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Renegotiating urban water

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Abstract

Water infrastructure is essential for the functioning of modern cities. This paper analyses conventional models of water infrastructure provision and emerging alternatives in order to identify points of reform and resistance in the relationship between people, technology and water in cities. It begins with a review of recent academic contributions to understanding the relationships between people, technology and nature in cities through the analysis of urban infrastructure. The work of Andrew Feenberg, a critical philosopher of technology, is presented as the basis for analysing both the technical and discursive elements of infrastructure. Feenberg's concept of 'the technical code' is used to synthesise key insights from the analysis of urban infrastructure and technology, to devise a series of critical categories for comparing changes currently underway in urban water infrastructure provision. This 'technical discourse of water infrastructure' is used to analyse developments in desalination, wastewater reuse, decentralised non-potable supply, domestic water efficiency, water sensitive urban design and ecological sanitation. Planners, designers and policy makers concerned about sustainability should be wary of the technical inevitability of desalination, potable recycling and other systems which reinstate conventional codes of domination and control of nature and separation of public concern from technical rationality. Decentralised water systems embody assumptions about the limits to water resources, but can also be problematic as high users of energy and reinforcing a private right to water. Improving the efficiency of domestic water using technologies and appliances is unarguably important in achieving sustainability. Moving beyond water efficiency to open up discussions about water using practices and cultural norms holds greater potential for transforming water consumption. Water Sensitive Urban Design is widely championed by designers and planners as exemplifying a sustainable approach to urban nature, providing a useful foundation for moving beyond drainage into water supply and wastewater technology and discourse. Ecological sanitation is filling a basic necessity in developing cities and may be part of a longer term transition to sustainability in developed cities in the future. Eliminating water from sanitation and recovering resources from waste holds the potential to radically reorder relationships between bodies, urban spaces and nature. Relationships between cities, technologies and water are shifting. The extent to which this balance falls in favour of sustainability over coming decades will be determined by political discourse as well as technical innovation.
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Contents

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1. Introduction

Water is a good servant, but it is a cruel master – John Bullein 1562

Technology is society made durable – Bruno Latour, 1991

Negotiating our relationship with water is one of the few essential struggles of human settlement. For millions of people this struggle continues through the daily challenges of finding clean water and keeping dirty water out of their homes and bodies. In developed, modern cities this struggle has been delegated. Armies of engineers marshal legions of pipes and pumps to keep clean and dirty water under control in our cities. Water is disciplined, hidden, serving the needs and fulfilling the desires of modern citizen-consumers. Freed from personal struggle to control water, people living in wealthy cities are able to engage in economic, social and cultural life.

Water is a good servant. Domesticated since ancient times to keep cities and households free from disease, water has served as an everyday agent of purification ever since. With water on-tap in homes, offices, factories and public spaces, people have developed new uses for it that go far beyond basic needs for health and hygiene. As new water using appliances have appeared in homes, the networks of pipes, treatment works and reservoirs have expanded to meet growing demand, and the water has continued to flow. Water infrastructure has transformed social relationships and bodily functions. Controlling water in cities also requires particular modes of political control, to enable financing and governance of infrastructure. Water infrastructure has contributed to the social and political transformation of cities as much as hydrological and bacteriological change.

In cities in the developed world, water that falls on urban roofs and streets has also largely complied with engineering and planning controls. Urban drains have ensured that rainwater flows away as quickly as possible, leaving the urban environment free from surface water, except where designated by urban design. Urban rivers and streams have been mastered and constrained, concreted, covered over and incorporated into drainage and sewerage networks. The water that once seeped into the ground and flowed freely in small streams now rushes through pipes beneath the city, discharging into major water bodies, often bringing contaminants.

Water is a cruel master to those who live outside formal infrastructure systems. Daily routines of water collection and purification and battles with water borne and water-dwelling-vector-borne diseases define life for the urban poor in rapidly expanding cities in the developing world. Life and livelihoods are undermined by scarcity of clean water and abundance of dirty water in slum settlements around the world. Such aqueous chaos is usually the result of the absence of infrastructure to control water, rather than absolute water shortages or extreme flood events. Technology, governance, economics and politics are the cause of daily water catastrophes more often than hydrology.

The control of water in cities, along with the construction of canals, roads and railways, was one of the founding tasks of the civil engineering profession. To mark the formation of the Institution of Civil Engineers in 1828 Robert Tredgold defined engineering

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