Giulio Boccaletti
Water: A Biography
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Water: A Biography by Giulio Boccaletti is a history of water and economic development, exploring the tension between a sedentary society living in a world of moving water. The book makes an historical exposé of the social contracts that have coordinated land and water resources to produce food, energy and navigable passages. Boccaletti suggests that water has dominated people's relationship with the environment, and that societies' modifications of landscapes are principally in response to its dependence on water. Yet, it is not a story of technological progress but rather about the evolution of political institutions.

The book has four parts: Part I. Origins, Part II. A Thousand Years of Convergence, Part III. The Hydraulic Century, and Part IV. Finale. The first chapter outlines how water as a substance controls climate on Earth, but otherwise remarkably little attention is paid to hydrology or climate (surprising, since the author is a physicist and climate scientist). Part I continues with how sedentary farming – the first artificial ecosystem – asserted people's relation with water, and then how the Roman Empire's food trade hedged against rainfall variability across the Mediterranean region. The Romans' investment in trade, rather than irrigation, is a telling example of how uneven water endowments can be overcome. This is an implicit example of what could be labelled virtual water[1] trade, making the consumption of larger quantities of water-intensive goods possible also in water-scarce locations.

Part II tells the story of how republican forms of government liaised with commercial interests to invest in hydraulic structures and how the Peace of Westphalia 'marked the shift in emphasis from rule over people to rule over territory' (p. 122). Using examples from Northern Italy, the Netherlands, Britain, India, China and the United States, Boccaletti dwells on the tension between private action and state intervention. While land-holding policies in the US essentially favoured smallholders, the American rivers were too large to be tamed by individual farmers. State power thus came to be expressed through engineering, and the US became 'the most radical architect of water geography in human history' (p. 135), culminating with the (engineering) feat of (beating the French to) the Panama Canal. From the pinnacle of private enterprise in the nineteenth century, a new, powerful state was going to be the main developer: 'The great projects had set a new standard for what the water landscape of a great nation should look like' (p. 163).

1. Allan, J.A. '"Virtual water": a long term solution for water short Middle Eastern economies?' paper presented at the British Association Festival of Science, University of Leeds, 1997

The Hydraulic Century, subject of Part III, covers several related societal transformations. The demographic explosion, in which the capitalist system had consumption as the palliative for inequality, led to a tenfold growth in energy use so that 'hydropower would dominate the story of water for much of the twentieth century' (p. 168). Nation-states now became the most powerful *economic* actors, mobilising unprecedented amounts of public resources, within and beyond their own territories. At the peak of the Cold War, the US had expanded its international engagements to become 'hydrologist in chief' for the world (p. 238).

As pointed out in the 'Finale' (Part IV), however, by the 1970s, the enthusiasm for water-led development waned with economic crisis and environmental disasters. While large projects and state-led investment went out of fashion, Boccaletti suggests that the 'role of the territorial state as a vehicle for collective power … [remained but] … negotiation between society and water had migrated to a different space, one mostly hidden from view' (p. 263). Pointing to China's strategic interests, and its rise as the world's second largest economy and prime locus and financier of water infrastructure, he speculates that 'if the twentieth was the American Century, the twenty-first will be the Chinese one' (p. 280). Incidentally, the book both starts and ends with the dreams, plans and feat of the Three Gorges Dam. Boccaletti notes that in its relentless quest for economic development – through engineered water landscapes – China has during the first two decades of the twenty-first century 'poured more concrete over its rivers than any other nation in history' (p. 295).

While entitled 'Water. A Biography' this is not a biography of *water* as such. The adventures of water itself would go well beyond its interaction with humans. If a *biography*, it is the biography of *infrastructure* or the human quest to control water. The heart of this political account is the iterative relation between state formation/hegemony and engineering/financing capabilities. Boccaletti sees power among those with the ability to amass investment into hydraulic structures.

Critical of ecological determinism and theories about (Oriental) despotic hydraulic society, Boccaletti suggests that 'both the Soviet communist system and the American capitalist one had made reclamation, irrigation, and hydropower pillars of their success' (p. 227). Still, highlighting Wittfogel's[2] point about how the architecture of the state and political philosophy manifest in the landscape, Boccaletti does not go into the specifics of the social institutions. Boccaletti also does not dwell on how the distribution of water endowments in turn might have shaped societies. Such political-ecological questions of how water institutions *iterate* with the *physical* environment remain under-explored.

2. Wittfogel, K.A. *Oriental Despotism: A Comparative Study of Total Power* (New Haven, USA: Yale University Press, 1957)

The 'Finale' relates to 'A World of Scarcity' – that is scarcity of both water and energy – and to the 'Planetary Experiment' of climate change. Comparing US and Pakistan management of catastrophic flooding events, Boccaletti highlights how the twentieth century has left countries with vastly different endowments of infrastructure and institutions. He reflects further on the two-way relationship – that 'countries that are rich can manage water better; but it is often the case that countries are rich because they have found a better way of managing water' (p. 286). The disastrous effects of the 2010 floods in Pakistan were ascribed to a lack of wealth. This is unfortunately also relevant to events unfolding again in 2022.

Boccaletti is concerned with societal transformations like industrialisation and modernisation, but the very physical process of urbanisation is quite absent. The iterative relationship between (economic) development and environmental management, as discussed in relation to flooding, could have been applied at a broader level. Urban water supply – a 'tried and proven route to legitimacy for despots' (p. 74) – is just about mentioned. By extension, universes relating to the human rights to water, water and human health, sanitation, gender, or even people, communities and grassroots movements, fall outside of the purview of this book. The water–society interactions considered by Boccaletti are not at local–individual level, but at the regional–national level, and all with a bird's eye perspective. Rooney's review in Water Alternatives[3] also notes that 'Water: A Biography' is 'lacking in representing the agency of everyday people.'

There is little or no consideration about how people fared in this historic trajectory of resource management. Nor does Boccaletti explore alternative or less exploitative worldviews beyond geopolitical or commercial interests. Contrasting perspectives relating to indigenous peoples or alternative movements could have enriched the presentation.

Notwithstanding, as suggested on the back cover: 'Boccaletti brilliantly traces the history of how human civilization has been shaped by its attempts to control water for economic and societal benefit'. His geopolitical account of basin developments from different eras are historically rich and politically insightful. The events, processes and many interesting examples, however, could have been more graspable with historically relevant political maps inserted into the text. The two maps, contained on the inside covers, include most of the world's larger river systems (except for Brahmaputra, which is mentioned in the text but not on the map).

Water: A Biography remains an insightful and worthwhile account of water's role in society and the economy, with important reflections and questions for water management into the future. After reading, I feel educated about water's economic history and how societies have organised to conquer,

3. Rooney, E. Review of *Water: A Biography*. *Water Alternatives*. http://www.water-alternatives.org/index.php/boh/item/256-Biography (undated)

manage and make use of nature. Yet, I'm left to wonder: How does *Water* itself feel about all this?

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