USE AND ABUSE OF SOUTHWESTERN RIVERS

HISTORIC MAN--THE SPANIARD

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Without benefit of carbon-dating, geological stratigraphy, or calendric stele we can affirm that the first Spaniards tramped down an Arizona river -- the San Pedro -- four hundred and thirty-two years ago. If it were not for the written record, none of us today would ever have known that Esteban and Fray Marcos de Niza had left their foot-prints in the shifting gravel and sand of an Arizona river.[1] The caravans of Coronado and Melchior Diaz, the scouting parties of Tovar and Cardenas, the slavers of Nuno Guzman, and the prospecting parties of Francisco Ibarra all knew the rivers of Arizona or their counterparts in the mountain drainages of northern Mexico.[2] But for all their presence and for all their ambitions in the land of Cibola traces of these men and their works along the rivers have vanished like the foot-prints they left behind. Then the missionaries came to pacify scores of Indian tribes and shape difficult harmonies between the out-classed Indian and the avaricious miner. These Spaniards did leave traces of their occupation in the labyrinthine workings of silver mines and sometimes elegant churches that dominated the landscapes of desert valleys. But the Spanish presence in the Southwest never left extensive evidence of how the rivers were used, as was the case with the pre-historic peoples of Arizona. And after the Spaniards came the Mexicans. Some priest had shouted something in a Mexican village, and suddenly Spaniards were Mexicans.[3] The family names were the same; the villages, the same; rivers, the same. For most people of an Anglo heritage this pretty well sums up the Spanish contribution to American history -- a conquistador's sword in the desert, a missionary's cross in the valley, and revolution everywhere. So why ask questions about today's rivers when it is perfectly obvious Spain let all that water flow so we could worry about it manana.

When I began research for this paper on the uses and abuses of Arizona's rivers in the Spanish and Mexican periods, I asked myself the usual questions. Where can I find evidence to show that the Spaniards dammed the San Pedro or the Santa Maria (the Santa Cruz today)? What dreams did they have for inundating the dry desert with the voluminous Colorado? What plans did they entertain to resurrect the splendid city of Montezuma on the banks of the Gila? How did they measure and record the flow of their rivers and streams? What court cases would best illustrate the conflict between the Spanish consumer and the inevitable fiend who clutched the water deed in his hand? After reading Spanish documents for several years my notes should reveal something. They did. The Spanish did not dam any rivers. They held no dreams for the Colorado other than hoping it might lead eventually to Anian. They thought only about a modest presidio on the Gila. They measured water flow and rainfall by prayers of petition or thanksgiving for the rain that fell and litigation over water rights is rarer than heresy trials.[4] In short, there are no Spanish answers to Anglo questions. And that should be the end of that. But is it?

Doesn't it strike you as odd that Cabeza de Vaca walked from Florida to Sonora? Or that no Spaniard tried to antedate John Wesley Powell by running the rapids of the muddy red river? Isn't it curious that Manje did not eventually bring some canoes to explore the Gila? We have too quickly surmised that the Colorado wasn't explored by boat because the canyon was too deep and precipitous, or that the desert rivers were too shallow and short-coursed. But the real answer is that the Spaniards were not riverine explorers. They possessed both the opportunity and technology to explore Arizona's rivers by boat, but their natural preferences leaned toward overland exploration. Bred in the culture of an arid land, the Spaniard first chooses a horse; his last resort, his feet. An Englishman or Frenchman builds a raft -- after all, there's always water, isn't there? So I ceased searching for information to answer questions we always ask about dams and water flow and looked, rather, at Spanish culture. And there were the clues.

As Jose Ortega y Gasset, the twentieth century Spanish pundit, says, a particular culture is a group of solutions by which man responds to a group of fundamental problems.[5] And fundamentally life in the desert Southwest differs very little from life in peninsular Spain. The Spaniard found fertile lands along rivers of limited water supply. He was uncomfortable with the scattered rancherias of the Indians, so he invited and sometimes forced the Indians to dwell in a Spanish style pueblo. Technologically there was little difference between the Indian's use of water for his rancheria home and the Spaniard's use for the pueblo. Both cultures responded to the problem of water supply and use in ways that were wise about arid-land living. Pueblos were built on river banks where alluvial fans could be easily irrigated. The houses were clustered together to conserve valuable arable land and to shorten the trek to the town well. Small check dams diverted the flow of water through arroyos into acequias that fed wells and tanks in the towns. In the river beds diversion dams were built to draw water into the canals from which the fields of grain, beans, squash and melons were irrigated. Water flowed through orchards, fields, and barrios; then it seeped back to the river bed and flowed sluggishly and warm to the next pueblo to repeat the same cycle of service.

The key to the Spanish concept of water use resides in the expression aqua viva -- living water, and living water is flowing water. Nowhere do we find instances or plans among the Spaniards to dam the torrents of summer to provide for the scarcity of the winter. When the Spaniard builds a dam, he does not think of a reservoir, a saving-up against scarcity; rather, he calls his dam a presa, a clutching, a capturing of water in motion. When he supplies a pueblo with water, he does not think of water-mains and water-meters; he thinks of open aqueducts, of gurgling fountains, and convenient wells. When he irrigates his fields, he does not change the course of rivers or stop their flow entirely; he diverts only what he needs to provide for his pueblo. The rest is allowed to flow on because others need that water for survival not only as animals but as humans.

In constructing diversion dams, when beavers didn't provide the services, the dams were designedly weak and efficient only to the point of channelling sufficient water for the purposes of the pueblo. A sudden summer cloudburst or flash flood could send the churning waters of a river slashing through the soft alluvial soils; a greed for too much water might be the cause for winter's famine. Once in 1639 when the first governor of Sonora Pedro Perea insisted on large diversion dams to irrigate his newly planted fields of wheat, thundering floods obliterated the three dams, ripped out the fields and soil and sent the Indians scurrying to the bluffs to live in safety.[6] The Spaniards learned from the Indians that it was better to have a weak dam and a modest system of irrigation than a stong dam that might change the course of a river and the history of a local village.

The occasional reference to water use in the Spanish records is innocuous at best. Padre Juan Nentwig, who compiled a most worthy book on colonial Sonora, describes the rivers of Arizona more geographically than culturally. Speaking of the Rio Matape which was east of modern Hermosillo, he said:

> The other so-called rivers ... are merely rivulets. There is so little water in the Rio Matape that after irrigating a moderate orchard and ten or twelve fanegas of wheat, there is hardly any left for the consumption of the people.... The river sinks into the ground so that most have to dig wells to recover the water.[7]

To Nentwig the Gila was magnificent; the Verde was so named because of the groves along its banks; and the Salado was voluminous but unpalatable. Padre Eusebio Francisco Kino, who probably had more expansionist dreams for the whole of the Southwest than any colonizer before or since, never suggested the taming of the Colorado or the Gila. In his opinion the Indians were already doing a good job that could only be improved on, not radically changed.[8] Padre Jacobo Sedelmayr pushed the exploration of the Colorado northward and circled back into central Arizona by way of the present Bill Williams river; his assessment was the same as his predecessors in claiming that the rivers of Arizona could provide for many new missions and settlement -- but there was no change in the patterns of use that extended all the way up from Mexico.[9]

Nicolas de LaFora, making a reconnaissance of the presidios of northern New Spain in 1767, recorded only one reference to a dam. His comment is revealing because the dam at the hacienda San Gregorio near Chihuahua held back the water from two springs to run a small mill, "thus obviating the need for river water."[10] But there were few mills in Arizona; grinding was quicker and more reliable with metates or arrastres.

Few people will dispute that the reputation of the Apaches among both Spaniards and Americans was one of savage fear. In the late eighteenth century, however, Spain was making headway in pacifying even this belligerent tribe. Several Apache familes had been settled along the Rio Santa Cruz just north of the presidio of Tucson. Their land was poor and water-starved so they requested a transfer to better lands closer to the pueblo. In a letter to a fellow Franciscan Fray Juan Bautista Llorens commented that the Apaches were to be given some land continuous to the pueblo and that one-fourth of the water supply furnished to Tucson would be allowed to flow on to irrigate their holdings.[11] Again, this example cites only a minor event in the history of water usage, but the generosity of the Spaniard cannot be overlooked. Equitable sharing and responsible cooperation meant survival, if not even comfort, for all who would live under the Southwest sun.

The Mexican period adds little to our report. The turmoil and confusion that Independence brought to Mexico swirled like a dust devil on the frontier as well. The pattern of life was much the same, only a bit more trying because the support of the Crown had ceased. Land holdings became dubious in the fights for title. But the water kept flowing. In all probability the Gadsden Purchase changed little or nothing for many years in the economy of the desert. Consequently the observations of Phocian Way in 1858 would be a valid description of water use in the Mexican period:

> A small creek runs through the town [of Tucson]. The water is alkaline and warm. Hogs wallow in the creek and the Mexicans water their asses and cattle, wash themselves and their clothes, and drink the water out of the creek. Americans have dug a well and procure tolerably good water which they use. A few acres of land along the bottom are cultivated by irrigation.[12]

This excerpt from Way's diary brings up a subject as yet untouched in this report -- the abuses of Arizona's rivers. Here we are injecting a system of values into our observations on the use of water in the desert. Obviously Phocian Way was not enamored of the multiples uses the Mexicans were making of the Santa Cruz. Water that hogs wallow in, that asses drink from, that humans bathe in, is not fit for consumption. The peasant enjoys more immunities than his urban cousin; he also is cautious about boiling the water he drinks at table. What really constitutes abuse of a water supply? Our clean, piped and purified water would be a luxury beyond comprehension for the Spaniards of history who never knew such benefits of wealth and technology.

Man-caused water pollution goes unmentioned in the documents from missionaries and soldiers. Nature-caused pollution, however, was recorded whenever a cieniga became stagnant or a putrefying animal contaminated one of the scattered mountaintop tanks. I doubt very strongly that this lack of reporting man-caused pollution was an omission. Desert peoples know their very survival depends on the unwritten codes of human decency and cooperation. What water was needed was used; what was not needed was left for the next unknown traveller or resident, whether friend or foe. Apaches might poison water-holes in western novels, but real western Indians did not make that a practice in the real world.

I am sure you have drawn your conclusions already about this brief paper. When I first reviewed my own sources and evidence, I felt the Spanish presence in the Arizona desert could really offer nothing to the modern ecologist. But I discovered wisdom in the ways of those people. Their technological competence could not propel them to create "humid oases" in a barren wasteland, nor did their ambitions compel them to develop a technology that would. Yet the Spaniard transformed the Sonoran desert into a productive garden land never before excelled by indigenous peoples. But after the collapse of the mission system the discipline that protected the careful balance between productivity and profit-making vanished; the land was raped by ravenous cattle and sheep while arid-minded men cursed the dust and declining wealth.[13]

I am sure you see the point of this lesson from history. More than anywhere else on earth man must be the master of his destiny on the desert. He must seek a better life for himself and his progeny; he must devise an ever more accommodating technology; and he must accept the limitations imposed by the natural world until he has reached a point where he can use that technology in harmony with the land around him. Ortega y Gasset put it this way:

> Landscape does not determine, casually and inexorably, the destinies of history. Geography does not drag history along behind it; it merely incites history. The arid land which surrounds us is not a fate imposed on us, but a problem set for us. Each people finds its problem set by the land before it, and solves it in its own way, sometimes well and sometimes badly. Modern landscapes are the results of that solution.
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> Just as one knows the inner depths of a man by observing the woman he chooses, so there are few things which reveal a people so subtly as the landscapes they accept.[14]

We live in an arid land that knew the delicate respect of Spanish culture; if it becomes a barren waste, it will only be a sun-drenched monument to our own dried-up inner selves. Arid men make arid lands.

FOOTNOTES

[1] In a frenzy over "firsts" some like to think that Alvar Nuñez Cabeza de Vaca, the ship-wrecked survivor of Narváez' Florida expedition, was the proto-hiker of southern Arizona. His trek took him to El Paso, but after that he followed the customary route to Corazones which took him via Guachinera and into the lower Sonora River valley, missing Arizona by scant miles. Postulating that Esteban and Fray Marcos de Niza returned to the land of Cibola via the village of Corazones, the only logical route north was via the San Pedro that was later followed by Francisco Vásquez de Coronado, in 1540.

[2] Melchoir Díaz was sent westward to meet the naval support for Coronado; that tiny flotilla was under command of Hernando de Alarcón who eventually reached the mouth of the Colorado and made their way at least up to the Gila junction. The rivers were remarkable, but no one knew exactly where they were. Coronado sent Pedro de Tovar to conquer the Hopi and he brought back news of a large river which followed on to a land of giant people (quite probably the Yumas). To ascertain the facts another scouting party went out under Gárcia López de Cárdenas and they managed to stand on the brink of the Grand Canyon without being able to draw on the water far below to slake their thirst.

For Cabeza de Vaca see: Cleve Hallenbeck, Alvar Nuñez Cabez de Vaca, 1940; for Coronado see George P. Hammond and Agapito Rey, editors, Narratives of the Coronado Expedition, 1540-1542, Quivira Society, 1940; for Melchoir Diaz see the same; for Tovar and Cardenas, see the same; for Nuño Guzman see Hubert Howe Bancroft, North Mexican States; for Francisco Ibarra see J. Lloyd Mecham, Francisco Ibarra and Nueva Viscaya, Duke Univ., 1927;

[3] The reference is to the "Grito de Dolores" of Padre Miguel Hidalso in 1810.

[4] In a review of the Archives of Hidalgo del Parral, Chihuahua, Mexico, there were some four listed cases involving water rights or water flow cases, which pertain to the nature of this study. The search was carried through 1726 and the cases are all in the section on Administrativo y Guerra: 1685A, fram 65sq. Aguirre vs. Montenegro; 1697A, frame 354; 1702, frame 371 on water rights; 1704, frame 933, 941 or water use; 1721A, frame 4, appeal for use of water for Conchos Indians. The litigations do not affect the findings of this study although they do corroborate the approach described in the Spanish attitude toward water flow, cooperation, and recycling.

[5] José Ortega y Gasset, "A Theory about Andalusia," in the translation by Mildred Adams published as Invertebrate Spain (W.W. Norton, New York, 1937), p. 92. Unfortunately this volume uses a title of a series of essays by Ortega y Gasset but the collection presented in the English translation is not equivalent, hence the title of this essay is also given in the note.

[6] Information cited in a Requirimiento filed by Leonardo Játino, the newly appointed Visitor of the missions on the Sonora rivers; done in Matape, March 21, 1640. Archivo Histórico de Hacienda (AHH) Temporalidades 1126, expediente 1.

[7] Padre Juan Nentwig, Rudo Ensayo, trans. Eusebio Guiteras, Arizona Silhouettes, Tucson, 1951. p. 9.

[8] Eusebio Francisco Kino, trans. Herbert Bolton, Kino's Historical Memoirs of the Pimería Alta (Berkeley: University of California, 1948) Vol. I, p. 242, sq.

[9] Ronald Ives, trans. Sedelmayr's Relacion of 1746, Smithsonian Institution, Anthropological Papers No. 9, Washington, 1939.

[10] Nicolas La Fora, Relacion of an Inspection of the Frontier, 1767, Quivira Society, 19__. p. 134.

[11] Fray Diego Bringas to the King, unpublished manuscript translation by Bernard Fontana and Daniel Matson, Arizona State Museum Tucson. p. 78 sq. The Bringas report was written but never sent to the King in 1796. Original Spanish is in the Civezza Collection, Aetaneo Pontificale Antonianum, Rome.

[12] W. Clement Eaton, "Frontier Life in Southern Arizona, 1858-61," Southwest Historical Quarterly, Vol. XXXVI, pp. 173-92.

[13] James Rodney Hastings and Raymond Turner, The Changing Mile (Tucson: University of Arizona Press. 1965), p. 5.

[14] Ortega y Gasset, ibid., "Arid Plains, Arid Men," p. 164.