

## Chapter 4

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# Laws of the river: Conflict and cooperation on the Colorado River

*Brian O’Neill*

*Water Resources Research Center, UMI-iGLOBES, University of Arizona, USA*

*Franck Poupeau*

*UMI iGLOBES, CNRS/University of Arizona, USA*

*Murielle Coeurdray*

*UMI iGLOBES, CNRS/University of Arizona, USA*

*Joan Cortinas*

*UMI iGLOBES, CNRS/University of Arizona, USA*

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### INTRODUCTION

“The courtroom was overflowing. Dozens of lawyers were there, representing not only Arizona and California but also three other states having Lower Basin interests – New Mexico, Nevada, and Utah – all of which had joined the litigation, though not all voluntarily. Present also, of course, was the United States, a brooding omnipresence, which could have been going along for the ride but which, as it turned out, laid a claim to a large part of the vehicle and to the right to drive besides.... These and many, many more were present on that opening day, and an air of Armageddon pervaded the room-though of course there was sharp disagreement over the identity of the forces of Good and Evil. Men were present on both sides who had literally spent their lives on the battle over the Colorado. And for Arizona it was the long-awaited moment; it was now or never. For California, who had long played the waiting game, the crisis was now at hand -having contracts and works for 5.362 million acre-feet, she had nothing to gain, only water to lose.”

The scene above was described in 1966 by Professor Charles J. Meyers (42–3), just a few years after the final decision in *Arizona v. California* (1963), as the parties gathered to make the most important determinations regarding the flow of the Colorado River since the Colorado River Compact of 1922 (Compact). The description is vivid. It paints a stark reality, invoking a contentious atmosphere that may be unfamiliar to contemporary observers of the Colorado River Basin trials and tribulations, but it is certainly not forgotten. *Arizona v. California*, and the whole body of law, contracts, and agreements encompassing roughly a century of water disputes makes up the Law of the River (*Glennon & Culp, 2001: 912*). In essence, it governs and manages the river.

In this chapter we describe how the courts have often been utilized as a method of conflict resolution since the late 19th century. Our analysis begins with the Western US, and works toward specific elements related to Arizona. Our research hypothesis

is as follows: *Whereas historically, the resolution of conflicts in the courts has created norms, rules, and instruments that take the form of legal and institutional tools, in more contemporary times, water management has political strategies at its core, often with the aim of avoiding court action, and producing social consensus between professionals of water management and the public.*

To say that there has been a consistent historical movement from conflict to cooperation would be far too simplistic: the water in the Colorado River Basin has not been managed in a smooth, linear fashion. Instead, conflict and cooperation are in constant flux (Zeitoun & Murumachi, 2008), and both of these components cohabit in the complex world of water management. Conflict and cooperation necessitate a social, and therefore relational, way of thinking about water. Consequently, water management cannot be evaluated by a singular focus on the hydrologic cycle (Linton & Budds, 2014), groundwater-surface water interactions, legal structures, climate change, or the need for policy solutions to manage drought. The social agents involved, taken alongside the institutions and norms they created and continue to create, are of primary interest for a social analysis of the legal structures underlying water management in West United States.

First, we will set the historical backdrop of water management in the West in order to understand the roots of the present model of water management. Additionally, we will examine the primary legal doctrines affecting water allocation in the West. A discussion of the *Arizona v. California* decisions and related legislation will follow. Finally, some more recent examples will be presented – the Groundwater Management Act of 1980 (GMA) in Arizona, and the more recent Shortage Sharing Agreement of 2007 involving the Colorado River Basin states. By considering the aforementioned factors, it will be possible to identify how conflict and cooperation coexist, and how that cooperation toward consensus building can be seen as a logic of strategic political management, all the while illustrating the struggles of water management in the past and present.

## I THE FRONTIER

*Ditat Deus*. “God enriches”. Arizona’s state motto holds much in its grasp. It is concise, but invokes a vast and involved history. Arizona’s is a history that is similar to much of the West, and also much different. In the West we see a history full of struggle – early settlers struggled to acquire land, and then to carve out lives for themselves in previously inhospitable territories. Many of the earliest settlers and pioneers were disenfranchised individuals from the eastern US, who believed that the open spaces of the western frontier would provide them with a fresh start toward a better future (Worster, 1992). However, this future could only be made possible with sufficient water supplies: “*Everything depends on the manipulation of water -on capturing it behind dams, storing it, and rerouting it in concrete rivers over distances of hundreds of miles. Were it not for a century and a half of messianic effort toward that end, the West as we know it would not exist*” (Reisner, 1986: 3).

As the 20th century began, America saw conflict and controversy erupt frequently. Early evidence of such conflict is provided by *Winters v. United States* (1908), in which the Supreme Court determined who had the right to the water from the Milk River in Montana: Native Americans or the settlers? In 1888, the US Government established

the Fort Belknap Reservation in Montana. As settlers arrived, they diverted water from the nearby Milk River and after several years, the Native Americans were unable to irrigate their lands sufficiently. The settlers claimed “appropriative rights” to the water, stating that they had used the water for their own benefit prior to the Native American’s beneficial uses. The water was just waiting to be used by the settlers, or so they thought. The Supreme Court ruled that when the federal government established the Native American reservation, it did so with the intention of allowing the tribes to become self-sufficient. Therefore, the right to water was “reserved” for the tribes’ beneficial use, such as agriculture. This case established the Federal Reserved Rights Doctrine, commonly known as the Winters Doctrine. The doctrine would eventually come into play almost as an afterthought in *Arizona v. California* (1963); however, the tribes were given senior priority rights to Colorado River water for their purposes (*Glennon & Kavkewitz, 2013: 26*). Although the main point of this paper is not to discuss the intricacies of Native American water rights, this early example illustrates the fact that land in the West is important, but it can be of little use without water.

Water disputes extend well beyond some of these initial determinations. Many issues stemming from the Compact and related to the allocation of water to each state are still being debated. These issues of allocation have recently come to the forefront, as Arizona and the other states of the Colorado River Basin may have to contend with an official declaration of a shortage in the Colorado River supply beginning in 2016 or 2017. Although the 2007 Shortage Sharing Agreement was a groundbreaking effort, exemplifying the ways in which parties with long-standing differences could come together for effective policy reform, the challenges into the future are great (*Grant, 2008; Glennon & Kavkewitz, 2013*), not the least of which will be how to reach consensus in the future, while working within the framework of the Law of the River.

## 2 FIRST LAW OF THE RIVER: SETTING THE FIELD OF PLAY IN WATER MANAGEMENT

If “*the story of the Colorado River is the great epic of water law and politics in America*” (*Thompson et al., 2013: 975*), one can say that everything starts with the Law of the River, which is the aggregate collection of various contracts, court decisions, and state or federal laws, constituting a complex, and at times seemingly incoherent, mire of history (*Meyers, 1966; Megdal et al., 2011*). Any major political or legal movement within the Colorado River Basin must deal with the Law of the River. As a system, it reveals a certain amount of coherence, involving all states within the Colorado River Basin. In a broader context, examining the Law of the River exemplifies how water management “*is not merely a technical field that can be addressed through infrastructure provisions and scientific expertise, but a political one that involves human values, behavior and organization*” (*Linton & Budds 2014: 170*). Therefore, “water is not an inert backdrop for social relations, but plays a positive role in social formations” (*Linton & Budds, 2014: 174*). The doctrines that underlie water law have influenced man’s interactions with water. As people from the East populated the West, they gave water meaning and virtue that cannot be rivaled by any other natural resource in western American culture. All are aware, on a level foreign to the East, of the value of water. It is a cultural artifact of sorts and contemporary fascination. As one begins

to see meaning in water, one becomes aware of the legal structures that give water practical definition. In the legal history of the West, one sees not so much the amalgam of the laws, or the many layers of a single corpus of law, but rather the creative imbrication that history has allowed. When faced with a shortage of water, the laws and structures of this imbrication are revealed as foundational and part of the doctrinal fabric of the Western spirit.

## 2.1 Doctrines: a not-so-equal appropriation

Many doctrines play a role in understanding the laws affecting the Colorado River, which collectively come to determine water rights. Over the years, the states have proven to be quite strong-willed in efforts to implement their own laws to govern water (*Getches, 2009; Thompson et al., 2013*). The doctrine common to most Western states is that of prior appropriations, which states that the first person to use the water has the right to it. The oldest user is legally known as a “senior” rights holder. When Arizona was allowed to proceed with the Central Arizona Project Canal, the catch was that it would hold “junior” priority through the Colorado River Basin Project Act of 1968. Therefore, if and when the Secretary of the Interior (SOI) declares a shortage on the Colorado River, Arizona will see reductions, but California will remain unaffected (*U.S. Department of the Interior, 2007; CAPa, 2014*). It has been argued many times that the prior appropriations doctrine needs to be reformed because it was originally conceived to encourage settlement of the West, and was highly conducive to creative water management, by utilizing diversions and dams for beneficial uses. In the end, the prior appropriation doctrine is not only indicative of the early settlers’ views of nature, but also of their views regarding agricultural and industrial progress (*Glennon, 2012*).

### Prior Appropriation

In the field of law, Arizona’s Spanish heritage was reflected in the Latin principle *qui prior est in tempore, potior est in jure*, which means “he who is earlier in time, is stronger in law”. When the Territory of Arizona was set up in 1863, the Howell Code passed by the Legislative Assembly incorporated Spanish and Mexican customs of prior appropriation. As more and more colonists gradually arrived in the Territory, and periods of flooding were repeatedly followed by severe drought, competition for land and water intensified, giving rise to numerous legal battles.

Regarding the Salt River, in 1882, Judge H. Kibbey of the Territory’s Supreme Court was invited to resolve disputes between water consumers and the canal company of the Salt River Valley Land. The court’s ruling reasserted the doctrine of prior appropriation. It said that water belonged to the land rather than the canal companies, and could not be sold as a separate commodity. The Kibbey decision, linking land and water, was used as the basis of water law in Arizona.

Approximately thirty years later, on March 1, 1910, Judge Edward Kent of Maricopa County, who worked in the Territory of Arizona, followed the Kibbey Decision with what has become known as the Kent Decree (1910). The Kent Decree opposed the owners of land irrigated by the Salt River Users Association who, under contract with the government, owned canals to the north of the river and received surplus water from those

canals, as well as the individual owners to the south of the river, who had no contractual relationship with the federal government, and who claimed the right to access water. The Kent Decree reaffirmed the doctrine of prior appropriation concerning cultivated plots of land, including all of the Salt River Valley connected to the Salt River. The Kent Decree was the key element in terms of water law and the administration of Arizona at the moment that it ceased being a territory and became a state in 1912. The Kent Decree came into play again in the case of *Hurley v. Abbott* (1966) when “over a half-century later, in 1966, in the face of expanding Verde Valley water uses, SRP attempted to enlarge the Kent Decree to adjudicate Verde water rights, but the federal district court (the successor to the territorial court) held that the decree could not be reopened without joining all landowners and water users in the Verde watershed (*Feller, 2007: 406*)”.

Furthermore, the prior appropriations system came into being as a result of miners, farmers and grazers moving west without owning land. Therefore, one was able to divert water for a beneficial use without needing to necessarily own property (*Getches, 2009: 6; Tarlock, 2001: 770–771*). Under this system, a certain inequality around water use developed, even though water is a public resource. As stated in A.R.S. 45–141,<sup>1</sup> “the waters of all sources, flowing in streams, canyons, ravines or other natural channels, or in definite underground channels, whether perennial or intermittent, flood, waste or surplus water, and of lakes, ponds and springs on the surface, *belong to the public* and are subject to appropriation and beneficial use...” In this way, ‘prior appropriations’ is similar to the riparian doctrine that governed water management in the Eastern US. According to the riparian doctrine, simply owning property that adjoins a watercourse endows one with a right to use the water; however, the prior appropriation doctrine operates differently (*Thompson et al., 2013: 167–181*). The riparian doctrine also provided that a “riparian”, one who owned property along a river, must make some “reasonable use” of the water, relative to other users. This meant that there was some degree of equitability built into this method. However, not all Western states apply the same doctrines, for as Article 17 of the Arizona Constitution sets out most of these rules for that state, it clearly establishes that the riparian doctrine does not apply. In its modern form, prior appropriation water rights require permission from a state agency, which then monitors and considers the other users of the watercourse (*Getches, 2009*). The imbrication of riparian rights, prior appropriation and their foundations is illustrated nicely by *Wallace Stegner* (1953: 226) when he explains that:

“In general, American Law was based on English Common Law. But the Common Law, accumulated out of the experience of a rainy country where water was no problem, affirmed only what where known as riparian rights to the water of streams. The man who owned the bank could make any use that he pleased of the water, but he had to return it to the stream when he was through with it. That worked for running grist mills, but it did not work at all for irrigation, which used the water up instead of taking advantage of its passage. In the West, before and

1 Arizona Revised Statutes, see <http://www.azleg.gov/ArizonaRevisedStatutes.asp>.

since Powell's time, there have been heads broken with irrigation shovels because of someone's attempt to apply riparian law upstream, and take uncontrolled advantage of the water. In an irrigating country, appropriation becomes an essential criterion, and delicate refinements about more or less beneficial uses, and priority, and dipping rights, and a great many other complications still unheard when Powell wrote. There was nothing wrong with the riparian law for the West except when downstream bank-owners sooner or later found themselves with riparian rights to a dry creek bed. Water is the true wealth in a dry land; without it, land is worthless or nearly so. And if you control the water, you control the land that depends on it. In that fact alone was the ominous threat of land and water monopolies."

The battle to make the land worthy of settlement and development fell chiefly to the federal government. With respect to the major allocations that have been made for each state in the Colorado River Basin, large federal projects were built so that the states could make use of the water. This meant that over time, states could pay back the government, usually the Bureau of Reclamation (BOR); however, the states owned the water, rather than the government agency that had paid for the project. This process allowed the government agency to operate the projects under state laws rather than federal laws (*Trelease, 1960: 403; Thompson et al., 2013: 843–65*). Currently, there is a great deal of apprehension when states discuss the future of the Colorado River. Each state owns the rights to certain amounts of water from a specific source; however, the lines become blurred because the federal government represents Native Americans, who are legally seen as sovereign nations, and many of their rights are relatively senior on the Colorado River. Therefore, the states fear what may happen to their rights if the federal government intervenes, because it operates many of the diversion projects in crucial states such as Arizona and California. The federal government would prefer not to take sides in any water shortage negotiations, thereby allowing the states to continue to work within the parameters initially defined by the Law of the River, which began with the Compact in the early 20th century.

## 2.2 The compact and the players

The commonly accepted origin of the Law of the River is the Colorado River Compact of 1922, which was initially proposed by the states that have come to constitute what is known as the "Upper Basin" of the Colorado. These "States of the Upper Division", as described in Article II of the Compact, are Colorado, New Mexico, Utah and Wyoming, while the "States of the Lower Division" are Arizona, California and Nevada (*Meyers, 1966*). During these early years of Western settlement, a great deal of primitive canal building and irrigation was being performed. The settlers of California's Imperial Valley made their opinion known early when they asked the federal government to create the "All American Canal" (*Reisner, 1986:125*).

However, the turning point was in 1905 when a massive flood created the Salton Sea in the Imperial Valley, which eventually necessitated the construction of the Hoover Dam (*Reisner, 1986: 122–125*). Los Angeles saw great electricity potential

in a dam project, and began organizing the Metropolitan Water District to lobby in Washington D.C., with help from Imperial Valley irrigators. Additionally, there was a drought in California at this time, which charged the whole situation with an extra impetus for reform (*Thompson et al.*, 2013: 978). California approached its water problems aggressively by sending lobbyists to Washington D.C., and strategically placed itself in the best possible position for future management of its water supply into the 20th century. This initial political foresight has been a hallmark of California water politics.

As many water managers will say, even today the future remains uncertain in the Colorado River Basin. Arizona has historically been proactive with its conservation and management practices because it was politically late to the game, and has been unable to effectively push its agenda against that of the more powerful California. The Western states are concerned about California because its population continues to increase, as does its relative political power. Therefore, history may be repeating itself, as the water worries of the early 1900's are reflected in the concerns of the 21st century. "*What the representatives truly concluded to be sufficient water in the Colorado River for all needs for all time, based on the extensive studies of Colorado's R.I. Meeker and the Bureau of Reclamation's Arthur P. Davis, soon became a shortage. The seeds of controversy for the Colorado River Compact were sown*" (Tyler, 1998: 26). However, Delphus Emory Carpenter was one figure, during the negotiations of the Compact in 1922, who valued cooperation over conflict. This is not to say that he was not going to fight for his water, but he is one example of an individual who acknowledged the social and relational nature of water, and recognized that conflict and cooperation are not so easily separated.

### Delphus Emory Carpenter: Origins of "win-win" Water Management

Trained as a lawyer at the University of Denver and graduating in 1899, Delphus Emory Carpenter had a constant penchant for finding himself in water law disputes as he practiced through 1908. In 1909 he ran for the Colorado Senate as a Republican, and won despite his opposition to the agrarian populist movement. Known as "Give-a-Dam Carpenter", he was truly a gentleman by all accounts, and always insisted that he get his way, but that the other parties received "a square deal" (Tyler, 1998: 28). He might even be considered as the father of modern interstate negotiations, and of the strategies of working towards "win-win" situations that many current politicians and negotiators utilize (Mostert, 1998).

Around 1910, he was made chairman of the Senate Committee on Agriculture and Irrigation, and he prepared a report on the Colorado River, its tributaries, and the legal criteria that should be applied to their use. He came to the conclusion that the doctrines of prior appropriation and beneficial use were key components of Western water law, and should remain so. Interestingly, he also felt that the states should take responsibility for the Colorado River, and prevent the federal government from intervening in the matters of the Basin. "*To Carpenter, the intervention of the Reclamation Service in Kansas v. Colorado was like a fire bell in the night. Even though the Supreme Court ultimately decided in 1907 that each state had full jurisdiction over the waters of its streams, the federal government appeared increasingly disposed to build its projects with scant attention to the statutes and judicial decisions of sovereign states*" (Tyler, 1998: 29–30).

He was additionally appointed to work on *Wyoming v. Colorado* (1922), which further provided a basis upon which interstate rivers might be divided. Despite initial infighting between Carpenter and Herbert Hoover (Warren G. Harding's Secretary of Commerce), they eventually came to work together quite closely. Once the final decision in *Wyoming v. Colorado* (1922) was made, Carpenter drew up the 50–50 (7.5 MAF–7.5 MAF) allocation scheme between basins upon Hoover's request for the Colorado River Compact. Million acre feet (MAF) were used as the measurement to accommodate the vast sums of water being used in the West.

The "equitable" division of the Colorado has proven problematic into the future despite Carpenter's belief that it would decrease future litigation (Tyler, 1997, 1998). Mainly, Carpenter believed that the "equitable apportionment doctrine" that had been applied in *Kansas v. Colorado* (1907) was the best way to proceed. This doctrine has been criticized because despite the fact that prior appropriation may have many flaws, making attempts to divide waters in equal parts provides yet another level of uncertainty, however it can become a necessity for the courts when dealing with large disputes between states (Patashnik, 2014). However, one must consider that Carpenter, in one stroke, was attempting to make a sweeping reform in the West. By doing so, he attempted to be sensitive to Arizona's situation and understand that it would take many years to ratify the Compact, but he also wished to protect the Upper Basin's supply of water. At the time, everyone was concerned about the rapidity with which major Lower Basin cities were growing.

In the decades following the Compact, almost all in attendance recognized the fundamental role that Carpenter played. However, it was Sims Ely of Arizona who spoke of the situation with great perspective and candor in 1920, and again in 1944 when he wrote that "*I shall never forget the prophetic look that came over your face, nor the clarity of your reasoning as you pointed out to me (in 1920) why that allocation [referring to one-half of the total flow of the Colorado River to the Upper Basin States] would be demanded by you when the time should come to frame the treaty.... You and I will not live to see it,' you said, 'but within the next one hundred years, perhaps' within fifty years, water for irrigation will have become so valuable that the easterly side of the Rockies will be pierced by a tunnel or tunnels, and water will thus be conveyed to the Plains below.' It was then that you became the prophet of great things to come*" (Tyler, 1998: 27).

Arizona eventually ratified the Compact in 1944, when Mexico was additionally guaranteed 1.5 MAF of Colorado River flow (Glennon & Kavkewitz, 2013). Carpenter's savvy legal ability and knowledge of the inner workings western water law, enabled him to successfully protect the Upper Basin from many future issues. However, one tricky element of the Compact was that it simply divided the Basin, and did not provide for intra-basin allotments. This issue eventually brought Arizona and California to the courtroom. The states would have to work out the inter-basin apportionments themselves.

### 3 INTERSTATE CONFLICT

California continued lobbying for the building of the All-American Canal and Boulder Canyon Dam. In 1928, the Boulder Canyon Project Act (BCPA) was finalized,

clearing the way for construction of a new dam along with the All-American Canal. Even naming the dam became controversial, at first called Black Canyon Dam, later Boulder Dam, and finally Hoover Dam, prompting one observer to suggest the name “Hoogivza Dam”. (*Thompson et al.*, 2013: 980). In 1928, it was agreed that California would be allowed 4.4 MAF and 1 MAF of unused surplus on the river. The BCPA created a general provision for the entire Lower Basin, whereby Arizona would receive 2.8 MAF and Nevada would be allotted 0.3 MAF. At this point, the famous *Arizona v. California* lawsuits began. These decisions established various social norms that have taken the form of legal and institutional tools, even though Carpenter, and other proponents of the Compact, had hoped to avoid future legal action.

### 3.1 Arizona v. California (1963)

The set of decisions issued by the U.S. Supreme Court in the litigation between Arizona and California, from 1931 to 2000, if taken as a whole, is one of the longest lasting and most influential Supreme Court matters regarding the Colorado River. The issue stemmed from California’s need to further divert water beyond that which was outlined by the BCPA in 1928. The 1963 decision is the best known, and the most well documented, because the court held that the SOI is responsible for contracting with states to allocate water according to various formulas outlined in the court’s decisions. Arizona finally received its 2.8 MAF allocation and was able to begin the construction of the Central Arizona Project (see *infra* chapter 6). However, in the event of a water shortage, the SOI determines apportionment after the 1928 rights can be met.

*Arizona v. California* is also significant because the Federal Government has the final say in apportionment when water shortages occur. For many years, California took over 5 MAF because the SOI had declared a surplus on the River. This is not the case today as the river faces a potential declaration of shortage and prolonged drought conditions (*Glennon & Kavkewitz*, 2013). Additionally, in the subsequent 1964 and 1979 decrees, present perfected rights became further defined; therefore, apportionment to Native American nations and Lower Basin States became clearer. Native American allocations have increasingly been considered, and will continue to be an interesting twist to the Law of the River as the drought becomes severe. *MacDonnell et al.* (1995) argued early on that if droughts increase in the future, flaws in this aspect of the Law of the River would become glaringly apparent. Major cities such as Los Angeles, Phoenix, and Las Vegas may have to look elsewhere for water because they are not high enough on the totem pole of appropriation rights.

The federal government has had the largest impact on the policy process as it relates to the Law of the River for more than 100 years, and it will always have the final say in major water appropriation disputes. However, it is not an interest group in the traditional sense. The government’s interest lies in the fact that more disputes over the Law of the River, and more drought in the Southwest, necessitate more government intervention. Historically, the SOI has been heavily involved and still holds a great deal of legally endowed power, especially in the way he/she can control water policy and frame debates. Arizona will continue to struggle with the allocation scheme that resulted from *Arizona v. California* and the agreements it made to secure construction of the Central Arizona Project (CAP), because the CAP has such a low priority on the Colorado River.

### 3.2 Arizona's groundwater struggle

One of the most important institutional and technical tools in Arizona's water management apparatus is the CAP, which resulted from decades of thought, planning, legal battles and political struggles, ultimately codified in the Colorado River Basin Project Act of 1968. The CAP was made possible only after various legal actions between Arizona and California provided greater clarity regarding the allocation of the waters of the Colorado River (*Cortinas et al., 2015*).

Over time, there has been growing emphasis toward more locally driven management, and away from large-scale federal action, such as the BOR's dam and diversion projects, and the array of aforementioned Supreme Court proceedings. This change in emphasis has important practical applications when considering the role that the federal government may be forced to play in the years following a shortage declaration. To illustrate this shift in water management, it is helpful to analyze the Groundwater Management Act (GMA), which marked a major transition in Arizona and western water management, because it was the result of clear political tensions leading to fundamental policy reform in Arizona (*Connall Jr., 1982*). It was not the result of direct courtroom action, which had been employed to resolve many conflicts in the past, although it was certainly influenced by *Farmer's Investment Company v. Bettwy*. Ultimately, water management in the 21st century has much more to do with managing recurring political conflicts. As Bruce Babbitt, former Governor of Arizona, wrote in 1986, "the second century of the Colorado River, now before us, will raise issues that no one even thought of back in 1922" (*Weatherford & Brown, 1986: xi*). His words still ring true today, thus it is increasingly important for scholars to look back into the richly sedimented history of the Colorado River to better understand the present, and look to the future.

Even though there are major issues with which to contend in terms of surface water, Western states face major concerns that have only recently been realized with respect to groundwater. The embedded issue for Arizona is that it was pumping groundwater at alarming rates, because it lacked major canal and delivery infrastructure from the Colorado River. In 1972, Lawrence McBride wrote an article in *Ecology Law Quarterly* entitled "Arizona's Coming Dilemma: Water Supply and Population Growth". McBride carefully examined demographic data and a variety of hydrologic data collected by the United States Geologic Survey and other agencies. His article sounded a significant alarm, because it provided a comprehensive analysis of the Basins and their populations. He described the method of water governance in Arizona as a "system of diversions because of the lack of surface water to meet demand" (*Mc Bride, 1972: 359*). At that time, the CAP was not yet finished for Tucson or Phoenix, and the challenges of evaporation, the possibility of desalinization plants, and diversions from Canada and Alaska were seriously considered. Meanwhile, groundwater recharge, which was eventually used to solve many problems in Arizona, was only mentioned in the context of Orange County, California. McBride concluded that, in Arizona, there was an "impossibility of setting up a recharge program without changes to the law". In the end, it would take powerful leadership in Arizona and Washington, D.C. by Cecil Andrus, Bruce Babbitt and others, to begin to mitigate the years of groundwater overdraft (*Connall Jr., 1982; Ambrose & Lynn, 1986*). Clearly, many strides have been made since that time, although some disconnect still exists between water law

and the science of hydrology. Some scholars (*Linton & Budds, 2014*) would go so far as to say that the constant obsession with the hydrologic cycle in matters such as law, which have profound social components, actually serves to obscure the human interaction with water, and disguise water beyond comprehension. However, adaptations for the better have been made, even if legal doctrines still hamper the Western United States (*Glennon, 2007*). Finally, despite Delphus Carpenter's efforts, a highly constructed and contentious system has been created, and its effects can be seen in today's methods of water management.

### 3.3 Arizona's water management tools: the GMA

Many of the tools and techniques that have allowed Arizona to effectively rebrand itself, from a state that was over-drafting water at a dangerous rate, to a leader in conservation and management techniques, have come about since the 1980's and 90's. Arizona had to take on somewhat of a "bunker mentality" (*Source: Interview, Kathryn Sorensen, Phoenix Water Services Department, April 2015*) in order to gain the stability and assuredness that it has today. As will be described, Arizona underwent a complete about face as it moved through the 1980's, beginning with the GMA and a new vision for its water resources.

Today, collaboration and negotiation are the preferred methods for resolving water conflicts. Court cases are often seen as expensive and time consuming, and are sometimes avoided because the decisions may contain undesirable outcomes for both parties. After a long history of depleting its groundwater, the state had to be summoned to action. As Arizona transformed itself, Bruce Babbitt emerged with the leadership and vision it required.

#### **Bruce Babbitt: New Visions for Arizona and America**

Bruce Babbitt is one of the foremost figures in Western environmental politics. Born into a ranching family in Flagstaff, Arizona in 1938, he rose to prominence with his election as Governor of Arizona in 1978, after serving as Attorney General of Arizona since 1975. He continued on as Governor until 1987 when he ran on the Democratic ballot for President. Babbitt also served as SOI under President Clinton from 1993 to 2001. As SOI, he left his most lasting impression on American politics, and he is considered to be one of the most successful to hold that position, because of his extensive conservation efforts through use of the Endangered Species and Antiquities Acts. Additionally, he became known for his ability to "reach bipartisan compromises on issues whenever possible" (*Leshy, 2001: 199*).

Babbitt maintained a strong commitment to the environment throughout his political career. His father was one of the founders of the Arizona Wildlife Federation, as well as the Arizona Game Protective Association. Following interests in the natural world, he received a degree in geology from the University of Notre Dame, and then moved on to the University of Newcastle, England, where he received an M.S. in geophysics, and finally to Harvard Law School before entering his political career. About the time that he became the SOI, Babbitt was twice considered for a position on the U.S. Supreme

Court by President Clinton (O'Leary, 1998; Terrain.org 2006). Throughout his career, he exhibited an uncanny ability to see the big picture. As Lesby (2001: 201) states: "Babbitt has been the most nationally focused of them all", (referring to the legacy of various SOI's). From the Flagstaff of his youth, his worldview was leavened by years at Notre Dame and Harvard, by graduate school in England, by much travel around the country and abroad, and by an inquisitive mind and voracious reading on many subjects".

Additionally, Lesby (2001: 203) goes on to say that it was Babbitt's ability to engage the details that was "a technique he had mastered soon after becoming Governor of Arizona, when he almost literally locked representatives of major water interests in his office for months while, under his strong direction, in 1980 they hammered out the first meaningful groundwater management law in the state's history". In this context, it is possible to see yet another example of strong leadership utilized to promote consensus to prevent future problems. It is a spirit that was also evident with Delphus Emory Carpenter during the initial years of work on the Colorado River Compact.

Today, Arizona's GMA is highly regarded for its success, as well as its ability to compensate for the damage that had been done to Arizona's aquifers by placing limits on the amount of groundwater that could be withdrawn from certain areas (Connall Jr., 1982: 314). It has been argued that *Farmers Investment Company v. Bettwy* was the event that set the actions of Babbitt and others in motion. *Bettwy* involved pecan growers in Arizona (South of Tucson) and the Anamax Mining Company. The copper mine needed water and was drilling wells in the Sahuarita-Continental Critical Groundwater Area, with the intention of then moving the mined water outside of the Critical Management Area, as was permitted by the Critical Groundwater Code of 1948. *Bettwy* proved to be a turning point, because it applied the reasonable use doctrine to prohibit the transportation of groundwater away from the land from which it was extracted. The mining company and major Arizona cities including Tucson, stood to lose a great deal from this legal decision because cities were transporting water from wells that were a great distance outside of their service areas (Pearce, 2007: 42).

As Governor of Arizona, Bruce Babbitt was able to recognize the potential implications that *Bettwy* had for cities. Rather than again going to the courts, he was able to successfully enact the GMA by utilizing the state legislature, which helped cities and allowed for new development opportunities in ways that were more secure than in the past. In this way, the GMA allowed for some transportation of groundwater to occur away from the basins and sub-basins from which the water originated, rendering the *Bettwy* decision irrelevant.

The GMA has had implications for Arizona beyond what anyone could have anticipated. It allowed Arizona to craft a unique model of water management, which was built around the production of consensus between interested parties, rather than lengthy litigation. Importantly, the GMA set the stage for a whole host of legal and institutional tools that would shape Arizona groundwater management for years to come. By instituting proactive measures to conserve water for the last twenty-five years, Arizona, and especially Tucson, appears well positioned for future shortages on the Colorado River.

### 3.4 Beyond Babbitt

By 1977, SOI Cecil Andrus made it clear that Arizona must demonstrate through legislative action that it could begin to withdraw groundwater in a healthy way; otherwise the CAP construction would not move forward. In 1980, Arizona responded to these problems with the GMA (Connall Jr., 1982). This law created Active Management

Areas (AMAs), which not only instituted an innovative style of managing groundwater based on basins, but also introduced limits to the expansion of irrigation and development. The cities in Arizona that were designated as being within an AMA had to demonstrate an Assured Water Supply for 100 years. According to A.R.S. 45–576 (J) (1),<sup>2</sup> assured water supply means “sufficient groundwater, surface water or effluent of adequate quality that is continuously available”. Unfortunately, the system has sometimes been difficult to implement.

In 1993, the introduction of the Central Arizona Groundwater Replenishment Districts (CAGRDR) gave real estate developers the chance to introduce subdivisions in places in which there were no direct connections to CAP water (*Valdez Diaz, 1996; Blomquist et al., 2001: 662*). These districts were given extended powers in 1999 with the aim of supporting real estate activities in Arizona (*Avery et al., 2007*). They function as water banking tools for developers in that those developers who join the CAGRDR are allowed to pump water for their subdivisions, and in turn, the CAGRDR purchases the water necessary to replace any groundwater withdrawn in excess of “safe-yield”. This process allows developers to enroll their homeowners in the CAGRDR, and the homeowners become responsible for paying groundwater withdrawal fees, which are seen as a line-item on property tax bills (*CAPc 2015*). Under this system developers must prove a “100 year water supply” to the Arizona Department of Water resources (ADWR), and obtain the right to sell lots in the subdivision. The developers become members of the CAGRDR and purchase CAP water to satisfy the “safe yield” obligations to the Replenishment District. Problems with this system emerged in that an unevenly depleted aquifer was created at the site of subdivisions because that water was not directly injected into the more vulnerable hydrological zones from which it was pumped, causing a water deficit in the areas of the subdivisions, especially into the most vulnerable hydrologic zones from which it is being pumped (*Avery et al., 2007; Colby & Jacobs, 2007*). Finally this process allowed developers to essentially create a model of fragmentation in the urban landscape whereby subdivisions could be built outside of existing water networks.

The CAGRDR is not to be confused with the Arizona Water Banking Authority (AWBA), which was created in 1996 as an additional underground storage mechanism (*Blomquist et al., 2001: 663*). In common parlance, AWBA is referred to as the “water bank”. One difference between the CAGRDR and the AWBA is that the AWBA deals exclusively with the state of Arizona’s unused 2.8 MAF allotment, primarily supplied by the CAP. In this way, the state of Arizona is able to “use” the water, and prevent it from being used by California. At least initially, the CAGRDR and the AWBA were seen as a success.

Another provision of the GMA was that the Arizona Department of Water Resources (ADWR) was created to replace the Arizona Water Commission (*Blomquist et al., 2001: 661–2; Colby and Jacobs, 2007*). The ADWR provided for a seven members board to be elected by Arizona voters, with the director appointed by the Governor. It was this quick and very deliberate action by the state of Arizona, especially Governor Babbitt, which caused the Department of the Interior (DOI), SOI, and BOR to make the CAP one of its top priorities through the 1980’s (*Kupel, 2006; Colby & Jacobs, 2007*). Despite the strides made by Arizona in the 1980’s and 90’s,

2 Arizona Revised Statutes, see <http://www.azleg.gov/ArizonaRevisedStatutes.asp>.

more challenges lay ahead for Arizona including the delivery of CAP water in Tucson through Tucson's aging infrastructure which created a firestorm of anger in the local community in the early 1990's (Kupel, 2006; Cortinas et al., 2015). However, there is a commonly heard discourse about water that was made clear by the Director of the Arizona Department of Water Resources, Tom Buschatzke in a recent NPR interview when he gave the following response to questions comparing the drought in California to the drought in Arizona:

The metropolitan parts of Arizona already have mandatory water conservation requirements in place. We also have stored a lot of water underground, so for a point in time when we see shortages, we've got over 3 million acre-feet of water. That's more than a year's (worth) water underground. We've definitely done things differently, we've made some different choices. I think Arizona is one of the better places you can be right now in the western United States (LeClair, 2015).

To be sure, Arizona has been forced to be proactive and it is much to its benefit as the drought that spreads throughout the West (albeit less severe in Arizona than California) continues. However, one must understand that Arizona's model of management has revolved around historical responses to the rival state of California over many years as has been illustrated. In fact, it may even be argued that California did not really "play the game," so to speak when the time to negotiate the 2007 Agreement came, which may be largely attributed to the fact that it has remained squarely in the field of power in water management in the West.

In adding new nuances to the highly imbricated structure of Colorado River Basin management and policies, however voluntary such measures may be, the observant participant in this play will undoubtedly encounter and be faced with notions of uncertainty. In a broad sense, this simply means that no one has an answer for the future. Each state can only be as well prepared as possible with planning strategies and iterations thereof. For Arizona, the 2007 Agreement provided a level of certainty in terms of amounts of flow to be received (or not), but also a level of uncertainty. What will the next agreement look like? Will there be another cooperative effort like the one in 2007?

According to the 2007 Shortage Sharing Agreement Guidelines, Arizona will face a reduction at the 1075 feet watermark in Lake Mead, and official CAP documents state the reduction will be 320,000 af. At a Lake Mead elevation of 1050 feet, Arizona faces a 400,000 af reduction. Finally at the Lake Mead level of 1025 ft., Arizona faces a 480,000 af reduction and some municipal and industrial users will be forced to cut back on consumption (CAPa 2014; CAPb 2015).

### 3.5 The shortage sharing agreement of 2007

The most pressing issue today is the ongoing 15-year drought, which the Basin states set out to manage in 2007 with the Shortage Sharing Agreement. As Douglas Grant writes in his article entitled "Collaborative Solutions to Colorado River Water Shortages" (2008: 964), the Colorado River "supplies drinking water for over twenty-seven million people and irrigation water for over 3.5 million acres in seven western

states. *This vital resource has been gripped since 2000 by the worst drought in over a century of recordkeeping*". The reservoirs of Lake Mead and Lake Powell are hovering near half full. However, the Shortage Sharing Agreement is further evidence of how managing water is a kind of strategic political management in which conflict and cooperation are both present. Considering that many states are quite apprehensive about federal involvement, and especially apprehensive about the SOI mandating an unfavorable model to manage a shortage in the Colorado River Basin, it may be surprising to learn that in 2005, SOI Gale Norton (Colorado) provided the initial impetus by requesting the BOR to provide "guidelines" under which Lakes Mead and Powell could operate in times of official shortage (*Grant, 2008: 964*). For a cooperative, and admittedly temporary, solution to be reached however, the structure for the agreement did not result from litigation, but rather came through the National Environmental Policy Act (NEPA) with the direction of the SOI. In fact, without the direction of the force (i.e., SOI Gale Norton) external to the state authorities, the agreement may never have been reached, and the process may not have begun (*Grant, 2008*). In this way the determining authorities were quite concentrated, which allowed for collaboration to take place. This is not at all implausible considering that part of the Colorado River Basin Project Act of 1968 indicates that the SOI must consult the Basin states to establish long range plans for reservoirs. Clearly, the legal structure of the Basin gives rise to the contemporary model of water management.

The 2007 agreement may not have fallen into the traps of the past for a number of reasons. As the Record of Decision (ROD) states, the process created "voluntary" reductions in flows and voluntary signing of the forbearance agreements, and the federal government was present to "facilitate and not dictate" a solution that was not intended to be "permanent" (*ROD, 2007*). Therefore, the stakeholders came to the table with somewhat less of a burden to make a long lasting, hard and fast type of decision that may have plagued collaboration in the past. The final agreement allowed for flexibility in Basin operations and it seems that the process in reaching agreement was also somewhat flexible given NEPA constraints on the autonomy of the players (*Table 1*). Additionally, the number of states necessarily involved in such an agreement is daunting, but the number of individuals actually negotiating with and representing the following different entities within the Basin, must also be considered.

In this instance, the Department of the Interior (DOI) served as the mediator, which allowed for a certain degree of constrained autonomy of the negotiators (*ROD, 2007*). Some of the parties who were privy to this negotiation would simply have one member present, or a few members, and perhaps assistants. Interestingly, there are clear inequalities of representation that immediately appear when considering this membership. The Upper Basin has very minimal representation from the individual states, and historically, has not used all of its allotted flow. However, from the earliest days, California has been able to secure the money, and therefore the infrastructure, to control even more water than it was officially allotted (*Resiner, 1986; Glennon & Kavkewitz, 2013*). Arizona and Nevada have very specific representation, but it is not nearly as extensive as that of California.

One criticism of the 2007 Agreement could be that it only buys Arizona slightly more time before it starts to take shortages. It also appears that while other Basin states have been forced to deal with new legal rules for extracting groundwater, taking shortages, conservation measures, and (in general) real concerns about future

Table 1 Entities involved in interstate negotiation.

**Representing Arizona:**

Arizona Department of Water Resources  
(ADWR)  
Central Arizona Project (CAP)  
Yuma Irrigation District  
Lake Havasu City

**Representing California:**

Governor's Board of Directors  
Municipal Water District of Los Angeles (MWD)  
Imperial Irrigation District  
Coachella Irrigation District  
Palo Verde Irrigation District  
City of Needles

**Representing Nevada:**

Colorado River Commission of Nevada  
Southern Nevada Water Authority

**Representing the Upper Basin States:**

Executive Director of the Upper Basin States  
Upper Basin Colorado River Commission  
City of Denver Representative  
Bureau of Reclamation  
DOI Solicitor from Washington D.C.

Source: Interview, Tom Buschatzke, ADWR, March 2015.

water, California has not really had to play the game in the same manner, which is to say, altering the future of Californian society and lifestyle.

Eventually, the seven states then provided their own proposal, and the BOR received public comment. Finally, on December 13, 2007, the SOI issued a final set of guidelines, including operational elements, based on the proposal made by the Basin states in April 2007 (*Grant, 2008: 965*). The four key components of the agreement were that (1) the states agreed to coordinate the operation of Lakes Mead and Powell, (2) the Lower Basin states would develop a set of operating guidelines for times of declared shortage, (3) guidelines established in 2001, which were devised with surplus in mind, would be modified, and (4) the delivery plan would create an intentionally created surplus to allow more water to be stored in Lakes Mead and Powell to forestall a declaration of shortage (*Grant, 2008*). Arizona will still take the brunt of a shortage in the initial years under this scenario, but the main focus is to ensure that enough water is in Lakes Mead and Powell to prevent a shortage declaration for as long as possible. Through Arizona's extensive groundwater recharge, storage and recovery programs, Arizona has been preparing for these challenging times for many years (*Grant, 2008; Glennon & Kavkewitz, 2013*).

The 2007 Shortage Sharing Agreement is another example of the complexity involved in studying the relationship between water and society. The values,

institutional and conflictual history, instruments and agencies of each state across the Colorado River Basin (and Mexico), were on full display (*USBOR, 2010*).

#### 4 CONCLUSION: CHANGING TIDES IN WATER MANAGEMENT

Throughout this history, it can be seen that the model of managing water in the West has been a consistent movement away from what may be considered more traditional forms of conflict, such as litigation and court action. Consequently, novel institutional tools have developed within the Western states. The larger model of management of the Colorado River Basin's water resources leaves Arizona with much to lose from long-term drought conditions. Because Arizona cannot afford to repeat the past, it has created a unique water management model for itself that stresses cooperation and consensus over conflict.

In terms of studying water management, much of the history has involved extensive research into the hydrologic cycle, or issues of who/what governs and at what level, be it local, state or federal. However, "*a notable development has been the increasing recognition that it is not just society's relationship with water that is at stake, but the social nature of water itself*" (*Linton & Budds, 2014: 170*). This social nature can clearly be seen in the aforementioned examples. Many more academic and newspaper articles as well as op-eds, will discuss the drought crisis in the West.

But, how is today's situation different, and what framework of investigation can be applied to it? The current drought is important, not only because it is the most severe in recent history, but because it presents a chance to break with the past. A consensus has been built allowing for the sharing of water that is largely unequal and has created clear social and political divisions, but it has also created a norm of collaboration, and a need to produce consensus. Clearly, water management does not only involve managing flows, it also involves managing trust, people, and political power and even the forces of domination, which may often be implicit and charged with a particularized and historical energy.

Hence, a struggle in policymaking remains; however, it has taken a novel form, that of struggling to reach consensus. As time passes, the struggle becomes less about taming the waters of the Colorado River, as was done in the first part of the century, and more about working within the confines of the established model of management in the Basin, and also simultaneously, the model within each state.

Many people are asking what the future will hold for Arizona. To be sure, it will face the brunt of a shortage in the initial years following such a declaration. It is unclear what role the SOI will play in the Colorado River Basin, and what ongoing efforts to manage the drought will mean for Arizona as the populations of California and Arizona continue to grow, and the drought becomes more widely felt. Many of these same concerns about population growth, and the role of water in the development of economies, are the same as those that the framers of the Compact struggled with in the first part of the 20th century. Although no state wants to be forced into a situation in which the courtroom must be revisited, the future remains uncertain.

Finally, it seems that conflict and cooperation will persist in many forms, perhaps in constant fluctuation. In 1893, Emile Durkheim wrote that "the greater part of

our relations with others is of a contractual nature” (*Durkheim, 1893: 213*), before adding that “everything is not contractual in the contract”. Therefore, while legal or contractual legitimization may provide the necessary coherence to water laws, the uncertain and unforeseen future might constitute the ultimate problem when charting the convoluted course of the Law of the River. With this in mind, the issue of the Western U.S. drought takes on new meaning. Just as many scientific articles, and much popular press yet to be written, will seek to document and explain what the drought is and what it means, it may be equally important to ask, what would the West be without its laws on the Colorado River? The issues surrounding a drought, spanning from how to deal with depleting aquifers and decreasing Colorado River flows to choosing which fields to fallow, or what to do about desalination, call into question the actions involving more than 100 years of history. As has been shown, it is a history of hard fought battles for and against dams and canals, of struggles over drinking water, and ultimately over the existence of Western American culture. Water management, and the policies that allow the water to be managed, continue to be of great importance as states craft innovative ways to manage crisis, but also to prevent crisis from reaching their doorsteps.

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