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**RIVERS AND DAMS OF THE AMERICAN EMPIRE.
SOCIOLOGY OF THE ENVIRONNEMENT AND THE SPHERE
OF POWER**

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Description Project

BlueGrass - Les luttes pour « l'or bleu » : des mobilisations locales pour l'eau à l'internationalisation des politiques environnementales. Une analyse multi-niveaux. Programme de recherche ANR mené dans plusieurs pays d'Amérique: Bolivie, Brésil, Colombie, Etats-Unis, Mexique et Pérou. Ce programme est porté par l'unité mixte internationale du CNRS EGlobes et l'université of Arizona à Tucson en partenariat avec le Centre d'études mexicaines et Centraméricaines au Mexique, le CIRAD en France, l'Institut français d'études andines en Bolivie, Colombie et Pérou et l'université de São Paulo au Brésil.

Description Project

BlueGrass - The struggles for "blue gold": from grassroots mobilizations for water to the internationalization of environmental policies. A multilevel analysis. ANR research program conducted in several Latin American countries: Bolivia, Brazil, Colombia, United States, Mexico and Peru. This program is supported by the CNRS Unité Mixte Internationale EGlobes and University of Arizona in Tucson in partnership with the Center for Mexican and Central American Studies in Mexico, CIRAD in France, the French Institute of Andean Studies in Bolivia, Colombia and Peru and University of São Paulo in Brazil.

Descripción del proyecto

BlueGrass - Las luchas por el "oro azul": Desde las movilizaciones locales por el agua a la internacionalización de las políticas ambientales. Un análisis de múltiples niveles. Programa de investigación ANR conducido en numerosos países de América Latina: Bolivia, Brasil, Colombia, Estados Unidos, México y Perú. Este programa es conducido por la Unidad Mixta Internacional CNRS EGlobes y la Universidad de Arizona en Tucson en sociedad con el Centro de estudios mexicanos y centro americanos de México, el CIRAD en Francia, el Instituto Francés de Estudios Andinos en Bolivia, Colombia, Perú y la Universidad de São Paulo en Brasil.

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RIVERS AND DAMS OF THE AMERICAN EMPIRE.

SOCIOLOGY OF THE ENVIRONMENT AND THE SPHERE OF POWER

“This was the American Dream: a sanctuary on earth for individual man: a condition in which he could be free not only of the old established closed-corporation hierarchies of arbitrary power which had oppressed him as a mass, but free of that mass into which the hierarchies of church and state had compressed and held him individually thrilled and individually impotent.”¹

William Faulkner

INTRODUCTION – OBJECTIVES AND INSTRUMENTS OF A SOCIOLOGY OF THE ENVIRONMENT

Over the last few years, the environment has become a subject of central importance in the human and social sciences: in both the United States and Europe, interest in political ecology and environmental ethics has grown dramatically (Gagnon 2008 ; Hache 2013); environmental history has become a vast field of study, at once structured and diversified (Lochet & Quenet 2012); political science researchers are focusing on approaches to the governance of resources (Olstrom 1990); and “instruments” have been implemented by institutions responsible for the environment (Lascoumes 1994; Lascoumes & Le Gallès 2004). However, environmental sociology is finding it difficult to constitute itself as a specialist field in its own right, to the degree that it is, on occasion, possible to speak of a “resistance” on the part of the discipline to defining an object of research that is still relatively absent from its *raison d’être*, for example the jurisdictions of various institutions (Kamaora & Vlassopoulos: 2014). As well as academic blockages, one should also mention a reticence to accept the demands of a field of applied research largely dominated by international expertise, whose centers of interest in terms of social issues are confined to a small number of well-defined themes, among which are adapting to climate change, reporting perceptions of the environment, modeling the decision-making process, and analyzing the participation of stakeholders, in most cases assimilated to “economic actors.” Furthermore, the pragmatist approach (Latour 1991; Hache 2011) consisting of studying the relations between society and its “other,” namely nature, which seems to be increasingly fashioned and transformed by human action, appears to be trapped in an epistemological constructivism which does not so much efface the “great dichotomy” (nature/culture; object/subject, etc.), largely imagined and reinvented a posteriori, as dissolve its object in human practices carried out in a kind of sociological void.

An attempt will be made here to examine the potential foundations of a sociology of the environment, both from the perspective of research carried out on the construction of the object to be studied, and of the methodological tools implemented to achieve that end. In this regard, we shall undertake a review of works on “water wars” beginning in the late 19th century in the western United States, a region whose economic development was based on the exploitation of its natural resources (Pincetl, 2012). These researches ask questions about modes of domination associated with the unequal distribution of natural resources and their transformation into basic services via major technological systems, a transformation that made possible the construction of contemporary cities and metropolises and their “networks of power” (Tarr & Dupuy 1988). In effect, the region has witnessed the development of gigantic infrastructures (dams, aqueducts, etc.) designed to encourage the large-scale irrigation of agricultural land and the expansion of cities. Beginning in the 1930s, public policies developed in the urban East, particularly programs developed by federal agencies, contributed to the installation of technical systems that gradually transformed the West into the bread basket of the East (Cronon, 1991), and, later, into an autonomous center of economic development (Leslie 2005).

The process was not without its ups and downs, and conflicts over the distribution of water between valleys, cities, states, and professional sectors were commonplace. Centralized decision-making authorities came up against powerful collective resistance, ranging from community-based protests to the environmental movement and legal and administrative actions. Research on conflicts about water provides a different image not only of the way in which the environment is regulated in the western United States, but also, and above all, of the American social

1. William Faulkner, “On Privacy (The American Dream: What Happened to It)” in *Essays, Speeches and Public Letters*, ed. James B. Meriwether, New York: Random House, 1965, p. 62. Originally published in *Harper’s Bazaar*, July 1955

sciences themselves. It emphasizes power relations and acts of resistance, and systematically deconstructs the mechanisms of imperial domination, managed from the very heart of the Empire, of the region's rivers, the dams that control their courses, and the energy production feeding economic development. This field of research demonstrates that the American West cannot be considered an empty, arid tourist destination in which pioneers in search of a new frontier realized the "American Dream," but that, instead, reveals that the scarcity of water is at once a resource and a problem or, more precisely, the product of multiple appropriations by groups – social organizations, local decision-makers, federal elites – struggling for control of both water and power. This vision was developed by historians of the environment like Donald Worster (1985) and, later, by social scientists like John Walton (1993) and Wendy Espeland (1998) – three

authors whose research will be analyzed here. Thus, this article does not present a well-defined and identifiable corpus, and still less a "school" (Topalov 2003). Instead, based on an ensemble of books on a vast socio-ecological area functioning as a kind of "enlarged case study" (Burawoy: 2009), it highlights analytical principles applicable to a sociology of the environment: a sociology that focuses on specific forms linked to environmental issues and that takes into account the multiple layers of institutions and instruments which fashion the environment as a "natural problem." Nevertheless, the water regulation cannot be reduced to institutional management alone. A sociological approach has also to take into account the way in which conflicts are inscribed in spaces of power in which local power centers and multiple economic forces are confronted with a bureaucratic field that is at once centralized and decentralized.

1. THE DESERT OF THE "AMERICAN DREAM": INFRASTRUCTURE AND SYMBOLIC CONSTRUCTION

Few regions are associated with images as idealized as those linked to the desert landscapes of the American West. First and foremost, the region's spectacular landscapes are the incarnation of the Wilderness considered as an ideology structuring the relationship between North Americans and their natural environment (Nash: 1967). These landscapes represent a "frontier," an external territory that society attempts to circumscribe by introducing parks and conservation policies. While the American West is a desert, it is nevertheless an inhabited desert. Inhabited, or, in other words, prey to a growing urban expansion throughout the 20th century, an expansion coupled with the effects of climate change. As Edward Abbey wrote in *Desert Solitaire*, one of the founding works of political ecology: "Water water water... There is no shortage of water in the desert but exactly the right amount, a perfect ratio of water to rock, of water to sand, insuring that wide, free, open, generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different from other part of the nation. There is no lack of water here, unless you try to establish a city where no city should be..." (Abbey 1968: 130).

The ultimate site of ecological nostalgia and conservatism (Jacobi 2003), the West is also the birthplace of American anthropology; in the 19th century, as unknown lands were explored and cartographic missions organized, an interest in local native populations developed (Fowler 2010). Information gleaned in the various exploratory missions to the Colorado River, the Green River and the Grand Canyon undertaken by John Wesley Powell around 1879 was later used in the planning of major hy-

draulic projects in the region on the basis of a form of governmental science piloted by the federal government (Stegner 1953; Worster 1991). In the following decade, Powell was appointed director not only of the US Geological Survey, but also of the Bureau of Ethnology at the Smithsonian Institution in Washington DC, where his position was somewhat weakened by the maneuvers of Senators defending "local interests" against federal projects. He was probably the first to define the West as the "arid region" of the United States at a time when the area still represented a "frontier" and a dream of freedom.

This "Paradox of the American West," to quote the historian, Donald Worster (1982; 2001), raises a series of questions concerning the impact of aridity on natural resources and the use made of them, as well as on ways of living and the institutions regulating economic and social life. How did people who had taken possession of the land adapt to ecological conditions? Achieving that promised freedom was a correlative of a desire to transform nature: "Those five centuries of learning about the Colorado (actually most of the learning was concentrated in about five decades) seem almost never to have raised in people's minds a simple question: What changes in society would be required to master the Colorado's course? Only Powell gave the matter much consideration; he recommended that both big government and big business stay away from the river; that ordinary settlers be encouraged to organize themselves into 'cooperative commonwealths' and set about in their own way to make use of the watershed. Had his suggestion been followed, development would have been confined to the smaller side streams and upcountry valleys, for the main river was

too strong for any local group of settlers, with limited capital and expertise, to harness" (Worster, 1982: 67). In just a few sentences, Worster paints a convincing picture: the West should have been conquered by organized, autonomous communities of smallholders incarnating the "American Dream." However, in the end, it was the work of the federal government and of economic forces more powerful than they were.

In fact, it is generally acknowledged that the major projects of the 20th century were not managed by self-organized smallholders, for the simple reason that they did not have the capacity to finance such infrastructure, particularly the construction of the various dams along the 2,300km course of the Colorado River². These projects were designed to regulate the flow of a river running through the arid and semi-arid areas of several states (Colorado, Utah, Nevada, Arizona, California) before flowing, almost in the forms of a stream, into the Gulf of Mexico. In 1994, the completion of the Central Arizona Project Canal, begun in the 1960s to meet the irrigation needs of the agriculture of southern and central Arizona, also contributed to meeting the growing urban demand of the Sun Corridor (Phoenix, Tucson). In the end, the development of the Colorado River not only enabled California – notably the Imperial Valley and Los Angeles (Leslie 2005) – to expand throughout the 20th century, but also made possible the expansion of the entire area to the west of the Rockies (Summitt 2013), a region less desert-like than at first appeared and, in reality, largely structured by agricultural irrigation. Anyway, no more than small farmers, agribusiness did not, on its own, have the resources required to build such infrastructure. Toward the end of the 19th century, large-scale farmers had to call upon the federal government (Reisner 1985) in order to mobilize and instrumentalize the ideal of the "American Dream" of the frontier and the development of smallholdings to arrive at its ends. In so doing, however, it provoked a number of conflicts over rights to the use of water³

2 Everyone has heard of the Hoover Dam and the Glen Canyon Dam, completed in 1946 and 1964, respectively, but, in reality, several thousand dams and canals were built throughout the region within a period of a few decades.

3 As Wallace Stegner (1953: 226) explains: "In general, American Law was based on English Common Law. But the Common Law, accumulated out of the experience of a rainy country where water was no problem, affirmed only what was known as riparian rights to the water of streams. The man who owned the bank could make any use that he pleased of the water, but he had to return it to the stream when he was not through with it. That worked for running grist mills, but it did not work at all for irrigation, which used the water up instead of taking advantage of its passage. In the West, before and since Powell's time, there have been heads broken with irrigation shovels because of someone's attempt to apply riparian law upstream, and take uncontrolled advantage of the water. In an irrigating country, appropriation becomes an essential criterion, and delicate refinements about more or less beneficial uses, and priority, and dipping rights, and a great many other complications still unheard when Powell wrote. There was nothing wrong with the riparian law for the West except when downstream bank-ow-

While, in a semi-arid environment, irrigation reduces uncertainties linked to natural factors, a high degree of institutional regulation is nevertheless required to resolve conflicts about access to water between different groups of farmers. The political ideal of autonomous community organizations managing water supply, presented as the most effective solution in terms of guaranteeing economic development, cooperation and social justice, echoed Jeffersonian ideology, according to which agricultural smallholders constitute the heart of American democracy – as if the civic virtues allotted to them, supported by the pastoral mythology of their communion with nature, enabled them to incarnate the role of regulator. With growing urbanization affecting the desert lands of the West, and the New Deal period destined to provide a remedy for the Depression, approaches to economic development were indissociably linked to the federal government, which became the manager and main contractor of major water projects at the national scale (Pisani 1984). The predominant role played by the driving forces of economic development that were large farmers, San Francisco investors, and the Los Angeles elites undermined the democratic hopes of the previous period (Reisner 1985). Although they may have changed scale, conflicts over the use of water persisted. Disputes now involved not small farmers, but the states of the West, which fought against California for a share of the Colorado River in order to boost economic prosperity.

The region is, therefore, more than a natural framework colonized by man, as in the semi-mythical stories about "how the West was won." Indeed, it forms a complex socio-ecological system, marked by the presence of social organizations and institutions actively working to transform and regulate nature (Ostrom 2009), a process incarnated by the "outgrowths" represented by the cities of Las Vegas, the tourist destination located in the Mojave Desert (Nies 2013), and Phoenix, an "unsustainable" city in the Sonora Desert (Schipper 2008; Ross 2011). The West is located at the crossroads of a series of needs and desires: the conquest of new demographic spaces and pressures; the influence of federal bureaucracies and local authorities; demand for agricultural activity to guarantee food supply and exports, etc. It is, therefore, all the more difficult to reduce the development of the US desert to an ineluctable process of population increase and economic development, especially in that the "American Dream" was used to legitimize a wide variety of approaches, including economic modernization through agribusiness. It is, therefore, the symbolic construction of the desert, nourished by various narratives concerning the conquest of the West – ranging from paeans to "modernization" to catastrophist critiques of that same process – that should, first and foremost, be analyzed from a

ners sooner or later found themselves with riparian rights to a dry creek bed. Water is the true wealth in a dry land; without it, land is worthless or nearly so. And if you control the water, you control the land that depends on it. In that fact alone was the ominous threat of land and water monopolies".

historical and sociological perspective.

In effect, *contra* the enchanted vision of the “American Dream,” it is, of course, possible to highlight the destruction engendered by the construction of the hydraulic society and, like Marc Reisner in *Cadillac Desert* (1985: 481), question whether it was really necessary to build such large dams rather than offstream reservoirs, or to irrigate relatively infertile land instead of developing a less extensive form of agriculture. This environmental, and even civilizational catastrophism – as indicated by the title of the last chapter: “A Civilization, if You Can Keep It” – nevertheless leaves unaddressed the question of the logic underlying the approaches at play. Reisner’s narrative of the various companies involved in the field delivers a somewhat absurd vision devoid of meaning or, more exactly, of motivations: politicians, administrators, engineers and landowners fighting for or against major projects are cast as either cynics corrupted by power and money, or “political idiots” who fail to understand the implications of their actions, namely the construction of infrastructure and the kind of economic development enabled by it. They are either traitors to the “American Dream” or fanatics of technological modernization. The end of *Cadillac Desert* show the brute, and indeed brutal force of economics, but gives little understanding about how the management of rivers and dams is also a symbolic construction involving, beyond mere personal in-

terests, collective struggles over the principles informing a legitimate vision and division of the world and its development. It is, therefore, an interpretative framework that integrates various levels of analysis, notably relations of domination at the intersection of local powers, and the fields of economics and bureaucracy, that should be elaborated, with a view not only to reconstituting the chronology of individual environmental events, but also to bringing their underlying social logics to the surface. Worster’s work is often presented as a simple transposition to the vast landscapes of North America of the perspective of the despotic states of Asia developed by Wittfogel, according to whom agricultural irrigation would, due to the organization of labor and capital required to build the infrastructure, lead to a centralization of political power. But Worster’s interest is broader in scope; in fact, his focus is on an original definition of the hydraulic society and the power structures that developed in the American West: “a social order founded on the intensive management of water. That regime did not evolve in isolation from the industrial system, of course, but all the same it was a distinctive emergent, reflecting the geography and arid climate of the state” (Worster 1992: 55). His emphasis is less on the omnipresence of a centralized state constituted through approaches to water management, and more on the impact of relationships of domination traversing all the social groups concerned.

2. HYDRAULIC SOCIETY AND DOMINATION

Worster outlines the implications of the social and ecological transformation of California, which enabled it to strike a balance between the ideals of the West (freedom, democracy, individualism) and its mythical history (the saga of men and women leaving civilization to dig out with their own hands a means of subsistence from the bowels of nature, the story of liberation from the East, of tradition and control, the tales of cowboys and other intrepid adventurers). Veering away from a conception of the West as a simple colony of the East – as described by Cronon (1991) – he suggests that the concept most suitable to defining its specificity is that of empire. This empire emerged in the 19th century with the transformation of a desert region into a verdant, prosperous territory: the introduction of major hydraulic projects oriented a fast-developing California toward the export of agro-industrial products. This empire was structured around a politico-bureaucratic elite from the metropolises of the East Coast and wealthy local farmers, motivated by a shared desire to transform an arid desert into a fertile oasis and a source of profit.

In this framework, the manipulation of rivers led not only to the introduction of new models of human interaction, but also of new relationships of domination. Worster provides a review of the principal approaches to water management characterizing the history of irrigation based on specific criteria such as the scale of water networks, the type of managerial authority operating them, and the goals pursued by the irrigators. In the American West, the approach to water management characteristic of the capitalist state was accompanied by the emergence of a social order within which power and influence were held at once by a private sector dominated by wealthy farmers, and a public sector composed of bureaucratic planners and representatives of politicians, supporting one another in regard to the elaboration and control of water resources. This created a hierarchical society in which workers were used as instruments of environmental manipulation, while, at the same time, rivers became a means of control over the workers. In such a society, in which the action of the capitalist state is guided by the constitution of an empire, water is no longer thought of as a biological necessity, as it would be in the kind of sub-

sistence economy characteristic of traditional societies. Water here becomes a commodity, the value of which is assessed in function of what it is capable of representing (an irrigated parcel of land, kilowatts of energy) or producing (bales of cotton or truck loads of oranges).

To transform a sterile desert into an economic product, the capitalist state thus accorded a place of honor to the science of engineers, whose technological prowess made it possible to build gigantic dams. The main protagonist of the development of water infrastructure in an arid environment, the state appears less as a body echoing the voice of the people, and more as the product of an elite motivated by a spirit of conquest and power. In this regard, Worster partakes of the ferocious critique developed by Arthur Maas in *Muddy Waters* (1951). Professor of Political Science at Harvard, Director of the Harvard Water Program from 1955 to 1965, and consultant to a number of public sector environmental agencies, Maas in effect denounced the unbridled power of a federal elite, the US Army Corps of Engineers, that he defined as an insubordinate, exclusive "clique," with little concern for public wellbeing. Linked to the senators of the West and the economic forces that they represented, this lobby, one of the most powerful in Washington, composed of around two hundred officers from the upper echelons of society (controlling nearly 50,000 engineers on the ground), was responsible, according to Maas, for preventing the needs of the region from sufficiently being taken into account.

In the early 20th century, the expansion of the American West was threatened by a problematic ecological situation due not only to repeated droughts, but also to a lack of sufficient capital for constructing the irrigation systems needed by small, family-run farms. The conquest of the desert demanded large-scale irrigation that could not be managed unaided by small farmers, but that presupposed a new mode of control and organization. Regional politicians and entrepreneurs thus turned to Washington. They appealed primarily to a federal agency set up in 1902 – the Bureau of Reclamation – which promoted the idea that exploiting the wild rivers of the West with a view to boosting local economic prosperity and carving out a place in the wider world should be built around the expertise of administrator-engineers, the only people capable, thanks to their scientific knowledge, of implementing a large-scale irrigation system.

The question therefore arose as to who was to control the system: capitalists or the people? Some saw in the conquest of the desert an opportunity to create a technological democracy: the natural characteristics of the region presupposed a form of social organization based on watersheds (districts) regulated on an associative basis by a local corpus of entrepreneurs and politicians; access to irrigable plots of land would be limited in order to preclude cattle barons from making a free/private use of public domains, or forestry companies from selling land off cheap, while non-irrigable land would be managed internally, without the intervention of professional bodies from outside the American West. The setting up

of a district following the natural topography of the local watershed would thus call into question the capacity of citizens to achieve self-determination by decentralizing sources of authority and power. It would express defiance in regard to the federal government and capitalists and, at the same time, a quasi-absolute faith in technocrats and administrator-engineers, who presented themselves as the sole guarantors of regional development. For others, however, the new social order announced by the introduction of large-scale irrigation systems was tantamount to the creation of an industrial empire based on agricultural land. The transformation of the desert into productive farmland presupposed access to a huge amount of capital which regional administrations were unable to provide without help from external sources. Consequently, a large-scale water management system could not be envisaged without federal aid. Thus, in the early 20th century, "federalization" of the development of the West reflected a questioning of the modalities of economic expansion policy.

According to Worster, the main reason the centralizing elites promoted an irrigation program was to boost the wealth and influence of the country in order to serve their own interests: they represented a new generation of administrator-engineers who enjoyed a powerful position within government, who had little belief in democracy as a social remedy, and who defended the idea that only a technological elite could contribute to national expansion. In this regard, Worster disagrees with those historians who see in the legal and institutional concretization of this conception (the 1902 Act and the setting up of the Bureau of Reclamation), a victory for ordinary people, who were provided with the right to own land and accrue wealth. For Worster, the federal agency's decision to make land available represented, above all, an opportunity for speculators to get rich quick by purchasing plots of land, not with the intention of exploiting them, but with a view to selling them on as soon as access to water had been guaranteed. Indeed, that decision also reinforced the position of previously established landowners. On occasion, the Bureau's involvement in the reorganization and development of a valley was not carried out entirely to the advantage of private interests. In this schema of national expansion, for large, established landholders, "federal water" was a real godsend.

On the other hand, for small farmers who had migrated to the West, working on public land that had never been exploited before was associated with hard manual graft and debt. In these conditions, the hoped for mass immigration of endless waves of people who had previously lived in rented accommodation and who were willing to leave overpopulated cities behind in order to become landowners did not really take place. In fact, the conquest of the West was structured around a relationship between a national politico-administrative elite and a regional economic elite. It cannot be maintained that the West was developed by an omnipotent federal government, as in

Wittfogel's analysis⁴; Worster suggests, on the contrary, that the effects of a composite field of power, made up of coalitions established at multiple administrative levels are to be sought in the sphere of the control of resources. California provides a fine example of a transformation from a rural region to an agricultural-industrial complex through the emergence of a new form of domination based on a parallel accumulation and combination of two types of resources, namely land assets owned by wealthy farmers, and the technical expertise of federal officers. Up until the 1930s, factory farmers represented a kind of industrial avant-garde, employing around 100,000 workers, selling fruit, vegetables and cotton for export, and exerting immense influence on local and national policies. These private proprietors in the Californian agricultural sector controlled access to land in Imperial Valley in the south of the state and, further north, in the Great Central Valley. The management of irrigation, articulated around quasi-governmental districts originally introduced in order to regulate access to property and, therefore, to irrigable plots of land, was not really democratic: few small farmers had access to decision-making processes, which were largely dominated by influential representatives of the private sector elected to the board of directors, and by expert managers suspicious of the community-based participation of small farmers in water planning on the grounds that it would, or so they supposed, endanger the maximization of technological and economic efficiency. Water was, therefore, managed in the private interests of large agro-industrial irrigators, a factor that created tensions in the Valley.

According to Worster, in the early 20th century, the Valley was, in a sense, run by an agricultural elite. But, at the same time, that elite was increasingly dependent on and vulnerable to a resource that was escaping its control. The constant transformation of a desert into a commodity presupposed a conception of irrigation on a large scale – and in order to be able to consume an ever-

4 En terms of economic structures, the American West does not correspond to Wittfogel's theories either. Based on a study carried out in the American West and the south of Spain, Maas and Anderson (1978) demonstrate, in effect, that: "To meet the demands for cooperative effort in hydraulic agriculture, which are indeed great, the water users of Spanish and US systems have shown a genius for inventing operating procedures that avoid centralized and despotic political power. Systems that were in existence before the central government invested money and technical expertise have to a remarkable extent protected their autonomy and even defied national policies that are supposed to accompany national money if these policies have been a serious threat to local custom. (...) Wittfogel has posited that the need for capital and technical expertise leads to centralized and despotic power in irrigation regions. (...) But here, as in the case of the Wittfogel thesis, what may appear to be logically compelling is not the case. Avoiding foreign and arbitrary power has been one of the objectives of water users that, to be sure, they have had to compromise in order to achieve satisfactory levels of efficiency and security, but, as we shall see, the consequences of the tradeoffs these irrigators have made among their objectives have not included despotic rule" (Maass & Anderson 1978: 4-5).

increasing amount of water, new regional alliances were required. After the depression of the 1930s, a period in which its very existence was threatened, the Bureau of Reclamation demanded that the totality of the Colorado River, California's main source of water, be ceded to it, a request seen as a threat to the stability of local power centers. But, due to its major projects, the federal agency was destined to become an indispensable partner in the development of the West's industrial agriculture sector, which was in need of its expertise. Thus, the Bureau of Reclamation's influence did not derive from its role as an agent of social reform, but from local irrigation agencies motivated by the logic of the market. Consequently, it functioned as a kind of "service bureaucracy," that served more to perpetuate a well-established elite than to eliminate poverty in the region. Beginning in the 1940s, the emerging hydraulic society was the result of a convergence of instrumental forces: farmers harvested a profusion of cereals, with no end in sight other than accumulation; federal technicians, indefatigable in their reorganization of natural watersheds, rendered reasonable what they thought of as previously having been irrational. Thanks to this convergence, the desert was transformed into a source of wealth, and, as Worster points out, it was not important why or how this wealth was produced.

From the 1960s, the development of large-scale hydraulic engineering (\$7 billion was invested in irrigation), along with the wealth generated in the region, notably by agribusiness, meant that the West was on an economic high. But Worster asks questions about the power structure associated with this triumph. Was the region a model of democracy, as the advocates of its development maintained? Was it a society in which power and profit were widely distributed? Or was it, as in the case of more or less all the earliest hydraulic societies, characterized by a hierarchical power system rife with social inequality? Was authority concentrated and centralized in the hands of a few individuals to the point that small communities were reduced to a state of impotence?

Before Worster, observers of the American West were in agreement concerning their diagnosis of the omnipresence in the region of the federal government and its bureaucratic apparatus. However, opinions diverged as to the effects of the state on private power, its implications in regard to the freedom and autonomy of communities, and its relation to social inequality. Advocates of the free market criticized what they saw as the Napoleonic ambitions of the Bureau of Reclamation, taking the view that the tax dollar would favor the farmers of the West over and above not only those of the East, but also those of urban residents and industrialists. The region would be confronted by a bureaucratic despotism to which only the restoration of a private market, free in terms of the distribution of water, investment and prices, could save it. On the other hand, the liberal advocates of the public interest saw in the development of agricultural irrigation in the West a typical example of the problems of American political life: the tendency of restricted interest

groups free of federal control to appropriate power that should have been exercised by the government encouraged private interests and, as a consequence, subverted the democratic process. Fearing the advent of a despotic centralized state with the power of life and death over its citizens, Americans opted for a decentralized society, placing their trust in local control without realizing that the problem of the exercise of power nonetheless remained unresolved, and that, in spite of grassroots mobilizations, was to become more acute with the passing of time. Only a strong, transcendent federal government in which a diversity of interests was represented could capture the attention of the public interest.

The main contribution of Worster's research is to demonstrate that an emphasis on the opposition between market and state is not the most effective approach to describing the power structure in the American West, where capitalism had to adapt to specific ecological conditions. In an arid environment in which water was scarce, the private sector found it hard to prosper on its own and called upon the state in order to overcome the problem and pursue its logic of accumulation. According to Worster, the hydraulic society to the west of the Rockies was built on restricted environmental foundations, those of aridity, producing an integrated system of power including both the state and the private sector in a relationship of interdependence, a system that made possible it possible to exploit every river and creek in the region in the cause of increasing the wealth of the West and of America in general. After the Second World War, this power structure gradually established itself, accompanying regional industrial transitions and encouraging the creation of future desert metropolises by the creation of an unprecedented water infrastructure.

But, in the America of the 1970s, and up until the election of President Reagan, the legitimacy of this empire was increasingly called into question: social and ecological militants disapproved of the empire's engineering triumphs, which were the objects of the neo-liberal critiques of the role of the state in land regulation and, consequently, in

the field of access to water. The state was charged with achieving contradictory goals: promoting the accumulation of private wealth through the augmentation of the availability of a scarce resource (water), while maintaining social harmony via its equitable distribution. Meanwhile, the Bureau of Reclamation had privileged a logic of accumulation incompatible with the redistributive function of the state. The question of justice in its various forms was raised more and more frequently: protests against the introduction of new dams; juridico-political debates on limitations on land allocations by the Bureau seen as an attack on the freedom to do business or, inversely, as a form of democracy prejudicial to economic growth; strikes led by agricultural workers against agribusiness; claims made by native populations in regard to water rights dating from the 19th century. This dissension revealed that the hydraulic society was more fragmented and fragile than had previously been thought. Alongside technological feats and the accumulation of profit, it had also generated growing levels of inequality: the elaboration and scope of irrigated agriculture was accompanied by the exploitation of proletarianized immigrants; the Bureau of Reclamation did not hold to its promise of an equitable redistribution of land making access to property and prosperity possible for the greatest number (particularly for the urban proletariat of the East); the management of water rights suffered from a democratic deficit; and farmers were increasingly unhappy about federal control over their ability to acquire land.

Public criticism of major hydraulic projects, considered economically unjustifiable and harmful to ecological systems, highlighted the need for an alternative society focusing on the conservation of nature. These criticisms also marked the emergence of a new struggle concerning the empire's legitimacy, a struggle not only about the validity of modes of administration, but also about the principles used to define that legitimacy and, consequently, the legitimacy of the domination of the water sector by a coalition of agribusiness and the federal administration.

3. COLLECTIVE MOBILIZATIONS AND THE CONSTITUTION OF THE FIELD OF POWER

While the American West, like many frontiers of European expansion, was conquered by military force and incorporated into the geopolitical architecture of a "foreign nation," it would be simplistic to see in this process of conquest the systematic reflection of an uncontested domination on the part of a state bureaucracy informed by an ethos of instrumental rationality. At certain times and in certain places, the process of political and economic incorporation generated resistance movements, as evidenced in Walton's study on the battles for water in Owens Valley over a period of 130 years.

Located in the east of California, Owens Valley is a rural, arid and mountainous area which, over the course of its history, has been the object of a multitude of desires due to its natural resources, notable among which is water. And yet, while the federal government and the City of Los Angeles looked to encompass the area within the empire, thus imposing the kind of hydraulic domination described by Worster, they were obliged, from the outset, to confront the resistance of the local community, despoiled of its environmental riches without fully benefitting from California's economic development. By placing this community's revolt in the context of the state's process

of economic growth and modernization, Walton provides a different, but complementary perspective to Worster's: both, in effect, attempt to establish a correlation between the management of natural resources and the involvement of the federal government in the regional economic development of the American West.

From 1860 until its transformation in the 1890s, Owens Valley was commercially isolated; the area was characterized by an economy based on subsistence farming carried out by colonists struggling for survival in a region traditionally peopled by the Piate Indians. While the federal government, informed by a desire for conquest, encouraged the setting up of colonies, it provided a bare minimum of security and land. Infrastructure (roads, canals, etc.) was entirely funded by the colonists, who developed cooperative organizational approaches to irrigation, mechanisms of popular justice, and community values. Over the course of time, these values and approaches provided the foundations of a rebellion in regard to the growing involvement of the public authorities in the economic development of the region. In effect, the accentuation of social inequalities deriving from this involvement increasingly threatened the autonomy of independent farmers and local traders by subjecting them to external competition that dictated prices, monopolized distribution and imposed foreign standards.

At the turn of the 20th century, Owens Valley suffered the direct consequences of a change in national policy. While pursuing its conquest of the West by means of economic development, the federal government began to place an emphasis on urbanization, the bureaucratic management of natural resources, and regional incorporation. Initially, Owens Valley was happy to be absorbed into a process of development oriented toward large-scale irrigation projects designed to guarantee agricultural efficiency. The federal project was caught between the rock of Los Angeles, on the one hand, and the hard place of California, on the other; with neither able to reach an agreement about development perspectives. And when the project was abandoned in favor of Los Angeles, local people organized protests demanding the restoration of federal involvement on the grounds that it was more legitimate than an approach based on urban exploitation. Traditional picnics, a symbol of social cohesion, were transformed into political rallies leading to the creation of a legal organization representing Owens Valley (the irrigation district) which sought support from California's public institutions (the governor, politicians) and brought the dispute before the state courts. When requests from representatives of civil society for negotiations with the Valley's public authorities were rejected, traditional methods of "popular justice" were adopted by citizens: commandos sabotaged the aqueducts. By finally neutralizing the community revolt, Los Angeles achieved control over water and the territory, but it nevertheless had little control over local residents and their legal strategies. According to Walton, dissidence persisted, limi-

ting the power of the City to that of an owner-employer, rather than that of an occupying authority.

In the early 1930s, the New Deal, designed to rejuvenate the nation's economy, made its effects felt in rural areas, including Owens Valley. The policy of conservation became an essential factor in efforts to climb out of the economic recession by delivering employment and repairing land damaged by drought, erosion and flooding. In the American West, the policy was accompanied by the reinforced presence of federal agents: the Bureau of Reclamation extended its influence by means of new projects such as the Grand Coulee Dam and the California Aqueduct (leading to Central Valley). In the water sector, federal projects subsidized the development of agribusiness, which led to an increase in the use of chemical fertilizer and pesticides, as well as of salt-leaching irrigation. During this period, federal agencies were reticent in regard to any kind of environmental protection. The very idea that the Department of the Interior, which was, at the time, responsible for managing those agencies, should be reorganized or supervised in the interests of the conservation of water as a resource, was met by widespread opposition among Congressmen. According to Walton, it was well known, although rarely explicitly acknowledged, that the US Army Corps of Engineers was a major source of both pork barrel projects for Congressmen and of subsidized water projects designed to promote local interests. This conception of the management of the resource gave rise to the modification of eco-systems and the over-exploitation of groundwater reservoirs, which, in turn, provoked opposition in Owens Valley, whose inhabitants sought to combine economic prosperity with environmental protection.

The 1960s and 1970s marked a turning point in the history of the resistance of Owens Valley. The Welfare State became ever-more closely involved in environmental conservation. This new political orientation, combined with Los Angeles's need to protect rest and relaxation areas in order to attract ever-growing numbers of seasonal migrants, transformed the Valley into a new tourist and governmental service economy. Owens Valley's resistance, rather than capitulation to the desires of the metropolis, was rendered possible and legitimized by changes on the national political scene, with Congress introducing new legislation (the National Environmental Policy Act, or NEPA) and creating a new legal instrument (the Environmental Impact Statement) demanding that all federal agencies assess the environmental impacts of their programs. Owens Valley was able to find the arms to fight Los Angeles's expansionist political programs that, once again, it considered to be oriented toward the destruction of its communities and of the natural environment. As in the water wars of the 1920s, traditional citizen committees were set up in the Valley to circulate petitions and put pressure on the federal government and its representatives; legal action was taken and, in particularly tense moments, popular violence broke out,

targeting the City's infrastructure.

Compared with the struggle of the 1920s, the resistance of the 1970s was, according to Walton, characterized by the fact that it was a legal battle orchestrated by state and federal legislation mainly conducted within bureaucratic arenas by means of collective action taking the form of a social movement. In the 1970s, the policy of extended state responsibility for environmental protection effectively introduced a new source of legitimacy for community-based rebellion. The Welfare State furnished the legal means that local political entrepreneurs could use to align themselves with the federal government against the State of California. In a direct parallel with the community-based rebellion of the 1920s, the battle of the 1970s and 1980s focused on a local strategy, the objective of which was to bring the dispute before state courts with a view to protecting the environment. Local initiatives in Owens Valley proved successful within the framework of the Welfare State because legitimate ways of expressing them had become available. Furthermore, the county government also opposed the metropolis. As well as ousting the Los Angeles Water Department and laying claim to full self-determination, the citizens, with the support of county government, won most of their legal battles and forced Los Angeles into an agreement stipulating its responsibility vis-à-vis the local authority.

The success of the environmental movement of the 1970s and 1980s was also the result of a combination of cultural values, militant strategies, and the incorporation of environmentalism into the political and legal forms of the state. According to Walton, the environmental movement was able to make such an impact in Owens Valley because the community-based revolt that had preceded it had created a culture encouraging the emergence of political conditions that the following generation could use in its

own circumstances to transform the opportunity of opposition into a local reality. In Owens Valley, the rebels of the 1970s and 1980s sought above all to obtain political rights within the federal and regional administrations with a view to guaranteeing mutual participation in the development of the region. For, since the 19th century, civil society had traditionally provided local services and organized water management by means of cooperative bodies responsible for irrigation, and this tradition was actively restored in a modern political struggle in favor of community-based autonomy, environmental conservation, and ideals of shared economic prosperity.

In terms of theoretical contributions, Walton's longitudinal analysis of the specific case of the water wars between Owens Valley and California makes it possible to elaborate a model describing relations between the state and collective action in terms of efforts to protect the environment. Counter to theories of rational choice, mobilization of resources, and moral economy, it links collective action to its origins in cultural beliefs about legitimate rights and the contexts of state authority. A decisive step was taken when collective action, no longer limiting itself to community-based resistance, became a social movement fighting to protect the environment within that same field of power. Walton emphasizes a relational conception of the state, which he casts as at once a relationship of domination and an invitation to protest. From his point of view, the relationship between different forms of the state and collective action is reciprocal: the state does not only transform the orientations of an environmental movement by creating a new legal framework; within the federal politico-administrative system, the environmental movement can also exploit contradictions between different levels of state power with the objective of enlarging the public arena of legitimate social demands.

4- INTERNAL STRUGGLES WITHIN THE FIELD OF POWER: THE BUREAUCRATIC AND POLITICAL FIELDS

At the end of his book, Worster suggests that, in the context of the expansion of the environmental movement, the American water empire generated a form of internal opposition that was not founded on class relations but, instead, on rival approaches to conferring a value on nature. In her book, *The Struggle for Water*, the sociologist Wendy Nelson Espeland explores this hypothesis by focusing on the decision-making process leading to the decision to abandon a project to build a dam in the 1980s. She analyzes the ways in which the political controversy over the Orme Dam became a "contest over the terms of rationality," which called into question the frontiers of traditional water sector bureaucracy. Protests culminated in the institutionalization of new administrative practices oriented toward the resolution of environmental con-

flicts.

In order to understand the heuristic interest of the Orme Dam controversy, its link with the Central Arizona Project (CAP) must be taken into account. This project, originated by the Bureau of Reclamation, consisted in the introduction of a complex system of dams, electricity plants, pumping stations and aqueducts designed to divert water from the Colorado River to irrigate the desert. The Orme Dam was part of this architecture. Originally thought of in the 1930s, gradually formalized in the 1960s, in the context of the 1970s, the project came in for increasing criticism from Washington because of its cost. It was also the object of increasing opposition from the Yavapai, an Indian community that would have been relocated if Congress green-lighted the Dam. When Jimmy Carter became

President, the CAP found itself on a black list of 19 hydraulic projects that the White House intended to delete from the federal budget. But in Arizona, due to the vital role of water supplies, the President's approach caused a political crisis. In order to save the CAP, Carter agreed to fund a study – the Central Arizona Water Control Study (CAWCS) – on the alternatives to the construction of the Orme Dam. The results of the study, undertaken by the Bureau of Reclamation, were officialized in the form of an environmental impact report as recommended by the NEPA (New Environmental Policy Act). Focusing on the CAWCS, Espeland demonstrates – and this is the most valuable aspect of her work – how the Bureau of Reclamation went through a process of organizational and ideological change which led, a few years later, James Watt, Secretary of the Interior in the Reagan administration, to validate an alternative to the Orme Dam and, in so doing, ratify an approach to evaluating environmental projects irreducible to the instrumental rationality that had, up until that point, dominated the American water empire.

In 1976, the Bureau of Reclamation's first EIS (Environmental Impact Statement) on the dam was published, stirring up lively opposition. Written by engineers in favor of the dam, the report failed to mention the forced relocation of the Yavapai community. In regard to the scandal that ensued and the political debate concerning the CAP, the CAWCS was set up with a view to restoring the Bureau of Reclamation's credibility. Experts with a new profile (the New Guard) – environmental specialists with a background in the social and natural sciences – were recruited. This new corps of experts were to create and expand a new decision-making process based on procedural rationality designed to make the Bureau of Reclamation more democratic, an approach that triggered the hostility and incomprehension of the traditional engineers (the Old Guard).

According to the NEPA, the job of assessing the social and environmental effects of alternatives to the Orme Dam required not only traditional economic and technical data, but also the inclusion of data from archeological, historical, anthropological, sociological, biological and meteorological analyses. Efforts were also made to document and incorporate the opinions and values of the public. How could such disparate information be reconciled? How could it be guaranteed that social and environmental questions would be included in the agency's initial decision-making process? How could abstractions like "social wellbeing," "environmental quality," and "efficiency" be evaluated? According to Espeland, in order to answer these questions, members of the New Guard turned to science, adopting rational decision-making models derived from economics and cognitive psychology, the underlying idea of which was that to rationalize various values and entities, those values and entities must first be rendered measurable. They therefore introduced Public Values Assessment (PVA), a procedure designed to measure the public's attitudes to and preferences

for different projects and to enable citizens previously excluded from the debate about the dam to participate in the decision-making process. The Yavapai community, intent on defending the territory on which the dam was to be built, was thus consulted and involved.

The CAWCS became an arena in which to accomplish in a practical sense what numerous decision theorists advocated theoretically and to change the decision-making routines deployed by engineers within the organization. For the approach taken by the New Guard at the time militated against, on the one hand, the Bureau of Reclamation's traditional technology, namely, the planning and promotion of dams and, on the other, with the local political lobby which arrived at a decision to greenlight the dam, rather than exploring alternatives that took external opinions into account. Meanwhile, due to its marginal position, the New Guard deployed a strategy of inclusion that put instrumental rationality at the service of democracy by creating procedures authorizing more people to take part in the decision-making process, while improving the quality of information used to render decisions. It believed firmly in the potential of science as the source of neutral, specialized knowledge for resolving disputes and improving the decision-making process.

On the other hand, the engineers of the Old Guard were, due to their status as an enlightened elite, used to politicians and members of the public giving them authority to take all decisions concerning the irrigation and development of the West. Its members were wary of the new legal framework (the NEPA) and were markedly unwilling to abandon a system that had made so many important decisions and generated so many major projects. They had dedicated over twenty years to promoting the CAP and the Orme Dam, focusing on finding technical solutions to social problems (flooding in urban areas, irrigating arid land). In this sense, they had followed in the footsteps of their predecessors from the era of progressive policies and the federal irrigation movement that had culminated in the setting up of the Bureau of Reclamation and the deployment of an ideology of professionalism underwritten by a vision of nature as an entity not to be evaluated scientifically, but exploited through the implementation of a useful, monumental architectural aesthetic taking the form of gigantic dams. According to Espeland, for the Old Guard, abandoning the Orme Dam was tantamount to admitting that their careers had been a failure, that their technological ideals were no longer the object of consensus, that their agency was a relic from the past, and that, in sum, their power had been eroded. What was at stake for them in the struggle over the Orme Dam was, more than anything else, the preservation of their glorious past.

But this "outmoded past" in which trust was placed in the technology of the engineers and in which substantial budgets were allocated to ever-more pharaonic water projects was fading away. While, previously, the dam

would have been the expression of a technical solution to an irrigation problem, it now became the object of a referendum on water development; furthermore, the affirmation of the vision of nature of a native community revealed itself as incompatible with an instrumental rationalism applied to modernity and economic development. The Old Guard found itself out of step with, on the one hand, the new ideals informing their agency, characterized by an emphasis on science and a greater distance from networks of influence, and on the other, with a more open attitude toward a public that, at a priori, did not take their side. And when an alternative to the Orme Dam was finally chosen by means of the decision-making procedures implemented by the New Guard and communicated to the Department of the Interior, they were unable to see it as a triumph for the kind of rational planning to which they had dedicated their professional careers. The members of the Old Guard rejected the legitimacy of this alternative, but having been publicly discredited by the publication of the first report on the project for the dam, they were unable to bring a halt to the process and did not offer anything in exchange – they were of the opinion that the project was the best and most rational solution to the technical problems that they were attempting to solve in order to irrigate the Arizona desert.

Last, the professional identity of the Old Guard, their loyalty to the Bureau of Reclamation, and the value and time they dedicated to their work explained their support of the CAP and the Orme Dam, a position coherent with the traditional ethos of the agency, which was at once hard to quantify and ill-suited to conflict resolution. However, the New Guard took a different view of the decision-making process. The elaboration of an alternative to the dam provided an opportunity to promote a vision of the public service in which the government was more receptive to citizens. Similarly, participating in the decision-making process enabled the Yavapai to express their rights and to lay claim to a cultural attachment to the land that could not be reduced to a monetary evaluation. A rivalry was thus created between instrumental rationality, procedural rationality, and identity-based rationality. In deciding not to build the dam, the political authorities introduced the possibility of creating and participating in a new form of democracy, rooted in a procedural rationality deriving from a plurality of opinions. Consequently, the controversy over the Orme Dam in the new NEPA legislative framework led to the views of the public at large being taken into account, enabling a reappraisal of the Bureau of Reclamation's decision-making procedures and a redefinition of its *raison d'être*.

It may seem strange to focus on decision-making processes regarding a dam that was never built. But Espeland's research can be seen as a contribution to the elaboration of a sociology of the environment that provides us with an understanding of the rivalries between different approaches to evaluating nature, and their links with the social and professional groups that defended them

in the bureaucratic field. Unlike the technical vision of decision-making procedures exclusively controlled by scientific experts designed to improve the proposals of bureaucrats and politicians, transforming perceptions about nature into quantifiable data designed to reflect public choice in the water sector is far from a neutral act. According to Espeland, this process of transposition modifies the categories used by individuals to represent what is important to them. Changing ways of manufacturing public decisions serves to redefine the terms of the debate and set the parameters of what can and cannot be said. Evaluating nature becomes a political process in the sense that interests, values and preferences are at issue and have practical effects on the strategies adopted, as well as on professional identities. Marginalized within the Bureau of Reclamation, it was in the interests of the New Guard, which was seeking professional legitimacy, to ensure that instrumental rationality became institutionalized, that the agency's network expanded, and that mechanisms of participation were set up. In becoming a part of the decision-making process, the Yavapai, skeptical about the legitimacy of the procedures of the New Guard, had to express their cultural differences, their demonetized relationship with the land. Organizational interests and the construction of identity can also play a role in the environmental decision-making process.

Espeland takes a similar position to Walton when she asserts that it is difficult to find a satisfactory analytical approach in theories of rational choice that properly describes environmental decisions able to integrate rationalities based not on efficiency but, instead, on moral values (public participation, social justice), multiple interests, and problematics concerning identity. Far from being consensual, theories of rational choice trigger conflicts over the most legitimate definition of approaches to evaluating and thinking about nature. In order to fully grasp the meaning and scope of environmental decisions, Espeland, taking a leaf out of the books of Worster and Walton, examines the origins of those decisions and the historical context of their production, thereby reconstituting their institutional trajectory. The case of the Orme Dam demonstrates how the emergence of a new legal framework (the NEPA) perturbed organizational routines, thus calling into question the hegemony of a professional culture that seemed natural and universal by institutionalizing a new way of thinking about nature that integrated environmental and social preoccupations in a decision-making process that was at once bureaucratic and political.

CONCLUSION – THE ANALYTICAL TOOLS OF AN ENVIRONMENTAL SOCIOLOGY

Exploring these three books provides relevant research directions for an environmental sociology: bringing back the history into a such sociological perspective showed that water projects cannot only be considered as a matter of technical ability or the product of rational decision making but should be regarded as deeply embedded in long-standing struggles for control of both water and power. Any struggle of this kind deserves to be highlighted: this is the starting point as well as the bedrock for a better understanding of what social relationships are involved in water projects and to what extent tensions among various groups with different vested interests play a part on the design of these water projects over time. Investigating such social space enables to show how much water policies cannot be reduced to an expression of external economic forces. In this regard, Donald Worster's analysis of hydraulic society raises another important point for an environmental sociology : claiming and pushing for big infrastructures on behalf of a "new America" does not mean that such an imperial dogma can be established by itself : this implies the building of a strong coalition between federal administration with a leading role of engineers and local elites (based on agroindustry companies).

However, the way in which water policies were implemented cannot be grasped as a mere instrument of domination through which populations would play the role of passive puppets. As John Walton shows it, collective capa-

city to resist such a domination reveals that water management has to be understood as a space of struggles or a field (with reference to Pierre Bourdieu's theory) where dominant groups have constantly to refine and produce the legitimacy of their model of management in the face of the continuing involvement of other stakeholders in local issues – especially when the management of local issues involve larger scales and other levels of action. In that perspective, water megaprojects require another model of water rights to share the resources among various states: engineers have accept to implement other forms of management, that cannot be reduced to technical solutions – and thus to transform themselves into managers in order to preserve their (dominant) position in the field of water management. As the forms of water management evolve, the goals to achieve and the nature of relevant accumulated resources in order to be powerful in this field change too: Wendy Espeland shows that struggles for water turn into conflicts, in which the legitimate forms of political rationality are at play, and the history of water policies can thus be understood as a competing evolution from technical to legal and political ways of management. A sociological approach of water management should/ might have for objective to better understand and highlight these principles of structuring the field of water management which appears to be much more connected to the field/ sphere of power than a technical approach might show it.

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