

# **GEORGE KNAPP'S WATERY VISION FOR KANSAS**

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One person can make a difference. George Knapp was just such a fellow and his life-time of work yielded more influence over Kansas water development during the 20th century than anyone else alive or dead. He played the pivotal role in giving voice to how Kansans viewed water, developed water for economic purposes, negotiated with other states over the division of water, and used law to regulate the uses of water.

But why call Knapp's vision "watery?" Like water itself, Knapp's vision flowed according to its own internal logic rather than always following the lines set by its initiator. Water is the source of life on this planet yet it is also one of the most corrosive substances known. It yields both good and ill for human beings, and Knapp's vision was much the same in that it has yielded both vitality and dissolution, good and ill for Kansans.

Knapp's thinking and actions were the shaped by his times. He could not escape the intellectual currents of his day, and as a result, he could not envision the problems encountered by those living today. There was no way in which he could anticipate all that has transpired in terms of water problems in this state. His concerns were unrelated to pollution, overuse, river access and endangered species. The most vexing problem for him was the lack of economic development resulting from what he saw as a mal-application of, or inefficient use of, the water resources in the state. He believed efficient water use for economic growth automatically resulted in an improvement of the human condition, or progress. Water development would provide for prosperous farms and for cities where education, creature comforts, and the arts would all flourish.

By 1940, Knapp saw a state with an economy stymied by poor crop returns, restricted urban development, and lower quality of life resulting from poor water uses. He wanted to change all of this, and he had a plan in mind. Over thirty years of work in the area of Kansas water development and problems had prepared Knapp to take the steps that he took to remedy this situation in 1945. His solution established the base for the course of water development in this state after 1945. This solution, the Kansas Water Act of 1945, unleashed a

torrent of economic gains, but it also resulted in some withering ecological and social problems.

Before we begin with Knapp, let's place two images in our minds so as to gauge in a concrete way the rather vague and abstract proposition that I've placed before you. One is a pre-Knapp era photograph of the Arkansas River taken at Garden City in 1878. The river is wide, and full – probably the photograph was taken during what locals called the “June Rise,” a time when the riverbed swelled with the snow melt from the Rocky Mountains. No trees lined the banks, which suggests a yet unbroken, undeveloped – at least in terms of economics – shortgrass, High Plains ecosystem. The second photograph was taken in 1986 near the same spot as the first. The river is but a trickle of that pictured in 1878, and the banks are heavily lined with sickly looking salt cedars and cottonwoods. Clearly, something dramatic has occurred to this river, and one explanation comes in outlining how George Knapp's vision contributed to this phenomenon.

It is useful to begin with the social and intellectual currents in which Knapp swam. The “American Conservation” movement was the key force governing the thinking of most engineers of Knapp's generation. Concepts such as efficiency, conservation, corporate-like government, scientific method and objectivity, and social engineering were a part of Knapp's daily lexicon. Knapp, like many other engineers in similar positions throughout the West, strove to achieve these goals through a centralized bureaucracy managed by scientifically trained people such as himself.

The American Conservation movement, itself, rested upon a much deeper ideological foundation; and in many respects, the American Conservation movement can be seen as the pinnacle of this mindset. This worldview, peculiar to peoples of European descent, started coming into focus around 1600. It overshadowed an earlier tradition that many scholars refer to as “organicism.” This older view of the world imparted everything around humans with life and imbued with spirit. This tradition also held that people were in a relationship with these animated beings and had to respect their individual spirits. For example, miners performed ceremonies seeking permission from the earth before digging into her live bowels. Europeans talked with trees and animals, and were involved in all kinds of relationship with these entities.

The mechanistic tradition was the ideology that supplemented organicism as the controlling worldview of western civilization. This line of thinking found some its most potent advocates among men like Rene Descartes, Galileo Galilei, Francis Bacon, and Issac Newton. They reasoned that matter was dead rather than alive and imbued with spirit, and as such, Earth's elements could, and should, fall sway to human understanding and control. Historians and philosophers have

labeled this drive the "domination of Nature."

For thinkers like Descartes, the earth was nothing more than a machine. Through science, the operations of the machine could be understood, then controlled and placed into the service of people, who stood apart from this machine because of their God-given souls. His credo might have read something like this: People are not a part of Nature. Humans, and only humans, have souls and self awareness, and these traits assign people the God-given right and obligation to dominate all of creation. Francis Bacon summarized this view in one cogent sentence: "I am come in very truth leading to you nature with all her children to bind her to your service and make her your slave."

Don't think Francis statement out of keeping with the ideology governing the engineers of Knapp's generation! His peer in Colorado, State Engineer Michael C. Hinderlider, penned the following thoughts about water control in 1931: "Controlled and guided by the will of man, [water] becomes his never tiring slave, turning the wheels of industry, energizing the levers of force, and bearing the burdens of commerce." Hinderlider simply reiterated Bacon some three-hundred years later in a way that Knapp certainly would have appreciated.

Now, what about Knapp's life's journey? How does his fit into the American Conservation mold, and how did it shape the Kansas water environment. His formative years were colored by a confident, expansive time in American history. American industrial and economic strength were the wonder of the world, and the young nation made its international appearance known to its elder rivals.

Knapp was born at Limeridge, Wisconsin on September 23, 1884, and within a few years his family moved to Iowa where he attended public schools. In 1909 he enrolled in the engineering department of Highland Park College, in Des Moines, Iowa. He spent three and one-half years there before he saw the light and journeyed to Manhattan, Kansas, where he took an instructor position in the Division of Engineering at Kansas State Agricultural College in February 1913. At the same time, he worked to complete his studies in engineering and in 1914 he graduated with his Bachelor of Science in Engineering. Several years later after he began acquiring some recognition as a hydraulic engineer, Kansas State Agricultural College awarded him the professional degree of Agricultural Engineer in 1922.

In the same spring that Knapp graduated he took a position with the Office of Irrigation Investigations under the U.S. Department of Agriculture, out in remote western Kansas – otherwise known as Garden City. Knapp arrived just in time to witness and study first hand the results of forces transforming irrigated agriculture in the state. Nascent pump irrigation systems dotted the valley; sugar

beets had become an established, high value, market crop; and the federal government was becoming a more important player in resolving interstate litigation, building dams and mediating interstate accords.

Knapp was responsible for investigating the cost of pumping water from wells for irrigation, and the use of water on farm crops. This trend had been in the making for about twenty years. Around Garden City, farmers had experimented with windmills in the 1890s. This technology proved useful for watering seldom more than five acres at a time. Later around 1900 electric and gas driven centrifugal pumps became the vogue. These pumps were more reliable and the cost of using them was offset by the profitability of raising sugar beets.

George Swink helped initiate beet growing around Garden City. His efforts led to the incorporation of the Arkansas Valley Beet, Land and Irrigation Company. In 1906, Spencer Penrose bought this enterprised and formed the United States Irrigation Company. This eventually became the Garden City Sugar Factory.

Knapp also knew of previous federal support for pump irrigation around Garden City. In the late 1880s, Kansas Senator Preston Plumb and the Senate Committee on the Irrigation and Reclamation of Arid Lands, explored the possibility of irrigation in the area. As a result of their work, the Reclamation Service built a pump irrigation system in 1906. It had twenty-three high volume pumps but technical difficulties and ample rainfall damped local farmer support. By the end of World War I, the federal had shut down the project and auctioned its holdings.

Knapp also observed the legal anarchy governing water use in the area. He was well aware of the results of *Kansas v. Colorado*, 1907. Kansas attorneys maintained a position based upon the riparian doctrine whereas irrigators around Garden City thought that prior appropriation, the position argued by Colorado attorneys, was better suited for them in western Kansas. Justice David Brewer, in May 1907, gave the Court's opinion, one that skirted the whole issue of water doctrine.

Justice Brewer formulated the doctrine of equity, a doctrine that still governs inter-state water suits today. Equity is an accounting procedure, and his thinking went this way: The economy in western Kansas was depressed because of Colorado water uses; however, the economy throughout the Arkansas River Valley in Kansas was growing every year. Consequently, Coloradans did not have to curtail their water uses. Why hurt that growing economy? But if conditions in Kansas ever changed significantly, then Kansans would have a case.

Knapp was familiar and well versed with all of this history, and he knew the principle players well. He worked to promote pumping with the irrigators around Garden City. He knew the managers of the Garden City Company. He discussed legal matters with local and state attorneys. In 1916 he received a promotion and became superintendent of the Garden City Experiment Station, and in this capacity he furthered his work of keeping records of tillage methods, crop rotations and crop varieties under dry land agriculture, as well as the methods, crop varieties and studies of irrigated agriculture. He retained this position until 1919. In the meantime, his reputation as one of the best authorities on water use in the western portion of the state grew.

During this same time period, the Kansas legislature created offices designed to guide and regulate irrigation in the state. In 1917 legislators created the Kansas Water Commission established by the legislature. The duties of this office included:

1. Making an inventory of the water resources of the state; and
2. Developing systematic, general plans for the complete development of the water resources of the state.

In 1919 the state legislature created the office Commissioner of Irrigation, which fell under the jurisdiction of the State Board of Agriculture. This position replaced the former State Board of Irrigation (created in 1913), and the State Irrigation Commissioner (created in 1915 and appointed by the Governor).

In June 1919, Knapp received the appointment as the first Commissioner of Irrigation. In this capacity he was responsible for :

1. gathering data, information and statistics concerning the water supplies of the state, and the use of water on crops, and
2. to advise with farmers as to the feasibility of proposed irrigation projects; to prepare plans for farm irrigation pumping plants.

From this time on, Knapp would begin to address water issues on a broader state-level basis, but with always more time spent on affairs in the western portion of the state.

As late as 1929, he saw no pressing need for state regulation of groundwater uses beyond the Irrigation Acts of 1891 and 1911. As he saw it, the 1891 act made groundwater in the northwest portion of the state submissive to the prior appropriation doctrine (first in time, first in right) and the 1911 act tied groundwater use in the southwestern division to the land above it. Knapp summarized his views this way: "I believe Kansas can get on for another fifty years at least without any necessity for State control or regulation of groundwater." The limited application of groundwater rendered these laws innocuous to its development.

Knapp knew that the eastern portion of the state had its own water problems. By 1936, he purported a need for "reserve storage for conservation and flood control." This reserve would serve municipal uses, provide flood protection, and maintain stream flows during the late summer months. But still, this need for conservation did not yet translate into the need for a state-wide water code.

Besides predicting the legislative needs for water development, Knapp began representing the state in a series of inter-state negotiations. These accords would establish the bonds governing the division of water flows between Kansas and its neighbors. In 1923 the legislature passed an act providing for an interstate river commissioner to be appointed by the Governor and George Knapp was appointed. The commissioner's first negotiations were with Delph Carpenter, the father of interstate river compacts, which resulted in an unsuccessful compact that would have regulated the a Purgatory River for supplemental flows in the Arkansas River beyond the Colorado state line.

In the early 1940s he negotiated the Republican River Compact, which was ratified by Congress in 1944. This was to settle issues with Colorado, Nebraska, Kansas, and the Federal Power Commission over the Republican River watershed. And later in the 1940s he would contribute as an important member of the Kansas delegation negotiating the Arkansas River Compact of 1948.

In the 1920s, Knapp's power over state water issues continue to be expanded by the state legislature. In March 1927 he was made the Chief Engineer of the Division of Water Resources, which fell under the control of the State Board of Agriculture. Soon, about a dozen legislative acts established his responsibilities, among which numbered

3. investigating the water resources of the state;
4. regulating the building of dams, or placing of obstructions in rivers or streams;
5. regulating drainage and levee districts
6. carrying out the decrees, the decrees of the courts in the matter of the distribution of water from a stream for irrigation among those entitled to it.

In short, he controlled all aspects of water development in the state except for those matters falling under the jurisdiction of the State Board of Health, and the State Forestry, Fish and Game Commission.

The depression and the New Deal brought into focus the need for a more uniform water code for the state. Part of this need arose in light of the state's desire to tap the bountiful well of New Deal dollars. So, in 1939 the legislature created a special committee to devise a state-wide water plan. Soon afterward, especially with the economic boom stimulated by federal

spending for World War II War Department contacts, in 1941 legislature gave to the Division of Water Resources the power to regulate ground water appropriations. This was, in part, to facilitate urban growth like that occurring in Wichita, and Wichita officials sought application for ever more rights to the Equus Beds to supply a rapidly growing urban population.

All of these economic changes turned Knapp's thinking about how he saw the need for groundwater and surface flow control.

On the whole, the Water Resources of Kansas, remain yet relatively undeveloped and until recent times, the natural flow of streams and storage in ground water reservoirs in general, have been sufficient for most of the purposes for which water was needed. It is apparent, however, that further growth of industry, agriculture and commerce in the state must be accompanied by development to make more of the state's water resources available for use. An extensive program of construction of works for flood control, irrigation, water supply and stream flow regulation, is definitely in prospect for Kansas in the post-war era.

But the fledgling power to regulate groundwater proved short-lived, and the loss of this authority threatened the development of regulatory power as Knapp had envisioned it.

Warren L. Noe, and Knapp had encountered intense opposition from Benard Peterson, county attorney for Harvey County. And in 1944 the state supreme court, in its decision of The State of Kansas, ex rel. Bernard Peterson, County Attorney of Harvey County v. the Kansas State Board of Agriculture et al., ruled against Knapp, Noe, the Board of Agriculture, and the state statute. Chief Justice W.W. Harvey wrote: "we have no statute which authorizes the Division of Water Resources to regulate, allocate or otherwise interfere with the use and consumption of underground waters."

This led to the Knapp's work on writing the 1945 water act. The way in which Knapp's thinking ties into the mechanistic tradition can be easily seen in a statement that he made about the riparian doctrine: "Unused water cannot wisely be held in perpetuity for a common-law owner who may never have use for it, without resulting in underdevelopment, permitting the water to flow out of the state and on toward the ocean, as an economic waste and loss of a valuable natural resource." The key here is understanding that Knapp saw undeveloped and unregulated water as a "economic waste." Controlled and regulated through science, Knapp believed, water would serve the economic well being of the state, or in other words, it would lead to progress.

Governor Andrew Schoeppel of Wichita certainly favored a new water law for the state. He placed Knapp in charge of his Governor's Committee on Water Appropriation. This committee included Dr. Frederic H. Guild, a political science professor at K.U., John Glenn Somers, a judge from Newton, State Senator Henry S. Buzick, of Sylvan Grove, State Rep. Vern Mayo of Garden City, who also chaired the House Irrigation Committee, Rep. Chris Green, a banker from Courtland, who also served as the director of the Kansas State Reclamation Association, Paul W. Applegate of Wakeeney, an attorney and the Kansas director of the National Reclamation Association, and Gaylord Munson, from Junction City, who served as the president of the Board of Agriculture.

Their report, fifty-three pages long, stated that the prior appropriation doctrine would "lead to maximum development and use" of water. It is important to note how no one thought of pollution as a spinoff of economic development, or how little fish, wildlife or recreational interests were considered during these deliberations. The emphasis was solely on economics, not ecology.

The report led to the passage of the Kansas Water Act of 1945. In March 1946, Governor Schoeppel signed Knapp's handiwork, and Kansans had a new set of law to regulate its water development. Economic development became the highest goal for water use. Beneficial use replaced the common law assumptions of reasonable use that before had protected downstream quality and quantity from degradation. In 1946, an article in *Kansas Business Magazine* stated: now "Kansas rivers would 'go to work' when tamed by control programs." Such statements were echos of Bacon's and Hinderlider's slaves. The article went on to say, "our rivers in Kansas have led a pretty lazy carefree existence . . . harnessed to full time jobs by multiple purpose dams and reservoirs these streams can do much to help us in expanding agriculture, business and industry of the state."

The way in which Knapp helped to put water to economic uses can also be seen in the way in which the Arkansas River Compact was negotiated and implemented by 1948. A question about the affect of the compact on Cheyenne Bottoms came before the negotiators. Fish and Wildlife Service regional director, R.A. Schmidt, questioned Knapp and the other commissioners. Knapp derailed Schmidt's concerns by claiming that providing for Cheyenne Bottoms was an intra-state concern, not an inter-state concern relevant to the compact negotiations. In essence, Knapp was trying to so no connection of the operations of John Martin Dam and Reservoir to the ecological health of Cheyenne Bottoms. Knapp's position won the day because the Arkansas River Compact was essentially an agreement on how to divide stored assests, and thereby made water only a commodity rather than a living entity. Water was a part of Bacon's inert mechanical world, not a vibrant member of an organic



universe. John Martin Reservoir simply served as the account, and the river was nothing more than the deposits.

Clearly events of the last two decades reveal that the Arkansas River Compact has not solved the problems between Kansas and Colorado. The Republican River Compact has not solved the problems over that river either. Moreover, the ecological problems in Kansas streams mount.

One hundred and forty years ago Kansas streams, for the most part, ran clear and clean. Consider a small creek once aptly named Paradise, which flows through Rook and Russell Counties. J.R. Mead, a bison hunter and founder of Wichita, Kansas, gave this account of the valley in the early 1860s.

The Mecca of the Hunter's Dream, and the Indian's Delight. The beautiful valley, clear, cool water, plenty of wood for camp fires, abundance of game of the grandest sort in the world! [H]ere roamed the grand buffalo and slothed the noble elk, the timid deer, antelope, lordly strutted the turkey gobbler and sulked the wolf, coyote, the lynx, the coon, possum, skunk, porcupine, beaver and other game in abundance. The ducks, geese, prairie chickens, and the quail here found their home, seldom disturbed by man.

Mead seemed to recognized a simple, yet critical, point: water is the basis of life, and as such, the highest value that Kansans can attach to water is in the preservation of life.

But the 1945 Water Act, which placed economics as the highest value for water, disregards ecological values. The endangered species list for Kansas bears the point. Depleted and polluted rivers, like the Neosho or the Smoky Hill, are the source of the problem. Federal and state lists of endangered or threatened species contained mostly aquatic species. As of 1992, sixty species were on these lists, and of these ten were amphibians, fourteen were fish, and thirteen were invertebrates, ten of which were mussels.

The mussels are trying to tell Kansans something. Of course they cannot talk, but they would surely be screaming "Clean Up Our Waters," if they could. Mussels are at a distinct disadvantage in dirty water. They do not move as adults and they filter about nine gallons of water per day where they sit. They draw their sustenance from filtering the water, and if the water is polluted then the mussels' internal organs suffer debilitating consequences.

Clearly, Kansas faces some severe water quality problems. In 1994 the Council of State Government rated Kansas water courses as the worst polluted streams in the nation, or streams that don't support designated uses established under the Clean Water Act. In early 1995 a report from the Kansas Department of Health and Environment warned that more than half of the 22,500 miles of rivers

and streams in the state are too polluted to serve as a source of water for towns or for farmers to irrigate crops. Around eighty percent of these same streams have bacteria and manure counts so high that swimming is hazardous to human health. And now the Kansas River is listed as one of the twenty most threatened rivers in the nation.

What accounts for this pollution? Much of it comes from the economic development abetted, in part, by the 1945 Water Act. Seventy-seven percent of the streams are polluted by feedlots and dairies, and sixty-six percent by non-irrigated cropland. Around forty-one percent suffer from irrigated cropland runoffs, and the oil industry pollutes twenty-six percent of the streams in the state. Over seventeen percent are tainted by poor sewage treatment, some twelve percent by urban runoffs, and four percent of the streams suffer from industrial wastes.

In terms of our water laws, we have failed to protect water and hydraulic ecosystems, and by extension life itself. Our laws, especially the prior appropriation water laws of this state, completely discount the value of water in the preservation of life. Rather, we have made the highest value of water the promotion of economic growth.

Photographs of earth from Apollo spaceships have dramatically changed the way in which people see this planet, our home. A view of a lonely Earth hurtling through the infinite blackness of space makes a few things obvious. As Kansans, we occupy a small place on this tiny swirling globe. What is particularly notable about Earth is its free flowing water upon which all life depends. Earth is the only planet in our solar system to have free flowing water, the solvent of life.

According to Juan Oro, a molecular chemist at the University of Houston, a living planet will exhibit the color of blue. The other planets share the same elements as Earth, but only Earth has free flowing water *and* life. Humans are mostly water, and in a literal sense, the way in which they treat water becomes the way in which they treat themselves.

The lesson is simple, treating water as nothing more than an exploitable economic commodity has also led to serious human problems, because people are connected inextricably to water. Quantum physics has given a completely overshadowed the mechanistic view of life and the earth. One of its chief lessons is that no matter what we do as humans, we cannot separate ourselves apart from the ecosystems that nourish us. What Knapp would have done differently had he known more about quantum physics is at best conjectural. But Knapp's historical accomplishments can serve us in another way.

It is wise for us to remember Knapp when we strive to make a difference. As had Knapp, we will confront apparent problems, devise solutions, and many of these remedies will solve the problem at hand. But the solutions will also spawn unanticipated problems. Today, we as Kansans can no more extract ourselves from the knowledge that shapes our understanding of our environments than Knapp could escape the prevailing views of his time. Still, our understanding of the Earth is certainly not the same as his, and our understanding cautions us to take fewer intervening and altering steps before we take prudent measures to preserve our ecosystems, the means of life as we know it. Knapp had the courage and conviction to change state law to meet the social and economic conditions of his times. The question for us is: Do we have the same resolve and ability to change law to meet the social, economic and ecological conditions of our own times?

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