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Sara B. Pritchard. *Confluence: The Nature of Technology and the Remaking of the Rhône.* Cambridge: Harvard University Press, 2011. xvii + 371 pp. $49.95 (cloth), ISBN 978-0-674-04965-9.

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Sara B. Pritchard's new book on the Rhône is a history of a modern French river. Though the object of this book is classic in environmental history, a river biography, Pritchard's book can also be read as an introduction to the theoretical positions and concepts of envirotechnical history–how an envirotechnical analysis can be accomplished. Pritchard's intention is to analyze the case both materially and discursively. However the environmental impacts are not at the core of her interest; many river biographies have already done this. Her focal point is on "the objectives, design, negotiation, and materialization of river management in France" (p. 6). I will comment on the consequences of such a choice.

Pritchard blends perspectives from the history of technology and environmental history. By analyzing the development of managed environments–in this case the Rhône–she presents the history of an envirotechnical landscape demonstrating that technology, nation, and nature are related. Her envirotechnical analysis brings perspectives and analytical tools from both traditions. Pritchard uses the first chapter as a fairly long introduction of her theoretical positions. This introduction is so informative and clear that it stands well by itself and could be read by those who just are interested in the historiographical as well as the theoretical aspects of the envirotechnical perspective. By this I do not mean that this theoretical discussion is a satellite to the main theme of the book and with no connections to the empirical parts of the book; rather, the book's real strength is the consequent integration of theoretical perspectives and concepts throughout the empirical study.

According to Pritchard, the field of history of technology has treated nature as a black box, disconnecting nature and technology from each other. At the same time, historians of technology have shown how technology is formed by societal variables. The social constructivist framework within science and technology studies (STS) can of course be taken too far. Pritchard, for example, criticizes the work of those who view floods as cultural constructs; she argues that forces other than human culture are at work during floods. As Pritchard indicates nature and culture are not synonymous. She is also critical of assumptions in environmental history about environmental impacts due to the lack of reflection on the uses of representations of environmental knowledge. She maintains that environmental historians have been only minimally interested in technological development. Pritchard wants other researchers to follow in her steps to "treat *both* nature and technology critically without resorting to the determinism, reductionism, or realism of early work in both fields" (p. 14).

The author presents a chain of concepts–envirotechnical systems, envirotechnical regimes, and envirotechnical landscapes–to analyze this managed environment. Pritchard uses these concepts as "analytic tools to help conceptualize nature, technology, and their relationship *within* and *as* history" (p. 3). The relation that the envirotechnical emphasizes is "the 'nature' of technology, or the ways non-human nature affords material constraints to technological development and use" (p. 11). In envirotechnical regimes, ideologies, technologies, institutions, and landscapes comprise the normative structure that upholds an envirotechnical system. The legacy of Richard White as well as Thomas P. Hughes can be traced in these positions.

Pritchard shows that the envirotechnical systems are adapted to different modes of production. For example, she defines the pre-hydropower river, used mostly for irrigation, as well as the hydropower-harnessed one, as an envirotechnical system. The technology is still dependent on the river and nature is still present as power in the flowing and falling water as well as fertilizer. There can be different kinds of envirotechnical systems present at the same time, as, for example, irrigation and hydropower. Here Pritchard uses a long time perspective of an envirotechnical landscape: "the Rhône was and re-

mains an envirotechnical landscape" (p. 1).

She gives a very informative overview of the historical framework of institutions building river development in France, since the river is part of a public domain and managed by a fragmented group of different agencies. These institutions are part of the envirotechnical regime, often creating the specific historical context that make river biographies diverge from one another. As will be discussed later, the reader learns more about the societal level than the presentation of the river itself.

Parallel and different envirotechnical systems can be both complementary and contradictory. Agriculture and navigation competed with hydropower during the late twentieth century. The state prioritized postwar hydropower, by, for example, seventy-five-year concessions. During this period, the Rhône gained a technological style with a chain of low heads and diversion channels, instead of a reservoir system. After discussing the alteration of both hydrology and ecology, Pritchard places the radical change of the Rhône, both in its surroundings as well as in its temperature and flow, from the 1950s on. The expression "former Rhône" was introduced, implying that the diversion canals were the active river: "In some ways, then, the CNRs [Compaigne Nationale du Rhône] diversion canal became more of a river than the former Rhône, but it was a rationalized, industrialized, and simplified Rhône" (p. 100). Still Pritchard describes the projects changing the river as representations, rather than as facts and figures. Consequently in the chapter "Taming the 'Furious Bull,"' Pritchard focuses on discourse rather than on action. The rhetorical move to describing the energy and production capacity of the river "reduced the river to a mere hydraulic project" (p. 63).

The chapter on the "nuclearization" of the Rhône makes this river biography somewhat different from other river histories (p. 79). Nuclear reactors must use water for cooling and diluting contaminated water. As nuclear plants were constructed along the Rhône, a constant nuclear hydrology was shaped, creating new negotiations on volume, source, and destination of water. France today is dependent on 75 percent atomic energy, making the Rhône, what Pritchard labels, an atomic river.

The conflicts between hydropower and agriculture became less acute when implementing improvements. As agriculture elites had the same view of the river–"a high modernist view"–as other elites, a new blending of agricultural and hydrological systems called "hydroagricole" was created (p. 120). With this turn, Pritchard's story of the river becomes a history of negotiations and consensus more than of conflict. I have the impression that conflicts are not an important variable in this book; for example, Pritchard places her comment that conflicts are asymmetric in a note (p. 311).

Finally a new era was introduced in 1986 when the first planned project was closed down; ten years later, the Rhine-Rhône liaison was also put in the drawer. (We can sense a lot of hours in the archive when Pritchard sighs that these documents "have faded into the murk of archives not yet organized" [p. 238].) This development would have made the Rhône a European river, or in Pritchard's vocabulary, a "Europeanization of the Rhône," but it never happened (p. 200). The present river development is presented as a part of the "greening" of society. Negotiations have resulted in a seasonal regulation regime of three seasons, making the Rhône–in Pritchard's words–"a light green river" (p. 239).

Though my unquestionable opinion is that this is an innovative and original river biography, I have some critical remarks. As mentioned earlier, there is little information about the Rhône as a physical body: of the river hydrology, water volumes, falls of height, and energy production. She often presents dams without any facts about their size or capacity, and hydropower stations without power output or production capacity. She does not define the watershed. And when the river changed–"radically remaking the ecology of the entire floodplain" (p. 99)–we are left with no clear description of the result. We are left with inadequate knowledge about the nonhuman aspects of both the environmental as well as the technological in an envirotechnical analysis.

Furthermore, the actors become anonymous. Who were they? Pritchard describes CNR officials and their supporters as political and technological nonlocal-elites. Very little is said about their background. For example, from where were they recruited? The question is left with us–who is CNR?–the most important and dominant actor in this book. Other actors are "peasants and locals" (p. 75). Pritchard informs us that few of them have made marks in official records. Surprisingly few it seems; only letters from one hundred individuals along the river are mentioned. Why were there so few over such a long time? What scope for actions did "peasants and locals" have? What could they have complained about?

Another actor group that remains anonymous is the environmentalists. Who were they? What were their goals and their criticisms? Pritchard attributes environmental groups with romanticism and she characterizes their expressions as "romantic cry" (p. 224). Their his-

tory of the river is "the romantic version" where the wild was to serve as an antidote to the industrialized river (p. 205). They hold another dualistic position as they were spokesmen for the separation of humans and technology from the river.

There is a broad flora of metaphors–some created by Pritchard as analytical tools and others by the actors. The use of some metaphors converges when the CNR, as Pritchard does, wipes out the border between nature and technology in their rhetoric. CNR blurred the boundaries between culture and nature to legitimize development. This is the late twentieth-century message of the CNR, a uniting of technology and nature, a rhetorical attempt to distinguish the present from the past. But Pritchard claims that this is a process that had been going on for a long time, long before CNR made it their message: "In short, *technique* and nature had been repeatedly brought together physically and discursively well before the late twentieth century" (p. 241). At times, it can be hard for the reader to distinguish between a scholarly and actor metaphor. This is a book about the power of language, but the confluence of Pritchard's own language and the actors makes it hard for the reader to sort out the scholarly language.

In spite of these shortcomings, *Confluence* is an innovative history. Through consistent use of the envirotechnical perspective and concepts, Pritchard has written an important river biography, bringing new insights to this field of research. Everyone interested in the history of nature, technology, and nation should read this history of the Rhône, and anyone writing a river biography has to look to *Confluence*.

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