Hydraulic heroes: the ironies of utopian hydraulism and its politics of autonomy in the Guadalhorce Valley, Spain

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Abstract

This paper focuses on the Guadalhorce Valley, Málaga Province, Spain, where a rich farmer-managed irrigation tradition has flourished since Arab times. Local communities diverted water from the river, managing numerous small-scale systems. These systems have now been destroyed. We trace the causes back to the profound impact that early twentieth century discourse about water control had on Spain’s socio-natural landscape: an impact that extended far beyond water management. The idealistic Política Hidráulica discourse, linked with ‘regenerationism’, glorified small-farmer irrigation and promoted hydraulic works and the expansion of irrigation as a socio-economic and cultural-political solution for Spain’s bankrupt and ‘degenerated’ condition in the mid-19th Century. We follow the thinking and accomplishments of Rafael Benjumea, Count of Guadalhorce, Minister of Public Works and devoted follower of regenerationist leader Joaquin Costa. Benjumea was founding father of the widely acclaimed River Basin Confederations and one of Spain’s chief ‘hydraulic heroes’.

We analyse the irony of the water policy discourse, the political paradoxes and conceptual contradictions of hydraulic utopianism. This political-ideological current aspired to install decentralized watershed management and defend local collectives’ autonomy. Yet the policies, institutions and hydraulic works it established destroyed much of the local autonomy that did exist. The pursuit of the utopian project involved an iron-fisted, surgical policy of expertocracy, designed to restore ‘natural order’, which entailed overturning existing local water users’ institutions, rights frameworks and knowledge systems. Analysing historical material and empirical data gathered during long-term field research on the Guadalhorce, we examine four bitter ironies of ‘utopian hydraulism’.© 2012 Elsevier Ltd. All rights reserved.

Keywords: Hydraulic policy; Regenerationism; Irrigation; Self-governance; Utopia; Spain; Hydraulism

If you wish to leave traces of your passage through power, irrigate fields; the Arabs passed through Spain: their race, their religion, their codes, their temples, their tombs have all vanished, but their memory remains alive, because their irrigation has persisted.1

Like other regions of Spain, Guadalhorce Valley’s rich history has been profoundly modified by its diverse water management systems. During Arab times there was a boom in irrigation construction and management that generated new hydraulic technologies, expanded the productivity of agricultural systems within this semi-arid zone, and led to the establishment of a variety of normative and institutional frameworks to manage water autonomously. For centuries after the Moors were expelled from Spain, local communities continued tapping into this economic and cultural legacy.

This paper examines how fundamental changes in the discourse about water governance in Spain during the late nineteenth and early twentieth centuries deeply influenced practices surrounding irrigation and water control, which in turn affected the entire social and natural landscape. The discourse exalted traditional small-farmer led irrigation and promoted the expansion of large-scale irrigation and water works as a solution for the nation’s overall ‘degeneration’. The quotation that opens this section is from Hydraulic Policy. The social mission of irrigation in Spain by Joaquín Costa, who led the political-intellectual current of ‘regenerationism’ and exemplifies those feelings. At a time when the country had lost its empire and influence and was in profound socio-economic...
disarray, this current advocated utopian modernization as the way to
to revile Spain’s fortunes. Costa formulated the policy of ‘hydraulic
regenerationism’, aimed at re-structuring Spain’s natural, cultural-
political and economic geography and boosting productivity by
extending irrigation to all possible zones.2 The policy went beyond
advocating agrarian reform and sought to overhaul Spain’s entire
economic life and even solve ‘the social issue’ — the fundamental
contradictions of misery and injustice.3

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legumes and maize. The Arabs developed autonomously managed water control systems: ‘the most frequent Arab hydraulic structure was the azud (dam, weir), which was used to raise the river level and divert the water to an irrigation intake, hydraulic mill or drinking water supply canal. Generally, azuds were small in size, did not have spill ways and were built perpendicular to the river’. Over the centuries, local communities have continued to develop these hydraulic and productive agricultural systems. In the following section we draw on the insights of local leaders and irrigators, and briefly describe four basic aspects of these systems, elements that were later re-worked by Benjumea and the regenerationists to give shape to their utopian aspirations.

Hydraulic mastery: the art of building dams and canals

‘I have spent all my life in the countryside, and learned how to work the land. I lived with my aunt and uncle, who had a field across the road. There was a mill, at the end of the canal, to grind wheat’. Don Bartolo Martín, 81 years old but still a very active irrigator, is full of memories about the old canals. He grew up in the valley, recalling times before the last two big dams ultimately stemmed the flow of the Guadalhorce River, in the 1960s and 70s. The canals he describes were part of Guadalhorce’s social and natural landscape, dating back to Arab times, or as Bartolo says, ‘they have been with us since the world began planting and living’. Don Alonso García, is a retired aguador who spent half his life in the upper valley. He still waters his own fields and helps his neighbours irrigate theirs. He explains: ‘we cut off the river, with stones, mud, cane; with mules we could build a dam in a fortnight or so. The many elements that were later re-worked by Benjumea and the regenerationists to give shape to their utopian aspirations.

Agricultural production and livelihood construction

Don Bartolo explains how he lived at the tail-end of one acequia, planting different crops, mainly for subsistence: ‘In our fields, we planted many things: potatoes, tomatoes, beans – everything the family ate. There used to be fewer tree groves...’. In those days the canals diverted the flow for two main purposes: to power mills to grind grain and for irrigation. As Bartolo put it: ‘... where the canal died out, there was the mill’. He reveals that there were not many conflicts between irrigators and the mill over water distribution: ‘At night, no one watered. In the afternoon the aguador would close all the field inlets so they could grind in the mill at night’. Small-scale water works and canals not only permitted intensive and varied agricultural production, they also provided renewable energy, triggering diversified local livelihood development. As a consequence, over the centuries, water management became intrinsically linked to and shaped by the particular forms of production and reproduction and the strategies of Guadalhorce’s irrigator communities.

While the irrigation systems and the multiple cropping systems they supported were important legacies of the Arabs who had lived in the valley, successive inhabitants continued to use and further reshape Guadalhorce’s water resources into complex, hydro-social networks that ordered land, people and production in very precise ways. These networks were adapted to local climates, soils and development opportunities. And although Christians regained control (taking over Antequera in 1410, and expelling Moorish residents from Guadalhorce Valley in 1570), many Arab water technologies and institutions have remained.

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10 J. Brotons Pazos, El Embalse del Chorro, un hito en la política hidráulica en el umbral del siglo XX, Málaga, 1999, 124.
11 See also A. Málpica Cuello, El agua en la agricultura de Al-Andalus, Almería, 1995.
12 The aguador is a local water distributor, employed by water users themselves.
13 The term caño, in Guadalhorce, refers to the irrigation turn (shift), to the hydraulic inlet gates, and to a measurement unit of approximately 25 l/s (a common field flow for watering sugarcane).
14 No precise data exist regarding the total area irrigated before the large dams were built. Brotons Pazos provides an estimate of 4,000–5,000 ha (Brotons Pazos, El Embalse del Chorro (note 10), 109).
16 Coin Community Report, 23 November 1831, in Libro del Cabildo, Coin, 20 January 1832.
17 Libro del Cabildo, Coin, 2 December 1835.
18 Libro del Cabildo, Coin, 21 August 1864.
19 The ‘Hojas Parroquiales’ (parish documents) of Alora of 1823, 1861 and 1876 also refer to these mills and their respective locations (Alora Library; see also S. Lara Centella, El Chorro: 100 años de historia, Álora, 2002, 8).
Fig. 1. Ancient dams in the Guadalhorce Valley.
Source: Authors’ fieldwork in collaboration with vigilantes Guadalhorce.
The division of land under Christian rule (into Repartimientos) generally followed the orchard and irrigation system structure in the valley, with small-holders mostly concentrated in the upper valley. However, as mercantile bourgeois influence grew, large owners started to occupy vast areas, especially the higher dryland and lower valley areas. As irrigator Paco Martín explains ‘big landowners have had great influence here, because peasant families depended on them’.

Local knowledge and customary laws and practices

Smallholder communities developed their own water infrastructure, irrigation practices, water rights and distribution systems. Even today, long after those days of ‘earthen ditches’ and with a modern irrigation system in place, some lower Guadalhorce Valley irrigators continue to rebuild, maintain and use the azudos, to ‘increase the flow in the canals, because the modern system does not always bring sufficient water. They demand this right, dating back to “time immemorial”, meaning Arab times.’

Alonso tells how infrastructure was intimately related with keeping one’s rights. ‘Irrigators cleaned the canal. Anyone who could work cleaned, the others paid. Families contributed according to how many fanegas of land they had...’ Each irrigator contributed labour for cleaning and maintaining the canals, and money to cover material expenses and the aguador’s salary.

This historical practice is also mentioned in local community archives, such as the nineteenth-century community reports of Coín. Sharing the physical maintenance also served to reaffirm and reinforce collective property rights to the hydraulic system and to earn and consolidate each irrigating family’s individual rights. This also drove autonomous management: creating rights by constructing water systems, and re-creating rights by maintaining them.

The rules and tasks of water distribution were also collectively established, based on local knowledge and the particularities of each community, acequia, cropping pattern and the fields. Canals redirected water from the main river but also captured water from seasonal creeks. The aguador did the planning, handling flows towards fields and distributing water among irrigators by caños (turns). In some canals the turns rotated from top to bottom; others started irrigating at the tail and some changed the sequence every year. The irrigation intervals along the ditches had a duration of almost 1 month whereby, within each system, turns rotated. The land was watered ‘a manta’ (‘blanketed’) — by flooding, and the duration of each caño was generally proportional to land size.

Self-governance: local management and authority

All this was managed by water user communities, based on collective action. The irrigators would elect their own president, to organize reconstruction and maintenance, collect annual dues and mediate conflicts; and to defend the irrigators’ collective: ‘...he had to be able to talk to the Governor, so normally we looked for someone who could express himself... an older person, a good representative’ (Paco Martín).

The committees were selected by applying shared principles: for instance, not necessarily the most powerful person was elected president, and it was not a particularly prestigious position. The president was simply a ‘regular’ irrigator, who had to be an irrigator at the tail-end of the canal. Bartolo explains that this encouraged local social justice: ‘Anyone who had his field at the tail, near the mill, could be president because he would make sure water reached him. If he had his field at the top, people at the bottom would say: you get water because you’re close to the intake, but no water is reaching my land. The president, being at the end, near the mill, was put in charge of making sure water got all the way there.’ Alonso confirms this observation, ‘the canal has always been controlled by someone at the tail-end, because he needs water. The aguador could be at the top or the bottom, but the president, as a general rule, always had to be at the tail-end.’

In addition to directing the management of the system, the president also had to handle any internal conflicts. In this he was assisted by a treasurer and an aguador responsible for practical management, maintenance tasks and day-to-day water distribution. As retired aguador Alonso explains, ‘irrigators paid the aguador as this was a task that could take up the whole day and sometimes would mean working in the evening’.

Until the mid-twentieth century, local communities in Guadalhorce built and managed their water resources autonomously. Farmers’ irrigator committees were mostly informally organized and there are only few records of their activities or composition in public administration. As Alonso said, ‘we didn’t have to apply for permits to make dams and use water. The president would say “we are going to make a dam, or clean the canal” and we would clean the canal or make the dam’. According to their descendants, all irrigators believed the canal was their own.

This local self-governance came to end in the mid-twentieth century when mega-reservoirs and modern infrastructure incorporated them into one large governmental system.

With his hoe, Vicente points to a bend in the river. ‘Look at that corner; we would cut the flow off there, and it became like a pond, because there was a ditch we had made, leading the water from the river, to irrigate land on the other side. There, three or four kilometres downstream, there was another ditch on this side, that passed by the entrance to that house. Over there. It’s gone now...’

What happened? Since the mid-twentieth century, the multiple forms of local management in the Guadalhorce Valley have changed profoundly. In 1902, the family that Rafael Benjumea had married into, gained the concession to use the Guadalhorce River’s water. Don Alonso tells how this changed life in the valley: ‘They made the large dams and canals, and then the Confederation came...’. In combination with new water policies, this eliminated most farmer-managed systems. To understand this important, yet ambiguous process in Guadalhorce and throughout Spain, the following sections will review the history of this water policy.

Reviving the country: dreams of decentralization and autonomy

In 1921, the first large dam reservoir was inaugurated in the Guadalhorce Valley, the Pantano del Chorro. This incorporated all the valley’s user-managed irrigation systems into a single system, managed hydraulically and politically by government bureaucracy together with civil society stakeholders.25 This landmark in Spain’s

22 Fanega: ancient area unit (1 fanega = 6444 m²).
24 Although some main rural centres and their Alcaldes de Agua did consolidate them formally in the late eighteenth century. In certain cases, officials commanded irrigation, as in 1793 when the corregidor “changed usage turns by vegetable growers and millers, granting farmers priority in water use” (Bermúdez and Martin, Los pueblos nacidos del agua (note 9)).
25 Brotons Pazos, El Embalse del Chorro (note 10).
history represented a new era, especially important because Rafael Benjumea, the engineer responsible, also designed and drove the nationwide policy of Confederaciones Hidrográficas (River Basin Confederations).²⁶ Besides being a hydraulic and highway engineer, and Minister of Public Works during the Primo de Rivera dictatorship, Benjumea was also granted the title Count of Guadalhorce. The Pantano del Chorro later became popularly known as the Count of Guadalhorce’s Dam.

Benjumea had a profound influence on the flow of water in this Málaga valley and also on the political and administrative management of water throughout Spain. His innovative integrated watershed management policy is applauded worldwide to this day, for introducing the concept of autonomous, decentralized water management (Fig. 3).

The Count of Guadalhorce

Rafael Benjumea is not only glorified all over Málaga, where he did most of his engineering and water management work, but also nationally and internationally. His biographer, Carmen Martín-Gaite, says he epitomized the ‘progressive engineer, bringing new elements of civilization and culture’ and ‘the concept of social solidarity and placing general well-being above one’s own were unwavering moral standards in the Count of Guadalhorce’s life’.²⁷ This, juxtaposed with his staunch support for dictatorships, is one paradox within our analysis of national water policy and user self-governance in the Guadalhorce Valley — condensed in the notion of a ‘hydraulic utopia’.²⁸

Benjumea was born in Sevilla in 1876. He graduated from high school in Sevilla, studied engineering in Madrid, and married Isabel Heredia-Loring, daughter of an aristocratic family of Málaga, the Counts of Benahavis. The city of Málaga and Guadalhorce Valley would become the setting for his engineering.

In the Guadalhorce Valley, he designed and organized construction of the Salto del Chorro hydroelectric plant (1903–1905). Before that, rural communities had already built small electric plants and converted wheat mills in irrigation canals to use electricity; these operated until the 1920s.²⁹ The new power plant, using a head of 100 m on the Guadalhorce River, mainly provided electricity for the city of Málaga.

However, Benjumea’s largest and most famous engineering project was a reservoir on the Turón River, a tributary of the Guadalhorce, to supply drinking water and electricity for Málaga and irrigate 13,000 ha in the Guadalhorce Valley.³⁰ The dam was 72.5 m high, had a capacity of 80 million m³, and was complemented by the downstream Gaitanejo Dam, 20 m high, which acted as a hydroelectric energy reserve (Fig. 3).³¹

This dam building took 6 years and was completed in 1921. Martín-Gaite paints a heroic description of ‘that sober, optimistic engineer, leading tirelessly while sleeping little’, who showed extraordinary management ability, under which ‘not even the tiniest labour dispute occurred’.³² This project earned Benjumea his title of Count, bestowed by King Alfonso XIII.³³

The irrigation doctrine and enlightened despotism

The Count of Guadalhorce believed that Spain could modernize and flourished through his ‘irrigation doctrine’. In a national speech he explained his dreams: ‘...changing hydraulic topography, projects that must spread to as many rivers and croplands as are usable, [...] irrigation must be implemented everywhere possible; it is useless to whine without finding the remedy for one’s problems’.³⁴

The Count subscribed to the intellectual and political school of ‘regenerationism’, which advocated a ‘rebirth’ and ‘revival’ of the nation — spiritually, politically and economically. The new technical and hydraulic possibilities of civil engineering inspired regenerationists’ faith in ‘concrete’ solutions (in both senses of the word). The slogan of former Prime Minister Mendizábal, ‘Spain will never be wealthy while its rivers drain into the sea’ (1835)³⁵ inspired the Count’s regenerationist dream to cover Spain with reservoirs and other major hydraulic projects.

The Count of Guadalhorce identified with fellow regenerationist Joaquín Costa, whom he described as: ‘...the summit of manhood, the Aragon man with immense intelligence, culture, eloquence and force of conviction’. It was Joaquín Costa who coined the phrase ‘hydraulic policy’ in Spain.³⁶ Benjumea and Costa shared their idealism for improving society, alleviating poverty and working for shared well-being through concrete works, and avoided political debates and abstract, bureaucratic solutions. They shared an ideology of a positivistic, plannable society, based on scientific technical-managerial rationality, firmly rooted in natural sciences. The two men ‘also shared an admiration for the policy of enlightened despotism’.³⁷

The 13 September 1923 coup-d’état by General Primo de Rivera, who set up a dictatorship to ‘save the nation from professional politicians’, was a godsend to Benjumea. It led to the abolition of all political parties, the depoliticization of government and the technification of governance, replacing political debate by direct actions, with a particular focus on agrarian production, hydraulic development, transport and improving the country’s domestic economy.

Two years into Primo de Rivera’s dictatorship there were widespread criticisms of the lack of the ‘concrete results’ he had promised. He responded to this by appointing new ministers, all expert civilians unrelated to political parties. Benjumea was appointed as Minister of Public Works.³⁸

Confederaciones Hidrográficas: decentralization and depoliticization

On 5 March 1926, shortly after taking office, Benjumea changed the nation’s water policy administration decisively by creating the River Basin Confederations. He appointed engineer Manuel Lorenzo.

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²⁶ Internationally known as River Basin Authorities.
²⁷ Martín-Gaite, El Conde (note 4), 23, 24.
²⁸ See also Maurice and Serrano, J. Costa (note 7); Ortí, Política hidráulica y cuestión social (note 3); Swyngedouw, Modernity and the production of the Spanish waterscape (note 2).
²⁹ Bermúdez and Martín, Los pueblos nacidos del agua (note 9).
³⁰ The originally projected area (21,600 ha) was finally, in 1999, reduced to 10,500 ha; see Brotons Pazos, El Embalse del Chorro (note 10), 113.
³¹ Lara Centella, El Chorro (note 19).
³² Martín-Gaite, El Conde (note 4), 55. See also Lara Centella, El Chorro (note 19), 19.
³³ See also Brotons Pazos, El Embalse del Chorro (note 10).
³⁴ Martín-Gaite, El Conde (note 4), 23.
³⁵ Ortí, Política hidráulica y cuestión social (note 3), 14.
³⁶ Benjumea, 1951 in Martín-Gaite, El Conde (note 4), 21.
³⁷ Martín-Gaite, El Conde (note 4), 24.
³⁸ Lara Centella, El Chorro (note 19); Martín-Gaite, El Conde (note 4).
Pardo, founder of the Ebro River Basin Confederation, to organize the Confederations throughout Spain.

The Confederations were based on two ideas: ‘watersheds were formalized as a unit’ and ‘a democratic, participatory administrative structure was adopted for hydraulic development and water management, decentralized and highly autonomous, including financially’.39 This formula of integrated river management, taking watersheds as the planning unit, decentralizing water governance and setting up multi-stakeholder confederations with decision-making autonomy, was perceived as revolutionary.40 As part of this process the hydraulics of the Guadalhorce Valley were redesigned and reconstructed, integrating all traditional irrigation systems and other water uses under one Confederation.

Benjumea later called this national process ‘the splendour of my loves, integrating river management by organizing industry, agriculture and society as a whole’.41 The Royal Decree praised its supposed political neutrality, its technical and ecological superiority and its inherent ‘justice’. This undertaking entails justice, great moral value, as a significant example of social solidarity and patriotic exaltation [...] of free of all parties and factions, creating a meeting-ground for Spaniards’ regenerating drive.42

In 1930, four years after Benjumea took office, the military regime was ousted, because of scandalous squandering of resources, the lack of the dictator’s promised material results, and abuses of power. Benjumea soon afterwards went into exile in France and then in Argentina, where he managed shipping companies. He later became the driving force behind, and director of, the Buenos Aires Metro. In 1947, he returned to Spain to occupy various national administrative positions (see below) under the dictator General Francisco Franco.43 His honourable appointment by the Moral and Political Science Academy (1951) stated: ‘For 24 years, he strove with a lover’s drive and inexhaustible vision, as a technician and an artist, facing the huge difficulties posed by the terrain, the varied geographical strata and torrential nature of Guadalhorce River, more uncertain and twisting than most in Spain’s hydrography’.44 The Count of Guadalhorce died in 1952, in Málaga. His physical and institutional works in Andalucía and Spain continue to greatly influence natural resource management.

**New hydraulic policy**

Throughout his life, Rafael Benjumea’s plans and works that radically transformed water management in the Guadalhorce Valley and elsewhere in Spain were inspired by regenerationist ideology and its epitome, ‘hydraulic policy’. To grasp the historical background of these changes it is necessary to examine the roots of this intellectual movement and its political and production-oriented ideology.

**Degeneration and new hope**

In the 1880s, Spain was facing a profound domestic and external crisis that involved an agrarian catastrophe and an impoverished society, where the peasantry and proletariat were being throttled by parasitic, feudal, oligarchic relationships and a heavily conservative ideology.45

This oft-mentioned ‘degeneration’ and ‘disintegration’ were directly linked to Spain’s loss of imperial power, known domestically as the ‘Colonial Disaster’.46 This came about when Spain was thrown out of its last colonies, which were crucial for its national economy and international prestige. Joaquín Costa wrote: ‘Rather than gaining markets, territories, and friendships, in 1898 Spain lost half its territory, fertile lands, and productive capacity’, and ‘All our wellsprings of power and influence ran dry at once; all the foundations for foreign policy crumbled and were destroyed’.47

Regenerationist intellectuals from all disciplines and walks of life proclaimed the need to ‘regenerate’ the country: to colonize their own country instead of distant lands, incorporating all regions and people into itsernity.48 Costa, in 1900, blamed the colonial disaster and ‘degeneration of our nation’s conscience’ directly on the lack of domestic policy on irrigation: ‘Spain’s misfortune is mainly due to its nationwide failure to realize that our home-front war against drought, against uneven terrain [was...] overshadowed [by] the war against Cuban and Philippine separatism’.49 Fundamentally, regenerationism advocated restoring the country’s physical and social geography through intervention directed by a strong state and wise men, moral regeneration and regional and municipal autonomy.50

One of Spain’s major problems at the time was the explosion of demand for water due to urbanization and incipient agricultural industrialization.51 At the same time, large-scale monoculture farms with oligarchic-feudal structures were holding back the modernization of agriculture. By nationalizing water and reorienting it, the hydraulic utopians hoped to liberate water from fixed, private ownership.

Costa’s central thesis linked water, progress and liberty: ‘[t]he fundamental prerequisite for agricultural and social progress in Spain, in its present state, lies in springs and deposits of surface and rainwater’. His vision contained a clear logical sequence: ‘This is the first thing we should do, because any agrarian training is ineffective, credit is impossible, and freedom is vain and sterile without this’.52 Hydraulic regeneration would bring four related improvements: ‘a) enabling quantitative and qualitative increases

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41 Martín-Gaite, El Conde (note 4), 79.
42 Martín-Gaite, El Conde (note 4), 79.
43 Lara Centella, El Chorro (note 19), 20.
44 Martín-Gaite, El Conde (note 4), 85.
46 Ortl, Política hidráulica y cuestión social (note 3); J. Gómez Mendoza, Regeneracionismo y regadíos, in: A. Gil Ocina and A. Morales Gil (Eds), Hito históricos de los regadíos españoles, Madrid, 1992, 231–262.
47 In Maurice and Serrano, J. Costa (note 7), 66.
48 Besides Spain (also see Driever, Lucas Mallada (note 2); Silvestre and Clar, The demographic impact of irrigation projects (note 2), other countries also practiced policies of ‘interior colonization’ through large-scale irrigation development at that time; see e.g., Worster, *Rivers of Empire* (note 5); Fiege, *Irrigated Eden* (note 5); Powell, Environment and institutions (note 5); Evenden, Precarious foundations (note 5); Lane, Water, technology, and the courtroom (note 5).
49 In Gómez Mendoza, Regeneracionismo y regadíos (note 46), 233.
50 Maurice and Serrano, J. Costa (note 7).
51 Ortl, Política hidráulica y cuestión social (note 3).
52 Costa, Política Hidráulica (note 1), 3, 6.
in production; b) eliminating structural and inter-regional imbalances; c) redistributing land among farmers; d) as a consequence, decisively upgrading the social situation of rural people.\(^53\)

The primary goal of regenerationism was to resolve the urgent ‘social issue’ by challenging feudal-oligarchic relations and defending the oppressed peasantry. Nevertheless, the means of production were to be redistributed without altering class relationships; the regenerationists’ class policy was based on class collaboration. Hydraulic policy was presented as the only way to resolve agrarian problems and a way of forestalling wholesale structural (e.g. radical or socialist) agrarian reform.\(^54\) Only land owned by the government — and the church would be expropriated, not the latifundio holdings. Regenerationism sought to benefit all classes by bringing new land under irrigation, increasing property values for ‘all rural groups’ and avoiding conflicts. Ironically, such a policy would disproportionately benefit the owners of large areas receiving irrigation water. This was just one of the major discrepancies between proselytizing theory and actual practice.

Transforming land and the human race

Hydraulic policy aimed at far more than just building technical hydraulic mega-projects; it also pursued profound societal transformation to ‘remake the nation’s geography, to resolve agricultural problems and social inequality’.\(^55\) It advocated simultaneously reordering hydrological geography, people’s corrupt morality, and elitist-conservative power structures.

Rather than following contemporary Socialist and Marxist thinking, which sought to reform basic economic structures, regenerationists aimed to ‘change men to change structures [...] this creation of new men will necessarily save Spain from its slump — cultural, economic and political — largely caused by uncultured governance’.\(^56\) The ideology meant *civilizing* nature and people at once. Regenerationist author Ricardo Macías-Picavea wrote in his *El Problema Nacional* (1899) that, to save the country, ‘half of the reconstruction work involves (...) hydraulic policy, to civilize our land; the other half falls to pedagogical policy, to civilize the populace: the two are complementary and either without the other would prove sterile’.\(^57\) Macías-Picavea’s influential novel, *La Tierra de los Campos* (1896), advocated ‘regenerating the nation by transforming our land and race’ seeing them as two intrinsically interlinked elements.\(^58\) Joaquín Costa explained his political programme in the same words, proposing hydraulic policy as a means to ‘combat the misfortunes of geography and our breed, a work of art to remedy our inferiority in both respects’ [our italics].\(^59\)

The colonial disaster and the profound domestic crisis led to regenerationists receiving an increasingly sympathetic hearing throughout the country and explicit support from the influential Corps of Roadway, Canal and Harbour Engineers; members of the Corps were appointed to key governmental positions.

Hydraulic heroes

Alliance with engineers, reinforced with patriotic fervour, was fundamental for the regenerationists’ plans. Regenerationist politicians exalted the patriotic mission of hydraulic experts and natural science.\(^60\) For example, Rafael Gasset, journalist and Minister in a number of regenerationist governments, called the nationwide expansion of irrigation by engineers and hydraulic science a heroic task: ‘... if you can encourage Spanish farmers, practical men, then their ideas will be bolstered by the guidance and light of Science; because Civil Engineers have shown us their vast plan, to redeem agriculture by multiplying their modernizing constructions. Farmers are not alone; they are asking for what Science and experts profoundly recommend.’\(^61\) Gasset’s discourses portrayed engineers as a collective of neutral, scientific experts, moved by purely patriotic interest, whose efforts were more a sacrifice than anything else.\(^62\)

Years later, the Count of Guadalhorca expressed similar views: ‘We engineers are the forerunners. Plenty of sectors will follow us who want to develop wealth. We are the vanguard, summoning everything that can be useful to develop people’s material wealth and convey their values’.\(^63\)

The Count, when recalling the constitution of the Confederaciones Hidrográficas, portrayed engineers as the nation’s enlightened saviours — akin to Plato’s philosopher-kings, backlit by ‘... a light to guide the way of those who will follow; that light of mine was the Corps of Engineers’.\(^64\) In *The Allegory of the Cave*, Plato similarly portrayed society as a cave in which common folk ‘have their eyes full of darkness ... they see only their own shadows, or others’ shadows, projected by the fire against the opposite wall of the cave’.\(^65\) The sun of truth and right ideas shines on reality, but they cannot see it, only its reflection. The noble but difficult work of the philosopher-king (or, in our case, the engineer) is to govern the State and to rule, educate and enlighten the people of the cave. These wise instructors are the guardians of truth, and they can see reality. This depiction of them being neutral and objective over-looks any political interests and ambitions that a philosopher-king or engineer may harbour.

Hydraulic regenerationism has much in common with Plato’s allegory: both sought to reform society through scientific practice, grounded in disinterested, politically neutral analysis, by cultured experts. Hydraulic regenerationist missionaries felt that natural science and technical programmes were, in themselves, insufficient to achieve social change, which also required profound ‘social engineering’.

Similarly, explaining hydraulic policy, Joaquín Costa urged the people to trust specialists who know how to change the philosopher-king or engineer may harbour.

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\(^{53}\) Maurice and Serrano, *J. Costa* (note 7), 57.


\(^{56}\) Maurice and Serrano, *J. Costa* (note 7), 55.

\(^{57}\) In Gómez Mendoza, *Regeneracionismo y regadíos* (note 46), 233–234.


\(^{59}\) Ortí, *Política hidráulica y cuestión social* (note 3), 93; Regenerationist thinker Lucas Mallada, who wrote the document ‘La pobreza de nuestro suelo’ (later republished in his *Los males de la Patria*, 1888), strongly supported Costa’s thinking on improving ‘land and race’ through hydraulic development (see Drieer, *Lucas Mallada* (note 2), 6).

\(^{60}\) See Sánchez, Rafael Gasset (note 45).


\(^{63}\) Martín-Gaite, *El Conde* (note 4), 76.

\(^{64}\) Martín-Gaite, *El Conde* (note 4), 78.

the ‘political surgeon’ in a particular organ of the societal body was the only way to heal society as a whole. ‘In the body of society, just as with an individual, everything is organic, everything is connected and no member can possibly be healed or reformed in isolation, leaving the rest ailing.’66 This totalitarian mission by ‘wise’ men was to have much more dramatic consequences than the regenerationists could have imagined, leading to a period of oppressive and destructive reordering.

Utopia and violence: destroying the old to construct the ideal

Utopian hydraulicism

Orti called regenerationist policy a ‘hydraulic utopia’.67 Certainly, this political-philosophical-social project had many utopian characteristics.68 First, a utopia is a ‘makeable’ society; one that can be created to perfection. A utopia has its creators and founders, and their ideas are implemented by the inhabitants. Second, a utopia is a project to produce a society. The concept “utopia” cannot therefore be applied to individual experiments in living. Third, a utopia consists of an entire society. Partial improvements and specific reforms can help society to progress but such changes do not amount to “utopia”. A utopia is rather a total split with the core of the old society to construct a new one.69

Throughout history, the pursuit of utopian dreams has produced great nightmares: utopian ideals always (and necessarily) lead to a dystopia, by violently excluding deviants and rivals and actively destroying the ‘old society’ to build a new, ‘pure and unspoiled’ civilization.70 In order to radically de-pattern and subsequently re-pattern the ‘degenerated human and physical nature’ of Spanish society, regenerationism needed to portray ‘hell’ in order to legitimize its vision of a profoundly transformed polity and environment, the socio-natural heaven dreamt of. Regenerationists used apocalyptic predictions and dramatic metaphors to support their vision of the need to radically reshape society. Macías-Picavea’s work, El Problema Nacional, provides a clear example of how profound re-patternning is urgent to escape misery: ‘[a]nd the truth is that civilized Spanish agriculture is clinging to this implacable myth and tried to assimilate it into a collective national dream, balancing and harmonizing divergent class interests. The ideology needed this dream to conceal these existing societal contradictions, that would jeopardize the very regenerationist project itself.

Regenerationists believed that the contradictions of natural and human geography could be harmonized by a complete socio-technical overhaul and redesign. Hydraulic utopians argued that ‘...full utilization of the peninsula’s waters will re-establish not only ecological harmony but also the threatened social harmony in Spain’s rural areas [...].’ Their writings even suggested that ‘what society has torn apart in a conflict-ridden environment of scarcity and inequality [...], hydraulic policy, with all its promises and multiplier effects, will reconcile [...].’71 Utopian hydraulicism mobilized a collective illusion of abundance and harmony created by hydrological interventions that would produce a new natural, technological and political geography.72

However, beyond that, this utopian ideology not only aimed to generate harmony, to achieve its objectives, it also required harmony among all interests. ‘Perfect harmony’ underlay the regenerationist concept of the State; they saw the latter as the natural expression of general interest, beyond parties or classes and extended this analysis to taking water users as the basis for hydraulic policy. As Costa said: ‘...irrigators are nothing but the nation — there is perfect harmony between national interests and the interests of irrigators’.73

This idea found expression in one of the regenerationists’ policy cornerstones; River Basin Confederations. In 1927, the Count of Guadalhorce wrote: ‘I have deep faith in the Confederations to harmoniously and methodically integrate all initiatives and interests, by making maximum use of large rivers and watersheds, where copious wealth has been running, lost, back to the sea; this will transform Spain, creating a fertile future’.74 Lorenzo Pardo, charged with putting the Count’s dreams into practice, presented this patriotic project in similar words, ‘it is based on harmony, matching interests, on a summation of well-oriented efforts’.75

Regenerationists expected harmony and collective progress from the ‘natural pact’ that prevails (or ought to prevail) between the state (represented by the Head of State, who draws authority from society as a whole) and ‘the people’ (considered by regenerationists as a ‘collaborative network’ between classes). They assumed that hydraulic policy would be broadly accepted, because of its collective benefits and intrinsic, unquestionable logic. Once in government positions, though, the hydraulic reformers encountered ‘broken pacts’ which created economic

66 Maurice and Serrano, J. Costa (note 7), 120.
67 Orti, Política hidráulica y cuestión social (note 3), 14.
70 Achterhuis, Boelens and Zwarteveen, Water property relations and modern policy regimes (note 69).
71 In Orti, Política hidráulica y cuestión social (note 3), 18.
72 Costa, Politica Hidralica (note 1), 3. Earlier Mallada also called ‘... remaking the country’s geography an unavoidable necessity...’ — by means of dams and canals (see Driever, Lucas Mallada (note 2), 45.
73 Orti, Política hidráulica y cuestión social (note 3), 18–19.
75 In Maurice and Serrano, J. Costa (note 7), 72.
76 Martín-Caite, El Conde (note 4), 94.
77 M. Lorenzo Pardo, La Confederación del Ebro: nueva política hidráulica, Madrid, 1930, 100.
and political difficulties for them.  

They came to see the people as ignorant and unable to govern themselves (an irony given that this policy was based on autonomy). While they attempted to explain their patriotic project better, they also concluded that the reforms they advocated might require force and ‘guardian dictatorship’.  

Surgical policy and the restoration of ‘natural order’

Evidently, regenerationist mythology always contained the seeds of strong, totalitarian, ‘enlightened’ leadership. ‘Hydraulic heroes’ are portrayed as ‘volunteers fighting in a field bogged down in ignorant, passive rural masses and domination by powerful bosses. These heroes strive to rise above factions and political parties [...] to impose their anti-feudal programme of hydraulic regeneration on all, as an authentic solution for ‘social issues.’  

Similarly, hydraulic heroes in regenerationist novels foreshadowed the country’s dark, dictatorial future: ‘Desperation, emphasis on the role of the enlightened male leader pursuing his mission, and stubborn resistance by traditional forces already hint at the later emergence of falangist ideology and fascist victory.’  

Joaquín Costa called for ‘surgical policy’ depicting a compassionate dictator as an ‘iron-hearted surgeon, familiar with the Spanish people’s anatomy and feeling infinite compassion for them...’  

These calls for an ‘iron-hearted surgeon’ to regenerate the country provided, with radical firmness, the guidelines for the economic policy that would materialize under Primo de Rivera’s dictatorship.  

Indeed, hydraulic utopians had already set out the most radical ingredients of the dystopias to emerge. Costa thought the country’s structural failures could only be explained by ‘blaming the very nature of the Spanish people themselves... This is not simply an issue of schooling and medicines, but of examining whether the Spanish head can be changed.’

A military government offered to make their utopian dreams come true, and regenerationists, such as the Count of Guadalhorce, faithfully and firmly stood by General Primo de Rivera’s dictatorship. ‘Lack of parliamentary control suited Guadalhorce’s real interest: accelerating the country’s material reforms.’  

In later years, the Count founded his own political party, combining authority with technocratic intervention: ‘Order [...] material and moral peace [...] respect for discipline, for the principle of autonomy... generating technical perfection’. The ‘garden rhetoric’ and ‘technological democracies’ typical of hydraulic dreams (as noted by Powell and Evenden) closely resemble Zygmunt Bauman’s notion of modernity’s artificial order where ‘gardeners’ are in charge of expertly manufacturing, cultivating and doctoring the land to preserve societal designs and purify it from ‘weeds’.  

Swyngedouw argued that this radical utopian transformation to ‘restore natural order’ sought to rebalance nature and people, according to the presumed laws of nature, in order to produce socially harmonious development.  

With intervention from engineers, society, rivers and watersheds would be ‘naturally organized’ — according to ‘natural’ hydrological units rather than political and administrative criteria. ‘“Nature” would become inextricably connected to power struggles over the control and management of water. The river basins would become the scale of excellence through which the modernizers tried to undermine or erode the powers of the more traditional or national state bodies... The regenerationist engineers thereby incorporated naturalized river basins into their political project’.  

Materializing the regenerationists’ water dreams involved more than just destroying traditional oligarchic structures and landlords’ feudal water property relations: it also had a profound impact on local water management systems.

Destroying local autonomy in the name of the utopian policy of autonomy

We have begun the war for peace, the war of work, the struggle for progress, which instead of devastating, restores; instead of destroying, constructs; instead of impoverishing, enriches (Corps of Engineers 1899, vol. 286: 131).

Farmer groups managed traditional water systems in the Guadalhorce Valley autonomously, quite independent from broader decision-making structures. These systems evolved over the centuries, through collective investments in infrastructure and institutions. Although partially legitimized by the valley’s wider normative systems, individual families’ water rights in Guadalhorcean communities were enforced through the self-governing user authorities of local systems.

Ironically, to put its decentralization dreams into effect, utopian hydraulicism required the destruction of these existing, decentralized, smallholder systems. Four related aspects of this irony highlight the fundamental contradiction of utopian hydraulicism: a deeply centralist policy which preached support for local autonomy and the decentralization of power.

Hydraulic irony: inclusive designs destroying traditional infrastructure

The powerful discourse of utopian hydraulicism, of saving the nation through irrigation, still resounds to this day. To reinforce its presumed successes and legitimize the destruction it wrought, sympathetic historians turned to a dark legend of the past. For example; ‘before Benjumea constructed the El Chorro reservoir, the Guadalhorce’s waters were tapped using canals built centuries before, causing disputes among irrigators that often degenerated
into riots and disturbances as neighbours tried to take the water away from each other.

As in any system of water distribution in semi-arid regions, there were conflicts in Guadalhorce’s old systems; however, these were surely less numerous and intense than the struggles that ensued in the valley after the reservoirs were built. Old-time irrigators recall history, before construction of the last mega-dams in the 1970’s, very differently. As Don Vicente Garcia says: ‘I never heard of fights, because there were several small dams, and water ran back to the river from all of them’. The small rustic dams always let water by for users downstream. ‘These dams never cut off the river completely’. Modern reservoirs ruined these systems. ‘Before, we took water from the river to irrigate [...] They made the modern reservoir many years ago, cut off the river and canalized the water [...]’.

The violence of socio-geographical redesign and reordering entailed displacing whole towns from the upper basin, obliterating the living river, and profoundly transforming the valley’s socio-natural ecology. That mission denied, incorporated and consequently destroyed traditional water systems. All the diverse existing canals and works, often dating back to Arab times and belonging to various independent systems, were destroyed and overlaid by a single government system of large reservoirs, canals and gates — with prefabricated canals and modern works that worked poorly from the very outset (Fig. 2).

Socio-economic irony: the productivity-based dream leads to deepened differentiation

Despite the good climate and rich variety of crops, according to biographer Martín-Gaite, who admired the Count and his utopia, agricultural production before the mega-dams developed ‘scantily, with farmers barely eking out their living, dependent on rain, [...] either too little or too torrential’. However, again, such bias is based on the dark legend of the past; in fact, water scarcity in those days can not be compared with the current situation in the zone. As Paco Martín explains: ‘we used to get a lot of good out of the water, because the river’s volume was quite large; ... it was impossible to wade across. That was even true in the dry season.’ He agrees with Don Alonso: ‘In the old days, the river always had water’. So, again we see how the regenerationists’ ‘myth of generalized degeneration and poverty in the past — local and national — was conveniently made to justify the ‘internal colonization’ of the country.

Hydraulic policy, which was against oligarchies and monopolies, aimed to break down traditional power structures through decentralization, to ‘regenerate collective agrarian institutions and ... to defend the peasantry from disaggregating trends of individualistic capitalism’. However, this collectivist discourse failed miserably to defend the community property it so fervently sought to conserve. First, smallholder collectives’ traditional fields (huertas) that hydraulic policy aimed to ‘revive’ were increasingly absorbed by urbanization and industrialization. Moreover, when independent smallholder systems were incorporated into hydraulic mega-projects such as Guadalhorce, their common water property and organizations were obliterated. The approach ironically focused on the forces of the national and international capitalist market and private sector: although the state needed to take central control over water, forests and other natural resources, its policy towards land ownership was essentially private and market-led.

Hydraulism essentially based its reform of inequitable agrarian relations ‘on the voluntary offer of land by owners’, while the large-scale irrigation systems it promoted dramatically increased the value of private land. To avoid debate on the redistribution of large landholders’ wealth and monopolies, the doctrine ‘was conspicuously silent about the contentious issue of colonization in areas transformed from dry-lands to irrigated fields, once again skilfully meandering around the thorny issue of land reform, land ownership and access’.

So, minifundio systems (smallholdings) with water lost autonomy, while vast dryland areas were brought under irrigation, precisely for the large haciendas — in Guadalhorce Valley and elsewhere. As irrigator Paco Martín explains, in the higher, previously unirrigated areas of Guadalhorce Valley, ‘... a few large landowners, the Vila and Morales families, had almost all the property’. Extending irrigation to dry fields by major hydraulic works disproportionally benefited these large landowners. So, despite its ideals, regenerationist policy not only reaffirmed class divisions, but also increased social differentiation.

Socio-legal irony: customary water law and knowledge systems undermined by expert-based evaluation of local knowledge and norms

Regenerationism’s discourse grounded law in society’s actual, normative practice, not in theoretical, abstract legalism: ‘the only real laws are those people know and validate, that they themselves follow and translate into their actions’. Day-to-day norms and people’s customs applied to concrete contexts were central in regenerationist ideology. They thought that official laws must respect and deepen people’s legitimate customs, moulded by centuries of practical experience. These ideas fit perfectly into broader regenerationist notions about decentralization and self-government, in which the state gives part of its legal power to the citizenry through tribunals and local committees.

To enforce these local norms beyond solely ‘internal use’, regenerationism set out to systematize and codify them, as Costa says, to ‘share, from one region to another, different existing solutions, that had emerged from people’s actual practices in these regions, for the entire population to judge’. To examine, select and codify customary law, and separate ‘good’ customs from ‘bad’ ones, regenerationists applied positivistic science. Experts were charged with spreading good local water management customs, ‘materializing positive knowledge as shared heritage’.

Here we have another key paradox and irony of regenerationist hydraulic policy: that of ‘self-government under oversight and
Fig. 2. New mega-dams and the modern Guadalhorce Irrigation System covering the valley.
Source: Authors’ fieldwork in collaboration with vigilantes Guadalhorce.
Regenerationists claimed to value customary rights and norms but, considering them to be unsystematic and disorganized, submitted them to the universalistic rules of experts and scientists to select and discipline. Expert intermediaries judged and promoted ‘universal truthfulness’, as if there were one single truth about ‘effective’ water rights, norms of ‘good governance’ or ‘optimal’ agricultural practices.

In Guadalhorce, this scientific examination and codification redefined, assimilated and marginalized local water rights frameworks. Only the rights and principles that fit into official legislation and Confederation policies were approved, thereby muzzling the complex variety of ‘unruly rules’. The policy ignored the fact that scientific experts are not disinterested agents but part of cultural and power relations. If they decide about the ‘true value’ of local customs, because ‘people cannot represent themselves’ and seek to purify and universalize ‘best practices’ and ‘the best of the locality’, then this denies the people themselves the ability to actively create and regenerate. Ruling groups, regenerationist policymakers and intellectuals, whether consciously or not, supplanted diversity in Guadalhorce Valley in order to make everyday water management and social relations graspable and controllable. They did so by installing the dominant culture’s rights and frames of reference, which ended up controlling and disciplining local governance.

Management irony: local self-governance displaced by River Basin Confederations and paternalistic decentralization fosters centralist power and authoritarian violence

Traditional Guadalhorce Valley irrigation systems were relatively independent and user-managed. The irrigator communities established their management rules, both internally and with other groups. They defined and distributed tasks of regulation (e.g., each irrigator’s rights and obligations); operational management (e.g., water distribution and turns, operation and maintenance of infrastructure); internal organization (e.g., planning, conflict resolution); infrastructure construction; resource mobilization; administration; and the task of generating alliances to represent the system and defend users’ collective interests.

This user-management tradition would appear to fit well with regenerationism — which expressed admiration for the Arabs’ great traditions of self-managing water. Autonomous management of watersheds and hydraulic systems was the mainstay of the system. In his Orense address, in 1930, the Count of Guadalhorce exalted these virtues: ‘decentralization and the granting of administrative autonomies to anyone representing farmers as a sector, […] dignifying and raising up peoples, provinces and regions and lending vigour and power to productive elements and development...’

However, this policy of ‘granting autonomies’ actually led to the disintegration of these self-governing institutions. Lorenzo Pardo explained that decentralization aimed to ‘subordinate all works to a methodical plan for maximum yield’, by forming boards of technicians who prepared irrigation and hydroelectric plans alongside representatives of farmers and industrialists. In fact, technical experts and management structures in the Confederations replaced traditional authorities. In this way, as well as by challenging the power of traditional oligarchy by controlling the whole river basin — its explicit aim — regenerationist hydraulism also, ironically, challenged self-governance in traditional community and user-managed systems.

A further, related, ‘governance irony’ probably had even more drastic consequences. Water users viewed the large-scale modern infrastructure in Guadalhorce as a government project ‘for them’ but not ‘with them’. Irrigators showed little interest (to this day) in organizing, operating and maintaining the new canals they were put in charge of. Rather than recognizing the errors of paternalism, the official reaction from the outset, was to try to convince ‘users who are misinformed or backward’. National Irrigation Congresses played a key role in this process; they were presented as politically neutral forums, ‘motivated by clear feelings and a love for the country’. These Irrigation Congresses were a powerful strategic force as they served as debating platforms where ‘experts could easily dominate, by scientific and technical discourse, the opinion of a lay audience of owners and thereby influence public opinion and future political decisions.

The Count also came to specialize in techniques of enlightening and persuading the common folk. ‘Rafael Benjumea realized that, to complete his dream works, issues of a social and political nature had to be addressed, that went beyond his engineering studies. His gifts of persuasion and tact emerged’. In fact, most of the assumed beneficiaries did not automatically share the utopian perspective; regenerationist leaders needed to guide people towards their vision. They attributed errors and incapacities to ‘user beneficiaries’, and not to those who were intervening. With an anti-backwardness discourse, Benjumea and his followers maintained profound faith in their utopia, and could conceive of no culprit other than ungrateful beneficiaries, who threatened to destroy experts’ hydro-political dream, when things didn’t go as planned: ‘Never before had he struggled against such formidable obstacles... as dissidence and lack of solidarity in future irrigators, ancestrally attached to their routines and mistrusting — if not
clearly hostile to — the advantages of canal-irrigation for their prosperity.\textsuperscript{107}

Attempting to persuade ungrateful beneficiaries to share their vision of hydraulic utopia proved insufficient, so more direct, hard-line methods were needed to save the day. Regenerationalists defended the political and moralistic imposition (of what they presumed to be) the ‘collective consensus’ and ‘harmonious interests’, even backing oppressive dictatorships.

The shift towards dictatorship was certainly not lamented by the Count of Guadalhorce, the originator of ‘participatory water management’. His biographer notes that the ‘Count, so eager to put works over words [...] from the outset welcomed hopefully that regime of state interventionism, heir to regenerationalist ideas, which promised to foster political works’ flourishing without impediments’ (our emphasis).\textsuperscript{108} For the Count, only the hard-handed rule of an all-powerful dictator, supported by expertocracy, could realize the dream of hydraulicism ‘to benefit the common folk’, while silencing voices of protest.

The fundamental contradiction of a decentralizing, self-governing mission, based on authoritarianism and violent planning, was not just a mis-implementation of basically benevolent regenerationalist ideas in the face of stubborn reality, but was intrinsic to the ideology itself and visible in the seeds of hydraulic utopia. Costa’s ‘surgical policy’ to restore ‘natural order’ inspired dark forebodings.\textsuperscript{109} Apparently, in addition to requiring the ideology itself and visible in the seeds of hydraulic utopia, Costa’s ‘surgical policy’ to restore ‘natural order’ inspired dark forebodings (our emphasis).\textsuperscript{109} For the Count, only the hard-handed rule of an all-powerful dictator, supported by expertocracy, could realize the dream of hydraulicism ‘to benefit the common folk’, while silencing voices of protest.

This array of ironies is grounded in utopian hydraulicism’s intrinsic contradictions and paradoxes. The results achieved were the exact opposite of regenerationalism’s main objectives, and left a bitter legacy. The agenda to profoundly remodel the country through irrigation reached its climax during General Francisco Franco’s dictatorship (1939–1975). As Swyngedouw explains, under Franco the dystopia showed its most violent face, pursuing patriotic national regeneration as a path out of political-cultural chaos.\textsuperscript{110} ‘The centralizing fascist regimes that emerged from this turmoil could finally push through the production of a new geography, a new nature and a new waterscape, something the regenerationalists of the turn of the century had so desperately advocated, but failed to accomplish’.\textsuperscript{111}

It was no coincidence that the Count of Guadalhorce returned from exile during the Franco dictatorship and received new appointments, including that of Honorary President of the Public Works Council, in 1946. Hydraulic mega-structures increasingly became politically unquestionable objectives, which could not be criticized in the dictatorship’s era. Estevan typifies this as the country’s hydrological and cultural anomaly: ‘... no country in Europe has gone as far as Spain, where exclusive identification of water policy with large hydraulic works was not simply a main feature of Franco’s dictatorship, but had already existed for a long time, and after Franquismo survived in the political and administrative institutions of democracy’.\textsuperscript{112}

‘Changing soil and race’ and ‘rectifying natural disorder’, as Swyngedouw shows, was also presented as a profound act of justice, fighting discrimination against Spain’s dry areas, against injustice created by nature. In 1959 Franco proclaimed: ‘We are prepared to make sure that not a single drop of water is lost and that not a single injustice remains’.\textsuperscript{113} This totalizing vision and interventionist programme aimed to integrate all Spain’s climates, watersheds and rivers so they fit within one single hyper-managed system, creating a tame and obedient geographical territory. During the Franco period the number of reservoirs grew from some 180 to over 800.\textsuperscript{114} A system of interbasin transfers was established as the backbone of this hydro-political territory, integrating the whole country under centralistic despotism — the sad, contradictory legacy of the regenerationalists’ dreams of autonomy and decentralization.

In Guadalhorce Valley, this policy led to the building of two new mega-reservoirs in the 1960s and 1970s, completely ‘closing’ the whole river basin, shutting off the Guadalhorce River forever. This was the coup de grâce for the ‘living river’ and for the last user-managed systems using its water, which were incorporated into the single government system. Even during the democratic transition, Franco’s hydraulic policy was left unchallenged, because of its image of productivity and neutrality, supposedly producing unquestionable benefits under the leadership of cultured experts.

Only recently have changes and cracks appeared in hydraulic expertocracy; even though ancient self-governance systems in Guadalhorce were destroyed, a gradual process of democratizing water management has led to the questioning of mega-hydraulism. This was partly the result of bottom-up demands, such as popular mobilizations against the mega-hydraulic projects planned on the Rio Grande, a tributary of the Guadalhorce. On the other hand, the ‘human factor’ within the Confederación Hidrográfica also triggered changes. Amidst the legacy of an obsolete infrastructural and bureaucratic system, the result of the failed utopian project, a network of vigilantes (local water officers) has emerged, who collaborate closely with aguadores and farmers, who are committed to maintaining and protecting their socio-natural and political-cultural environment.\textsuperscript{115} They show that water management is not based just on inflexible infrastructure, uniformity and hydraulic formulas but on human practice. They seek to interweave professional devotion and negotiating capacity to promote hydro-social solidarity and justice.

Conclusions

This paper shows how an ideological and interventionist policy response to Spain’s late nineteenth-century national crisis deeply influenced the country’s future. Among other things, it fundamentally broke down traditional forms of water management in the Guadalhorce Valley and many other parts of Spain. The complex political and economic situation, ‘colonial disaster’ and the mythical discourse of continuing degeneration — characterized by political and cultural decadence amidst a ‘disorderly’, ‘erroneous’
and ‘unjust’ geo-hydrological natural environment gave rise to regenerationism. The backbone of this movement was utopian hydraulism, striving to save local and national society through a doctrine of irrigation which called for a profound transformation of social and natural geography. The dream of modernizing the biophysical and social landscape through large hydraulic works, extending irrigation and hyper-regulating water management, is not unique to Spain, but Spain’s mythic mission and societal project to re-order and re-create society as a whole through water control is unique in terms of its scale and depth.

Despite initially well-intended objectives, regenerationist ideology and its vision of a hydraulic utopia were full of contradictions and paradoxes, both in their political and theoretical formulation and in how they were materialized. Their impacts and effects, ironically, often contradicted their goals and starting-points. This article has outlined several of these ironies, which hinge around a fundamental paradox: a centralistic hydraulic policy, which explicitly sought to promote decentralization and local autonomy, precisely frustrated existing forms of local autonomy.

The ideology, its paradoxes and ironies are no innocent utopia; from the outset it contained the seeds of oppression: the destruction of the existing order was deeply embedded within its principles. In the Guadalhorce Valley, restoring ‘natural order’ meant destroying the variety of self-governed irrigation systems in hydraulic, organizational, political and even cultural terms. Independent systems were incorporated into a government-imposed mega-project, the river supplying the systems was dammed and dried up, and horizontal management frameworks were replaced by vertical government ones ‘decentralized to the watershed level’. These physical and political ingredients spelled death to the existing modes of user-management.

Rafael Benjumea, the Count of Guadalhorce, plays a central role in our analysis. He dammed the Guadalhorce River, created a nationwide network of River Basin Confederations, and firmly supported Spain’s repressive twentieth-century dictatorships. An archetypical and paradigmatic figure, he incarnated the idealism, expertocracy and authoritarianism of hydraulic utopianism. His life story exemplifies the generation and degeneration of regenerationism.

Now, despite the profound and high-impact legacy of this ideology which became policy and concrete works, a new generation of citizens, in civil and professional society, is eager to reverse the nightmares of regenerationist Utopianism.

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