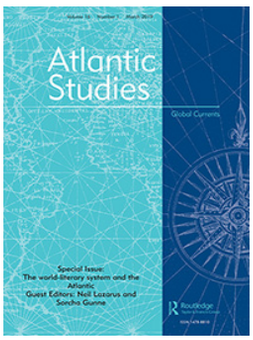

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Water shocks: Neoliberal hydrofiction and the crisis of "cheap water"

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ABSTRACT

This essay examines world-literary representations of neoliberal hydroculture, exploring the crisis of "cheap water." I investigate how water functions in hydrofiction as a thematic element, but also as representation and symbolic regime, product and producer of the socio-ecological relations stabilizing the neoliberal organization of water. I begin with an analysis of Latin American and Chinese hydrofictions which anticipate intensified enclosure of water commons at the moment of the neoliberal turn before moving to the analysis of twenty-first-century novels that register China's turn to "extreme water." These hydrofictions display similar tendencies towards "hydro-irrealism" that underscore the limits of the hydrological regime. I conclude with two examples of millennial "hydro cli-fi" that portray "water shock" in autumnal cores. The impulse of these Euro-American *cli-fis* is diagnostic, but also regulatory, projecting fears of a new hydrological revolution as the basis for Chinese ascendancy.

KEYWORDS

Hydrofiction; water; neoliberalism; world literature; world-ecology

Late capitalism is mired in a crisis of "cheap nature": the loss of the frontiers in cheap labour, energy, food and resources that fuelled earlier phases of accumulation.[1] The neoliberal ecological regime is riven by mounting contradictions: the stagnation of agricultural productivity; climate volatility; geo-technical challenges to extraction of energy, minerals, and water and deposit of wastes and pollutants. Minqi Li suggests that crises of food, energy and water in China harbinger an epochal crisis of the capitalist world-economy.[2] The decline of what I call *cheap water* – the exhaustion of water frontiers, intensification of technologies of extraction and manufacture of water scarcity, combined with rising costs of appropriation – is integral to this crisis. The earth's surface is covered in 70 per cent water, but 97 per cent is saltwater unsuitable for drinking, irrigation or industry with only 1 per cent of saltwater fit for human consumption.[3] Domestic consumption of water has been commodified on an unprecedented scale, at the same time as industrial sources of "crude water" confront limits to appropriation. As climate change intensifies drought in water-poor zones and flooding in water-rich zones, capitalist cores such as the USA and industrializing states like China face water scarcity in their agricultural bread-baskets to the extent that Fred Pearce calls water "the defining crisis of the twenty-first century."[4]

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Hydrological crisis is exacerbated by financialization, which institutes new socio-ecological relations between water and money, integrating the flows of finance capital with the flows of the liquid resources necessary for social reproduction. Material components of water systems and uncommodified elements of "the hydro-social cycle" are incorporated into financial networks as part of a fundamental shift in how "nature" is valued: "no longer [as] a limited stock of material inputs metabolized within the production process, but [as] an infinite series of performing assets that can be measured, evaluated, circulated and *speculated* on in financial markets."[5] Thus, investment bankers hail water as "the ultimate commodity" and "the oil of the future."[6] Richard Sandor, the inventor of carbon trading, is currently developing predictive algorithms for a US Water Futures market, exulting that "scarce resources like water and air will replace crude oil as the most important commodities of the twenty-first century."[7] Prototypes of water-financialization include the Palisades Water Index and Australian Waterfind, which purport to stabilize prices in water-strapped regions, though their growing percentage of investors are speculators, not farmers. Fredrick Kaufman warns that just as financial derivatives exacerbate global dietary instability by producing a "food bubble" of inflated prices, they will create a "water bubble" even "more catastrophic than betting on the world's food supply."[8]

The "cheap food" integral to "cheap nature" is founded not only in "cheap oil," but also in "cheap water." The Green Revolution is not only energy, but also water-intensive, silting rivers, salinating fields and desertifying water-abundant regions.[9] Just as a crop such as wheat embodies virtual oil, it also embodies "virtual water," the virtual form of 1000 tonnes needed to grow one ton of grain. Freshwater is often imagined as eternal, without limits to appropriation. Similarly, hydropower is presented as "clean" and "renewable," unlike oil reserves, which cannot be renewed once extracted, even though the energy harnessed from hydropower is constrained by the short life-spans and ecological limits of large-scale hydroelectric dams. However, as with oil, the problem is not truly one of finitude, but of how to leave what is left in the ground. The world-ecology ought to be post-oil, given atmospheric limits to carbon release, but extraction of fossil fuels persists. Graeme Macdonald calls this the regime of "extended oil, a world where petroleum, despite everything, remains undead."[10] The extent to which water is renewable faces biophysical and social limits. Virtual water ruptures the social metabolism of nature and produces a rift in the hydrological cycle. Deep "fossil" aquifers, which contain ancient water locked in the earth by geological transformations millions of years old, cannot recharge: once their water is exhausted, it is gone. "Shallow" aquifers can recharge from surface water and rain, but if drained past their refill rate, these too are easily exhausted. Surface water in lakes, rivers and reservoirs is dwindling. If the hydrological cycle of evaporation, condensation, precipitation and transpiration is disrupted – by deforestation and desertification; declining melt-fed water systems due to changes in the melt-rate of glaciers and icepacks; soil degradation; saltwater intrusion in lowland coastal areas; and increased climate volatility and variability of water – then rainfall patterns can be delayed or permanently interrupted.[11] Water is "renewable" only when the closed-circles of hydrological cycles remain complete.

Just as "extreme oil" references costly, carbon-intensive technologies of extraction, the term "extreme water" could be used to encompass the intensive technologies of aquifer pumping, hydraulic mega-projects, bore wells, oil-based deep-drilling tech, industrial

desalination and cloud-seeding. Brown problematically advocates a "blue revolution" to resolve the hydrological exhaustion of the "green revolution,"[12] while the World Water Council speculates that "water productivity" can be increased by biotechnology.[13] The likelihood of a fix to maxed-out "cheap water" is dubious, however, given that technical intensification tends to accelerate crisis. Extreme energy and extreme water are destructively interrelated, with the decline of renewable sources of freshwater compounded by the huge amount of water consumed by energy and extractive regimes: in mining, fracking, smelting, semi-conductor manufacturing, in the coal, oil and nuclear industries. Even "green energy" is water-intensive: bioenergy and hydroelectricity have "water footprints" per unit of energy up to three times larger than fossil fuels or nuclear.[14]

Although I have cited critics such as Brown and Li who employ "peak" discourses, it is with a strong caveat against Green and Red Malthusian conceptions of "natural scarcity." The proliferation of neo-Malthusian ideas buttresses neoliberal forms of dispossession and the reduction of civil freedoms in the name of resource securitization.[15] Discourses of water "security" are instrumentalized to justify militarization and transform the idea of water into a "scarce" exchangeable commodity, as evidenced in the Pentagon's war-gaming of extreme water impacts and strategies to colonize water reservoirs in South America.[16] Development theorists tend to over-emphasize the potential for sensational international conflicts resulting from "water wars" in contrast to the slow and incremental violence that impacts communities subjected to hydrological apartheid and hydrocolonialism. "Water scarcity" must be understood as socially manufactured, rather than naturally inevitable: the creation of capitalist hydrological regimes. Thus, "peak water" is a problematic term, since freshwater is renewable within certain socio-ecological conditions, and because peak discourses fail to recognize that water is not a static object to be extracted, but a fluid set of social relations that could be changed.

It is more useful to think in terms of cheap water, peak appropriation, exhaustion and extreme water. In his discussion of "The Four Cheaps," Moore distinguishes between "peak appropriation" and two different forms of exhaustion, "maxed out" and "wiped out." Peak appropriation signals the moment in an accumulation cycle when the least amount of capital investment can release the greatest amount of water, oil or food. Thus, my use of "cheap water" designates the period when rising volumes of water are secured and extracted through declining unit costs. By contrast, "relative exhaustion" indicates the moment when peak appropriation has been reached and exceeded, when the unit cost of a gallon of water begins to rise relative to its previous lowest cost or volume point. At this point, unpaid appropriation of water is "maxed out": a rising volume of water can no longer be appropriated without rising inputs.[17] "Wiped out," therefore, signifies the absolute exhaustion of an accumulation regime.[18] In our current conjuncture, post-peak appropriation has been succeeded by a shift towards "extreme water," a rising absolute mass of water extraction that coincides with a dynamic of rising costs. The present response to the relative exhaustion of cheap water has been to extract *more* water, not less, at rising unit costs amplified by the rising cost of energy. Such intensified extraction leads to water supply not only being "maxed out," but "wiped out." This is "extreme water," the exhaustion of historical hydrological frontiers, where intensified extraction incurs rising costs and surpasses the capacity for renewal, threatening the democratic distribution of water throughout the planet.

Vandana Shiva reminds us that the earth is a hydrosphere, and the hydrological cycle is a water democracy: "a system of distributing water for all species."[19] Water and precipitation are not distributed uniformly, which would result in homogeneity of species, but rather equitably, across agro-climatic zones. This diversity of water, promoting diversity of all forms of life, is at odds with the rationalizing logic of neoliberal capitalism. Producing asymmetries of consumption across agro-climatic zones, capitalist hydropolitics subject marginalized communities to "water shocks," acting as "an engine of destabilization."[20] Water captured by extraction schemes no longer flows freely, but rather "flows uphill, towards money."[21] "Imperial water" flows towards capitalist agribusiness, state-favoured development projects and urban centres, diverted away from riparian and traditional agrarian users.[22] Hydropolitics operate at regional, national and transnational scales along intersectional axes of class and ethnicity, as in the case of China's imperialistic attempts to monopolize Tibetan rivers or US hydropiracy in the Americas.

Hydroculture and world literature

This essay explores the cultural logic of water in the neoliberal hydrological regime – what I call neoliberal *hydroculture*, referring not to hydroponic cultivation, but rather to the cultural forms and figurations corresponding to the enclosure and appropriation of water. I examine world-literary representations of the neoliberal crisis of cheap water, beginning with a trans-hemispheric comparison of Chinese and Latin American hydrofictions that anticipate intensified enclosure of water commons in key semi-peripheries of the world-ecology at the moment of peak appropriation. American and Chinese hydrofictions are particularly ripe for comparison, given that China and the USA are empires built on "conquest of water," whose hydraulic regimes are central to their "pacification" of humans and the rest of nature.[23] Both countries have confronted post-peak appropriation by turning to extreme water. I conclude with examples of millennial "extreme water" fictions from the USA and Finland that mediate Euro-American fears of twenty-first-century water shock and hegemon crisis. Throughout these hydrofictions, I argue, water functions as a thematic element, but also as representation and symbolic regime, product and producer of the contingent socio-ecological relations stabilizing the neoliberal disposition.

My analytic framework draws on Moore's synthesis of Marxist ecology and world-systems theories. Moore uses the term "capitalist world-ecology" to designate the "patterned history of power, capital and nature, dialectically joined," arguing that capitalism does not act *on* nature, but rather emerges *through* periodic re-configurations of human and extra-human natures, alternating ecological regimes and ecological revolutions.[24] A world-ecological approach to world literature enables new forms of comparison of the structures of feeling and forms of commodity fetishism peculiar to different regimes, revealing the socio-ecological relations that stabilize hydrological, energy and agrarian regimes in different phases of capitalism. Cultural forms are historical agents in environment-making, not merely *reflective* of re-organizations of capitalist nature, but *co-productive* of them. Thus, this essay will interrogate how hydrofictions anticipate or stabilize neoliberal hydroculture, but also the ways in which they subvert the socio-ecological relations produced by dominant epistemes and technics of water.

Neoliberal hydroculture shares several key representational characteristics with *petroculture*: fluidity, hypermobility and ubiquity paradoxically conjoined with occulted

visibility. The material global infrastructure of pipes, pumps and container ships is less tangible than the liquid that emerges from the tap. Like fuel reserves, the bodies of water under greatest onslaught are underground or occluded from public sight: whether groundwater despoiled by fracking, fossil aquifers pumped dry, cloud vapour captured and reseeded, feeder rivers eutrophied or oceans contaminated with petrochemicals. Significantly, as Michael Niblett has observed, in the 2008 James Bond film *Quantum of Solace*, the "non-said" of oil is seemingly reversed in the scene where the body of murdered MI6 agent Strawberry Fields appears slathered in crude.[25] This image is peculiar because the plot does not revolve around the villain's theft of oil, but rather his attempt to monopolize Bolivia's water reservoirs (an allusion to the Cochabamba water wars). This substitution of oil for water signals the way in which the hydrological regime has emerged interdependently with the petrolic regime. Whereas it is usually oil that cannot be made the direct subject of narration of the world-system because its cultural logic is that of mediation, here it is water-as-systemic-relation that eludes subjectivization, displaced by the shocking viscerality of figurative oil.

A contradictory ambivalence pervades neoliberal representations of water crisis, veiled in the fetishism through which flowing water is transformed into exchangeable, quantifiable commodities, but also charged with the sensory immediacy of the necessity of water for all life and human development. Given the interdependence of energy and water, the hydrological regime can be said, like oil, to be a relation through which capitalism articulates its structure. Oil's saturation of the world-ecology presents challenges to representation, an "imaginative block on articulation" bound up with the "certitude of its symbolic logic in the way we live now."[26] The phantasmic representation of oil has been theorized as pertaining to its seeming invisibility yet ubiquity within a mode of production wholly dependent on fossil-fuel consumption and to the fetishism of the commodity-bubbles and disparities in wealth-generation that form around its extraction. Unlike oil, however, water is visible in the form of rivers, seas and rains, and pre-capitalist imaginaries teem with metaphors of water as life, as gift, as sacred. In contrast to petroleum's ineluctable association with modernity, water has been re-imagined in symbolic regimes since the first emergence of art. Yet, as Hannah Boast observes in her pioneering study of hydrofiction, environmental literary critics have had far less to say about water than about land or energy, even though "no resource … is more fundamental than water."[27]

Rather than concentrate on non-representation, it is more productive to focus on what *can* be said about water. We may be subjects of petro-modernity, but the planet is not a petro-sphere in the same sense that it is a hydrosphere: water, not oil, spurs biodiversity. Our bodies, subjectivities and cultural formations are peculiarly fashioned by and dependent on oil, but they do not depend on oil in a biological sense for life itself. If it seems difficult to imagine modernity without oil, a world without water is simply impossible. The very urgency of the human requirement for water opens up new possibilities for political action. Whereas the "energy unconscious" of oil may be subject to erasure,[28] the politics of water are more immediate, even if critical analysis of *hydroculture* is less developed.

Water enclosure in the Americas

My first exemplary novel anticipates the neoliberal turn to water-enclosure in the Americas. In Colombian writer Gabriel García Márquez's *The Autumn of the Patriarch* (1975), an

ageing Central American dictator is coerced into selling the Caribbean Sea to the USA in exchange for relief from debt and a CIA-sponsored coup. As he lies dying in his beachfront mansion, his repressed guilt unfolds in a stream of consciousness whose riverine prose ironically contrasts the aridity of the seabed:

> Either the marines land or we take the sea, there's no other way, your excellency, […] so they took away the Caribbean in April, Ambassador Ewing's nautical engineers carried it off in numbered pieces to plant it far from the hurricanes in the blood-red dawns of Arizona, they took it away with everything it had inside general sir, with the reflection of our cities, our timid drowned people […] I granted them the right to make use of our territorial waters in the way they considered best for the interest of humanity and peace among peoples, with the understanding that said cession not only included the physical waters visible from the window of his bedroom to the horizon but everything that is understood by the sea in the broadest sense, or, the flora and fauna belonging to said waters, its system of winds, the inconstancy of its millibars, everything, but I could never have imagined that they would be capable of doing what they did to carry off the numbered locks of my old checkerboard sea with gigantic suction dredges […] they carried off everything […] and left behind only the deserted plain of harsh lunar dust.[29]

The eloquent flux of the first-person narration captures the rich subjectivity of the dictator's over-developed ego and centrality to the state, though interspersed with deictic shifts between the pronouns *I*, *they* and *we* that underscore the intersubjective constitution of his consciousness. Niblett observes that periodic exhaustion of commodity frontiers is frequently mediated in "irrealist" aesthetics that capture the dynamics of peripheral societies subject to price volatility and cycles of ecological regime and revolution that rapidly dissolve social unities.[30] I argue that hydrofictions like *Autumn* that imagine absolute exhaustion display similar tendencies towards *hydro-irrealism*: a preponderance of tropes of draining and dessication; plots that tend towards repetition and circularity; narration marked by the spectral or absurd; macabre and gothic atmospheres of death-in-life.

In its plot and genre, García Márquez's *novella del dictador* mediates the "neoliberal turn" during which Latin America became a laboratory for structural adjustment policies imposed by the IMF and World Bank and enforced by US-sponsored c*audillos*. These economic policies were also environmental, reorganizing Latin American societies around appropriation of ecological surpluses. The nexus between debt and hydrocolonialism in *Autumn* anticipates the rising hegemony of finance capital over accumulation from the 1970s onwards, in which asset-stripping and speculation were prioritized over productive investment. In 1975, the novel's vision may have seemed satirically apocalyptic, but it is revealing to consider alongside Roman Polanski's 1974 film, *Chinatown*, which fictionalizes the California Water Wars. The "water grab" is the structuring violence in the film noir, exceeding the individual crimes that the investigator initially sets out to track. The overarching "mystery" in need of disclosure is the sacrifice of the public good of the rural hinterland to the profit of the LA city-system.

Autumn is a dystopian mirror to *Chinatown* that projects the American west's water regime forward to imagine what happens when internal enclosures of cheap water (such as those of Owens Valley) are maxed-out. In the novel, Arizona is the anticipatory marker of water crisis in the American West. The Ogallala aquifer, one of the largest underground sources of freshwater, sprawling 170,000 square miles across eight states, is being drained faster than it can recharge. Mighty rivers like the Arkansas, the Colorado, the Rio

Grande, are disappearing or running dry. Yet states and corporations accelerate the pumping of aquifers and the importation of water, perpetuating "the Hydro-Illogic cycle," in which anxiety over scarcity is followed by amnesia about its social causes once shortages ease.[31] In *Autumn,* this hydro-illogic culminates in appropriation of the periphery's water as a temporary spatial solution to the core's hydrological crisis, an ecological fix that "wipes out" the Caribbean Sea. The impossible quantification of an entire ocean, imposing a Cartesian grid on the fluid sea, encapsulates a vision of supreme technocracy saturated with the logic of radical commensurability accompanying finance capital's attempts to rationalize the whole of reality into generic income streams. The "ocean grab" in *Autumn* is apocalyptically total, more extreme than the theft in *Chinatown*. This is underscored in the genre: there is no (anti)heroic investigator to reveal the violence immanent to the system, no prospect of legal redress within the undemocratic regime. Instead, debt-based structural adjustment and external military force combine with the weakness of the peripheral state apparatus to ensure that the water grab is experienced as a disaster without mitigation.

Today, the prospect of suction dredges to drain seas is no longer speculative. New transport corridors into the Amazon River reservoir have enabled black market traffic in crude water carried by converted oil tankers from South America to Europe, North America and the Middle East.[32] The overproduction of water-intensive food crops in capitalist cores is sustained by the extraction of hydrological resources from peripheries. The horizontal appropriation of territory for mining and agri-business by transnational corporations has been joined by *water grabs* that vertically enclose subterranean waters, projects of death that dispossess riparian communities.

In *Autumn,* the selling of the sea is a death-scheme that violently removes the basis for future socio-ecological reproduction. The patriarch develops an ecogothic horror of the "flashes of the lighthouse without a sea," a "fantastic starlike firefly that fumigated in its orbit of a spinning nightmare the fearsome outpouring of the luminous dust of the marrow of the dead" (211). This false enlightenment figures capitalism's episteme of externalized nature, which grows by eviscerating life. The US ambassador installs a wind machine that replicates "the cross currents of the tardy trade winds," but the machine's "false mistrals" reveal the hollowness of the promise of a technological fix: they cannot replenish the evaporated lifeworld, only offer simulacra (210). When US engineers dredge the sea, they take away everything it sustains: the flora and fauna, the winds and rains, the reflection of cities, even the basis for the dying patriarch's liquid narration. The autumn of the patriarch is the autumn of the "*oikeios*," Moore's term for the dialectical interweaving of symbolic and material relations within the matrix of human and extra-human natures.[33] The text's hauntological qualities gesture to absolute exhaustion, a hydrological rupture in the social metabolism of nature that promulgates an irreversible collapse of the entire ecology.

"Great talk" of China's water

My next text captures the emergence of new social relations at the moment of China's "neoliberal turn," with a particular emphasis on the constitution of a new hydrological regime. Whereas García Márquez's *Autumn* is charged with a bitterly-resistant mediation of the ecological fix appropriating Latin American waters to resolve the hydrological

crisis of the US core, Chen Jiagong's "Number Nine Winch Alley" is energized with the inflated affects corresponding to China's ascendance. The short story was published in 1981, three years after Deng Xiaoping pronounced the "four modernizations" opening China to economic liberalization. Set in a courtyard community, the short story captures the transmutation of these modernizations into new forms of subjectivity stabilizing the emergence of the neoliberal ecological regime. The alley residents reconceive water not as the basis of communal life, but rather as a commodity to be privatized:

> One of the residents of the courtyard heard that the nation's economy was "in the red." […] There was a vague sense that that had something to do with rising prices, and people started to get panicky. Han Delai saw the old ladies whispering together in a corner and grew angry. "Hummph! Look at all this lack of patience! In the red, in the white, what are you frightened about? I'm telling you our government has everything under control […] Let's just talk about water for a minute. Even China's water is worth money! Haven't you heard that over in Shandong, the water of Mount Lao is worth tons of money! Fill a bottle up with water and send it overseas to the 'big noses' and fork over the money please! Hell, water – will we ever run out of it? […] These days we've got lots of water, it's the bottles that are causing the problems. When we have more bottles, we'll be swimming in oceans of cash! Only four modernizations? … We can do eight … " These words put Widow Feng into a fit of ecstasy, and the "gan-qings" flowed like water, too. In fact, everyone's spirits were raised; it seemed that they were all feeling much more secure. […] This great talk about the water of China being worth buckets of cash was Han Delai's most memorable heroic feat.[34]

In contrast to the fluid eloquence of *Autumn*'s patriarch, this third-person narration is suffused with the brash volubility of peasants-turned-entrepreneurs, focalizing a collectivity on the verge of privatization. The aesthetics are social realist, but the chatty narration radiates a certain euphoria: the creative destruction of the reimagination of Mount Lao not as sacred site but as vessel to be drained for export to capitalist cores; the heady affects of innovation and nationalist pride offered as social salves to the anxieties of price volatility and financial panic caused by integration into the world market; the illusory promise of an ecological fix to debt through the enclosure of previously uncommodified zones of life; the acquiescence to securitization under an authoritarian state. The passage sets up a striking analogy between the untrammelled expression of privatized consciousness and the crystallization of the myth of water as a flow that can be endlessly appropriated for China's modernization, as expressed in the loquacity of Han Delai and Widow Feng. Widow Feng's verbal dexterity is "blocked" when she fears the nation's economy is foundering, but is restored after Han Delai's speech, when her confident Beijing aphorisms affirming the new social reality (*gan-qing* loosely translates as "that goes without saying") "flow" once more like "water." Verbal and subjective flow are linked to the exultant endorsement of nature as a source of capital flows: the cultural fix that corresponds to Han Delai's celebration of a new hydrological frontier as part of the "ecological fix" to China's economic crisis, which accumulates new forms of value through the appropriation of externalized nature.

This process is accompanied by the financialization of everyday life. The residents enter into credit relations, reversing the Cultural Revolution's campaign to "destroy the four olds" by vigorously competing in novel forms of consumption. They purchase incongruous appliances on credit they cannot use, displaying them "ostentatiously" as evidence of social status (276). For these households, China's neoliberal reforms are "a kind of 'tease', luring them into a market economy with promises of increased

autonomy while eroding all forms of collective property and security."[35] When Han Delai grows old, with the security of the "iron rice bowl" of social protections removed, he finds himself impoverished and despised by a now-atomized community, trapped in a "living death" (280).

"Number Nine's" aesthetics do not extend to dystopian prolepsis, partly because they do not register the same extremity of peripheral subordination to foreign appropriation as *Autumn* does, nor the imagination of absolute exhaustion. However, the story's narrative logic – euphoria, followed by deflation – captures the social experience of privatization, while implying the inevitable relative exhaustion of the cheap water and cheap food integral to China's modernization. The bathos of Han's decline ironically contrasts the over-inflated affect of his "great talk" of China's water, predicting the decline of the hydrological regime that he lauds. Far from being able to export its water globally, China has exceeded the carrying capacity of its hydrosphere.

Blood spurts like water

China's "water crisis" has been accelerated by three decades of compressed industrialization without environmental regulation, under the mandate of "grow first, clean up later," an ethos that Ma Jun describes as "trying to rob nature of the last drop of water to serve economic expansion."[36] China is the world's most populous country, but possesses only one quarter of the world's average per capita water resources, and faces severe challenges in the variable distribution of water.[37] The planet's largest producer of hydroelectricity, with 50,000 dams on the Yangtze alone, China has launched hydraulic super-projects such as the Three Gorges Dam and the South–North Water Transfer Project in the attempt to resolve the geographic mismatch between its northern energy reserves and southern water resources. These schemes reengineer entire ecosystems to fit abstract supply, rather than recalibrating usage in proportion to different watersheds; they have produced mass displacement of environmental refugees and undermined the Yangtze's centuries-old use as a transport-system. The compound crisis of extreme water is manifested in "the drying up of the Yellow River, devastating floods on the Yangtze, the rapid decline in northern China's water table, and the serious pollution problems of southern China's water."[38] Pan Yue, Chinese minister of the environment, recently predicted:

> This miracle will end soon because the environment can no longer keep pace. Acid rain is falling on one third of the Chinese territory, half of the water in our seven largest rivers is completely useless, while one fourth of our citizens does not have access to clean drinking water.[39]

Twenty-first-century Chinese novels like Yan Lianke's *Dream of Ding Village* (2006; translated 2011) and Ma Jian's *The Dark Road* (2012; translated 2013) are saturated with eco-gothic images of hydrological exhaustion and pollution, whose depiction of the total annihilation of riparian lifeworlds recalls *Autumn*'s apocalyptic vision. Their hydro-irrealist aesthetics sharply repudiate the extractivist logics underlying China's extreme water. *Ding Village* is posthumously narrated by a 12-year-old boy, Ding Quiang, who was poisoned by the villagers in revenge against his father, the local "blood head." Its plot revolves around the decimation of a rural village in Wei County of Henan province after the epidemic caused by unregulated blood-selling during the plasmapheresis boom.

In the mid-1990s, in response to new transnational markets for biocapital, the Chinese government transformed Henan into a leading frontier in the plasmapheresis economy, wooing foreign direct investment in bio-product enterprises and establishing paid donation stations across the province. The rural blood economy was a vertical frontier of cheap nature that delved into the arteries of life itself, treating peasants' blood as an agricultural export. Plasma obtained by the state-sponsored stations was sold to biopharmaceutical companies producing human blood products at extortionate markups. In Henan, the blood trade was unregulated and contaminated, driven by impatience for rapid profits, resulting in a catastrophic epidemic of AIDS that infected millions, decimating the province.[40]

In *Ding Village,* the county director urges peasants to abandon farming for blood donation as an escape from poverty: "You can travel the golden road to wealth and prosperity, or you can stay on the same dirt path and live like paupers."[41] The village elder borrows the symbolic regime of hydrological plenitude to convince the villagers to give blood:

> When Grandpa reached the riverbed, he searched around for a moist patch of sand, rubbed it between his hands and began to dig a small hole. Before long, the hole was half-filled with water. Grandpa produced a chipped ceramic bowl and began ladling the water from the hole and pouring it on to the sand. Again and again he ladled, pouring one bowl of water after another on to the sand. Just as if it seemed that the hole had gone dry, Grandpa paused. In a matter of moments, the water began to seep in, and the hole was once again full of water. […] "Did you see that? […] Water never runs dry. The more you take, the more it flows. […] It's the same with blood. Blood always replenishes itself. The more you take, the more it flows." (30–31)

Here, once again, the concept of "flow" is indelibly linked to the reimagination of nature – the human body's circulatory system and the earth's groundwater – as a source of unlimited commodity flows, a fantasy of capital's circulation without barriers. The asymmetrical biocommodities trade results in the immiseration and physical enervation of the producers of blood, at the same time as it precipitates a collapse of the agrarian regime, since the weakened peasants are unable to water their fields or grow crops.[42]

The blood monoculture is inextricable from the hydrological crisis undermining the rural agrarian regime. Located in Central China's Yellow River Valley, Henan is irrigated by the mother river that has been the main artery of Chinese civilization for millennia. One of China's most populous provinces and largest producers of water-intensive crops, it has been beset since the 1990s by soaring temperatures, droughts and water shortages as a result of climate change and hydraulic engineering schemes. The overexploited Yellow River has entered a crisis of terminal dormancy, failing to reach the sea for over half the year. Upstream dry regions in northern China drain the river for agricultural and urban use, while downstream regions suffer chronic shortages in their wetlands and groundwater. The government's response is to drill deeper artesian wells and build longer diversion channels to tap fresh resources as each source is subsequently exhausted. The plasma economy, by introducing a new commodity frontier that does not require "cheap water" for agriculture, can be understood as a temporary ecological fix.

A chapter near the conclusion of *Ding Village* bleakly describes the hydrological rift. The technical fixes employed by the villagers exhaust the groundwater reserves and precipitate a rupture in the hydrological cycle that destroys not only crops, but the whole of the riparian ecology on which their lifeworld depends:

> The farmers, unaware of the drought, had diverted water to their fields any way they could. They dug deep irrigation wells and used diesel engines from tractors to pump even more water from the earth. By June and July, the wheat was in ear, the cottonwoods were in bloom, and there was no moisture in the ground. With no nearby rivers to draw from, the soil was parched. […]
>
> When the sun burst from the eastern horizon and roared into the sky, the plants were dry, their leaves brittle under the burning sun, and their heads drooped, crumbling at the slightest touch. With each gust of wind, chalky dust rose from the scorched earth and swirled across the plain. […]
>
> The plain was as pale as ashes, as far as the eye could see.
>
> The leaves on the trees withered and curled. The scholar trees, whose shallow roots couldn't absorb enough moisture from the soil, began shedding yellow leaves, as if autumn had come early. […] The village, once green, was barren. It blended into the landscape.
>
> Crops died in the fields. Grass withered on the plain. The soil was bleached, as far as the eye could see. (281–282)

The repetition of ashen tropes and motifs such as "as far as the eye could see" creates a sense of poetic litany, recalling *Autumn*'s lunar deathscape. The novel's structure is characterized by repetition and circularity; passages similar in language and content evoke the cyclical return of water shortages and the chronic draining of the vitality of the villagers and the land. These acquire a double significance when the extractive relations underlying blood monoculture are interlayered with those of hydrological crisis.

The narrator's grandfather is visited by monstrous dreams of the plasma economy as a vampiric infrastructure that intertwines with the pipes that drain the countryside's water resources:

> For the last three nights, he'd had the same dream: the cities he'd visited […] with their underground networks of pipe like cobwebs – running thick with blood. And from the cracks and curvatures of pipes, from the l-bends and the u-bends, blood spurts like water. A fountain of brackish rain sprays the air; a bright-red assault on the senses. And there, upon the plain, he saw the wells and rivers all turned red, rancid with the stench of blood.[43]

If Grandpa persuaded the villagers to donate blood by evoking a symbolic regime of endlessly renewable water, here the symbolic regimes of water and blood as circulatory systems are once more interlinked, but this time their idealist valence is reversed into a horror-show. The pipe is a nightmarish instrument of extraction, within which blood does not circulate perpetually, but rather "sprays" and "spurts," signalling violent rupture. This doubled figuration uses the hydrological rift caused by the draining and diversion of the Yellow River in order to articulate the asymmetries of the blood economy. The plasma infrastructure is the product of the reorganization of human labour and the wider eco-system in the wake of hydrological crisis, and thus the ways in which both regimes drain the vitality of the lifeworld must be articulated together. The extremity of ecogothic aesthetics in passages like these expresses the stark necessity of blood and water to social reproduction. By the novel's conclusion, the majority of characters are dead; those that linger on are the "stationary displaced,"[44] suspended in a form of death in life. The posthumous narration underscores the destruction of rural futurity, giving the lie to government promises that the appropriation of cheap nature would bring plenitude.

Waste and water

If *Ding Village* figures the draining of the Yellow River, my final example from Chinese fiction, Ma Jian's *The Dark Road*, mediates the hydrological crisis of China's second great river: the titular dark road of the Yangtze, black with silt and chemical waste. Whereas *Ding Village* chronicles the devaluation of the rural countryside through the perspectives of the displaced-without-moving, *Dark Road* charts the traumas of migrants and refugees. The novel represents hydrological crisis as dialectically interrelated to neoliberal frontiers of waste, pollution and hydro-energy. During 2008–2009, Ma Jian travelled extensively through Guandong, researching the experiences of boat people on China's most polluted river, discovering that "people's relationship to trash is getting closer and closer. […] When I went to these wastelands, life was no different than death."[45] The novel narrativizes the environmental catastrophe of the Yangtze through the journey of Meili, pregnant with a forbidden second child, as she and her husband Kongzi flee the state's population control.

Leaving their upstream village, they sail south to "Heaven Township," in the Special Economic Zone of Guiyu, centre of a boom in waste-outsourcing from capitalist cores:

> As much as 70% of the world's toxic e-waste is shipped to this area of southern China, where it is processed in makeshift workshops by migrant labourers who are paid just $1.50 a day […] In just ten years, Heaven Township, once a collection of sleepy rice villages, has become a digital-waste hell, a toxic graveyard of the world's electronic refuse. The air is thick with dioxin-laden ash; the soil saturated with lead, mercury and tin; rivers and groundwater are so polluted that drinking water has to be trucked in from neighbouring counties […][46]

Because most men who dwell there become infertile, and many children are born with birth deformities, the official state policy of one child-one family is not enforced, making it a haven for migrants such Meili and Kongzi.

Their episodic boat journey is described in meandering aesthetics that invoke a riverine rhythm of perpetual circulation opposed to linear conceptions of modernization, while capturing their rootlessness as deracinated peasants. Their slow travel is a strategy of narrative deceleration, opposing the developmental time of the Chinese "miracle." A sense of suspended temporality pervades the first half of the novel, implying a riparian consciousness that encompasses a longer durée of civilizational-time than the neoliberal hydroculture of New China. Kongzi, who prides himself on being the "seventy-sixth generation male descendant" (5) from Confucius, proclaims that "the Yangtze is our nation's artery of life," citing classical poetry rooted in the pre-capitalist Chinese philosophy of nature (33). Meili responds by quoting Li Bai: "On both sides of the gorge, apes cry unceasingly/My light raft has already passed through ten thousand mountain folds" (33). They encounter an endangered Chinese green sturgeon with reverence for the ancient geological time it evokes, only to mourn its imminent loss: "When the dam is finished, their migration route will be completely cut off. They're doomed to extinction" (51).

For Meili, struggling against Malthusian state policies that govern her reproductive capacity and against her husband's patriarchal belief in his right to inseminate her with a male heir, the river is a feminized sphere where "she feels more free on the water than she did on the land" (52). She imagines the Yangtze as a commons whose "constant flux" repels masculinist hierarchies, in contrast to the land: "Whether it's rented or borrowed, every path of soil in this country is controlled by the state" (52). As Suya, a detainee in a camp where the state incarcerates rural migrants in an attempt to limit urbanization,

tells Meili, "Grains of soil are seeds of the masculine spirit; rivers are dark roads to the eternal female" (190). Posing the river as the sacred feminine strategically equates the domination of nature and of women by the Chinese state, even if it problematically verges on biological essentialism.

The ecofeminist vision of the Yangtze is held in dialectical tension with the toxified watershed, analogizing the pollution of the river with the abuse of Meili's body and the appropriation of her unpaid labour in the sphere of social reproduction. The narrative sense of temporal remoteness from the hyper-modern metropolitan hubs of Shanghai or Beijing is constantly interrupted by industrial reminders in the form of river waste and pollution. The protagonists' subjectivities are focalized through a complex perceptual apparatus registering constantly shifting sensations of toxification: the variegated stenches of factory effluents, the colours of industrial waste, the sour and sulphurous tastes of chemicals. In Dexian, metallic rain corrodes their boat; in Guai Village, where Kongzi sells blood to a bloodhead, the riverbanks "are so darkened by dust and pollution that, compared to them, the fumes billowing from the far-away factories look clean" (142). A flood diversion area, Guai, is inundated by "yellow foamy water" from upstream factories, and its rate of birth deformities is so high that the town starts a "deformed infant trade," selling children to Shenzhen begging gangs (144).

The ironic contrast between the pastoral imagination of the river in classical poetry and its reality is sharply marked in Sanxia, a town flooded by the Three Gorges Dam, its occupants relocated against their will. Kongzi recalls Li Bai, "who sailed down this river a thousand years ago and immortalized it in his verse" (33). The affects encapsulated in Li Bai's poetic description of "the coolness at the base of the gorge, the giddiness one feels when disembarking onto the riverbanks" (42) will disappear forever once the valley is flooded. Meili is struck by the broken town's uncanny sense of folded temporality, where the residual traces of millennia-old civilization and its earlier philosophy of nature exist simultaneously with the developments that will erase them.

Meili's and Kongzi's sensation of temporal incongruity, of coming from a less capitalized region but going forward in time as they move downstream, signifies the uneven development of the rural countryside in comparison to the industrial corridor of Guandong. Everywhere they pass is pervaded by the social violence that accompanies hyper-pollution, toxification and destruction of riparian lifeworlds. The bodies of babies and women that litter the river channels draw a horrible equation between capitalism's generation of surplus value and its generation of objective waste and disposable "surplus" populations. As rural communities are reduced to humans-as-waste, they are forced into new modes of informal labour: in black markets such as the infant trade, in the blood trade or in precarious work, as when Kongzi joins dam demolition teams and Meili becomes an e-waste recycler, stripping components by hand.

Once they arrive in Heaven, the symbolic regime shifts from riverine emphasis on circulation to uterine metaphors of gestation and growth, telegraphing the frenetic energy of the recycling boom. Similar to the posthumous narration in *Ding Village, Dark Road* combines naturalistic description with an irrealist narrative device: the italicized interruptions of the spirit of Meili's unborn foetus, which is subjected to several deaths – strangulation by family-planning enforcers, miscarriage due to toxification. Eventually, it refuses to be reborn until Meili reaches a "safe" haven. The spirit embodies both her post-traumatic distress and the contradictions of her belief-system, oscillating between

animism and the neoliberal rationality pervading Heaven's economic boom. As Meili confesses to the Sacred Golden Flower Mother,

> Sometimes I feel it's looking back at me from a future realm, as though my present is its past. And on some occasions, I've felt that it exists in a completely separate realm that somehow overlaps with ours. But when I try to put these feelings into words, my mind spins and time seem to go into reverse. (342)

The unborn foetus allegorizes the ecological crisis of Chinese modernity, in which economic growth is privileged over every form of life, and women's lives are disposable, considered as "cheap" as the water so thoughtlessly expended and polluted. The novel's concluding image hauntingly figures the foreclosure of social futurity: the stillbirth of the "alien-like" baby, transfigured by toxic exposure, its uncanny body glowing "as green and shiny as an apple" and its spirit-consciousness dissipating into the ether, as its mother slips lifelessly into the dead river. Like *Ding Village,* and *Autumn*, *Dark Road* ends with death, a final limit that cannot be superseded, a vision of absolute exhaustion.

Water shock

In the recent burgeoning of what Dan Bloom calls "cli-fi," a distinct genre of hydrological climate-change science fiction, or extreme water fiction, has emerged. In these, post-apocalyptic climate change scenarios are predominated by "water shock," even where oil and water remain ineluctably intertwined in figuration. In *Mad Max: Fury Road* (2015), gasoline still fuels the war-machinery of gearhead tribes as in the earlier trilogy, widely interpreted as responding to the oil shocks of the 1970s. However, the sequel's object of biopolitical control is no longer solely gas, but rather water, blood and mother's milk, an infrastructure of "four flows" associated with reproduction; the regime of extended oil is interlayered with the crisis of the hydrological frontier.[47] The gas now functions as a propellant for territorial monopoly of water, fuelling the security apparatus of vehicles that protect Immortan Joe and energizing the pumps that extract water from artesian wells deep beneath his wasteland Citadel. Here again the pump is central to the nightmare of extraction. Peak water does not replace peak oil as the object of anxiety and desire, but their symbolic regimes and technics are interknitted, enhancing each other's extremity.

I complete my trans-hemispheric triangulation of the crisis of cheap water by gesturing to two prominent cli-fi novels portraying "water shock" in autumnal cores. US writer Paolo Bacigalupi's *The Water Knife* (2015) and Finnish writer Emmi Itäranta's *Memory of Water* (2014) turn around anxieties of the decline of the USA and of the European Union as driven by post-peak water appropriation. They imagine a world dominated by a transition from American to Chinese hegemony, driven by China's innovation of new technologies that enable superior water-productivity. In *Water Knife,* Chinese-built high-rise "arcologies" in a desertified American southwest, where all remaining water sources are monopolized by robber barons, offer closed-system miniature biomes and vertical water farms where American and Chinese elites can reside in water-luxury, even as masses of dispossessed "zoners" struggle to survive outside airlocks, paying more for water than for gasoline. China flourishes from the export of hydro-technology, while the USA is bifurcated, its sovereignty severely compromised by the collapse of its western breadbaskets.

In *Memory of Water*, after an apocalyptic collapse of the EU in which rising sea waters swallow "land and freshwater" and cataclysmic resource wars are conducted over "fuel resources revealed beneath melting ice," the former social democracies of Scandinavia have been brought under the reign of the Qian empire, ruled out of "Xinjing." Imperial society is post-oil, no longer able to operate "fast-tech," reliant instead on solar, hydro and geothermal energy. This quasi-utopian energy transition is portrayed mostly in terms of privation and authoritarian control (an anxious correlative, perhaps, to the neoliberal austerity regimes that have dismantled European welfare states since 2008). The Qian Empire is founded in hydrological monopoly, sending water patrols across the hemisphere to police the metered consumption and rediversion of freshwater to Asia. The water-impoverished denizens of former Europe are driven to drinking salt-water and committing forms of "water theft" punishable by death. The young protagonist – a tea master who protects a secret spring in a cave-system and learns of a source of freshwater in a hidden glacier – is condemned to starvation by Qian interrogators after she refuses to surrender the water to imperial control.

The Chinese hydrofictions I explored primarily treat water crisis as an expression of the internal contradictions threatening the current regime's survival, articulated from the perspectives of the peasants who bear their costs. By contrast, in these Euro-American *cli-fis*, the crisis of the neoliberal hydrological regime is articulated through outward-looking discourses of China as simultaneously technotopian and hydrocolonialist, focalized through middle-class protagonists. Their impulse is diagnostic, seeking to anticipate the future of the world-ecology after climate change and the end of "cheap water," but also regulatory, projecting Euro-American fears of the emergence of a new hydrological revolution as the basis for Chinese ascendancy. In contrast to the consciousness of slow violence that predominates in the two Chinese texts, these cli-fis are energized with more thriller-like plots and speculative imaginaries of sensational resource violence. Written in conjuncture with America's "Asian pivot" in foreign policy, which seeks to contain Chinese expansion by blocking access to vital resources, these novels are exercises in hegemon crisis culture, which anticipate the transfer of power from the US world empire, its hegemony foundering with the erosion of its frontiers in cheap nature, to a Chinese empire imagined as hegemonic as a result of its production of new ecological fixes.

If texts like these anticipate hegemon crisis, they can also contribute to imagination of more emancipatory forms of environment-making. Vandana Shiva, descrying the "ecology of terror" pervading neoliberal geopolitics, calls for alternative visions of nature-society in which water rights are no longer the object of private ownership or state control, but rather a common good for humans and the rest of nature: "We can work with the water cycle to reclaim water abundance. We can work together to create water democracies."[48] The hydrofictions I have examined are haunted by apocalyptic or gothic imaginaries of water crisis as permanent disaster and death-in-life. The novels conclude with the deaths of their main protagonists and with the total desiccation or toxification of environments, underscoring the exhaustion of "cheap water." Yet, alongside these deathly imaginaries, there are intimations of alternative conceptions of water that refuse the instrumentalist epistemes of sink, commodity, input and object that have precipitated hydrological exhaustion. These are rooted in residual and indigenous philosophies, as in Meili's ecofeminist conception of water as sacred mother; or in the imagination of technics that transcend the hydraulic regimes of America and China's empires of water, as in

Bacigalupi's arcologies, which if liberated from the elite, could enable equitable use by the many; or in restorations of earlier modes of water use, as in the tea master's memory of usufructuary irrigation. The very title of *Memory of Water* signals its impulse to restore to consciousness conceptions of water as dignity and reciprocity. If these fictions are dominated by aesthetics of hydro-irrealism and water shock that correspond to their critique of the hydro-illogic of the neoliberal regime of water, they are also shot through with the dialectical tension of their struggle to summon not-yet-possible alternatives into consciousness. The question they pose, therefore, is how to think beyond hydrological catastrophe to a world that is post-capitalist, rather than post-water.

Notes

1. Moore, *Capitalism*, 291.
2. Li, *The Rise of China*, 15.
3. McWhinney, "Water," online.
4. Pearce, *When the Rivers*, 1.
5. Bresnihan, "Neoliberalization," online.
6. McWhinney, "Water," online.
7. Ren, "Sandor Predicts," online.
8. Kaufman, "Futures Market," 469.
9. Brown argues that "peak water" poses a greater challenge than "peak oil," because of the volume of water used in agriculture (Brown, "Real Threat," online). See Pearce, *When the Rivers*, 81.
10. Macdonald, "Improbability Drives," online.
11. Moore, "Climate Change," 26.
12. Brown, "Real Threat," online.
13. World Water Council, *World Water*, 24.
14. Hoekstra, "Switching," online.
15. Ross, *Chicago Gangster*, 12.
16. Maceda, "Pentagon Preps," online.
17. Moore, *Capitalism*, 225.
18. Ibid.
19. Shiva, "Resisting," 2.
20. Parenti, *Tropic of Chaos*, 99.
21. Shiva, *Water Wars*, 28.
22. Worster, "Water," 13.
23. Ibid., 6.
24. Moore, *Capitalism*, 8.
25. Niblett, "Oil on Sugar," 1–3.
26. Hitchcock, "Oil," 86.
27. Boast, *Hydrofictions*, 1.
28. Yaeger, "Editor's Column," 309.
29. García Márquez, *Autumn*, 208–210. Hereafter cited parenthetically.
30. Niblett, "Oil on Sugar," 8.
31. DeBuys, "Age of Thirst," online.
32. McDougall, "Caribbean Water," 191.
33. Moore, *Capitalism*¸ 35.
34. Chen, "Number Nine," 275–276. Hereafter cited parenthetically.
35. Anagnost, "Strange Circulations," 510.
36. Jun, *China's Water*, vii.
37. Ibid., 26.
38. Ibid.

39. Lorenz, "The Chinese Miracle," online.
40. Anagnost, "Strange Circulations," 517.
41. Yan Lianke, *Ding Village*, 31. Hereafter cited parenthetically.
42. See Anagnost, "Strange Circulations," 510.
43. Ibid., 8.
44. Nixon, *Slow Violence*, 42.
45. Ma Jian, "Questions and Answers," online.
46. Ma Jian, *Dark Road*, 280–281. Hereafter cited parenthetically.
47. Wark, "Fury Road," online.
48. Shiva, *Water Wars*, xiv, xv.

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Bibliography

Anagnost, Ann S. "Strange Circulations: The Blood Economy in Rural China." *Economy and Society* 35, no. 4 (2006): 509–529.

Bacigalupi, Paolo. *The Water Knife*. Kindle ed.London: Orbit, 2015.

Boast, Hannah. "Hydrofictions: Water, Power and Politics in Israeli and Palestinian Literature." PhD diss., University of York, 2015. Accessed 1 November 2017. http://etheses.whiterose.ac.uk/12508/.

Bresnihan, Patrick. "The Neoliberalization of Vital Services." *ENTITLE: A Collaborative Writing Project on Political Ecology*, 27 August 2015. Accessed 1 November 2017. http://entitleblog.org/2015/08/27/the-neoliberalization-of-vital-services-the-bio-financialization-of-irish-water/.

Brown, Lester. "The Real Threat to Our Future Is Peak Water." *The Guardian*, 6 July 2013. Accessed 1 November 2017. http://www.theguardian.com/global-development/2013/jul/06/water-supplies-shrinking-threat-to-food.

DeBuys, William. "The Age of Thirst in the American West." *TomDispatch*, 4 December 2011. Accessed 1 November 2017. http://www.tomdispatch.com/blog/175475/.

García Márquez, Gabriel. *Autumn of the Patriarch*. Translated by Gregory Rabassa. London: Penguin, 1996.

Hitchcock, Peter. "Oil in an American Imaginary." *New Formations* 69 (Spring 2010): 81–97.

Hoekstra, Arjen Y. "Switching to Biofuels Would Place Unsustainable Demands on Water Use." *The Guardian*, 28 May 2015. Accessed 1 November 2017. http://www.theguardian.com/sustainable-business/2015/may/28/switching-to-biofuels-would-place-unsustainable-demands-on-water-use.

Itäranta, Emmi. *Memory of Water*. Kindle ed.New York: Harper Voyager, 2014.

Jian, Ma. *The Dark Road*. Translated by Flora Drew. London: Vintage, 2014.

Jian, Ma. "Questions and Answers." *Foyles*. Translated by Flora Drew. Accessed 10 February 2016. http://www.foyles.co.uk/ma-jian.

Jiangong, Chen. "Number Nine Winch Alley." In *Worlds of Modern Chinese Fiction*, Kindle ed., edited by Michael Day, translated by Michael S. Duke. London: Routledge, 1991.

Jun, Ma. *China's Water Crisis*. Translated by Nancy Yang Liu and Lawrence R. Sullivan. Norwalk: Eastbridge, 2004.

Kaufman, Frederick. "Futures Market: Wall Street's Thirst for Water." *Nature* 490 (2012): 469–471.

Li, Minqi. *The Rise of China and the Demise of the Capitalist World Economy*. London: Pluto, 2008.

Lorenz, Andreas. "The Chinese Miracle Will End Soon." *Der Spiegel*, 7 March 2005. Translated by Patrick Kessler. Accessed 1 November 2017. http://www.spiegel.de/international/spiegel/spiegel-interview-with-china-s-deputy-minister-of-the-environment-the-chinese-miracle-will-end-soon-a-345694.html.

Macdonald, Graeme. "Improbability Drives: The Energy of SF." *Strange Horizons*, 16 February 2016. Accessed 1 November 2017. http://strangehorizons.com/non-fiction/articles/improbability-drives-the-energy-of-sf/.

Maceda, Jim. "Pentagon Preps for Conflicts Sparked by Climate Change." *Global Policy Forum*, 16 December 2009. Accessed 1 November 2017. https://www.globalpolicy.org/security-council/dark-side-of-natural-resources/water-in-conflict/48559.html.

Mad Max: Fury Road. Directed by George Miller. 2015.

McDougall, Russell. "Caribbean Water and Hydro-Piracy." *Kunapipi* 34, no. 2 (2012): 191–199.

McWhinney, James E. "Water: The Ultimate Commodity." *Investopedia*. 24 May 2013. Accessed 1 November 2017. http://www.investopedia.com/articles/06/water.asp#ixzz3dFAPuPNS.

Moore, Scott. "Climate Change, Water and China's National Interest." *China Security* 5, no. 3 (2009): 925–939.

Moore, Jason W. *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. London: Verso, 2015.

Niblett, Michael. "Oil on Sugar: Commodity Frontiers and Peripheral Aesthetics." Paper presented at "Imperialism, Narrative and the Environment," Rachel Carson Center for Environment and Society, Munich, Germany, 11–12 October 2012.

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor*. Cambridge, MA: Harvard University Press, 2011.

Parenti, Christian. *Tropic of Chaos: Climate Change and the New Geography of Violence*. New York: Nation Books, 2011.

Pearce, Fred. *When the River Runs Dry: Water – The Defining Crisis of the 21st Century*. London: Eden Project Books, 2007.

Quantum of Solace. Directed by Marc Forster. 2008.

Ren, Lucy. "Sandor Predicts a U.S. Water Futures Market." *Medill Reports Chicago*. 3 June 2015. Accessed 1 November 2017. http://news.medill.northwestern.edu/chicago/sandor-predicts-a-u-s-water-futures-market.

Shiva, Vandana. "Resisting Water Privatisation, Building Water Democracy." Paper presented at the *World Water Forum*, Mexico, March 2006, 1–22. Accessed 1 November 2017. http://www.globalternative.org/downloads/shiva-water.pdf.

Shiva, Vandana. *Water Wars: Privatization, Pollution, Profit*. Cambridge, MA: South End Press, 2002.

Wark, McKenzie. "Fury Road." *Public Seminar*, 22 May 2015. Accessed 1 November 2017. http://www.publicseminar.org/2015/05/fury-road/.

World Water Council. *World Water Vision: Making Water Everyone's Business*. London: Earthscan, 2000.

Worster, Donald. "Water in the Age of Imperialism – and Beyond." In *The World of Water, Vol. III*, edited by Terje Tvedt and Terje Oestigaard, 5–17. London: I.B. Tauris, 2006.

Yaeger, Patricia. "Editor's Column: Literature in the Ages of Wood, Tallow, Coal, Whale-Oil, Gasoline, Atomic Power and Other Energy Sources." *PMLA* 126, no. 2 (2011): 305–310.