Covenant Institutions and the Commons
Colorado Water Resource Management

International Association for the Study of Common Property
Bloomington, IN May 31-June 4 2000

Barbara Allen
Department of Political Science
Carleton College
Northfield, MN 55407

Edella Schlager
School of Public Administration and Policy
University of Arizona
405 McClelland Hall
Tucson, AZ 85721

Abstract

Covenants represent a primary means for establishing polities and crafting voluntary or enforceable obligations within political systems. Covenants differ from other consent-based institutional arrangements such as contracts in their origin, scope, and duration. Covenants offer a means for integrating heterogeneous actors politically by permitting asymmetrical rights and obligations when such structures make sense. Our paper details the principles of covenant relations and explores the affinity between a covenantal orientation and federal democratic institutions by analyzing Colorado's water resource management. Colorado governs this resource through institutions that permit resource users to develop, modify, contest, and transfer their water rights. As the Colorado case demonstrates, covenants offer scholars of commons governance an institution for creating flexible, stable agreements for sustainable resource allocation.

Introduction

Water rights are among the most important and diverse institutional arrangements that human beings have crafted. Very often the lineage of institutions governing access to water can be shown to include a high degree of self-government, volunteerism, and wisdom about the resource and the people who regulate and use it. Yet, water, like many other vital parts of our environment, has increasingly become the subject of regulators that may be far from the scene of local knowledge and local regulatory strategies. For several decades in the United States, environmental problems, including the depletion and degradation of water resources, have been addressed through national legislation and regulation, often to the detriment of viable local institutions. These strategies have more recently come under review with a call to "think ecologically" about the diversity of institutional arrangements required to sustain natural resources (Chertow and Esty 1997).

By including viable local and indigenous institutions in the search for appropriate methods of water regulation, policy makers hope not only to protect the resource more effectively, but also to foster a new mentality toward regulation. Instead of viewing local institutions as obstacles to the proper management of resources that typically flow beyond recognized political boundaries, the "next generation" of environmental governance, its advocates say, should look to local knowledge and institutional arrangements for methods of cooperation that link constituencies, people, and polities across existing boundaries. In this effort to reconsider regulatory strategies, a variety of special administrative units, voluntary agreements, and enforceable rights governed by special courts have surfaced as effective forums for collective choice and action in governing the appropriation and use of water. Increasingly environmental policy makers are turning from their concern from large-scale point source polluters to the complexities of commons governance in the daily decisions of individuals engaged in myriad "private" choices from recycling to farming to water use. This new focus for environmental policy analysis has created a new interest in institutional arrangements that reflect the abilities of common pool resource appropriators and producers to govern themselves. Fortunately, researchers who study self-governance as an possible approach to common property regulation have something to say to the new ecological thinkers.

Self-governing water institutions seem to have some characteristics in common: clearly defined boundaries, an acceptable ratio of benefits and costs, capacities for making, monitoring,

and enforcing rules, usually by applying graduated sanctions. Such institutions also share features that speak generally to the foundations of self government: rights permitting self-organization, collective-choice arrangements, and the means to resolve conflicts. These fundamentals of governance are embedded in a greater matrix of similarly organized arenas of political action (E. Ostrom 1992). Under these institutional conditions, self-government takes place within a matrix of governing associations, with larger and smaller — rather than greater and lesser — arenas in which political decisions are made and political authority is exercised. Governing associations share authority, they may exercise concurrent authority, and they encounter limits on their governing prerogatives. In short, self-governing institutions are characterized by a high degree of polycentricity (E. Ostrom 1990, V. Ostrom 1987). In the language of some scholars, this matrix of associations in which individuals can act with a high degree of autonomy as part of a collective decision process constitutes a "federal" structure of authority (Elazar 1984 and 1987, Lutz 1998, V. Ostrom 1991).

These principles of design may be common to viable self-governing resource management institutions, still institutions conforming to this description may fail; institutional arrangements alone cannot insure success. Ideas inform these principles, providing the basis for interpreting rules along with the other components of successful institutions. Perhaps particular ideas as well as specific design principles are also common to successful self-governing resource management institutions. It may be that self-governing activity depends on specific ways of conceptualizing the natural world, the artifice of authority, and the relationship of people to both aspects of their environment. Several ideas or orientations offer themselves — for example, the idea of the market or the idea of stewardship come to mind. In this study, we explore an orientation that is historically and theoretically intertwined with the development of the federal qualities that many successful institutions evince: the covenant tradition in politics (Allen 1998, Elazar 1995, 1996, 1998a, 1998b).

Covenants and "Covenantal Thinking"

The covenant idea represents one of several dominant conceptions of the origin of legitimate political authority. The covenant tradition stands in contrast to two other ways of understanding the development of legitimate structures of rule and governance: the organic ideal and the ideal of absolute sovereignty instituted by fiat, divine or human. In the former case, the prerogatives of rule emerge organically in a people, generally through structures of kinship that

confer status, and authority. In the latter type, sheer force empowers the ruler whose absolute dominance is legitimated by subordinates when they vest and accede to this superior power (Elazar 1995). The fabric of such a society may include the belief in a divine grant of power, but belief in the supernatural is not what sets this structure of authority apart from the other types. Belief in the transcendent may play a role in organically emergent rule and is a critical part of the covenant tradition. The crucial element of covenant is consent, an element even modifies a covenanted peoples' understanding of the transcendent.

Covenants are consent-based, broadly reciprocal, morally informed perpetual agreements (Elazar 1995). In the narrowest use of the term, covenants are made between a people and their Creator or are made among a people and witnessed and supported by their Creator. The Biblical covenants of the Jewish tradition offer the model for modern secular and sacred covenants. This tradition entered modern constitutional development in the sixteenth and seventeenth centuries as Protestant Reformers based church organizations, polities, and colonies on the principles of their "federal" or "covenant" theology (Allen 1998, Lutz 1988, Elazar 1996 and 1998a). In Jewish and federal theology, God offers a perpetual, binding agreement to humanity; those who agree to lead an "upright" life may live as God's people, delivered of iniquity, saved from the Omnipotent's capricious displays of powers, and free to attempt what they will in human history (Miller 1939, Witte 1987, Elazar, 1996, 1998a, b).

Community and individual alike are implicated in such a covenant. The prescription for an upright life entails a common commitment to establish institutions that permit and support the individual's capacities to uphold the human end of the covenant with God. In Biblical covenants a whole people binds itself in relationship with God under terms that also require them, as individuals, to commit themselves to each other. Similarly in the federal theology tradition, individuals covenanted among themselves and, as one body, covenanted with God. In both traditions, the congregation that resulted was charged with forming a community that conformed to the terms of their transcendent agreement.

The conditions of a righteous life generally include justice, forbearance, and, above all a commitment to work through the inevitable conflicts that arise from the diverse talents and hopes of human beings. Covenanted religious commitments inevitably manifest their sacred ideals in the political dimensions of mundane existence. The commandment to do "justice and righteousness" implied a host of responsibilities, which were made explicit parts of the civil

order in rules of hospitality, and laws governing the forgiveness of debt, and aid to the poor (Miller 1937, Yazawa 1985, Elazar 1995, Weinfeld 1995, Kuehne 1996). Covenants also presupposed a particular orientation to God's commandments. Peoples in a covenant tradition were said to "hearken" to God and their neighbor; that is, they were to listen and respond. In the covenant tradition, hearkening contrasts with the idea of revelation expressed in many theologies as a one-way dictum from a superior authority. Individuals and communities who hearken to God understand themselves as in a dialogue, with corollary obligations to reflect and act, rather than merely conform to commandments from above. In covenant, the most basic representation of authority — the power and justice with which God confronts human beings — is, thus, conceived as a relationship of mutuality. If God's command may be received dialogically, the rule of mortals can correspondingly be understood as relational and limited.

The Biblical model of covenant also emphasizes a new locus of constraint, authority, obligation, and right. Although God initiates the pact, the Creator is also a party to the agreement. In the paradigm case, then, those who bind themselves to covenant are also those who empower themselves to enforce their covenant. In contrast to images of sovereignty that place the powers of lawmaking and law enforcement beyond the reach of those who consent to be ruled, covenantal thinking rejects the notion of a lawgiver or enforcer who is external to the agreement. In this respect, at least, a covenantal orientation rules out the idea of absolute authority. If God forswears omnipotence, becoming a party to covenant, any subsequent lawmakers or enforcers are similarly bound (and, thus, limited) by the terms of their mutual agreement. This relocation of authority from an external, omnipotent lawgiver, to the communion of covenantors is significant for other reasons. God clearly holds a status in the cosmos that differs from the place and powers enjoyed by humanity. In covenanting, human beings do not become God, nor does the Creator sink to the level of the created world. Creator, and creature maintain their distinct statuses and their powers remain asymmetrical. But they enjoy another kind of "equality" through covenant.

In the Biblical paradigm, God has the power to destroy creation capriciously or for good cause; God also has the power to determine human history. By covenanting God forsakes these powers. Similarly, humanity may do good or ill by their own volition. They may chose or reject the covenant. In the covenant orientation, each party to the agreement has an equal capacity to give or refuse consent. An omnipotent Creator consents to a relationship with fallible beings

who exhibit an equal capacity to consent. God's part of the bargain is to offer the covenant in perpetuity and to behave as an equal in upholding the terms and conditions of the covenant. In federal theology the significance of the paradigmatic case is underscored. God promises deliverance and salvation for the elect. God promises not only to forebear in the destruction of creation, but moreover promises not to give up on errant humanity. Human beings may breech the covenant (they are after all fallible creatures), but God promises the means of faith in a perpetual bargain aimed at their ultimate deliverance (Miller 1937).

For federal theologians, the covenant paradigm offered a clear model of bringing asymmetrical powers into a constructive relationship of equality. In the sixteenth and seventeenth century, humanity was understood to be heterogeneous in its talents and, as a consequence, to exhibit this variety in its creation of appropriate social roles. But under the terms of covenant, differences were not understood as a hierarchy of status, but rather as complementary, reciprocal vocations. Moral equality and mutuality were the fruits of covenant. If relationships under covenant were unequal, if obligations and rights were asymmetrical, these differences were understood as products of an initial choice among moral equals. As such, these social and political differences at various times became the subject of amendment, *under the terms of covenant*.

These elements of the covenant form can be found in secular as well as sacred agreements. By the seventeenth century, the term covenant was applied to pacts that envisioned the civil sovereign as the authority witnessing and enforcing such mutual agreements. In the covenantal view, civil sovereigns were parties to an agreement and, thus constrained in their exercise of authority (Winthrop 1630). If they were not bound by covenant in partnership with their subjects, then they were at least indirectly bound to their subjects by their participation in a prior covenant with God (Hobbes 1651). Even covenant-based theory and practice that seemed to offer little in the way of "self-government" (not to say "democracy") contained this element of constraint in their "absolute" formulations. In colonial America, the term "covenant" was increasingly used interchangeably with the term "compact" to describe agreements that were witnessed and enforced only by the agreement's signatories. In essence, such agreements transformed the principles of consent and limited authority into an explicit practice of popular sovereignty. These cases of popular sovereignty continued to evince the moral dimension of

covenant even as colonial polities were increasingly constituted and maintained by popular consent (Lutz 1988).

The moral dimensions of federal theology inspired the particular orientation to legal obligations seen in seventeenth century founding documents and ordinary laws. The juridical system of any religiously based political order places individuals under the moral and legal scrutiny of the community. The primacy of consent and the internal locus of authority that characterized the covenant orientation not only held individuals under the judgment of others, but also required each individual to make judgements according to constituted moral and legal standards. Law, thus, was conceived as a process of making judgments and setting standards of judgment to which all were simultaneously parties and subjects. This orientation to law led New Englanders to use mediation (to use contemporary language) and equity proceedings. They spoke in terms of "loving admonition" and penance as well as sentencing and punishment, and enjoined "backbiting" and malicious gossip as obstacles to doing justice (Cambridge Platform 1948, Gildrie 1975).

This emphasis on the moral dimension of authority, law, and polity distinguishes traditions of covenant and compact from another category of consent-based arrangements, contract. Each instrument produces a voluntary agreement, but the principles and mental stance at the heart of covenants and compacts differ substantially from the mentality informing contracts. In contrast to broadly reciprocal pacts of unlimited duration, contracts are narrow agreements designed to limit the obligations and liabilities of the parties to the specific duties designed to facilitate their private relationship. While the law of contracts may evolve from moral grounds, the legal dimension of positive law is generally held to provide a sufficient standard for judging right action. In contrast, citizens who are party to a covenant or compact are judged not only in terms of positive law, but also according to transcendent principles to which each person and the political body as a whole are, by their consent, bound. Citizens bound by covenant or compact are obliged not only to do what law commands, but also to realize the "spirit of the law." Those who covenant and compact bind themselves to do what their relationships necessitate as well as what the law requires.

Several implications follow from this intimate connection between consent and the moral and legal foundations of a polity. For example, "self-government," in the sense of self-control, is always present in the covenant ideal, although a covenanted polity is not limited to a particular

regime type (e.g. democracy) or to a particular view of suffrage or voting rules (e.g. universal suffrage and majority rule). Put another way, the covenantal amalgam of consent, positive law, and moral law indicates that "self-governance" was more than a matter of voting; neither democracy nor majority rule is synonymous with this meaning of self-government. While New England's colonial polities functioned with relatively broad grants of suffrage, few communities understood themselves as democracies or majoritarian. Voting rules and the rules ordering colonial church and civil assemblies reflected a more complex notion of interdependencies. As a consequence, the content and purpose of political participation went well beyond voting and the defensive use of an individual right against the demands of the community. From the perspective of covenantal thinking, the constitution of collective-choice arrangements, requires a broader understanding of rules, governance, interest, and institutions. Colonial existence necessitated a great deal of "popular sovereignty," but the basis for such "liberty" evolved more from a sense of covenantal constraint than individual right. The distinction that covenantors made between civil liberty and natural freedom and the covenant perspective on political participation can be seen in all of its complexity in the New Englanders' orientation to human interpretation of "articles of faith" and transcendent law.

Capacities for making judgments and placing oneself under judgment depend on antecedent standards of judgment. In secular and sacred covenants and compacts, such shared beliefs generally transcended human law, or at least transcended the narrow notions of interest peculiar to a given community; certainly these fundamentals transcended narrow claims of individual self-interest. Conceptions of the collective interest as well as individual interest were to be continually weighed against an even more encompassing sense of the perpetual nature of communal relationships. In this way, covenanted polities recognized human limitation and fallibility; all decisions were provisional and subject to amendment in light of experience gained through their implementation. Standards of judgment were also subjects of reflection and choice, since covenanted assemblies also recognized their incomplete understanding of the transcendent.

This emphasis on humility and fallibility led to a particular orientation to collective decision making in covenant communities. In the federal polities of New England, Puritan political bodies — the people "orderly assembled" — engaged in "curious inquiry" when they reflected in common on the transcendent, constitutional, and ordinary laws governing their

enterprise. Processes of deliberation and choice were oriented to the contingency circumscribing all human endeavor. It is difficult to overstate the psychological, philosophical, and political effects of Reformed Protestant conceptions of human limitation, especially the impossibility of certainty and control in the most fundamental matter of existence, salvation. Practically speaking, this sense of human incapacity set federal theology on a political path of experimentation that necessarily balanced experience against traditional belief. Doubt and limitation as well as perseverance and belief pervade the founding documents of New England covenantors. As a result, the members of these communities were keenly aware of the fragility of their institutions, their dependency on each other, and the value of every admittedly contingent consensus on prevailing standards and beliefs.

In this setting, practitioners of the "New England Way" made several assumptions about the individuals who formed covenanted communities. In addition to their beliefs about our equal capacity to give or withhold consent, they also accorded each member of the community an ability to distinguish what is good from what is not, and a desire to achieve the good, once it had been recognized. The objective of many Puritan institutions was to encourage public and private reflection, discourse, and deliberation as a means to sorting out the "good of the whole," in both the senses of the term: the righteous path and the long-term interest of the community as a whole. In sum, individuals were thought to be equally equipped to discern their good, to hearken to the transcendent good, and in communion with others, to realize the good of the whole. Given the covenantal emphasis on consent, such processes could not simply crush individual will or dismiss individual interests or experience. The individual was assumed to be able to set aside narrow self-interest for the common good, but the process of deliberation, contestation, and inquiry used to distinguish the particular from the universal good were meant to balance the partial and impartial standpoints that all participants were expected to bring to any public judgment.

Such distinctions between the partial and impartial, as well as the particular and the universal followed from the idea that covenants spoke to an individual relationship with God as well as to relationships among the individuals of a covenanted community. In essence, covenants evince a sense of duality from their inception. The community was not so much a mediator of the individual's relationship to God (or to a civil sovereign), as it was understood to stand on its own in relationship to transcendent authority. In the covenantal mindset, neither the

individual nor the community is wholly autonomous. But the connection of individual and community is, likewise, not conceived as two concentric spheres, with individuals embedded in the whole, or with the community as a mere derivative of individual wills. Rather, the individual and the public and private associations they form (including their universal association or commonwealth), create a matrix of decision-making authority. Each nexus of intersecting authority in this matrix represented a link between entities that each had a fundamental identity (and consequent right, and responsibility), which had been augmented with a new role (right and responsibility) as a partner in an agreement that created an additional identity. In this way, covenants in New England were used to knit together settlements for common purposes without destroying the integrity of the partners to these confederations (Lutz 1988).

Covenants were used, for example, to form the consociation of New England's Congregational Churches known as the *Cambridge Platform*. Delegations from church congregations met in assembly to constitute rules governing church membership and discipline. Although religious doctrine surely guided their thinking, not even doctrine was absolute; their document shows that experience — understood in light of doctrine and sometimes in competition with interpreted doctrine — dictated their designs. Rules of assembly, rights of members and the whole, judicial procedures, provisions for examining new members, the relationship between ministers and laity and the relationship of one congregation to another — all of these aspects of governance reflect principles of limited, shared authority, constitutional order, and separated, balanced powers. These unions were voluntary, demonstrating the federal principle of forming associations of associations as a way of uniting individual bodies while preserving those associations' integrity (Cambridge Platform 1648).

A variety of secular confederations also reflect these principles. From defensive alliances to special administrative unions, covenants knit communities together for common purposes without destroying or consuming these polities existing within a centralizing or hegemonic authority (Miller 1637, Lutz 1988). Covenantal thinking was similar for individuals: in covenants among equals, self-government remained each individual's responsibility, even as the covenant brought new responsibilities and a new identity as a member of the community.

Federal theology, thus dictated particular forms of authority: consociation, confederation and federation. A great degree of local liberty, religious diversity, and the exigencies of frontier life seem to explain the American manifestation of federal theology as confederation and,

ultimately, a federal governing structure. In the American federal matrix, each nexus of intersecting political authority — individuals in public association, public associations and the instrumentalities of various governments, citizen and the general government, state and Federal government, to name only a few — offered opportunities for political practices that, in combination, produced institutions of self-government.

In the view of several scholars, the covenant form is particularly amenable to the conditions of frontier life, the borderlands between diverse peoples, and similar conditions that require independent authorities to unite for limited, common purposes. The American experience is a case in point. New England covenantors differed in fundamental ways from their Anglo compatriots in Virginia and the Chesapeake Bay. Both of these groups differed dramatically from the Dutch in New Amsterdam (after England's conquest of the Dutch New York), the pluralism of Pennsylvania and the middle colonies. Yet federal principles associated with covenantal thinking united these polities without negating their boundaries or existing governments. In several cases multiple systems of law operated concurrently, many unions contained a variety of linguistic communities, and all such unions accepted the principle of concurrent, shared, limited constitutional authority. These qualities of federalism and covenantal thinking recommend themselves to situations that necessitate the union of diverse peoples who hope to maintain the core of their cultures, languages, or sovereignty. In this way, covenantal thinking and federal institutions offer means for maintaining the heterogeneity of peoples, social roles, and collective-choice arrangements.

As new peoples were added to church and civil covenants in colonial America, statements of common belief and corresponding norms and laws were expressed more definitively. Still, institutional arrangements that reflected these fundamentals remained flexible, if somewhat less fluid. The cultural transformations that followed covenanted unions among diverse groups were seldom one-way (Axtell 1985). Covenantal processes encouraged innovation and adaptation to the realities of diverse experiences. Covenantal thinking and processes persisted even as the content of covenants and the articulated source of their foundations changed. But it is a mistake to understand these developments as an erosion of the covenant idea.

Covenants and compacts in colonial and frontier America varied in their explicitness and in the depth of the commitments they enabled. Similarly, covenants today may fail to articulate

their foundations as a communal response to God, yet the sense of commitment to shared moral ideals often evinces such profound sentiments. The constitutional development of covenantal processes is likewise misconstrued as a process of increasing secularization. The most theologically oriented of covenants still had a secular political dimension and secular and sacred covenants coexisted in modern political tradition.

In contrast to our impressionistic view of New England towns, communities that enjoyed a greater consensus on theological matters were not less susceptible to institutional instabilities or necessarily able to weather the inevitable crises of covenant breaking. The communities that were most likely to withstand deep institutional challenges (and more subtle or more positive sources of innovation) were those who rejected ideological thinking in favor of practical responses to lived experience in a covenanted community. Such a community operated on the basis of principles that acknowledged the tensions and contingencies of the human condition. As a result, institutional arrangements emphasized the development of common sense, understood as the common science of curious inquiry. We can still find remnants of covenantal thinking in the law governing water allocation in Colorado. The Colorado Doctrine offers an example of flexible institutional arrangements for adjudicating disputes, distributing rights, and innovating to meet changing environmental conditions that reflects a modern covenantal orientation on the American frontier.

The Colorado Doctrine

Water law in Colorado, as in all western states, is based on the prior appropriation doctrine. Those who appropriate water earlier in time have rights superior to those who appropriate water later in time. Unlike most other western states, however, water law in Colorado is developed, monitored, and enforced by the same people who are governed by it; it is centered on solving the day to day problems of people in ways that fit in and are complementary to their experiences and lives; and it emerges from a consensus building process (V. Ostrom, pers.comm.). The citizens of Colorado engage in covenanting as the means for governing water.

Coloradans have defined, allocated, monitored, and enforced their water rights for 150 years, however, crisis engulfed the system in the 1960s as conflict erupted between groundwater pumpers and surface water appropriators. Groundwater pumpers appropriated water rightfully belonging to senior surface water appropriators, yet the water law of Colorado did not adequately

encompass groundwater. Over the course of three decades, appropriators fashioned institutional mechanisms that protected well established surface water rights while allowing appropriators to access and use a "new" type of water.

The groundwater pumping crises illustrate both the fragility and the resiliency of Colorado's water law system. The crises revealed the weaknesses of the system when confronted with widespread, intense conflict that could not be handled on a case-by-case basis. The crises also revealed the system's resiliency. Colorado's water law system incorporated the governance of tributary groundwater. Groundwater, however, will continue to challenge a system originally designed and best fitted for surface water. As water becomes increasingly scarce, citizens will want to access the millions of acre-feet of groundwater tributary to the major rivers in Colorado in ways that are simply not possible under current laws and customs.

The Evolution of the Colorado Doctrine

The Colorado Doctrine evolved in a relatively harsh landscape. In eastern Colorado, the soil, rich in nutrients from mountain runoffs, needed a source of water to bring forth plentiful harvests. The region, however, receives 12 to 16 inches of rainfall a year, categorizing it as desert (Whitney 1983). The obvious sources of irrigation water, the rivers, are both scarce and modest. The Arkansas River, in the southeastern part of the state, on average, only carries 500,000 AF of water past Pueblo each year (Whitney 1983:47). During particularly dry years, it would dry up and cease to flow (Sherow 1990). The South Platte River, located in the northeastern part of the state, carries half the volume of the Arkansas River, and during summers flowed intermittently over some of its reaches (Huber 1993). These rivers and their tributaries, with their inadequate flows of water, tied European settlers together. The rivers were the natural resource that everyone depended on and that everyone fought over. Almost as soon as permanent settlements developed along their reaches, conflicts emerged over access, use, and allocation of water (Mehls 1984).

Thousands of settlers from the eastern U.S. flowed into Colorado in 1859 in search of gold (Smith 1992). The "'59ers" quickly adopted forms of governance that had been developed during gold rushes in California and Nevada. Miners formed districts and adopted self-governing procedures for defining and enforcing mining claims (Smith 1992:8-9). Both ranchers and townfolk followed the lead of miners and formed cattlemen's associations and claims clubs as means of governing shared activities. Each of these forms of governance also included conflict

resolution mechanisms, such as people's courts and juries (Mehls 1984:56; Abbott et al. 1994:61).

Irrigated agriculture required an innovative form of governance – colonies. One of the more difficult constraints confronting agriculture was the necessity of funding, building, managing and maintaining irrigation systems. Colonies addressed this challenge by pooling the resources of large numbers of people, and using those resources to acquire land and build irrigation systems. The most famous was the Union Colony, founded by Horace Greeley. It was a temperance colony based on a $155 membership fee. In exchange for the fee, an individual received a farm plot and a town lot (Abbott et al. 1994:161). Spurred on by the success of the Union Colony, other colonies were quickly formed. The governing structures and methods of many colonies were grounded in covenants (Mehls 1984).

By the time Colorado was granted statehood in 1876, the Colorado Doctrine was firmly established. The State Constitution, adopted in 1876, expressly recognized and provided for prior appropriation. Article XVI, section 6 states, "The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied". The Colorado Doctrine that the citizens of Colorado worked out among themselves was granted constitutional recognition and protection.

The Colorado Doctrine and Its Administration

Conceptually, the Colorado Doctrine, based on prior appropriation is quite simple: first in time, first in right. Practically, it requires several mechanisms to operate appropriately. First, appropriators need access to forums for defining and modifying water rights. Second, information gathering and dissemination is vital for developing a public record of individual water rights and priorities. Third, a means of coordinating among appropriators is necessary to ensure that junior appropriators are shutdown in the correct order so as to satisfy the water rights of senior appropriators. Fourth, monitoring of appropriators is required to ensure individuals take only their share and only when their rights are in priority. Fifth, appropriators must have recourse to sanctioning of rule violators.

When an appropriator seeks a decree for a new water right, or to transfer, change the use of, or change the point of diversion of an existing water right, he files an application with the clerk of a water court (Vranesh 1987:442). All water appropriators in the basin are alerted

through public notices that a new decree is being sought, and thus given the opportunity to protect their rights.

The application is turned over to the water referee. Referees, who are "nonlawyer, technically trained personnel", conduct unstructured hearings in order to discuss the issues with the applicants and with any objectors (Vranesh 1987:456). If the issue is relatively simple and free of conflict the referees will often ask the applicants to draft the appropriate decree (Vranesh 1987:444). The applicant bears the burden of demonstrating that his application will not injure any existing water right, and the referee can require the applicant to modify his application so as to avoid injury to existing appropriations. If within a certain time period the referee's ruling is not appealed the water judge incorporates the ruling in a decree and a judgement is entered (Vranesh 1987:445).

The findings of fact or law of the referee does not bind the water judge. Thus, if a referee's ruling is appealed, *de novo* hearings are held before the water judge. Such hearings are more formal than those before the referee, however, the rules of civil procedure are not guiding. The courts generally allow the parties to the case an opportunity to propose terms and conditions that would prevent injury, and the judges themselves may suggest such terms and conditions (Vranesh 1987:446-447). The Colorado Supreme Court is the exclusive appellate jurisdiction over water cases (Vranesh 1987:447).

The system of devising and revising water rights encourages appropriators to negotiate among themselves before bringing their claims before the court. Once before the court, the procedures followed encourage negotiated settlements. Only issues that cannot be settled among the appropriators go to trial before a judge, and even in those proceedings the focus is on crafting an agreement acceptable to all parties.

Once a decree is entered, it must be administered, monitored, and enforced. Appropriators, water commissioners, division engineers, and courts participate in monitoring and enforcing water rights. Each watershed is divided into a series of districts. A water commissioner who administers the water rights serves each district. The commissioner keeps water rights records, measures water appropriations, and ensures that appropriators take their water in order of seniority (Vranesh 1987:473). Water commissioners typically live within the district they serve and are from well established and respected farming families.

The state and division engineers play the roles of coordinator and information gather and disseminator. A division engineer who maintains and update lists of appropriation rights and priorities serves each water basin. Engineers determine the accuracy of statements made in water applications and protests; they measure water flows, determine who is in priority, and order junior appropriators shutdown. They inspect and monitor diversion works, reservoirs, and dams, ensuring safety and accurate measurement of diversions (Vranesh 1987:509). The state and division engineers provide the information and technical resources to appropriators, courts, and the state legislature allowing these actors to define, revise, administer, monitor and enforce water rights.

The substance of the Colorado Doctrine has emerged as appropriators have contested, bargained, and negotiated their rights within the context of water courts, water commissioners, and division and state engineers. Two of the most critical issues addressed and developed have been what constitutes an appropriation and how a change in water right can occur. In Colorado, two conditions must be met in order to initiate a water right: a diversion of water, and the application of that water to beneficial use. A diversion occurs with the actual taking of water. Originally, a diversion may have been required because it "furnishes an open act or demonstration of intent to appropriate", thus putting existing appropriators on notice that a new appropriation is about to take place (Vranesh 1987:130). Disputes have arisen when an obvious and direct diversion has not occurred. [Larimer County Reservoir Co.v. People 8Colo.614, 9 P. 794 (1886)]. Whether an appropriator must take steps to control the water prior to its application to a beneficial use is somewhat unclear, however, the Supreme Court refused to recognize an appropriation to protect minimum stream flows, requiring an actual diversion from a stream [Town of Genoa v. Westfall 141 Colo. 533, 349 P.2d 370 (1960); Colorado Water Conservation District v. Rocky Mountain Power Co. 158 Colo. 331, 406 P.2d 798 (1965)].

While the requirements for a diversion are somewhat unclear, water must be applied to a beneficial use for an appropriation to occur (Vranesh 1987:141). The law demands actual application of water in order to discourage speculation and encourage official use (Vranesh 1987:141). The definition of "beneficial" is worked out on a case-by-case basis. In addition to domestic, agricultural, and manufacturing purposes, the court has recognized power generation, fish culture for commercial sale, and general municipal uses as benefits to the community (Vranesh 1987:145).

Beneficial use also becomes an important concept when an appropriator seeks to change a water right. Rights can be transferred, and point of diversion and type of use can change, as long as other appropriators are not injured. The "no injury" rule protects "junior appropriators' rights to stream conditions as they existed at the time the juniors initiated their appropriations" (Vranesh 1987:72-73). To prevent injury, the amount that can actually be transferred, is the amount put to beneficial use, even if the decreed right was greater (Vranesh 1987:148).

Courts generally did not require a specific accounting of every drop of water used. Instead, appropriators and courts developed the notion of "duty of water" to express the "amount of water necessary to meet reasonable needs"(Vranesh 1987:150). It was that amount of water that could be transferred. In irrigation, the amount of water placed on crops is only a portion of the water needed. Attention must be paid to maintaining an adequate flow to assure delivery of water. Furthermore, some water is lost to seepage and carriage. Finally, water needs vary by type of crop and by variations in weather. The concept of "duty of water" took these factors into account [Farmers Highline Canal & Reservoir Co. v. City of Golden, 129 Colo. 575, 272 P.2d 629 (1954)]. A change in a water right would be permitted as long as injury to junior appropriators is avoided. Using the "duty of water" to determine the amount of water that can be transferred is one means of preventing injury. The decree recognizing the change in water right must contain conditions that are proper for preventing injury. If reasonable conditions cannot prevent injury the change in water right is denied (Vranesh 1987:153).

The substance of the Colorado Doctrine was built on a case-by-case basis over a period of more than one hundred years. It served to satisfactorily allocate surface water among competing appropriators, and to channel their conflict in relatively peaceful ways. The Colorado doctrine illustrates a particular notion of covenant. More than the agreement itself, it is the orientation of coventantal thinking that permits the problem solving found in the Colorado Doctrine. This orientation can be understood in the groundwater pumping crisis that emerged in the 1960s.

The Colorado Doctrine and Tributary Groundwater Crises

The South Platte River is hydologically connected to a groundwater aquifer that is estimated to contain approximately 8 million acre feet of water (McDonnell 1988:585). Most of that water is inaccessible, not because of technological hurdles, but because of the prior

appropriation doctrine. The prior appropriation doctrine is not well suited for governing groundwater. Drawing upon groundwater necessarily lowers the water table. Lowering the water table reduces surface water flows. The surface stream can disappear if the water table is sufficiently lowered. Drawing upon the groundwater basin injures senior surface water rights holders. Actively using the groundwater basin by drawing heavily upon it during times of drought and refilling it during times of abundance can completely deny surface water rights holders of their constitutionally protected rights in surface water flows. The tradeoff is clear. Protecting surface water rights holders forecloses access to much of the water in the aquifer. Actively using the aquifer decimates the rights of surface water appropriators.

The tradeoff emerged in the 1950s and became acute in the 1960s. Colorado suffered a sustained drought in the 1950s. Farmers drilled wells and pumped groundwater to irrigate their crops. For instance, in 1940, in the Arkansas River Basin an estimated 40 irrigation wells were in operation. By 1972, 1,477 wells pumped 208,000 AF of water (McDonnell 1988:582). Noticeable effects on surface water flows appeared in the 1960s. Colorado courts had long recognized that tributary groundwater was appropriable water and governed by the prior appropriation system. Thus, the answer to the problem of pumping tributary groundwater seemed obvious. The groundwater pumpers' water rights are junior to those of surface water appropriators. When a call goes onto the river, the appropriations of the most junior rights holders should cease until the senior appropriators' rights are satisfied. Wells should be shutdown.

Two issues prevented such a direct solution. First, the Colorado constitution, appropriators, legislature, and supreme court advocated the development and use of the waters of the state to the greatest extent possible for the benefit of the citizens of the state. Foreclosing the timely use of tributary groundwater violated such intentions. Second, the concept of the futile call made it difficult, in practice, to shutdown well pumping. A futile call occurs when a senior appropriator's rights would not be satisfied even if appropriations junior to it were shutdown. In such a case, junior appropriators are allowed to continue to divert water. Shutting down wells to satisfy senior surface water calls is often futile because of a time lag between groundwater pumping and surface water flows. In most cases, shutting down wells will not have an appreciable effect on surface water flows for weeks or months. Even if a senior appropriator

made a call, and wells were shutoff, the senior appropriator would not realize any water for his crops in many cases until the irrigation season was coming to a close.

In 1965, the Colorado Legislature passed legislation providing the State Engineer with the opportunity to directly address the conflict between surface water and tributary groundwater appropriations. The state engineer was granted the authority to adopt rules and regulations that would incorporate tributary groundwater into the prior appropriation system. (Radosevich 1976:138). In the summer of 1966, the Engineer exercised his new authority and ordered 39 wells in the Arkansas River Valley shutdown in order to satisfy senior rightsholders with appropriations dating to 1887 (Radosevich et al. 1976:139). This action triggered decades of conflict among appropriators that continues to simmer.

After several attempted rulemakings, numerous lawsuits, threats by senior appropriators to abandon the prior appropriation doctrine if junior well pumpers were not regulated, agreement was reached on a set of rules for incorporating tributary groundwater into the prior appropriation system in the South Platte River Valley (Radosevich et al. 1976:148-149). These rules were hammered out among surface and ground water appropriators and the State Engineer's Office, in the context of the Division One Water Court (Radosevich, et al. 1976; Vranesh 1987).

The rules adopted for the South Platte River Basin are conceptually quite simple. First, the rules defined a time table for phasing out well pumping. Second, wells covered by a decreed plan of augmentation or a temporary plan of augmentation could continue to operate. Augmentation plans allow junior appropriators, whether of surface water or of tributary groundwater, to protect their diversions from "calls" by senior appropriators by augmenting stream flow. A plan of augmentation for a well, or series of wells, involves determining the depletions to stream flows, or injury to the river, caused by well pumping, and identifying a source of water that will be made available to the river at the time and place of injury to senior appropriators. Augmentation plans that allow out of priority depletions were key to incorporating tributary groundwater into the prior appropriation system.

Obtaining a decreed plan of augmentation is similar to obtaining a right to appropriate water. Appropriations of water for augmentation are placed within the priority system (McDonnell 1988:596). A decreed augmentation plan includes a list of each well to be covered, a list of each augmentation structure to be used to recharge water to the aquifer and eventually the

South Platte River, the methods for measuring well depletions and augmentation accretions, and a decreed water right with a priority date.

In the South Platte Basin, most wells are not covered by a decreed plan of augmentation, rather they are covered by a temporary plan of augmentation. A temporary plan of augmentation, or a substitute supply plan, is not adjudicated. Rather, it is annually reviewed, approved, and monitored by the State Engineer. To date, no water appropriators have mounted a court challenge to substitute supply plans.

In 1972, with the encouragement of the State Engineer, a group of well owners formed GASP, the Groundwater Appropriators of the South Platte, a nonprofit organization, to develop a portfolio of water to be used to cover members' out of priority depletions caused by well pumping. The organization agreed to provide a list of its members, a list of wells, an estimate of the amount of water to be pumped in the coming irrigation season, the actual amount of water pumped in the previous irrigation season, and an amount of water to be placed at the State Engineer's disposal to replace out of priority depletions and offset any injury to senior rights (McDonnell 1988:591). The State Engineer accepted the offer.

GASP is a controversial organization because it operates in apparent violation of the prior appropriation doctrine. The prior appropriation doctrine is based on the no injury rule. Appropriators can develop, change, and use their water rights, they can even take water out of priority, as long as no other appropriators are injured. Courts, in decreeing augmentation plans, have required that out of priority well pumping must be measured and completely offset by a reliable source of water available at the time and at the point of injury. GASP does not completely offset its well pumping.

"The GASP approach has been characterized as 'call management'"(McDonnell 1988:592). The GASP water portfolio is of a sufficient size and is strategically located so as "minimize the call on the lower portion of the South Platte River" (McDonnell 1988:612). Until very recently, GASP has been allowed to drill wells relatively close to the river, near the canals of the most senior appropriators. GASP turns on its wells and diverts the water into the seniors' canals to satisfy their water demands. The wells do not affect the river flow until winter when the South Platte River is free flowing. GASP supplements its well pumping by leasing augmentation credits and shares of reservoirs and ditch companies, making such water available to the State Engineer as he sees fit.

Call management violates the prior appropriation doctrine because it does not fully replace out of priority depletions to the river. Call management simply quiets the protests of the senior appropriators most likely to complain about well pumping. GASP has long maintained that it would be too complex and too costly to adjudicate an augmentation plan covering thousands of wells. However, the recent events in the Arkansas River Basin undercut this defense.

Augmentation, as practiced in the Arkansas River Basin ,although engaged in for the same purposes as that of the South Platte Watershed, is executed in an entirely different manner. The well owners in Division Two have acted and responded differently than their Division One counterparts to the process of incorporating tributary groundwater into the prior appropriation system. These differences are driven partly by physical circumstances, and partly by institutional circumstances.

In the late 1960s and early 1970s, large well-owner associations were formed to defend their interests as the Division Engineer's Office attempted to incorporate well-owners into the prior appropriation system. They were successful in avoiding regulation until the mid-1980s, when Kansas filed suit against Colorado, claiming that Colorado did not maintain adequate Arkansas River flows across the stateline into Kansas, in violation of the Arkansas River Compact. The special master, appointed by the U.S. Supreme Court, sided with Kansas. Among other things, Colorado was directed to regulate well pumping in the Arkansas River Basin. The State of Colorado acted quickly to bring wells within the prior appropriation system so as to minimize the penalties the state owes Kansas. Similar to what transpired in South Platte River Basin two decades before, the State and Division Engineers, the State Attorney General, and the well owners associations, within the context of the Division Two water court, devised a set of rules to regulate well pumping.

The rules created replacement plans, which are a cross between decreed plans of augmentation and temporary plans of augmentation. Replacement plans are similar to decreed plans in that they fully replace each out of priority depletion at the time and point of injury. Replacement plans are also similar to temporary plans in that they are not adjudicated, rather they are approved by the Division engineer each year. Each year, the well associations provide a list of wells by river reach; the amount of water each well expects to pump; and the actual water, by river reach, that the well association will make available to the Engineer to cover out of

priority depletions. The Engineer's office collects monthly data on well-pumping, stream depletions, and stream replacements data. Each month the Engineer, the well-owner associations and a representative of the State of Kansas review the accounts to ensure that the out of priority stream depletions have been covered.

Augmentation plans and replacement plans have softened the harshest edges of the prior appropriation doctrine. The prior appropriation doctrine, based on first in time, first in right, protects the earliest appropriations, forcing the burden of scarcity on to later appropriations. Augmentation plans allow junior appropriators to confront scarcity, not by shutting down their appropriations, but by developing and using additional sources of water to satisfy the water rights of senior appropriators. These plans have been particularly crucial in allowing for greater use of groundwater resources than would have otherwise been the case if the prior appropriation doctrine had been strictly enforced.

Temporary augmentation plans, and some replacement plans, while allowing for extensive use of groundwater, are fragile. They are fragile because they have not been fully incorporated within the prior appropriation doctrine, leaving those who rely on them susceptible, especially during times of water shortage. For instance, some replacement plans in the Arkansas River basin are based exclusively on leased surplus surface water. During drought, surplus water may not be available, requiring the wells under the replacement plan to shutdown. More fragile, however, are the temporary plans of augmentation that do not cover all out of priority depletions to the South Platte River. During a drought, the more senior rights holders will almost certainly challenge such plans so as to avoid shutting down their own appropriations and instead force the shutdown of junior wells. The State Engineer's Office will then be confronted with an issue it has attempted to avoid. Will thousands of junior well owners, who are tapping into aquifers that hold millions of acre feet of water, be shutdown in order to satisfy the demands of senior surface water rights holders?

Conclusion

All states in the western U.S. rely on the prior appropriation doctrine to define property rights and allocate water. Only the prior appropriation doctrine as practiced in Colorado, however, is clearly grounded in covenanting. First, the prior appropriation doctrine was born of conflict and cooperation among miners, farmers, and ranchers as they struggled to control and use scarce resources, especially the scarce resource of water. Second, Colorado water

appropriators continue to revise, change, contest, and enforce their rights among themselves within the context of water courts. The decision making process is not one of majority rule but rather of consensus building. Consensus decision making is built into the process at multiple points, and only as a last resort is conflict cutoff and a decision imposed.

Third, the consensus building process directs participants towards solving problems. Appropriators do not possess absolute and unconditional water rights that will be protected at all costs. Instead, new water rights and changes to current water rights will be accommodated to the greatest extent possible while preventing injury to existing appropriators. Individuals who initiate an adjudication bear the burden of protecting existing rights holders and demonstrating that their request will not injure others. Existing rights holders are required to accept reasonable accommodations that prevent injury to their rights. Thus, the problem that appropriators face is how to accommodate a new or changed use within the existing structure of rights.

Colorado water law illustrates the institutional evolution that a covenantal orientation encourages. Not only has the substance of the Colorado Doctrine evolved to address new circumstances, but so too has the administrative structure. The Colorado legislature, acting in its constitutional choice capacity has reconfigured the institutional setting. The occasional changes engendered by the legislature have been consistent in their purpose – promoting greater coordination among appropriators and among administrative actors. Before the state of Colorado was even five years old the legislature had created water commissioners, a state engineer, division engineers, and county district courts. Courts provided the forum in which appropriators decreed their water rights, while water commissioners and engineers coordinated the water diversions of appropriators.

The Colorado doctrine is grounded in a covenantal process in which relationships among appropriators are maintained while problems are worked out. These institutions, however, are fragile and subject to encroachment. Appropriators have jealously guarded their authorities and have consistently fought to ensure that other actors, particularly the State Engineer, are not granted powers at their expense. For instance, in 1965 the legislature granted the State Engineer the authority to devise rules to incorporate tributary groundwater within the prior appropriation system. Never before had the State Engineer ever been given the power to make decisions concerning water rights. Those decisions had always been made among appropriators working with a court. When the State Engineer attempted to exercise his new rulemaking powers by

regulating well pumping in the Arkansas River Basin, appropriators contested such authority in the context of the water courts. Eventually, the Colorado Supreme Court recognized the authority of the legislature to grant the State Engineer rulemaking powers, but the Court laid out a series of conditions guiding the rulemaking process (Fellhauer v. People, 167 Colo 320, 447 P.2d 986). Each time, however, when the State Engineer devised rules to regulate well pumping, appropriators challenged the rules in court, preventing their application until all issues could be heard. Thus, while the State Engineer has rulemaking authority, appropriators within the context of the water courts oversee that authority.

The Colorado doctrine allows relationships to persist, however, it is never safe. One issue that may never be satisfactorily resolved, however, is that of tributary groundwater. Trying to coordinate across two interconnected, but differently structured resources – groundwater and surface water – continue to generate conflict. Forcing tributary groundwater into the prior appropriation system forecloses access to substantial amounts of groundwater. To gain access to that groundwater would require substantial modifications to the prior appropriation system. Appropriators, the Colorado Supreme Court, the Colorado legislature, and the State Engineer, have wrestled with this issue for more than three decades, achieving fragile solutions that allow for existing pumpers to continue to access groundwater. Once a sustained drought occurs, however, such fragile agreements are likely to crumble as senior rights holders fight to protect their rights, and as junior rights holders fight to gain access to a large, but largely untapped source of water.

Bibliography

Abbott, Carl, Stephen J. Leonard, and David McComb. 1994. Colorado: A History of the Centennial State. 3d edition. Niwot, CO: University Press of Colorado.

Allen, Barbara. 1998. "Harmonizing Earth and Heaven: Tocqueville on the Covenantal Tradition of American Federal Democracy," Publius: The Journal of American Federalism, 28:2 (spring) 1-23.

Axtell, James. 1985. *The Invasion Within: The Contest of Cultures in Colonial North America*. New York: Oxford University Press

Cambridge Synod and Platform in Williston Walker, ed. 1960 [1893]. *The Creeds and Platforms of Congregationalism*. Boston: Pilgrim Press.

Chertow, Marian R. and Daniel C. Esty. 1997. Thinking Ecologically: The Next Generation of Environmental Policy. New Haven: Yale University Press.

Elazar, Daniel J. 1979. "The Role of Federalism in Political Integration," *Federalism and Political Integration*. Daniel Elazar, ed. Ramat Gan, Israel: Turtledove Publishing.

_____. 1984. American Federalism: A View from the States. 3d ed. New York:.

_____. 1987. Exploring Federalism. Tuscaloosa: University of Alabama Press.

_____. 1995. Covenant and Polity in Biblical Israel. New Brunswick: Transaction Publishers.

_____. 1996. Covenant & Commonwealth. New Brunswick: Transaction Publishers.

_____. 1998 a. Covenant & Constitutionalism. New Brunswick: Transaction Publishers.

_____. 1998 b. Covenant & Civil Society. New Brunswick: Transaction Publishers.

Gildrie, Richard P. 1975. Salem, Massachusetts 1626-1683: A Covenant Community. Charlottesville: University Press of Virginia

Hobbes, Thomas. 1994 [1651]. Leviathan. Edwin Curley. Ed. Indianapolis: Hackett Publishing Company.

Huber, Thomas. 1993. Colorado: The Place of Nature, The Nature of Place. Niwot, CO: University Press of Colorado.

Kuehne, Dale S. 1996. Massachusetts Congregationalist Political Thought 1760-1790. Columbia: University of Missouri Press.

Lutz, Donald. 1988. The Origins of American Constitutionalism. Baton Rouge: Louisiana State University Press.

MacDonnell, Lawerence. 1988. “Colorado’s Law of ‘Underground Water’: A Look at the South Platte Basin and Beyond” University of Colorado Law Review 59(3):579-625.

Mehls, Steven. 1984. The New Empire of the Rockies: A History of Northeast Colorado. Denver: Bureau of Land Management.

Miller, Perry. 1939 The New England Mind: The Seventeenth Century 1939. Cambridge: Harvard University Press.

Ostrom, Elinor. 1990. Governing the Commons: The Evolution of Institutions for Collective Action. New York: Cambridge University Press.

_____. 1992. Crafting Institutions for Self-Governing Irrigation Systems. San Francisco: Institute for Contemporary Studies Press.

Ostrom, Vincent. 1987. The Political Theory of the Compound Republic: Designing the American Experiment. 2d. ed. Lincoln: University of Nebraska Press.

_____. 1991. The Meaning of American Federalism: Constituting a Self-Governing Society. San Francisco: Institute for Contemporary Studies Press.

_____. 1997. The Meaning of Democracy and the Vulnerability of Democracies: A Response to Tocqueville’s Challenge. Ann Arbor: University of Michigan Press.

Ostrom Vincent, and Elinor Ostrom. 1977. “Public Goods and Public Choices.” In Alternatives for Delivering Public Services: Toward Performance, ed. E.S. Savas, 7-49. Boulder: Westview Publishers.

Ostrom, Vincent, Charles M. Tiebout, and Robert Warren. 1961. “The Organization of Government in Metropolitan Areas: A Theoretical Inquiry.” American Political Science Review 55 (December): 831-42.

Radosevich, G.E., K.C. Nobe, D. Allardice, and C. Kirkwood. 1976. Evolution and Administration of Colorado Water Law: 1876-1976. Fort Collins, CO: Water Resources Publications.

Selznick, Philip. 1992. *The Moral Commonwealth: Social Theory and The Promise of Community*. Los Angeles: University of California Press.

Smith, Duane. 1992. Rocky Mountain West: Colorado, Wyoming and Montana 1859-1915. Albuquerque: University of New Mexico Press.

Trelease, Frank 1971. Federal-State Relations in Water Law. National Water Commission Legal Study, No. 5.

Vranesh, George. 1987. Colorado Water Law. Volume 1.

Warner, James, Jon Altenhofen, and Jack Oder. 1994. Recharge as Augmentation in the South Platte Basin. Groundwater Program Technical Report #21. Fort Collins, CO: Colorado Water Resources Research Institute.

Weinfeld, Moshe. 1995. Social Justice in Ancient Israel and in the Ancient Near East. Minneapolis: Fortress Press.

Whitney, Gleaves. 1983. Colorado Frontrange: A Landscape Divided. Boulder: Johnson Books.

Winthrop, John. 1996 [1630]. The Journal of John Winthrop 1630-1649. Richard S. Dunn, James Savage, and Laetitia Yeandle, eds. Cambridge: Harvard University Press.

Witte, John, Jr. 1987. "Blest be the Ties that Bind: Covenant and community in Puritan Thought," Emory Law Journa*l.* 36, pp. 579-599

Yazawa, Melvin. 1985. From Colonies to Commonwealth: Familial Ideology and the Beginnings of the American Republic. Baltimore: The Johns Hopkins University Press.