, and so new works require more effort and yield less water. Federal investment in the water sector has shifted to water treatment infrastructure to improve the quality of existing water supplies. Overall, the focus of water governance has changed from increasing supply to reducing demand.

In northern Mexico, the changes in water use are particularly striking. From 1880 to about 1940, both the United States and Mexico engaged in a sustained effort to put the region's surface water to use in agriculture, building massive irrigation systems and colonizing them with farmers (Sauder 2009; Walsh 2004; Worster 1985). By the time the International Water Treaty between the United States and Mexico was signed in 1944, stream flow and availability was known, the rivers were dammed and channeled, and the surface water was completely allocated among the two countries and its users (Hundley 1966; Samaniego López 2006). Between 1940 and 2000, the population of the borderlands states increased tenfold (Peach and Williams 2000), mostly in cities. At the same time, the agricultural frontier continued to expand with the use of deep wells and centrifugal pumps to tap aquifers. The expansion of the cities resulted in the transfer of water from agricultural to urban uses and also contributed to the rapid mining of subsoil water resources. Many of these aquifers are now dangerously low, and urban water managers are shifting back to surface water sources, placing even more pressure on agricultural uses. Despite the growth of the urban uses however, in 2008, agriculture continued to account for 83.7 percent of water use Mexico's Rio Bravo watershed (CNA 2008). There is neither the money nor the will to increase the supply of water in Northern Mexico by building more storage capacity, and so most of the attention is now focused on increasing the efficiency of existing water infrastructure, on water treatment and reuse, and on reducing demand (CNA 2009).

Neoliberal strategies of demand-side water management center on the market, in which the responsibility for water provision and efficient use of the liquid is decentralized, privatized, and passed, ultimately, to the individual consumer's cultural-economic valorization of the resource. Nevertheless, given the obstacles encountered in the institutionalization and regulation of water markets in many parts of the world, or in the case of Mexico, the fact that that country's Constitution considers water more of a right than a commodity, this project often becomes an effort to create a popular will to conserve. "Culture of Water" programs such as the CDA-JAD aim to reduce demand by instilling economic and environmental values for water and obedience to the companies that manage the resource. Like other neoliberal strategies of governance and accumulation documented by anthropologists (Elyachar 2005; Narotzky and Smith 2006; Trouillot 2001), these seek to generate and organize quotidian practices of resource management outside the institutions of the state and intervene in the domain of local culture and social organization to do so.

The anthropology of water has followed the rise and fall of supply-side water management. In the early and middle part of the 20th century, while governments were building ever-bigger hydraulic works and controlling every-larger swaths of the landscape through irrigation, historians and anthropologists focused on the relation between water management and centralized, despotic, state power—what Karl Wittfogel (1957) termed "oriental despotism." Basing his argument on the insights of Max Weber and Karl Marx, Wittfogel argued that the construction and management of hydraulic works of irrigation and flood control required the centralized control of a class of managers to organize the labor of those who built and repaired the works and reproduced the power of those who controlled the water. His early work was taken up by Julian Steward, whose "cultural ecology" approach sought links between the material, productive relationships established by humans with their environment and the social and cultural aspects of human life (Steward 1949). These theories were especially attractive to scholars of Mexico, where the post-revolutionary state consolidated its power on the basis of irrigated agricultural development (Aboites 1987; Walsh 2004). At that time, archaeologists and anthropologists used the ideas of Wittfogel and Steward to explain the creation of urban centers and strong states in mesoamerica (Palerm 1955; Palerm and Wolf 1954).

Over the last few decades, tectonic shifts in global political economy and increased pressure on freshwater resources throughout the world have given rise to a general effort to decentralize and privatize water management through the creation of property rights and markets for water and the privatization of the infrastructure needed to store, treat, and distribute it. After nearly a century of building massive and expensive dam projects to increase supply in the arid and semi-arid western United States, for example, government officials and international financial leaders conclude that this supply-side model of water management has generated a series of environmental and economic problems that must

be addressed by managing demand (NRC 1996, 2007). Similar conclusions have been reached by those banks and government agencies funding water infrastructure in the developing world. The construction of large dams has not led to the economic growth and social welfare promised by proponents, and the World Bank, among other institutions, has backed away from funding such supply-focused infrastructure (McCully 2001). In Mexico in the 1990s, federal irrigation infrastructure was handed over to users who were organized into small groups for the purpose of managing and maintaining it (Melville and Whiteford 2002). As supply-side management waned in the last decades of the 20th century and the state handed its responsibilities of administering and financing hydraulic infrastructure to citizens and water users, water research turned to studying small-scale irrigation systems with weaker relationships to the state (Enge and Whiteford 1989; Martínez Saldaña and Palerm Viqueira 1997, 2000; Mitchell 1976; Rodríguez 2006; Trawick 2003).

Scholars have focused on institutional, economic, and political dimensions of the privatization of water resources (Bakker 2003; Castro 1995; Swyngedouw 2005), but the quotidian, cultural dimensions of managing demand have not received much attention. Who or what is responsible for managing water in the absence of a strong state? What exactly is the object of management in this new arrangement? The shift by water managers from increasing supply to reducing demand is a shift from the construction, maintenance, and operation of infrastructure to the education of consumer habits and desires. Culture, therefore, plays a key role in decentralized and/or privatized water management. For those who believe that markets can be managers, culture is generally seen as a unified hierarchical system of values, shared by members of a group, which guides the universal, economic decision making of rational individuals. But when such unity and coherence exists, it is the result of active projects. Confronted by the fact that real human beings and markets often do not act coherently, governments have often sought cultural solutions: educational programs designed to promote the rational individual decision-making and coherent value systems upon which the market and democratic governance depend (Lloyd and Thomas 1998).

Culture is also important for government projects that are not organized by the market principles of individual utility and property. Water in Mexico is the property and patrimony of the nation, and the decentralization of management, itself incomplete, has not been accompanied by the full privatization of the resource (Barkin 2006). In the case of water management in Mexico, then, the role of education is to instill or reinforce values of community and collective welfare that will guide the decisions of individuals to act for the good of the nation and humanity more than for themselves or their families, or to make those two goals equivalent. Even if water users in Mexico may make most of their decisions guided by a culture of rationality that emphasizes individual economic maximization, the market for water shaping their decisions is not fully institutionalized nor is it legal. Under conditions

such as these, demand-side management strategies promoting conservation and efficiency must focus their attention on forming values that do not respond principally to the market.

Demand-side management is based not only in the propagation of values and rational decision-making, but also in the exercise of force. To encourage conservation, water service providers generally charge disproportionately larger amounts of money for higher volumes of water and cut off water deliveries to those who do not pay. In situations in which the market does not dominate and water is more a right than a commodity, a basic minimum quantity is often provided without cost, and access to water is not usually denied. Local water service providers in Mexico are faced with the challenge of privatizing the resource within a legal and social context that recognizes access to water as a basic civil right. As we shall see in the next section, the JAD's Culture of Water program has negotiated this contradictory process of privatization by implementing a program of surveillance and sanctions that recruits schoolchildren to report water waste to the JAD and the municipal police.

### **Teaching a Culture of Water in the Borderlands**

The PCA of Matamoros came into existence in mid-1999 in response to a simple problem facing the city: poor water service. After a half century during which potable water and drainage was paid for by a combination of federal largesse and specific local taxes on the region's prosperous agricultural industries, these sources of funding dried up, and the JAD was forced to recover the costs of services directly from the rapidly growing population. This, of course, was quite in line with a general trend in decentralizing costs, but it placed the JAD in the difficult position of extracting money from users who, by law, cannot be denied the service. After decades of neglect and rapid population growth, the urban water infrastructure was deficient, and users were reluctant to pay for what they considered poor service. Homes in new and informally settled neighborhoods on the outskirts of the city often had to be delivered water by truck. To complicate matters, during the 10 previous years, the municipal government passed between different political parties a number of times, which added to the instability of the JAD, which operates as an independent business, but whose director is a political appointee who brings his own people to work in the institution.

The transition to neoliberal water management coincided with the most serious ecological crisis the region has ever confronted. Since the early 1990s, a combination of drought and overuse of water in the upper parts of the Rio Bravo/Grande river drainage has left the lower stretches of the river lacking water. Matamoros is located in the delta of the river and is the very last user to receive water from the river. To make matters worse, the subsoil water in the region is salty and not fit for use. As a result of these water shortages, irrigation was drastically reduced or cut off entirely from 1995 to the present. On June 4, 2000, the river where Matamoros is located

dried up entirely leaving the city with a two-day supply of the liquid. Scarcity and cutbacks engendered serious conflicts on local, national, and international levels and sent urban water administrators scrambling to avoid disasters (Walsh 2004).

To address this crisis, the JAD moved in a number of directions. In 1999, the municipal president created the Water Culture Program and named the director who continues in the post today. From its conception, it has been a program that works through the public schools to teach children to value, monitor, and enforce water efficiency, and it was formally recognized by the local branch of the federal Secretary of Public Education in 1999. The municipal president who created the PCA personally designed one of its most important elements: a cartoon character named "Supergótico" who takes the shape of a drop of water with a red cape. This cultural program, which we shall return to shortly, was accompanied by other actions. Around the same time the administration began to solicit funding from the new NAFTA institutions (the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBANK)) for infrastructural projects such as a large wastewater treatment plant. Also, the administration began a campaign of installing water meters where for the most part none had ever existed. The JAD approached the problem of recuperating unpaid debts in different ways. They offered a sort of amnesty in which most of the debt (which in some cases had reached tens of thousands of dollars over the previous decades) was pardoned in exchange for payment of the rest. Monthly payment plans were established. The JAD took care to install meters and go after the debtors in the wealthy and middle class neighborhoods first, to combat the idea that the agency was fleecing the poor. In a few extreme cases, the JAD simply cut off the water to wealthy homes that hadn't paid or reduced it to a trickle. Later, this same strategy was extended to the majority of the users. By 2005, the JAD had installed meters in about half of the households of Matamoros (personal communication, August 27, 2006).

The JAD accompanied this cost recovery strategy with a series of actions meant to win over hearts and minds. First, it sought to improve its product, carrying out much-needed repairs to improve water service and quality. The company expanded water supply among the peripheral neighborhoods of the city, mostly inhabited by poor, recent immigrants to the region. This involved establishing expanding water lines, setting up communal taps, and, in extreme cases, using trucks to deliver the water. At the same time, it mounted a publicity campaign that used television, radio, billboards, and other media to explain the new approach to water taken by the JAD. And in 1999, the mayor of Matamoros created the *Programa Cultura de Agua* (Water Culture Program). Despite changes in the municipal government every three years, the PCA has enjoyed steady and increasing financial support and was going strong when I last conducted fieldwork in the region in the summer of 2008.

In 2006 when I conducted the bulk of this research, the JAD was directed by an engineer who ran the semi-public

agency as he would a private business. In interviews, he described the JAD as the "*empresa*" (company) and referred to the water users as "clients." One of the first measures adopted by this new director was to purge the ranks of the JAD workers, firing those considered unproductive. This vision of the new, neoliberal JAD depends on the idea that the agency was no longer part of the government, but rather part of the business world. According to this public stance, the market, rather than politics, determines the actions of the new JAD. This, however, ignores the fact that the director and upper level management of the JAD is appointed by each municipal president, that its operating costs are covered to a large degree by government, and that the JAD is not part of any water provision market because it enjoys a monopoly. Nevertheless, the belief of the management of the JAD that it must be "run just like any other business" is quite genuine.<sup>1</sup> As of mid-2009, he has enjoyed enough success to retain the position, despite a change in government in 2008 that brought a new municipal president to power.

The 2006-2008 municipal government invested in and improved the "Culture of Water" program. In the midst of personnel cutbacks, the JAD director hired Santiago, a graphic designer who had worked on the municipal president's political campaign, to fortify the presence of the PCA in the media. "I listened to the opinions of the people in the street," said Santiago, "and they didn't like the messages sent out by the JAD." Santiago devised catchy slogans and messages that appealed to the hearts rather than the minds of the people. The new messages rallied people to save water, rather than preaching to them: for example, "*el agua es vida, aH<sub>2</sub>O, Orremosla*" (water is life, lets save it!)—note the chemical formulation of water integrated into the word. Showing even more sophistication, he built a supporting cast of cartoon characters around the already well-recognized hydraulic hero "Supergótico," and created a series of Web site based animated adventures in which Supergótico and his young sidekick Kiké join forces to stop the evil ambitions of their nemesis, the "sinister Dr. Gastón" (Figure 1). These three characters inhabit almost all the media projections of the JAD: bumper stickers, video games on the Web site, life-size costumes that educators wear during their visits to the public schools, t-shirts, water bottles, billboards, television commercials, pencils, rulers, etc. Even the back sides of the water bills carry the logo and characters of the JAD. By associating water conservation with the children of Matamoros, Santiago hoped to stimulate an emotional sense of responsibility among adults.

The heavy lifting of water conservation, however, was placed by the media campaign in the hands of the children. In the JAD's heroic narratives of water conservation, Supergótico is the representation of the JAD, Kiké represents the youth of Matamoros, and Dr. Gastón stands for the profligate and wasteful grown-up society of Matamoros. The meanings associated with the names are important. "Supergótico" can be read as "superdrop," for he is a big blue drop of water. At the same time, the name plays on the word "gothic," a reference to Batman's "Gotham" city and the gothic or noir

Figure 1. The Water and Sewer Council of the City of Matamoros presents The New Adventures of Supergótico against Dr. Gastón. URL:<[http://www.jad.com.mx/micrositio/galeriacultura\\_5.htm](http://www.jad.com.mx/micrositio/galeriacultura_5.htm)> (June 15, 2009)

# La Junta de Aguas y Drenaje de la Ciudad de Matamoros



Presenta

## LAS NUEVAS AVENTURAS **Supergótico** CONTRA EL Dr. GASTÓN



aesthetic of many superhero narratives including this one. The “*sinistro Dr. Gastón*” can be translated as the “sinister Dr. Waste-a-lot.” “Sinistro,” however, also translates as a “disaster” that causes damages: a drought, for example. The association of wastefulness and disaster is hard to miss. These densely layered meanings and the general story line stimulate the active participation of children who color in the coloring books, play the video games on the internet, and see or hear the commercials. The PCA Web site was especially important to Santiago and the JAD, and it was directed almost exclusively at children.<sup>2</sup> Children who win playing the video games on the Web site, for example, receive “stamps” which can be cashed in for JAD t-shirts. In the brief time that the PCA had been operating, Santiago told me that more than 500 t-shirts had been given away (personal communication, August 27, 2006).

Santiago kept close tabs on the effects of the JAD’s media campaign. The JAD hired a private company to carry out a

monthly survey in Matamoros to gauge the level of “market penetration” achieved. By the middle of 2006, 88 percent of the people surveyed by telephone in Matamoros were familiar with the logo and characters representing the JAD and knew that it was responsible for water service in the city. Fifty-five percent of those surveyed were reached by television ads, 20 percent by the radio, and 13 percent by the Web site, billboards, or other forms of publicity. By March of that year, the JAD-PCA Web site had been visited 30,000 times, and Santiago demonstrated to me that his computer program could determine the geographical origins of those Web visits. Most were from Matamoros, but visits were made by people in the neighboring state of Nuevo Leon, from Mexico City, as well as the United States. Between March and June of 2006, the PCA Web site was visited 1,500 times.

The cartoon characters and their adventures were also a central element of the didactic program carried out in the schools by the personnel of the PCA. Apart from the director,

the PCA had 6 “promoters” who work in the schools during the school year and carried out related activities in the summer, such as day camps and outreach in the peripheral neighborhoods of Matamoros. Except for an older woman, Beatriz, who worked in the PCA in the morning and served as director of a public school in the afternoon, all the promoters were in their twenties and had no formal training in education other than that which they received from the PCA. Every day during the school year, the six promoters visited schools from preschool to high school fanning out individually among the classrooms. The promoters gave a short lecture and directed activities, the content of which was designed specifically to match the age and abilities of the children. In preschool, very little technical information was offered, and the children did manual activities such as painting, cutting, and pasting. In the lower and middle grades of primary school, the children received more technical information and assemble puzzles. By fifth and sixth grade, the children received a PowerPoint presentation replete with technical information concerning the hydrological cycle and were given a short exam at the end of the session.

All the presentations concluded with another key element of the PCA: the “Water Detectives Club.” The Club was conceived when the PCA was first launched and continued to be a pillar of the program. The basic concept behind the Water Detectives Club is that the JAD gives the authority to the children to monitor and report water waste to the JAD. “Unite with Supergótico! Join the Water Detectives Club,” a poster exhorts (Figure 2). As the classroom presentations of the promoters reached a close, the promoters provided the students with a “prize:” a small trash bag for use in the car, filled with gifts that might include a pencil, eraser, water bottle, bumper sticker, and the like. All these items displayed PCA and JAD images. Included in the bag was a Club identification that carried the student’s name and information, as well as a form to be used to report individuals who waste water. The form was to be filled out by the student and left with the wasteful individual who was then told that because he or she is wasting water, the JAD would conduct a visit to confirm the wastefulness. If waste was detected by the JAD during this visit, a fine of 500 pesos (approximately \$45 at that time) would be levied. If the problem was not corrected, fines of up to 5,000 pesos (\$400 - about 4 monthly paychecks at minimum wage) would be levied. Following the general narrative of the “Supergótico” story, the newly deputized “Water Detective” (“Kiké”) was encouraged to work in his or her house and neighborhood to identify wasteful individuals (“Siniestro Dr. Gastón”) and bring them to justice.

The “Club Detectives de Agua” provoked controversy. Like other “cost-recovery” measures carried out by the JAD (water meters, enforcement of debts, media campaigns) this one pitted the JAD against its “clients.” But in difference to other measures, the “Club Detectives de Agua” placed the children of Matamoros on the side of the JAD and against their parents and neighbors. In classroom visits conducted in August of 2007, I noticed that both students and JAD

Figure 2. Unite with Supergótico! And join the Water Detectives Club for a Water Culture in Matamoros. URL: <[http://www.jad.com.mx/micrositio/galeriacultura\\_3.htm](http://www.jad.com.mx/micrositio/galeriacultura_3.htm)> (June 15, 2009)



promoters understood this delicate situation, but could not easily resolve it. In a preschool class I visited, when the promoters asked the children, “Would you like to be water detectives?” the children responded with a resounding “yes!” This was part of the ritualized question and answer exchange common in classrooms and one in which the content of the response is evoked by the teacher’s question. The promoter then continued, “To monitor your neighbors and parents?” The children responded with another resounding “yes!” The promoter finished by asking, “Why do we need to monitor water use and pay our bills?” To this question, the children had no answer, but the schoolteachers began to chuckle and offer responses such as: “So that they don’t cut off my water!” At this response, the PCA promoter joined in the laughter. The environmental message of water conservation that had been transmitted by the promoter in her talk was immediately trumped by the dynamics of cost recovery.

Among the fifth and sixth grade students, this consciousness that the PCA formed part of a general struggle between

the JAD and its users over cost-recovery and service was more developed. The students still performed the ritualized didactic question and answer exchanges, but they also asked difficult questions of the PCA promoters and conveyed the inconformity of their households toward the JAD and its programs. During one visit, the promoter asked, "Who knows what the Club Detectives de Agua is?" One child, among various who lifted their hands or called out, said, "When we see an adult wasting water, we report him." Many children in the classroom laughed and sent each other mischievous looks. The children seemed to find a thrill in the idea of turning in their neighbors, parents, and other adults. The promoter also laughed when the children chuckled and gossiped, acknowledging the recognition on part of the children that the PCA is asking them to place the authority of the JAD before that of their parents and neighbors. One boy then told the promoter, "But if we report our parents, they will scold us." At this point, another promoter stepped in to douse the flames: "It is better that they scold you than that we run out of water. Because what happens when we run out of water? What happens when we don't have any water to drink?" The children sensed the seriousness of the promoter's lesson, and one girl offered the sought-after response: "We die!" The promoter followed through by telling the children, now quiet, that "it is better to receive a scolding than to die, right?" (fieldnotes, September 2007)

The tensions that permeate the PCA came to the surface at other moments of this promoter's presentation. The promoter asked the children, "Why do we need to pay our water bills?" A girl responded, "So that there can be more pumps." This was an answer that correctly identified the infrastructural needs of Matamoros. A boy offered a different answer, one that reflected his understanding of the cost-recovery dynamic underlying many of the JAD's neoliberal management measures. He said, "So that we don't use too much water." Cost, he recognized, was being used to manipulate demand. Then other children began to ask questions of the promoter associated with the relation between costs and services. "Why do they cut off the water all the time?" a girl asked. Beatriz, the senior promoter and an experienced teacher, explained that the JAD shut off the water to conduct needed and costly repairs. Shortly thereafter, as the promoter gave practical advice on how to save water that included turning off the faucet while brushing one's teeth, one boy commented matter-of-factly that "when I run the faucet to brush my teeth, the water smells like the sewer." Another boy called out that the water arrives to his house dirty, and a girl complained that "on Victoria street it really stinks because of the sewers." Once again, the promoter moved to counter the criticisms of the children by explaining that the responsibility for water quality lay with the water users, who needed to report dirty water to the JAD and pay their water bills so that repairs and maintenance could be done.

As these exchanges illustrate, problems which seemed to the children to be the responsibility of the provider (JAD) were explained by the JAD as problems originating with the

users. Furthermore, the children and the promoters were all in one way or another aware of the difficult position of the children within these antagonistic relations. The brief ethnography of the PCA presented here sheds light on two important meanings contained in a phrase repeated by many of those involved in the PCA and in the JAD's cost recovery measures in general: "the children are our hope." First, it is believed that young people can learn habits and ideas that older people cannot. Efficiency, conservation, and fiscal responsibility can be learned by the children, but not by the adults. This idea is also captured in the characters and structure of the superhero narrative of "Supergótico." But perhaps the second meaning of the phrase is more important: that the children, because they are in a sense "shared" by parents and the public education system, are best positioned to do the difficult local work of enforcing the JAD's neoliberal measures. The JAD identified already-existing social relationships of family and community that it used to carry out the management of demand.

## Conclusions

As the need increases for reducing demand, existing and newborn cultural forms of value, social organization, and community will be integrated into wider hydropolitical systems. For efficiency and conservation to be achieved in the management of a river basin, all the local and regional stakeholders must share a common set of ideas about the value of water, especially in a context in which water cannot be freely owned and traded or in which multiple legal regimes operate. Beyond this, the stakeholders in a river basin must also share a set of cultural attitudes about how to make such management decisions, in order for a participatory political process of water distribution to function. If the local stakeholders do not understand their position within a larger hydrological system or "hydrocommons" (Michel 2000), they will not be compelled to negotiate solutions to problems of water quality and quantity that affect a much larger space than their own particular locale. This is especially true for the inhabitants of river basins and inter-basin water systems that span geopolitical and cultural borders. And it is especially true now, as rising demands for water resources cause conflicts such as those witnessed in the Bravo/Grande and Colorado River basins. While an abstract concept of the unified market is often proposed as the solution to water management, markets must be forged out of cultural diversity.

Problems of insufficient water quantity and quality fill the news and attract the attention of increasing numbers of government officials and intellectuals. Efforts to reduce water use often include a cultural dimension and are aimed at teaching values of conservation and efficiency in the use of water. These are important steps and should not be discarded. Nevertheless, the effort to generate a "culture of water" must be scrutinized on a few counts. First, it is based on a principle of homogeneity that may have negative consequences for local cultures that have evolved sustainable relationships with the environment over a long period of time.<sup>3</sup> The second major

difficulty with “culture of water” programs such as the one studied here, is that the principles of cost-recovery on which they are built end up determining much of their content as well as their practical dynamics. Because of this, positive environmental messages and practices are mixed together with a common sense understanding of the antagonistic economic and political relations between service providers and users and a critique and rejection of the latter can lead to a critique and rejection of the former. Distrust of the PCA, for example, may translate into distrust of environmentalisms. The use by the PCA of the intimate relations of family and neighbor to carry out surveillance of water users will only accentuate this distrust. Future scenarios can be imagined in which zealous young “water detectives” will grow up to resent the way the JAD used them to report on their parents and neighbors.

Finally, it is worth remembering that more than 83 percent of the total use of water from the Rio Bravo/Grande is dedicated to agriculture, and less than 13 percent of water use is urban and domestic (CNA 2008). While it is vitally important to inculcate values of sustainability among urban water users who form the great majority of the population, the possible increases in water availability to be made by increasing efficiency in this sector are relatively unimportant when compared to those to be had by increasing efficiency or simply reducing water use in agriculture. An 8 percent decrease in agricultural use, for example, would make water available for a 50 percent increase in urban and domestic use or just for the river itself. Seen in this light, it would seem that efforts to educate demand should be focused on the relatively tiny number of rural water users. A more important achievement of culture of water programs in the cities may be that the people learn to blame themselves, rather than water managers, for water scarcity.

As society in the United States-Mexico borderlands make its way through a century that promises less rather than more available water (Barnett and Pierce 2008), efforts to create a water culture of economic responsibility will not be enough. Due to the fact that more water is extracted from most water systems in this region than is replenished, difficult reductions in overall water use are inevitable. To ease these shifts, participatory political cultures of water management must be promoted, so that water reduction is not (and is not perceived to be) an imposition by governments and water companies (Arrojo 2006; Lacabana and Cariola 2005). And, of course, costly investments in infrastructure—largely forgotten about in the neoliberal era—are absolutely crucial. These need not be massive works for the storage and transportation of water such as those that characterize the 20th century “big dam” period in the borderlands. Rather, small and simple treatment plants for the improvement of water quality and local storage and delivery works for cities and agriculture would contribute much more to the overall environmental health of the inhabitants of the river basins in the region. As we struggle through the worst economic crisis since the Great Depression, it is important to remember that countercyclical spending programs such as those of the New Deal do not

happen all by themselves. Green infrastructure needs to be carefully thought through, and funding for the works needs to be argued for and won. This may be the most difficult of all the cultural aspects of water management to address.

## Notes

<sup>1</sup>JAD Director, Juan de la Guerra (personal communication, June 2, 2006). All names are pseudonyms.

<sup>2</sup>The Web site address for the JAD PCA is URL<<http://www.jad.com.mx/micrositio/index.htm#>> (June 15, 2009).

<sup>3</sup>Some recent initiatives attempt to respect and strengthen existing sustainable cultures of water (UNESCO 2009).

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