Two Page Note

Terrestrial Histories in the Hydrosphere
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Fins in the inland Ocean
How modern rivers discovered their pulse in British India

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Global warming is upon us and to paraphrase Naomi Klein's recent best seller on the dissonance between capitalism and climate, 'this changes everything'. Under the broad rubric of the Anthropocene ─ a human determined epoch ─ there have been many a call for disciplinary shakeups, a drastic reorientation in academic concerns and even an urgency for founding research programs that are unambiguously themed as Anthropocene studies.

Amidst this intellectual churn, it comes as no surprise that much of what has come to comprise Holocene thinking ─ previous11,700 years ─ is being upended. In other words, the search is on for conceptual ruptures and for paradigm level breaks rather than stumbling upon continuities. Those pursuing environmental histories, unsurprisingly as well, have equally felt the need to abandon the old nostalgia for finding local communities living with 'nature-in-balance', societies caught up in adaptation games with 'stochastic-natures' or even trying to explain the latent chaos inherent in how cultures grapple with rapidly altering environmental worlds.

More pointedly, the focus is now aimed at acquiring a sense of scale. No longer, as is increasingly argued, is the emphasis on documenting how local ecologies achieve environmental harmony nor is it about using middle range theories to explain whether regional environments are being degraded or conserved. The challenge, instead, has gone decidedly planetary. That is, the possibility for human flourishing involves dodging the chances of a sixth mass extinction by pursuing the survivability of all life at the planetary scale.

But what does thinking through the planetary scale mean? For one, as argued by the philosopher Thomas Nail, it involves embracing what he terms as the Kinocene, 'the earth's post-Holocene return to itself as an increasingly mobile, turbulent, and dynamically entangled process' (Nail, p. 14). Put differently, he urges us to unlearn our habits for living in a static stable earth. Rather, the effort is to grasp possibilities for harnessing a dissipative, dynamic and process ridden earth system. That is, to acknowledge that the climatic variability of the Holocene was, in fact, but an aberration in the deep histories of the dynamism of flow and flux that through chance and accident assembled the earth system.

In the light of the above, writings in environmental histories of South Asia too must embrace the possibilities of rupture in thought and framework making. In particular, by taking on the challenge by drawing upon a recent turn in the study of water, the hydrosphere which captures the weave within a single frame of the social and the hydrological. In step with the changed mood, my paper will aim to explore how the planetary scale can be drawn into debates about the ideologies and infrastructures for harnessing rivers in British India.

The paper is laid out in three parts. In the first, I will track how the idea of the 'modern river' gets assembled in the course of the nineteenth century in British India. Through a discussion of the writings, infrastructural projects and sharp disagreements between the pioneering colonial engineers Arthur Cotton (1803-1899) and Proby Cautley (1802-1871). I will aim to show how the idea of a river as flow of volumes and chiefly as a resource for irrigation takes root in the sub-continent. The idea of the modern river principally as stock that can be literally put on tap (Heidegger's 'standing reserve') is moreover disclosed through a range of infrastructures such as perennial canal systems, weirs, embankments and barrages. In such a reckoning, the modern river is idealized as a stable entity that is 'trained' via infrastructure to be predictable and regular.

In the second part, I will discuss the contrarian role and criticism of another celebrated colonial engineer William Willcocks (1852-1932), whose ideas on inundation irrigation or what he termed as 'overflow irrigation' served up a sharp critique of the single minded pursuit of treating rivers as resources for perennial canal irrigation. For Willcocks, rivers were not simply volumes in motion but huge erosive agents that transferred and shuffled around mud, detritus and silt. That is, rivers were primarily geomorphologic force that built up land through a

vast play involving the erosion and deposition of soil. Irrigation by rivers, thus, could only be seen to be a by-product of land formation and not the other way around, as a mere input to the cultivation of crops on land. Rivers, thus, conjured as a flow ─ a geomorphologic agent ─ for Willcocks, stood in distinct contrast to the Cotton-Cautley quest to treat rivers as stock.

The third and final part of the paper will explore how paralleling the heated disagreements over stock and flow was the growing realisation about the 'pulse' like quality of the river. Here, I will discuss the many striking observations in the several reports and studies of Francis Day (1829-1889), who as the then Inspector General of Fisheries began to map out rivers as types of pulse regimes ─ habitats for migratory fish, their breeding grounds, their seasonal movement and the complex and often evolving fluvial connectivity between oceans, the monsoons and the rivers. In a word, the river was a biological organism that drew upon and resonated with geomorphologic processes (erosion, deposition, tectonic uplift, crusts slipping and land building) and a range of diverse hydraulic phenomenon (estuaries, mangroves, oceans and the atmosphere).

In discussing these three frames, I will aim to discuss the relevance of the planetary scale and, in particular, engage with the recent writings of Dilip Da Cunha and Prasenjit Duara. For da Cunha, rivers are but a moment of precipitation in the 'enormous rhythm of the hydrologic cycle'. That is, rivers coursing the Indian sub-continent exist as a point within their monsoonal flex and slack and in several ways, therefore, are part of the atmospheric ocean that encases the planet. Duara's call, on the other hand, to grasp the 'Oceanic paradigm' is to urge us to grapple with the 'fluid boundary crossing' oceanic circulations that are 'interactive, inter-scalar and voluminous'. Put differently, rhythms and circulations help us understand how a range of material energies and biological forces play out to assemble and dissemble environments, that, moreover, cannot be understood outside their dense interweaves within the different scales that charge the dynamism of planet earth. Bluntly stated, a turn towards biological complexity needs histories that reveal planetary rhythms and oceanic circulations. Connections, causes and implications that would otherwise be obscured in nation-state territorial obsessed histories that transform dense differentiated flows into linear, tunnelled [*improvement*], channelled [*progress*] or directed [*planned*] time.

Ref

Thomas Nail, *Theory of the Earth*, 2021.