

Transboundary riparian watersheds: political conflict and power on the United States – Mexico border

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ABSTRACT

Disputes related to transboundary riparian areas are manifested within international power struggles related to water issues of flow control, flooding, damming, aquifers, pollution, navigation, access, and economic rights to sell. Shared land borders are often a stage for these conflicts. Shared water boundaries increase the complicated matters of dispute along the riparian zone where land meets water. The imbalance of power is fraught on numerous levels including economies, governments, institutions, military strength, international social capital, and the geographic loci of the water sources. This paper will analyze the conflicts and power exhibited in a single revelatory case study of the Mexico-United States transboundary riparian watersheds. Specifically, Ritzer's integrative theory of social analysis will be applied which illuminates the interrelationships of the macro and micro structural orientations that are framed within the conflicts and powers related to the shared water for these two North American countries. The comprehensive data collection contained in the Transboundary Freshwater Dispute Database (TFDD) was utilized for this research. Results infer that Mexico-United States water conflicts range in levels of intensity but are generally resolved with unified cooperation. Subtle shifts in political power are exhibited in periods of quiescence times as well as during events of escalating conflict. In particular, when multiple agency-multiple jurisdictional laws are in disunity, social capital is often employed by actors to strengthen their stated or desired positions. This case study analysis reflects both policy procedures in practice as well as interaction effects of micro-level activities effectuated on the transboundary riparian border waters.

KEY WORDS: *Transboundary water conflicts, United States-Mexico border, and socio-political analysis.*

INTRODUCTION

Shared land borders are often a stage for conflicts. The concept of shared and flowing water boundaries increases the complicated matters of dispute. This union of where land meets water is known as the riparian zone. Conflicts related to transboundary riparian areas are manifested within international power struggles related to water issues of flow control, flooding, damming, aquifers, pollution, navigation, access, and economic rights to sell. The imbalance of power related to the vital natural resource of fresh water is exhibited through multi-faceted aspects that include economies, governments, institutions, military strength, international social capital, and the geographic loci of the water sources.

This paper will analyze the conflicts and power exhibited in a case study of Mexico and United States transboundary riparian watersheds. Specifically, Ritzer's integrative theory of social analysis will be applied to the interrelationships of the macro and micro structural orientations that are framed within the conflicts and powers related to the shared water for these two North American countries. The comprehensive data collection contained in the Transboundary Freshwater Dispute Database (TFDD) will be utilized for this research.

LITERATURE REVIEW

Water issues are often studied as conflicts, but far less is studied on how resolutions are negotiated and maintained (Balthrop & Hossain, 2010; Diner, 2012; Dombrowsky, 2010). A number of factors influence how conflicts are framed and how resolutions are determined regarding shared international waters. Hierarchical socio-political structures and the development, application and interpretations of water laws exert a great deal of pressure on how resolutions are addressed. In some instances, no

laws exist for specific issues or conflicting laws that exist. Another detriment to resolutions is conflicting economic policies between stakeholders. Early evidence of water policy in the region is explicated in the hierarchical socio-political structure of the Hohokam Indians. They acted quickly to resolve disputes around 800 A.D. among the irrigation network that served farmers for extensive miles of the Salt River Valley area located about one hundred miles north of the Mexican border. Archeological remains support the hypothesis that high level members of the villages lived on an elevated mound at key junctures of water routes. It is likely they enjoyed benefits of the water and were able to quickly identify and resolve issues amongst nearby users (Cech, 2009).

Complex and varied water valuation methodologies affect the process of resolving conflict. Issues related to these various complications are well covered in the literature, and date back to the 1800s. Mexico and the United States resolved to work together and codify boundary issues of the naturally evolving riverbanks of the basins as early as 1884 with a treaty agreement finalized in Washington D.C. for both countries. Shortly thereafter in 1889, the *Convention on boundary waters: Rio Grande and Rio Colorado* was established. Following five years of inactivity, the two nations began annual extensions. This process was then halted and it was not until 1944 when a more comprehensive treaty, *1944 Rivers Treaty*, was negotiated that broadened the scope of their concord to include the Colorado, Tijuana Rivers, and of the Rio Grande. In the 1960s the United States agreed to lend water to Mexico for irrigation of crops. During the 1970s and 1980s the border countries further resolved to work collaboratively on issues of salinity in the Colorado River Basin and issues of environmental pollution related to

hazardous discharges. Matters of conveyance were addressed in the 1990s (Giordano & Wolf, 2002). Agreements can be made but further conflicts arise for numerous reasons. For instance, agreements related to the quantity of access from the Rio Grande were agreed upon. Quality of water was not. When it was determined pollution was occurring from the Mexican border, new resolutions had to be determined to address the pollutants. Conflicts occur when data discrepancies occur either through error or change. Significant climate change and drought conditions have sparked controversy over percentages of allocation when amounts have been over allocated in contract, but are not available due to drying conditions (Dinar, *et al.*, 2007). Past treaties of resolutions are mentioned in the literature but the details are obscure or omitted (Balthrop & Hossain, 2010; Conca, 2008).

Governments and institutions support the increasingly market-driven focus prioritization over a human rights approach to water. Around the turn of the 20th century, Mexico vociferously complained to the United States that the increased settlement and irrigation of the western United States was affecting the Rio Grande river flow in the Juarez region. In a show of supreme political force, in 1895, the United States Attorney General ruled in favor of the United States that it held absolute territorial sovereignty over water rights. By language, this ruling precluded an absolute territorial integrity positioning. This ruling followed communications between Mexican diplomats imploring attention to the eroding water conditions and responses from Washington D.C. declaring that their evidence purported dry conditions as being the likely cause of Mexico's woes. It further reported it decidedly was not due to massive western settlements and expansive irrigation on the United States side of the transboundary riparian zone as the likely causes of low water flow (McCaffrey, 1996).

Differences are underscored when international war crimes are applied as criminal law in a traditional *ex post* event punitive and judicial arena, versus applications of international laws of water that are primarily used as a tool *ex ante* in the course of the negotiations. This bears out when international water laws are a tool of political force (Eckstein, 2008). A thorough analysis of the approval of the 1944 *Rivers Treaty* reveals the underlying political dimensions of the time. Former United States President Franklin D. Roosevelt had been instrumental in bringing nations together to counter the ongoing World War II atrocities. Pre-United Nations (UN) talks had been underway for two years. Roosevelt was determined to build alliances in his own backyard of the Central and North American continent nations. Acquiescing to Mexico's demands for a water treaty would most likely ensure Mexico's support of Roosevelt at the upcoming 1945 UN Conference to be held in nearby San Francisco (United Nations 2012). Negotiating transboundary water rights improved the political atmosphere for acquiring international solidarity at the UN level.

Conflicting economic policies and water laws between entities that share waters can be detrimental to negotiations (Draper, 2007; Kibel & Schutz, 2007). Joint commissions and ad-hoc committees are created to address transboundary water issues. The International Boundary Waters Commission between Mexico and the United States was designed with authority to address "flood control, hydropower, sanitation, and water storage." Newer

complications of environmental protection were addressed comprehensively in the broader contracts of the North American Free Trade Agreement. Thusly, an additional layer of bureaucracy was created with a new institution, the Commission for Environmental Cooperation (Conca, 2008; Frisvold & Caswell, 2000). In addition, the La Paz Agreement, the Southwest Consortium for Environmental Research and Policy, the Good Neighbor Environmental Board, the Boarder Environment Cooperation Commission and the North American Development Bank have all been created within a ten-year period from 1983-1993 (Dinar, 2012). Hierarchical political structures are still evident. In 1995, then-Texas Governor Bush declared, "Texas will not support a loan of Texas water to Mexico, as this would jeopardize the welfare of many of our Citizens" Huston (2011). This statement was uttered on the heels of denying a "water loan" to Mexico when their annual proportion allocation had already been realized by May of that year.

In some cases of conflict, no laws exist. The underground aquifers along the border are being depleted and contaminated by users on both sides of the boundaries with little regard to future impacts. Draft articles have been penned by the United Nations to codify international water law for transboundary aquifers. Resolutions ask for nebulous "equitable and reasonable utilization and no significant harm" Eckstein (2011). Each country claims domestic national laws governing their own use of aquifers. Texas, New Mexico, Arizona, and California all claim certain states rights. Unenforceable agreements have been reached in selected locations, such as the 1999 *Memorandum of Understanding* between City of Juárez, Mexico Utilities and the El Paso Water Utilities Public Services Board of the City of El Paso, Texas

Understanding the complex issues that define water conflicts requires an understanding of how water is valued. A good amount of literature is available on how water pricing and valuation is determined and the missed opportunities that result from outdated policies and practices. Upper basins for whom in the past allowed excess water to flow to lower basins now fear future demands of their own could be negated by past and current practices. A "use it or lose it" attitude has some upper basin regions practicing wasteful or economically irresponsible practices in order to maximize water usage, thus curtailing excess flows. These policies do not induce conservatorship or best practices for water sources (El-Ashry & Gibbons, 2009). Traditional cultural practices of the arid area were to create irrigation systems along the floodplains for agricultural purposes. Pressure is mounting to divert usage for the growing urban populations (Fernald, *et al.*, 2007; Nitze, 2009). Eighty-five percent of global water consumption is used for agricultural practices (Jury & Vaux, 2007). As populations increase, food needs will continue to rise. The value of water for agricultural purposes cannot be understated (Goetz & Berga, 2006).

This intersectionality of influences on how water conflicts are framed and resolved sets the stage to conduct a case study analysis of the issues affecting the Mexico-United States shared waters.

METHODS & THEORY

A qualitative approach is utilized by conducting a single revelatory case study of selected transboundary riparian conflicts and identifying the issues of inequalities related to the Mexico-United States transboundary riparian water

zones. An explicatory analysis of specific situations will be examined utilizing Ritzer's Integrative Theory of Social Analysis (Ritzer, 1991). Ritzer's theory is characterized in the macroscopic levels as manifested in the objective forms of judiciary, bureaucracy, architecture, language, and technologies of societies. The subjective influences of culture, norms and values are layers of analysis that should not be overlooked. This theory is then bilaterally influenced with micro actions of individuals that create patterns of behavior and interactions. Studying the interrelationships between macro and micro dimensions of water conflicts allows for an understanding to emerge on how the dialectical relationships shape conflict and resolution.

DATA

The Transboundary Freshwater Dispute Database (TFDD) was created and is maintained by the Oregon State University Department of Geosciences, in collaboration with the Northwest Alliance for Computational Science and Engineering. It is a compilation of full texts of 400 water-related treaties. It contains 39 US interstate compacts in which some contain data that link to the transboundary riparian water zones along the Mexico-U.S. border. The TFDD has an annotated bibliography of water conflict resolution as well the negotiating notes from fourteen case studies of water conflict resolution. The negotiating notes are particularly helpful in understanding the underlying nuances of political power and international social capital that is exerted on issues of transboundary riparian watersheds. A comprehensive news file of international water-related disputes and dispute resolutions are available and can be compared to the descriptions of indigenous/traditional methods of water dispute resolution (Wolf, 2012).

A total of 43 treaties have been recorded between Mexico and the United States that include language governing the transboundary riparian watersheds, beginning with the seminal 1848 Treaty of Guadalupe Hidalgo which ended the two-year Mexican American War and declared the international border between the countries would be the Rio Grande River.

ANALYSIS

Measuring the intensity of disputes has been coded for conflict and cooperation related to transboundary riparian water issues through the creation of a water intensity bar scale. To quantify the intensity of conflicts, the Basins at Risk (BAR) water intensity scale was created, "BAR Scale." It has unit ranges from -7 to +7 (Wolfe, 2012). The BAR Scale takes into account varying issues of conflict such as quantity, infrastructure and economic development; and levels of intensity of conflict. Declared war over water is represented at the most extreme -7 level. Declared war over water has been documented from as early as 2500 BCE in Mesopotamia over the Tigris River (Jarvis & Wolfe, 2012). Conflict at the -6 and -5 are severe negative events resulting in death and armed military involvements. Zero (0) represents a neutral stance and no significant conflicts. +7 indicates the highest level of cooperation over shared waters when states unify into one nation. The Mexico-United States situations have long enjoyed the position in the range of peaceful conflict, usually measured at the +4 to +6 levels of unified cooperation and treaties. However, serious negative conflicts have been documented between

Mexico and the United States since the 1800s and continue through today. Conflicts at -3 have occurred at least twice in 2001, both disputes over water quantity disbursements for the Rio Grande River. In 1989, the two countries also experienced two conflicts at -3 over water quantity involving the shared Colorado River (Wolfe, 2012).

The most recent agreement, Minute 319, considered an extension of the *1944 Water Treaty*, was signed in November 2012. The five year agreement has been hailed as satisfactorily collaborative for both countries. Effects of drought, climate change, and expanded population growth in the arid west are the primary concerns. They have been addressed in the forms of humanitarian and environmental improvements for the Mexican parties and strengthening United States' implementations for conservation, environmental stewardship, storage, and infrastructure projects. Both countries are expecting mutual benefits from the provisions of the agreement (IBWC, 2012).

Major themes emerged in the analysis. Benefits and complications of multi-agency and multi-issue revealed the complexity of situations (Dombrowsky, 2010). Overlapping district, state, national and international water laws and traditions influenced the outcomes of conflicts (Ries, 2008; Salman, 2007). Political changes, political power, and international social capital weighted events (Blomquist, 1992; Draper, 2007; Huston, 2011). And finally, water valuation impacted negotiations (Nitze, 2009).

Explaining the positive outcomes of the multi-agency and multi-issue situation has been referred to as a "diffusion of innovation" Blomquist (1992). The methodology has elements of success that a comprehensive water plan is not capable of accomplishing with the same level of effectiveness. Blomquist specifically illuminates this microscopic analysis through the examples of working groups in the southern California region. Applying Ritzer's process of integrated theory of social analysis, the engaged parties objective behaviors and actions included the ideas brought forth by attorneys and engineers gaining knowledge by working in overlapping regions. Board members and staffers often sat on multiple organizational structures and brought knowledge and innovation to new groups of learners. Individual water user experienced overlapping jurisdictions in respect to irrigation, salinity, or environmental protocols. Working with multiple governmental agencies created the conditions for the subjective basis defining the social construction of their realities as neighbors with shared water consumptions (Blomquist, 1992).

Conversely, there are numerous international water governance organizations with overlapping jurisdictions and purposes where the diffusion of innovation is hampered by an unseen challenge. As they attempt to mete out cooperation and compromise they can remain unaware of silent politics that have the capability of undermining the intended work of the organizations. The strength of politics is not stagnant. Its strength is often directly correlated with the ebbs and flows with the force of economies. The stronger and more diversified the economies, the stronger the power of the country. Transboundary water organizations are often unconscious of evolving situations of power. For instance, population growth and increases in industrial usage can eventually sway political discord regarding power over quantities of water or quality of water discharges and environmental concerns (Raleigh & Urdal, 2007). Issues, mostly of access, were addressed in the

earliest of agreements. Political discord occurs when newer concerns of environmental impacts and increased population consumption and industrial usage have not been as adequately addressed (Sanchez-Munguia, 2011).

In other instances, political change arrives swiftly and without notice. Transboundary water organizations, namely the International Boundary and Water Commission (IBWC), have enjoyed relative freedom from politics. The IBWC is largely staffed with engineers and field experts. Indeed, it is one of the very few United States federal institutions that are not headquartered in Washington D.C. It is based with a home administrative office in El Paso Texas. The long tenured organization, evolved from the 1944 *Rivers Treaty* has endured with little political interference until most recently, when in 2005 the organization's primary United States agent was appointed and then quickly dismissed by the United States President of the time. After more than one hundred years, politics finally caught up with water organizations (Mumme & Little, 2010).

According to the oft cited *Harmon Doctrine* of the 1890s, "A country has the right to use the fluvial waters which lie within its territory without any limitation whatsoever, regardless of the effect of this utilization on the other countries" Vukovic (2008). The *Harmon Doctrine* was the stated position of the U.S. as penned by Attorney General at the time to address the Mexico-United States dispute over the Rio Grande River. The doctrine generated from the power base of the upper riparian country, clearly benefited the U.S. position. However, when Canada and the United States conflict over water, the U.S. becomes the lower basin country and then wishes to adopt the stance of rights preferred in the "principle of absolute territorial integrity, which means that a country cannot utilize the waters of an international river in a manner which might cause any detrimental effects on co-riparian territory" Vukovic (2008). The politics of water rights is often confounded with motives associated with the valuation of the waters.

"By treaty we had promised them [Mexico] a million and a half acre-feet of water. But we hadn't promised them *usable* [emphasis theirs] water" Kibel & Schutz (2007). Valuation of water is not solely related to a cost per unit. The quality of water can be too high in salinity (salt) which renders the water unpotable for human consumption. High salinity water can destroy agricultural fields. In 1960, the United States began draining saline water into the Colorado River, and deducted that water quantity as part of their required allocation to Mexico (Wolf, 2012). Thusly, issues of quality are but one measure in the valuation of water.

The notions of economic measures are now being computed with the ecological ramifications for wildlife and biosphere conditions. Furthermore, water valuations are more often addressing Pareto optimality. Notably, spiritual and cultural valuations, recreational valuation and associated tourism economies, and the availability of water for future generations. Usage costs must now also attempt to address and predict unforeseen expenses associated with environmental policies such as erosion control and salinity (Turner *et al.*, 2004).

Water valuations are predicated on social issues that demand an economic analysis that balances resources and increased demands between agricultural expansion projects and urban population growth; all the while motivating conservation practices and avoidances of pollution.

Expectations for traditional use must be counter-balanced with consideration for higher-value usage. The economic valuation of water includes incentive and disincentive practices. Water tariffs and pollution charges are but two examples. Furthermore, issues of cost-benefit, cost-effectiveness, and efficiencies are taken into consideration (Smuck & Schmidt, 2011).

CONCLUSIONS

Mexico and the United States are two nations that share more than transboundary riparian watersheds. Discussions should be extended to beyond the limits of where the water meets the soil. Discussions should embrace the shared realities of the politics between Mexico City and Washington D.C. They should embrace the shared impacts to migratory songbirds and other biospheric conditions. Solving transboundary dilemmas should recognize all levels of scale from the local individual that dips a handful of water from the flow to international organizations and stakeholders that construct Hoover-like dams. Contributions towards solutions should be valued by those made at the informal level. Likewise, formal agreements are crucial in defining responsibilities required from both countries (Lopez-Huffman, *et al.*, 2009).

Valuations of water and its usages will continually need to be reevaluated with the position of how can reasonable incentives be implemented that encourage conservation, reuse, and protection of the transboundary riparian watersheds (Quealy, 2008). Furthermore, as the waters flow and change, so do the conditions in which usage and agreements are bound. Unexpected or catastrophic events such as the 2010 earthquake that imparted significant damage to the Mexican water infrastructures can cause an abrupt disruption to agreed terms and conditions. Perhaps the newest 2012 agreement between Mexico and the United States for their transboundary riparian watersheds will herald an era of shared waters, as well as an era of peace between neighbors and governments.

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