

THE IBERIAN ORIGINS OF NEW MEXICO'S COMMUNITY ACEQUIAS

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The American Southwest encompasses a vast territory rich in natural and mineral resources but short on water supply. When Spanish *conquistadores* first entered the region, known to them as *Nueva España*, they immediately realized that irrigation would be a necessary development in the establishment of permanent communities, whether presidios, missions, provincial government centers or civilian settlements. Due to the conditions of aridity, already familiar to Mediterranean dwellers, Spanish colonization policies required that officials of the crown, and settlers who accompanied them, must locate their communities in the vicinity of watercourses and other natural resources needed for permanent occupation. To sustain themselves, irrigation systems would have to be built far in excess of the water control, flood-water farming and other irrigation practices conducted at the time by some of the indigenous peoples encountered in the region.

During the Spanish colonial period (1598-1821), the irrigation method most commonly employed was gravity flow irrigation by way of earthen canals or “acequias.” At various times, acequias were constructed in all of the southwestern states: Texas, New Mexico, Colorado, Arizona, and California. For a variety of reasons, however, it was in *La Provincia del Nuevo México* that Spanish colonization policies were the most effective, particularly with regard to the establishment of civilian towns and agricultural colonies. From the outset, the plans to colonize *Nuevo México* included the introduction of not only soldiers (for the presidios) and friars (for the Indian missions) but hundreds and then successive waves of *pobladores* (civilian settlers).

The relative isolation of this Hispanic province, its early colonization (compared to Texas and California) coupled with the issuance of a series of land grant concessions, led to the proliferation of towns and villages scattered alongside the major streams and their tributaries from *El Paso del Norte* to the San Luis Valley in Colorado. Today, the acequias of New Mexico continue to function much as before, unlike the fate of colonial period acequias in the other southwestern states where most were either abandoned after secularization of the missions, or they eventually were supplanted, as Well Hutchins (1928) points out, by Anglo-Saxon forms of organization such as private mutual ditch companies, water user associations, irrigation districts, or conservancy districts.

In New Mexico the acequia persists as a transplanted Iberian civil and social institution. Like their Valencian, Murcian and Andalusian counterparts, acequia associations

continue to function as “water democracies.” This means they are autonomous, and for the most part operate outside of government in terms of their internal affairs: they elect their own officers, establish rules and regulations, enforce them, and settle most disputes. Similar to the *herederos* (proprietors) in the Spanish *huertas* (traditional farmlands), the *parciantes* (members) of the New Mexico acequia all own lands irrigated by a principal canal. As a *comunidad de regantes* (the term in Spain for irrigators in a system), they are in charge of their day to day governance, and collectively they maintain their common canal and finance repairs to their diversion structure when necessary.

The sections that follow provide a synopsis of the major events that led to the development of the acequias of New Mexico, with an emphasis on their Iberian roots. The Pueblo Indians encountered by the Spanish officials in 1540 and in subsequent expeditions were practicing agriculturalists. They employed a variety of agricultural strategies that included water harvesting techniques, flood water farming and the use of irrigation ditches in some of the streams and creeks. The settlers arriving from the interior of Mexico and the Mediterranean provinces of Spain observed these practices and melded them with their own diverse experiences, as detailed below.

The First Spanish Colonies in New Mexico

The summer of 1598 marked the *cuarto centenario* or 400th year anniversary of the establishment of the first Spanish settlement in *La Provincia del Nuevo México*, the northern borderlands of *Nueva España* in the Americas. During their *entrada* up the *Río del Norte*, now the Rio Grande, conquistador Capitán General Juan de Oñate and his party of colonists encountered a terrain and climate not unlike that of arid and semi-arid southern Spain. On July 11, 1598, they arrived in present day San Juan Pueblo, on the eastern bank of the Rio Grande, calling it *San Juan de los Caballeros*. Here, Oñate planned to build a Spanish municipality to be named *San Francisco de los Españoles*.

For the meanwhile, Oñate’s party occupied a portion of San Juan Pueblo, but scarcely a month had passed when on August 11 he gathered a labor force of 1500 Pueblo Indians from the vicinity to begin the construction of a major irrigation canal to provide for the agricultural needs of his planned capital city. For unknown reasons, Governor Oñate abandoned his plans for the building of a new town, and instead, he negotiated with San Juan Pueblo to relocate to the west bank of the river at the confluence with the Rio Chama. This settlement he called San Gabriel, itself built on a partially abandoned Tewa Pueblo known as *Yunque*. At this second site, 1599-1600, Oñate simply had to remodel and expand the existing Tewa structures: a plaza with some four hundred dwellings that could easily be reconfigured into a U-shaped village with ample space to add a church and a *convento* or friary (Simmons 1991).

Here too, one of the first tasks of the Oñate party was to reconstruct an irrigation ditch sufficient to irrigate the fields to be cultivated in the fertile valley between the two rivers. Scholars agree that San Gabriel was located in the area now known as Chamita, and most agree that the San Gabriel ditch is the present-day Acequia de Chamita. This recognition probably establishes the Acequia de Chamita as the oldest, still functioning

community ditch of Iberian origin in New Mexico, dating to around 1600. For evidence of its antiquity, scholars often cite a report by Juan de Torquemada, a Franciscan historian who visited the colony in 1612-13, where he observed the practice of irrigated agriculture:

“San Gabriel... is situated at thirty-seven degrees latitude, and its sides consist of two rivers, one of which has less water than the other. The small one [the Rio Chama] irrigates all the varieties of wheat, barley, and corn, in cultivated fields, and other items that are planted in gardens, because those lands produce cabbage, onions, lettuce and beets, and other small vegetables than in this one: producing many good melons and watermelons. The other river is very large; they call it [Rio] del Norte, which provides a lot of fish.” (*Monarquía Indiana por Fray Juan de Torquemada*, published in 1615.)

San Gabriel remained as the capital city of the fledgling province until 1609-10 when Governor Pedro de Peralta moved the capital to a more strategic location at Santa Fe, where once again the construction of an irrigation system was a primary and early public works project. Initially, two *acequia madres* (main canals) were dug to irrigate cultivated fields on both sides of the *Río de Santa Fe*, the river that passed through the center of the new capital city (Simmons 1972; Twitchell 1925). Eventually, dozens of acequias would be required to sustain the growing population at Santa Fe (Snow 1988).

The next villa to be founded after Santa Fe was “*La Villa Nueva de Santa Cruz de la Cañada de Españoles-Mexicanos del Rey Nuestro Señor Carlos Segundo*.” On April 19, 1695, shortly after the reconquest of the territory (following the Pueblo Revolt and its aftermath), then-Governor Don Diego de Vargas issued a proclamation founding this new settlement some twenty miles to the north of Santa Fe, allowing settlers to occupy land and establish home sites and farms. De Vargas carefully chose the site at La Cañada valley because of its fertile soils and plentiful water supply for irrigation. These resources were needed to sustain the growing populations, newly arrived from Zacatecas and Mexico City, who could no longer be supported by the acequias and cultivated fields established earlier in the century at Santa Fe (Baxter 1997).

In his proclamation of the Santa Cruz land grant, Governor de Vargas designated to the Spanish-Mexican families not only the town site for the new *villa*, but also the use of the “cleared agricultural lands, drains, irrigation ditches and dam or dams” as well as access to the “woods, pastures and valleys” within the La Cañada environs. A few days later, he placed the families in possession of the *Nueva Villa de Santa Cruz*, escorting them to the site himself and conducting the appropriate land grant ceremonies. Around a year later, on May 8th, 1696, de Vargas issued a decree allowing a second group of families to move from Santa Fe to Santa Cruz because the water for irrigation continued to be inadequate to handle more growth at the capital city. His decree on this day illustrates the Spanish colonial policies of town site planning, common lands use and the dependency on irrigated agriculture in the arid frontier:

“Having recognized that in this *villa* of Santa Fe there is not the supply of water that is requisite to insure the irrigation of the cultivated fields, in order to maintain the

families domiciled thereon; and having recognized that this said villa has better accommodations for the reception of the families which the King, our Lord, whom God preserve, has seen fit to send for the settlement of this said kingdom and its frontiers... I assign them to said *villa*... and [they are] able to use the water which the rest have had generally in great abundance, assured by their ditches, clean and running, which have been established at my own expense, as I have also repaired and made their dam secure.... Likewise this will serve them as a patent to be residents belonging and assigned to the said *Villa Nueva de Santa Cruz*, and as such will further their use of the said lands, and their right to the pastures, woods, waters and minerals as it appears in the grant....” (see Rivera 1998, pp. 42-44)

Spanish Settlement Policies

The general region designated as *La Provincia del Nuevo México* was expansive and its boundaries indeterminate, loosely encompassing the territory north of *Nueva Vizcaya* (now the State of Chihuahua in Mexico) with no fixed boundaries east or west (D. Cutter and Engstrand 1996). The first Spanish communities, however, were established along the more confined *Río del Norte* corridor north and south of Santa Fe from Taos to Socorro either on the present day Rio Grande or some of its tributaries (C. Cutter 1995). Throughout the period of Spanish settlement, 1598-1821, colonial officials generally adhered to the ordinances set out in the Laws of the Indies issued by the Spanish crown as instructions governing the pacification, development and permanent occupation of newly discovered lands, *the Ordenanzas de Descubrimiento, Nueva Población de las Indias dadas por Felipe II en 1573*. Codified in 1681, the ordinances in the Laws of the Indies provided the framework for colonists and provincial governors to follow when selecting sites for occupation and development, including the requirement to locate settlements in areas with abundant pasture lands, forests to supply wood and building materials, lands with healthy and fertile soils for the cultivation and harvesting of crops, and above all, with “good and plentiful water supply for drinking and irrigation” (see Crouch, Garr and Mundigo, pp. 8-9).

Throughout the period of Spanish settlement, colonial officials for the most part complied with the necessity of locating villages in places where reliable water supplies and other natural resources could support the permanent occupation of the province and thus secure the northern borders of *Nueva España*. As noted by Carlson (1990), agrarian planning reflected strongly the environmental realities of the settlement region, where rough terrain, aridity and high altitude limitations on the growing seasons necessitated an integrated approach to colonization. Spanish officials overcame these physical barriers, Carlson and others argue, by implementing a wide array of land grant policies on the Rio Grande watershed and its short but perennial streams. In the case of the communal land grants, for example, settlers petitioning for lands were required to specify the physical boundaries of the desired grant of land. The boundaries of the land grants were not predetermined according to any formal grid plan, and instead were established according to the natural contours of the land, resulting in irregular shapes highly adaptive to local topography, vegetation, soils, hydrology and microbasin climates (MacCameron 1994; Van Ness 1987; Scurlock 1998).

In the next step, the governor would order an inspection of the boundaries by the *alcalde mayor* of the jurisdiction. This official had to ascertain that the land in question was not settled already nor prejudicial to the welfare of any existing Indian Pueblo or other Spanish land grants in the vicinity. Part of the investigation also included an evaluation of the water supply needed for irrigation and domestic uses, and for the watering of livestock (Baxter 1997). Further, the *alcalde mayor* made sure that the land, water, and other natural resources within the boundaries of the grant would encourage the tilling of the land, the grazing of cattle, and other elements needed for permanent occupation (Keleher 1929). If these other conditions were met, the governor would then be able to confirm the grant and authorize the possession ceremony.

Shortly after confirmation and possession, the settlers began the process of forming their community. Although the requirements for town layout and physical design were followed loosely—adapted always to local conditions and the availability of resources—each community site became designated according to the place where the river or stream was diverted and a dam installed. The technology to construct the irrigation systems was a melding of Islamic traditions, transplanted from Spain to the New World, with the irrigation practices observed by early Spanish explorers at many Pueblo Indian villages. On larger streams, such as the *Rio del Norte/Rio Grande*, the settlers built wing dams protruding into the river from one of the banks; these diversion structures were usually sufficient to channel water into ditches during the irrigation season when natural flows were highest. Streams with intermittent flows required the construction of dams across the width of the watercourses to contain portions of the flows and form small reservoirs.

The *presas* (diversion dams, also called *atarques*) were constructed of forest timbers, cottonwood stakes, juniper brush, boulders, rock slabs, earth, and other local materials, resulting in structures that often resembled beaver dams. These building materials were placed on the streambed in a layered fashion, gradually raising the level of impounded water closer to a ditch headgate constructed on the banks of the stream. Containment of the water by the *presa* would accomplish the rest of the task, with gravity flow pushing the water into and through the *acequia madre* and its *sangrías* (laterals).

The *acequia madre* itself was excavated off one or both banks of the river, thereby extending the irrigable lands adjacent to the watercourse for several miles downstream. Typically, each main canal was cut perpendicular to the stream source at the upper end of the community to convey water downstream, parallel to the river alongside the foothills or natural slope of the terrain, all the while enclosing the practical limits of irrigable land. Then, at the bottom end of the community, the ditch was made to return to the original stream source through a *desague* channel. This infrastructure system was the first public works project undertaken in the formation of most communities of New Mexico, even before the building of the local church, presidio or government buildings. Once completed, it provided a virtual lifeline from the watershed tributaries in the basin to the islands of human settlement alongside scores of creeks and tributaries.

Spanish colonization policy, thus, resulted in the building of communities alongside the Rio Grande and its many creeks, streams and tributaries, eventually dispersing the population into semi-isolated *plazas*, *ranchos*, *villas* and other water-based communities. Access to irrigation water served as the guiding principle, a land policy implemented since the founding of the early villas: San Gabriel in c. 1600, Santa Fe in 1610, *Santa Cruz de la Cañada* in 1695, and Albuquerque in 1706. The cultural imprints and the land-tenure patterns evident today in the valley bottomlands of northern New Mexico and southern Colorado resulted largely from these early efforts to occupy and secure the northern Spanish frontiers. Hundreds of acequia systems dot the landscape of the upper Rio Grande, where they still define the land uses and support the local economies.

The Islamic-Iberian Roots of Acequias

The word, “acequia,” derives from the Arabic term, “*saqiya*” and its root “*saqa*,” meaning “to irrigate” (Castañer Martín, p. 12). Berbers from North Africa as well as other Arabs from Egypt, Yemen and Syria occupied southern Iberia for over seven hundred years, naming it “*Al-Andalus*.” When they were expelled by the *conquistadores* (Christian Kings and military who reconquered Spain and subsequently redistributed the irrigated lands), they left behind much of the hydraulic landscapes still evident today in the regions of Valencia, Murcia and Andalucia. *Conquistador* King James I encountered the infrastructure of Islamic irrigation works in the kingdom of Valencia, but he prohibited the modification of these systems and indicated that any repairs that might be needed should be undertaken only in conformance with the manner and form of the original. In his decree granting land use privileges to the returning Spanish colonists, he authorized the taking of river water for irrigation purposes: “...*según que antiguamente era y fue establecido y acostumbrado en tiempo de sarracenos* [as established and customary in the time of the Muslims]. In another decree, 1238, he specifically granted the use of the acequias of Valencia to the settlers: “*Damos y concedemos perpetuamente todas y cada una de las acequias de Valencia, excepto la que va a Puzol, de modo que podais regar a la manera que de antiguo es costumbre....*” [We grant and concede in perpetuity each and all of the acequias of Valencia, except the one that goes to Puzol, so that you may irrigate in accordance with ancient custom” (see Box Amorós 1992, p. 77)]

Historians recognize that water development and irrigation works were in use by Iberian Pueblos and the Romans in the centuries prior to the Islamic occupation. However, they also agree that the *musulmanes* recreated the Roman agrosystems and developed new and expansive areas of *huerta* irrigation through novel hydraulic technologies that remain in use: such as the *azud* or small-scale diversion structure, *albercas* or earthen tanks that store surface water for later use, *norias* or animal driven wheels used in lifting water, *aceñas* or Persian water wheels, and *qanats* or galleries that mine water from aquifers on mountain slopes for use in irrigation. For additional evidence of the Islamic imprint on the Iberian landscape, historians point to the Arabic terminology and toponyms prevalent in the agricultural regions. They also cite the continued use of many of the techniques for elevating, measuring and distributing water that have persisted in the Mediterranean provinces of southern Spain (Glick 1970; Box Amorós 1992; Butzer, et al. 1985).

From the Islamic perspective, water was sacred and must be supplied to all who needed it based on principles of sharing, beliefs often referred to as the “Islamic law of thirst” where water could not be denied to any living persons in suffering, in return for a recompense. As to irrigation, large rivers belonged to all Muslims in common, and for the muslims of al-Andalus, following the Maliki legal school, upstream users of diverted water were entitled to only an ankle’s depth of water on their fields, after which water had to be released to downstreamers (Lambton 1986). Irrigation canals became common property of the persons who constructed them and could not be subdivided into individual titles. Under the arrangements for joint ownership, the irrigators then would establish common rules for the distribution of water under a variety of equitable practices: a system of turns expressed in days or hours under a rotation schedule; a quantity of water measured and divided in proportionate shares such as by fractions of water available; or by a series of individual headgates located on each irrigated parcel that allowed the taking of fixed amounts of canal water proportionate to the size of the parcel (see Vidal Castro 1995). After the expulsion of the *musulmanes* from *Al-Andalus*, these irrigation arrangements, among others, were continued by the *comunidades de regantes* (irrigator communities) and *tribunales de agua* (water tribunals) in southern Spain and were also transplanted simultaneously to the Americas after 1492.

When Spanish *conquistadores* set out to occupy and develop the northern frontiers of *Nueva España* across the Atlantic, much time was spent examining not just lands for new settlements but, even more importantly, the availability of reliable water supplies for domestic as well as irrigation development. Early exploration maps and texts of the region designated the locations of and named not only perennial rivers, creeks and lakes, but also other minute water features such as “tiny ponds, dry arroyos, muddy watering holes, and miniscule springs” (Meyer 1984, p. 77).

Prior to appropriating water from a stream or alternate source, the settlers would examine the soil in the area contemplated for the *huertas* and *labores* (cultivated fields), to make sure it was not too sandy or porous for ditch construction and water conveyance (Dobkins 1959). Finally, they would identify a suitable place for the *toma* or *saca de agua*, a location along the banks of a river or stream where water could feasibly be diverted by constructing a *presa*. For the most part, these engineering works were low-level diversion structures. They were designed not to store large quantities of water but simply to raise its level in a river bed enough to allow it to enter a canal headgate on one or both banks, following the Islamic-Iberian technique used in the construction of *azudes*. In the arid and semi-arid frontiers of northern *Nueva España*, most river systems were not formidable enough to warrant the construction of more substantial reservoir systems (Glick, 1970; Gomez 1990).

The *pobladores* who accompanied Capitán General Juan de Oñate, Governor Don Diego de Vargas and other *conquistadores*, originated from the central valley of Mexico, where irrigation existed from pre-hispanic times, and from Iberian provinces such as Andalusia, Extremadura, Aragón, Murcia, Canary Islands, and others. They brought with them their rich and diverse experiences with irrigation development in Mesoamerica and the

Islamic-Iberian Mediterranean world. With each successive wave of immigration to the arid and semi-arid climates of northern New Spain, the *pobladores* constructed waterworks for the diversion, channeling and distribution of water from rivers and streams: *tomas de agua*, *presas de derivación*, or dams, equivalents of the *azudes* of the Iberian peninsula as noted above; *tanques* or earthen reservoirs equivalent to the *balsas* or *albercas* of Islamic Spain; *compuertas* or wooden headgates equivalent to the *partidores*; *acequia madres* and *sangrías*, these latter ones equivalent to the *brazales*; *desagues* or drains, equivalent to the *escorredores* or *azarbes*; and *canoas* or aqueducts hand-hewn from mountain timbers. Water circulating through the irrigation systems of the upper Rio Grande also permitted other uses, such as the diversion of acequia flows to power hundreds of village *molinos* or gristmills with horizontal waterwheels, a clear legacy of peninsular milling culture (Rivera and Martínez 2000).

Development of Acequia Governance in New Mexico

The New Mexico commons ditch, described in the Spanish of colonial times as the “*acequia de común*,” was the main force that established a distinct place, defined the community boundaries, and bonded the irrigators, obligating them all to the collective management of the local water system and their village enterprise as a whole. The idea of a common property ditch for all irrigators in any new settlement was replicated time and again in the province and, in fact, was the key both the development and economic survival of local communities (Rivera 1999). Their participation in maintenance and upkeep of the communal irrigation system was proportional to the size of land area under irrigation owned by the proprietors.

These landowner irrigators of Hispanic New Mexico followed the nearly universal rule that governs many common property regimes, wherein each property owner must contribute to the maintenance of the communal system in direct proportion to the benefits received. In cases of conflicts over water distribution or the system of turns, some acequias of the colonial period employed the services of *hombres buenos* or good men, such as those employed in the lower Rio Segura of Murcia and Orihuela. The Hispanic roots of the ancient “*alcalde de aguas*” (water chief), known today as the *mayordomo* in New Mexico, is also clear, as is his kinship to the *cequier* (now called *acequero*) of Islamic Spain, as described by Glick (1970). The Spanish *acequero* of Spanish medieval times is virtually identical to the New Mexican *mayordomo*.

The irrigation regulations that the Spanish settlers imported to the region were principally those that had been developed in similar climatic areas of southern Spain. As Glick (1970) has noted, the allocation, distribution, and administration of irrigation waters during the colonial period, and continuing into the present, have been strikingly similar to those of medieval Valencia, practices that have survived there as well. In medieval Valencia, the basic irrigation unit in the society was the *comuna*, defined by Glick (1970, pp. 31-34) as a group or community of irrigators all irrigating from a single main canal. His description of the *comuna* could also be used to describe the functions of the historic *acequia de común* or, for that matter, the modern day acequia association of New Mexico:

“...[the] primary business of the commons as a whole was to enact regulations for the distribution of water and maintenance of the canal system and then to elect the executive and administrative officers to whom authority for the day-to-day running of the canal’s normal affairs was delegated. Ordinances [of 1435] established the duties of the *cequier* and his assistants, set fines for various misdemeanors, and stipulated obligations of the *hereters* regarding observance of turns, maintenance of the canal, and contribution of dues.”

The *acequero* during Spanish medieval times compares with the popular *mayordomo* (water manager or the acequia superintendent) of New Mexico. As described by Glick (1970, pp. 35-37), the duties of this medieval officer are virtually identical to the role of the *mayordomo* even in modern times:

“The canals of the Valencian *huerta* were administered by a *cequier* delegated by each community of irrigators at the general meeting.... The duties of *cequiers* [included]: to see that no one dare steal the water, nor disturb the canals, ... clean the main canal from head to tail, ...repair the diversion dam whenever it was breached.... [and] the *cequier* oversaw the normal distribution of water.”

In the Americas, the exact steps in the evolution of water officials to administer the ditches are not totally clear. Most historians point to any number of early role types that existed from time to time in *Nuevo México* and in other provinces of northern New Spain: *zanjero*, *acequero*, *mayordomo*, *aguador*, *mandador*, *alcalde de agua*, *juez de agua*, *repartidor de agua*, *veedores jueces*, *comisionados*, *la junta del agua*, and other designations. The process for their selection is not completely clear nor uniform. Some of these ditch overseers were appointed by the *alcalde mayor* of the particular *jurisdicción* (jurisdiction) and still others by the *ayuntamiento* (town council) when warranted. The *Plan de Pitic* for the *provincias internas de la Nueva España* (internal provinces of the north) in 1789, for example, instructed local officials of new towns to appoint a water *alcalde* or a *mandador* (water boss) charged with a number of key duties in the management of local irrigation systems: supervise conservation practices such as the *reparos* and *limpiezas* (repairs and cleaning); and distribute water to all irrigators according to a list and water schedule rotating days and hours for each turn (see Rivera 1998, pp. 18-20).

In most of the province of *Nuevo México*, however, the outlying communities were too small in scale to require a formal water bureaucracy or a town government. At some stage in the development process of each village, the irrigators probably began to appoint or elect a ditch superintendent of their own choice, as was the case already in the *villas* such as Santa Fe, where a *repartidor de agua* (water master) was elected by each of the *barrios* to distribute water, organize ditch cleanings, police the flow of waters, and order the construction of flumes (Tyler 1990). Ultimately, the most frequent title given to this type of water official in New Mexico became “*mayordomo*.” Although Simmons (1972) does not provide a precise date, he concludes that the first *mayordomos* were elected by the village acequia members originally under the call and direction of the district *alcalde*. A process of annual elections presumably followed from that point forward; these elections then became

codified in the territorial acequia laws of 1851-52, where the justice of the peace was instructed to convene all local ditch irrigators yearly for the purpose of electing their *mayordomo* overseers (Rivera 1998, pp. 55-57).

Prior to the territorial period (1846-1912), management of the *acequias de común* in New Mexico was based largely on unwritten local customs, especially in the rural jurisdictions outside of the few townships that existed. According to Meyer (1997), the ditches that were not governed by *cabildos de regidores* (town councils) fell under the jurisdiction of an *alcalde mayor* appointed by the governor, who oversaw the formation of *mancomunidades*, or voluntary associations. The purposes of these associations, per Meyer's account, were to construct the *acequias de común* during the early stages of settlement and to continue maintaining the systems during the annual cleaning and when repairs were necessary. In addition, the community of landowners (*propietarios*) who cooperated in these mutual aid efforts agreed to administer the ditches, devise water distribution plans, elect a water official to implement the local agreements, and very importantly, resolve their own conflicts and disputes (Meyer and Brescia 1998).

The customary framework for acequia administration was derived from medieval Spain, where legal arrangements evolved from local practices that were written down as *ordenanzas* by the end of the fourteenth century. Spanish water laws pertinent to irrigation management were implemented as guidelines and, more often than not, were elaborated to fit prevailing norms, customs, traditions, and local circumstances of the isolated New Mexico province. Thus, to a significant degree, acequia customary laws were improvised on a case by case basis, and then more broadly applied. After a period of time, local agreements and customs required official interpretation of specific rules and standards of conduct. As official proclamations and regulations became more formally established and circulated throughout the New Mexico province, the administration of the community acequia also developed in maturity and sophistication. The acequia enjoyed the legal status of a *persona jurídica*, and "thus had the full protection of Hispanic law" (Meyer and Brescia 1998, p. 328).

As is still the case today in most villages of the upper Rio Grande, the community acequias during the colonial and later periods were the only form of local government in the dispersed agricultural *jurisdicciones*. Thus, the powers delegated by custom and circumstance to the early *mayordomos* likely were very broad, particularly in the absence of a detailed role description or a formal set of ditch rules and regulations to administer. Without a written charter to prescribe his every duty, they colonial *mayordomo* nonetheless had ample guidance from other sources. By the early 1800s the duties of the *mayordomo* were an amalgamation of responsibilities inherited from earlier roles and residual Spanish water laws woven into local practices for some two centuries. At minimum, by this time, *mayordomos* would have been responsible for:

1. distribution of water on an equitable basis utilizing a water schedule or some other form of rotation to assure everyone would have a turn;
2. convening of the irrigators for the annual spring cleaning and for occasional repairs to the *presa* or the *acequia madre*;

3. policing of the irrigation system guarding against waste and violations of customary rules, including the authority to levy fines against those who committed infractions; and the
4. settling of conflicts and other disputes among *vecinos*.

The absence of written rules likely required a strong *mayordomo* who was familiar with local practices, norms, and informal rules, and was willing to enforce them equitably. Whether written or not, the *mayordomo* was vested with discretionary authority, which was the defining characteristic of such offices in medieval Islam and medieval Spain. Discretionary authority was the lynch pin of local control, the way local control was expressed. In New Mexico, more precise duties for the *mayordomo* were not defined in written statutes until the territorial assembly of 1851-52 under United States jurisdiction. These acequia laws were defacto the first water laws of the modern State of New Mexico. They codified into written statutes the extant acequia customary practices as they had gradually evolved since the first Spanish settlement was established in 1598.

The territorial legislature crystallized in New Mexico water law the customs and precepts already in place: the irrigation of cultivated fields “*debe preferirse a todas las demás*” (should be given preference above all others); all owners of tillable lands, *propietarios*, shall labor on the public ditches in proportion to their irrigated lands; the *alcalde* or precinct judge shall arrange for the election of *mayordomos* by the *propietarios*; the *mayordomos* shall superintend the repairs and cleaning of the acequias and distribute the water in proportion to the quantity of cultivated lands; *propietarios* who do not supply the labor stipulated by the *mayordomo* shall be fined for each offense (see Rivera 1998, pp. 63-67). For the most part, these and other early rules have remained in force and are strikingly similar to the *ordenanzas* (ordinances or regulations) adopted by the acequia organizations of southern Spain.

Local Control: Protecting the Bordos

The heart of community acequia self-governance are the twin principles of local control and discretionary authority (Maass and Anderson, 19xx). The particular modes of operationalizing the two principles were imported from Spain where they had been worked out in the wake of the Reconquest as Christians had devise new administrative modes for governing allocation systems adapted in tact from the defeated Muslims and whose original rationales the conquerors did not fully understand. Muslim irrigation had been administered on tribal principles which could not be passed on to the Christian conquerors. So the latter ran the newly-acquired systems by borrowing both the institutional structure and executive procedures of craft guilds (Glick, 1996a). Thus, the ditch commissioners are the equivalent of medieval craft-guild syndics, the mayordomos of guild mayordomos, inspectors (*veedores*) of guild *veedores* or *fieles*, *fiel* being a calque on Arabic *amin*. It is interesting to note that in nineteenth-century colonial India, the British administrators found that local allocation of irrigation water worked well in tribal areas and not at all in non-tribal places which had no indigenous forms of communal governance (Glick, 1996b).

Local control: the key contested sites where local authority must be exercised are head or lateral gates and the rights of way on the sides of the canal. Abstract water rights are given concrete expression at the former; while rights of way constitute a domain that the *acequero* and mayordomo must rule unequivocally and absolutely. The ordinances of the medieval Valencian acequia of Benatger y Faintanar stipulated that the acequero, syndics and inspectors had to patrol the entire system at least once a month, in exercise of a police function. They were looking for misdemeanors, but at the same time reinforcing the commons' suzerainty of the rights of way. Any misdemeanors discovered were punished summarily, *in situ* (Glick, 1970). As part of their official regalia, medieval Valencian acequeros carried hooks (*ganchos*) which they used to open or close lateral headgates, particularly when recalcitrant irrigators had failed to do so, in contravention of the statutes. They carried out these tasks undaunted by the opposition of individual irrigators because their control of communal space was absolute.

When the commons loses control of its space, acequia administration can break down. In contemporary New Mexico an obvious problem is created whenever newcomers who do not know the customary rules move onto an acequia:

...the purpose of the *bordos* has been forgotten; in fact, many of the new arrivals in the villages want to prevent the commissioners and mayordomo from walking them. No one can do that unless you allow them, and, unfortunately we have allowed that to happen. The acequias all have an easement of at least 7 ½ feet from the middle for a total of 15 feet on both sides, but recently they have become so overgrown, that they are being abandoned. *Por eso nadie se quiere prestar de mayordomo!* ...In the past the *bordos* were the walkways or *veredas* that connected one village with another (Arellano, 1970).

Discretionary authority. In Islamic law, where all executive authority devolves theoretically from the chief qadi of the place in question, certain officials including the market magistrate (*muhtasib*) and irrigation office (*sahib al-saqiya*) could punish infractors in the act and fine them summarily, so long as the infraction was a standard low-level misdemeanor. Any serious infraction had to be brought before the qadi. Medieval Spanish acequeros were invested with the same powers and this system was brought to the new world.

Here is a New Mexican mayordomo, Cleofas Vigil, describing how the right of way (*bordo*) functions operationally, as he recounts an argument with a newcomer over the mayordomo's right to free passage both in the ditch and on the *bordos*:

Le dije yo when I come to this place or go through this place yo no vengo a ver te a ti le dije. Yo voy a pasar esta acequia. I patrol the ditch y to no me puedes prohibir de que voy a pasar por esta propiedad. No voy a pasar por tu propiedad, voy a pasar por la propiedad de la comunidad. Dijo you heard me, you call first. Le dije...call you, and let me tell you something...ese atarque que tenes en esa acequia le dije quero que lo quites de la acequia le

dije....I'll give you a week le dije. Si yo suvo en una semana le dije...we will see the judge....al juez y meterle la regla de la asociacion de la acequia.

Cleofas explains that as mayordomo he has very wide latitude in the execution of the community's statutes, which include moving water around to maximize its use. "El mayordomo puede hacer eso," he emphasizes, " si usa su juicio cabal" (Rivera, 1985).

Conclusions

Today, there are approximately one thousand community acequias in New Mexico and southern Colorado. They continue to function in much the same fashion as their counterparts in southern Spain: autonomous, self-government institutions in charge of local water distribution and canal maintenance. In modern Spain the irrigator organizations are known, in generic form, as "*comunidades de regantes*," while the equivalent name in New Mexico is "acequia association" or simply, "acequia." The *regantes*, of course, are the *huerta* irrigators, whereas their New Mexico counterparts in contemporary times are called *parciantes*.

The *parciante* irrigators own the acequia watercourses, regulate them, police them, and maintain them from generation to generation, all the while perpetuating a sense of place and a system of direct, participatory democracy. As before, the acequia associations most often are the only form of local government below the county level; and for this reason, they perform social and political functions outside of their main purposes as irrigation institutions. For example, the annual cleaning of the acequia not only marks the beginning of the agricultural season in early spring; it is also an occasion for the *vecinos* to address other local issues, reconfirming the sense of traditions that undergird the social and political life of the community.

In the acequia culture of the upper Rio Grande, connections with a geographic locale are an integral part of individual as well as collective identity. Everyone is "from a place." When two persons introduce themselves, invariably the next question of mutual interest is: "*De donde eres?*" ("Where are you from?") The acequia of their community very likely delineates the physical boundaries of their place; many acequias bear the name of the locality itself, as in "*Acequia de Chamita*." Others pinpoint an interesting natural feature, such as "*La Acequia del Monte*" at Talpa, "*La Acequia del Bosque*" at Embudo, the "*Acequia de los Ojos de la Agua Caliente*" at Agua Caliente Canyon, and the "*Acequia Madre del Llano Largo*" on the Rio Santa Barbara near Penasco. Still others identify family surnames with longtime connection to the ditch and the community: "*Acequia de los Chávez*," "*Acequia El Llano de Abeyta*," "*Acequia de los Duranes*," "*Acequia de Tío Borrego*," and scores of others. As a living social institution, the community acequia of New Mexico is a modern-day treasure with roots in the medieval Old World, an example of the persistence of Hispanic culture in the United States.

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