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The hydro-logic of genocide: remaking land, water, and bodies in Democratic Kampuchea, 1975-79

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Abstract

Recent scholarship in hydropolitics and the hydrosocial cycle has emphasized the ways that water and society are co-constitutive, acknowledging the productive entanglement of hydraulic and social actors and processes. In this paper, we apply a hydrosocial framework to understand an infamous waterscape of mass violence. Between 1975 and 1979, the Khmer Rouge planned and partially implemented an extensive irrigation system to increase rice production in the Cambodian countryside. The programs of rationing, forced labor, and execution imposed by the government during construction killed up to two million people. We find that these infrastructural projects helped the Khmer Rouge remake water into a technology of capital accumulation and social control. The production of these systems enrolled water as an active agent into new relations of power, providing the state with classification and control over not only water, but the physical bodies of Cambodian men, women, and children. Furthermore, we find the Khmer Rouge's infrastructural violence was predicated on the production of new subjectivities—ones that emerged from a narrow imagination of idealized rice plants and laboring bodies. This case illustrates how a pervasive materialist logic, combined with the imperative of capital accumulation, may evolve into justification for mass murder.

Keywords: Water, irrigation infrastructure, hydrosocial, materiality, violence, Khmer Rouge

Introduction

Each May and June, as the Inter-Tropical Convergence Zone (ITCZ) moves north and persistent high-pressure develops over Madagascar, the South Asian Monsoon gathers up a portion of the Indian Ocean and releases it over Southeast Asia. The tremendous volume of this vaporous diaspora is only a tiny fraction of the Indian Ocean, but once it falls on the watersheds of Southeast Asia and courses through the Mekong basin, the deluge transforms Cambodia. Water takes over the landscape, inundates the country's parched central plain, reverses the course of rivers, and swells Cambodia's great lake, the Tonle Sap. In

the rice-growing heartland, rain kicks off the agricultural calendar, fills nursery fields, ushers in teams of water buffalo, and pushes billions of rice seedlings out of the muddy earth. In the coming months—as it has for centuries—this pulse of water will deliver nutrients, drive biological growth, and discharge waste for plants, humans, and animals alike. Around December the rains disappear, the land desiccates, and rice production (for the most part) takes a breath as it waits for the next deluge.

By the spring of 1978, an increasing fraction of Cambodia's monsoonal allowance was being trapped behind large dams and channeled hundreds of kilometers through freshly dug canals. These new organs and arteries directed progressively more Indian Ocean water into ever-expanding rice fields. In addition to spatial expansion, Cambodia's new irrigation system made water available for longer periods, enabling rice to grow—and the state to profit—during the dry season. This massive infrastructural undertaking was a cornerstone of the Communist Party of Kampuchea's (CPK) plan for economic and social transformation. Perhaps to no greater degree in human history, the CPK—also known as the Khmer Rouge—sought to master a modern state by mastering water; from its arrival as rain, through the timing of its availability, its transport, its distribution to plants, its apportionment to bodies, and the labor it enabled those bodies to perform. This mastery would come at a cost: by 1979, as many as two million Cambodians had been killed, either directly through execution, or through exposure and starvation from forced labor (Kiernan, 2002). The life-giving waters of the South Asian Monsoon had been remade as an instrument in the CPK's apparatus of genocide.

The standard narrative of Cambodia—or Democratic Kampuchea—under the Khmer Rouge is generally well known: after defeating the government of Lon Nol in April 1975, Khmer Rouge rebels embarked on a policy of wholesale social reform to implement their vision of an ideal, communist state. The resulting upheaval led to the evacuation of the country's urban population, the abolition of currency and private property, the imposition of a strict food ration, and forced labor in the 'killing fields' (Kiernan, 2002). Significant research has attempted to document both the direct violence of purges and mass executions (Chandler, 2008; Hinton, 2004; Vickery, 2000), and the structural violence enabled by the regime's transformation of the country's political economy (Tyner & Rice, 2015). But the relationship between structural violence and Democratic Kampuchea's water management infrastructure has received less attention (Tyner & Will, 2015 is a notable exception).

In this paper, we use irrigation as a lens through which to understand the Cambodian genocide as a *hydrosocial* phenomenon, a task that requires us to address not only the politicization of water infrastructure, but the materiality of water itself; in fact, the intersection of water with multiple materialities (Law & Mol, 1995). We find that the spatio-temporal patterns produced by these material interactions were essential to both CPK planning and its violent consequences. As the title suggests, this paper plays upon two readings of ‘hydrologic.’ In the first and most obvious sense, the word refers to the flows, cycles, and technologies involved in the management of water. In the second sense, we offer ‘hydro-logic’ as a form of governmental calculus around the value of life and death that is materially realized through the management of water. Here we build on the hydrosocial literature to examine the state’s planning and production of infrastructure as a key moment in the production of mass violence: through the remaking of Cambodians as ‘hydro-subjects,’ the measurement and inscription of human and non-human energy flows, and the subsumption of Cambodian water to the service of capital accumulation. As such, we encourage ongoing scholarly attention to the role of material interactions, infrastructure, and subject-making in mass violence—indeed, genocide.

Our discussion proceeds as follows. We begin by introducing recent theorization around the hydrosocial cycle and the making of infrastructural subjects, followed by a brief overview of the CPK’s irrigation plans and the imperatives that justified these extraordinary projects. Subsequent sections explore how the production of infrastructure produced hydro-subjects—laboring bodies organized around the production of irrigation—and how water’s materiality came to be imbricated with the materiality of soil, plants, and people. Finally, the paper concludes with a reflection on how the CPK’s narrow focus on materiality justified mass violence.

The hydrosocial cycle and hydro-subjects

A thriving body of work has examined the dynamic relationship between H₂O and society (cf. Barnes, 2014; Bear & Bull, 2011; Gandy, 2004; Swyngedouw, 2005, 2009). The *hydrosocial* cycle, in contrast with the classic *hydrological* cycle, emphasizes the ways that cultural, political, and economic processes influence—and are influenced by—the circulation of water across spatial and temporal scales (Linton, 2008; Linton & Budds, 2014). Karen Bakker (2002, p. 774) writes: “Whereas H₂O circulates through the hydrological cycle, water as a resource circulates through the hydrosocial cycle ... a complex

network of pipes, water law, meters, quality standards, garden hoses, consumers, leaking taps, as well as rain-fall, evaporation, and runoff.”

Following Linton and Budds (2014), this assemblage of social, natural, political, and material components exhibits three key characteristics. First, the historical requirement to control water has had a marked influence on the organization of society. Likewise, different forms of social organization have affected water in different ways. For our purposes, this dialectic implies the possibility of uncovering the contours of social organization by observing historical forms of water management—an assumption with roots that go back to Wittfogel’s (1957) *Oriental Despotism*. As Swyngedouw (2009) notes, “... each techno-social system for organizing the flow and transformation of water (through dams, canals, pipes, and the like) shows how social power is distributed in a given society.” As we will demonstrate, it was the CPK’s fixation on irrigation that makes visible the material logic of genocide.

Second, water and society are not separate categories, but are internally related. Swyngedouw (2006) notes that the hydrosocial process is not limited to a set of external relations between distinct and pre-given ‘social’ and ‘natural’ components. Rather, hydrosocial components are co-constitutive; that is, each continuously makes and remakes the others. To acknowledge the entanglement of H₂O with social processes, then, is to “ask questions about how water, social structures, power relations, and technologies are internally related” (Linton & Budds, 2014, p. 178). Furthermore, hydrosocial networks are not passive, contingent recipients of historical-geographic processes, but powerful “agents in the production of space” (Gandy, 2004, p. 374). To produce different spaces, water must be remade in different forms, each one shaped by the specific historical-geographic context in which it emerges (Bear and Bull 2011). This leads to the underlying question addressed by this paper: If the *hydrological* cycling of Indian Ocean H₂O in and above the Mekong Basin did not substantially change after the CPK took power, what features of the *hydrosocial* cycle ‘made’ water into an agent of mass violence?

Third, the social production of water is by no means all-encompassing; indeed, the materiality of water perpetually mediates hydrosocial processes in anticipated and unexpected ways. As we will argue in the case of the CPK’s national hydraulic program, the interplay between the *physical* properties of water, infrastructure, rice plants, and bodies is essential to understanding the *political* logic of genocide.

A growing body of empirical research employs hydrosocial frameworks to examine the social and environmental impacts of changing power relations around water, often associated with neoliberal

policies of deregulation and devolution. These contemporary processes find expression in new arrangements of private and public actors, including water markets and banks, rescaled water governance and regulation, and transboundary water compacts (cf. Bakker, 2002; Mollinga, 2014; Mustafa, 2007; Swyngedouw, 2005; Tewari & Oumar, 2013). By contrast, in Cambodia, the CPK captured total control over all natural resources. With the elimination of private ownership, water effectively became state property from the moment it fell upon (or flowed into) Cambodian territory, therein establishing water management as a potential instrument of state violence and social discipline. In this regard, we build upon Swyngedouw's (2007) study of the role of irrigation infrastructure in state violence under Francisco Franco, wherein the Spanish state sought to eliminate regional dissent and modernize the state through internal agricultural colonization.

Finally, this paper expands on recent work into the ways infrastructure influences the production of subjects (cf. Coward, 2012; Kooy & Bakker, 2008). For example, Coward (2012, p. 468) examines how the complex material assemblages that make up urban space have shaped "conceptions of citizenship and community" through the reproduction of segregated spaces and differentiated access to resources. In a study of Jakarta's urban water system, Kooy and Bakker (2008, p. 377) find that "access to different types of water supply infrastructure has been deployed both to define residents of the city as 'modern' or 'in need of development', and to rationalize exclusion from 'modern' water supply services." In similar fashion, we argue that the CPK deployed water infrastructure as a technology of governance, but within rural material-discursive assemblages, and with the intent to produce homogenous subjects, not differentiated ones.

The making of Cambodian water

Significant work has explored the water management policies and projects undertaken by the CPK (Himel, 2007; cf. Pijpers, 1989). Rather than ask how water was managed by the Khmer Rouge—as if water was a pre-existing resource in and of itself—we ask how Cambodian water resources were 'made.' In the case of Democratic Kampuchea, a key moment in the 'making' of water involved the design and construction of the country's irrigation infrastructure—an unprecedented network of dams, reservoirs, and canals designed to convert the Mekong Basin's irregular beats and pulses of water into patterns that could support large-scale rice production.

By 1975, years of civil war and nearly a decade of US aerial bombardment had forced hundreds of thousands of refugees from rural areas of Cambodia into the country's major cities, especially the capital, Phnom Penh (Kiernan, 2002; Porter & Hildebrand, 1975; Shawcross, 2002). Destruction of farmland and loss of labor during this period led to an 84% drop in rice production between 1970 and 1973 (Nesbitt, 1997). Food shortages ravaged the country, particularly in urban areas burdened by refugees (Kiernan, 2002; Porter & Hildebrand, 1978). In April 1975, the Khmer Rouge captured Phnom Penh, effectively ending the Lon Nol regime and the civil war. The new government, known as the CPK, declared the re-organization and re-establishment of rice production as a primary objective. In the words of Pol Pot:

“We have greater resources than other countries in terms of rice fields. ... It is the Party's wish to transform agriculture from a backward type to a modern type in ten to fifteen years. We are working [here] on a Four-Year Plan in order to set off in the direction of achieving this 10–15 year target.” (Party Center of the Communist Party of Kampuchea, 1976a, p. 131).

Not only was this transformation intended to bring food relief to the population after years of war, but surplus rice was to be sold to foreign countries in exchange for tractors, fertilizer, pesticides, industrial inputs, heavy equipment, and weapons—that is, any goods that could not be immediately manufactured within the country (Mertha, 2014). Eventually, imports purchased with surplus rice were to be used to jumpstart industrial production and mechanize agriculture.¹ In the vocabulary of international development, the CPK's long-term plan was agriculture-led growth followed by import substitution.

At the heart of this economic plan was the transformation of agriculture. To that end, the CPK set a target of tripling productivity to an average annual rice yield of three tons per hectare (Party Center of the Communist Party of Kampuchea, 1976b). First, planners needed to mobilize a sizeable labor force that could be directed to agriculture and infrastructural development, a goal accomplished by putting the majority of Cambodians to work under conditions of forced labor. Work units were established and organized following a military-like hierarchy of mobile brigades, communes, and collectives. Urban dwellers were evacuated from cities and moved into rural areas to supplement existing labor in the countryside. To ensure the largest possible rice surplus for export, the CPK imposed a strict food ration on the population, ranging from 300g of rice per day for the weak and infirm, to 600g of rice for those

involved in the most labor-intensive work (Kiernan, 2002; Party Center of the Communist Party of Kampuchea, 1976b).

Second, the CPK sought to expand the total area under cultivation and increase the number of harvests for any given field per year (Party Center of the Communist Party of Kampuchea, 1976b). Most areas of Cambodia only receive enough rainfall for cultivation during the wet season: between December and May, dry weather severely hinders rain-fed rice production. Before 1975, the most productive rice fields were producing two harvests a year: sequential growing seasons during the rainy months (Nesbitt, 1997). To meet production goals, the CPK planned to increase the number of harvests per year wherever possible, a task that necessitated extensive storage, movement, and allocation of water to rice fields during the dry season.

In the four years the CPK were in power, the Party built numerous large dams, hundreds of kilometers of canals, and thousands of water control structures. In many places, irrigation ditches were dug at 200m intervals to form a large grid such that each square enclosed four hectares. Supply canals spanned long distances, crossed watershed boundaries, and intersected rivers (Tyner, Munro-Stasiuk, Coakley, Kimsroy, & Rice, 2018). The physical legacy of this network is still obvious today and—in many places—still operational. Each laborer forced to work digging canals and building dykes was required to excavate and move one cubic meter of earth per day.² In exchange, the daily ration of rice provided to these men and women was insufficient to meet the caloric intake needed for such labor (see Tyner & Rice, 2015). In the popular media, much has been made of the Khmer Rouge's history of mass executions and brutal purges. While these atrocities did occur, the majority of the approximately two million people who died in Democratic Kampuchea succumbed to starvation, exposure, and exhaustion from lack of food and hard labor (Kiernan, 2002).

Through irrigation, the CPK made water into a tool that could address several problems. First, water became a tool for the expansion of rice cultivation. Irrigation infrastructure—planned and patterned arrangements of dirt, rock, concrete, and steel—translated the monsoon's unpredictable timing and distribution into a *water space-time regime* conducive to rice cultivation (see Bear & Bull, 2011). Without this new regime, extensification and additional rice harvests would have been impossible. Second, water was made into a tool of national development and growth. Through its support for rice production, water was necessary for acquiring the foreign exchange essential to the CPK's planned economy. Irrigation

infrastructure was the centerpiece of this economic engine: through the managed delivery of water, land could be made to produce more profit for the state. Finally, water was made into a tool of statecraft. Large dam projects were the subject of propaganda pieces, aroused national and party pride among cadre members, and were exhibited to foreign dignitaries (Mertha, 2014). Geo-engineering on this scale exemplified the CPK's power—over its territory, its people, and nature.

Irrigation and the making of hydro-subjects

The CPK's irrigation infrastructure made more than water, it also made new subjects. The Party believed the best way to instill revolutionary ideology in the population was through collective labor. Tyner and Will (2015, p. 368) write: "It was not simply that people under the Khmer Rouge were blank sheets of paper or clumps of clay to be moulded by ideology; rather, it was through labour itself that 'right minds' and 'right attitudes' were to be cultivated." To this end, the CPK's irrigation schemes disciplined both water and bodies: through this national infrastructural 'project,' the CPK honed a technology for the production of national identity.

Irrigation also helped remake Cambodia's systems of governance. Under the spatial hierarchy of the CPK, officials with proposals for water projects passed water management plans up the chain of command to higher level committees. These proposals were evaluated against the state-wide water management strategy, with decisions and plans for implementation eventually passed back down to local officials (Tyner & Will, 2015). In this way, the irrigation scheme reified and reinforced the bureaucratic structure of the Party through the everyday practice of planning.

Perhaps most important, the development and implementation of irrigation infrastructure allowed the CPK to 'see like a state' (Scott, 1998); to measure and budget inputs, and assess the machinery of economic production. Through the mandate for each person to move a cubic meter of earth per day, the CPK could quantify the labor inputs to production. Through the food ration, the Party could quantify the labor costs of production. And through irrigation, planners could quantify the primary non-human input to rice cultivation: water. The combination of an integrated irrigation scheme, a national food ration, and a forced labor regime offered the CPK the illusion of a state-wide balance sheet by which the economy's energy budget might be calculated and weighed against export quotas. Some have argued that the CPK

was an anti-modern regime bent on reverting Cambodian society to a more pristine and primitive state (cf. Jackson, 2014). We argue they were quite the opposite.

In *Political power beyond the State*, Rose and Miller (2010) explore the assembly and use of knowledge as a technology of governance. In arguing for a polycentric theorization of political power, the authors leverage the Latourian concept of inscription devices (Latour, 1987). These are material things or conditions that allow thought to ‘work’ on an object: “By means of inscription, reality is made stable, mobile, comparable, combinable. It is rendered in a form in which it can be debated and diagnosed” (Rose & Miller, 2010, p. 286). For Rose and Miller, the inscription devices in question are technologies of knowledge production and dissemination: lists, databases, catalogs, and other components of ‘big data’ deployed to make populations rational and accessible.

Here, we offer that Democratic Kampuchea’s irrigation network functioned as a form of Latourian inscription—indeed, a kind of *socio-geomorphological* inscription (Ashmore, 2015). For the CPK, irrigation infrastructure made soil moisture rational, measurable, and controllable. The irrigation ditch provided temporal permanence to the impermanence of the hydrological cycle. It reorganized natural rhythms (or a-rhythms) of rainfall and evaporation to harmonize with the drumbeats of Democratic Kampuchea’s mode of production. Through its precise measurement of flows, irrigation also dictated precise measurement of cultivated *area* and, therein, the precise measurement of *labor*. In essence, irrigation offered a specific re-construction of human and non-human nature for centralized calculation and evaluation.

Multiple materialities

The relationship between the CPK’s state-wide irrigation program and mass murder involves the intersection of at least four overlapping materialities. First and most obvious is water with its characteristics of quality, quantity, timing, and location. With the enclosure of water by the state, the production and distribution of water-as-resource to agriculture, and the orientation of the economy to rice production for export, the CPK effectively subsumed all Cambodian water to the profit motive and the imperative of capital accumulation. Second is the materiality of infrastructure: the dams, reservoirs, canals, and sluices that aggregated, channeled, and released water into the service of agriculture. In some places, such infrastructure adhered to topography; elsewhere, it substantially altered it. The material

arrangements of dirt, cement, and steel were designed and built to address the materiality of water (Larkin, 2013) and produce a water space-time regime that could bend biophysical processes into the service of the state. Third is the materiality of the domesticated rice plant, its specific environmental requirements and its need for human intervention. The biology of the plant is tightly coupled with agricultural practice: cultivation technologies have emerged in response to the plant's unique biology, just as parts of the plant's biology have been bred to respond to agricultural practice (Bray, 1994; Nesbitt, 1997). In fact, as a primary producer and staple crop, rice exhibits a kind of *calorie space-time*: it provides to the consumer units of energy in regular temporal patterns and predictable places. Finally, there is the human body with its daily need for water and nutritional energy, and its ability to work—to transform nature and produce new material arrangements. As with rice, human bodies exhibit a similar *calorie space-time*: on the one hand, the body must consume energy at regular intervals and in predictable amounts. On the other, bodies provide energy to productive tasks in calculable quantities, following specific patterns.

At the intersection of these four materialities, the large-scale irrigation schemes developed under the CPK provided the state with a technology for inscribing units of agricultural land, allocating quantities of water across time, calculating production estimates, organizing productive bodies into spatial-political units, assigning calories to those bodies, and calculating their productive output. The CPK's irrigation infrastructure did not end at the rice field: through the porous interfaces of fields, plants, and people, water management became state administration. The monsoonal precipitation that traversed the long arteries of Cambodia's hydrologic system eventually came to power the circulatory systems for millions of laboring bodies. Through the ration, the H₂O that held rigid the cells of rice stalks became the fluid that carried oxygen to human muscles. Following the best development advice of their day, CPK leaders may have understood these schemes in purely infrastructural terms. But integrated into the apparatus of a state organized around rice export for profit, these irrigation schemes became as much *vascular* as they were hydraulic.

It seems logical to examine the physicality of water, canals, dams, and rice plants; to see the give-and-take between their spatiotemporal patterns and the co-production of their material properties. And it seems logical to extend this analysis to the bodies that help make that water, build those canals and dams, nurture and consume those rice plants: after all, these human containers obey the same laws of

thermodynamics as the non-human substances to which they are connected. But it is here—in the forced inscription of humans into a non-human calculus—that the logics of capital accumulation and water management came to entail a particular logic of mass murder. It is hard to deny that the infrastructural violence committed by the CPK emerged, in part, from an all-too-narrow focus on the materiality—the *machine-nature*—of the human body. The CPK took for granted that bodies and minds could be directed, measured, and made productive, just like rice, dirt, and water.

Conclusions

This paper provides a brief exploration into the relationship between the irrigation schemes developed under the Khmer Rouge and the mass murder of two million Cambodian men, women, and children. By taking a hydrosocial approach, we offer three observations about this history and infrastructural subject-making. First, to better understand the Cambodian genocide requires us to examine the CPK's massive irrigation scheme as a hydrosocial undertaking, from its material basis and discursive value, to its foundation in Democratic Kampuchea's new political economy. Second, multiple and overlapping materialities participated in this hydropolitics; at the very least, water, the irrigation system, rice plants, and human bodies. Component interactions spanned both temporal and spatial scales: from yearly flood pulses to daily plant transpiration, and from basin-spanning canal systems to the vascular architecture of human bodies. The particular spatio-temporalities produced by these material interactions were essential to the CPK's plans. Finally, a too-narrow focus on the machine-nature of this hydrosocial space allowed the CPK to subsume these human and non-human participants to the logic of capital accumulation. On this basis, we argue for vigorous scholarly engagement with the co-constitution of water and mass violence in both historical and contemporary contexts.

The development and use of infrastructure creates subjects, and this case is no exception. But the bloody history of Democratic Kampuchea may offer another, more subtle point: before subjects can be made, the *planning* of infrastructure already *assumes* subjects, material ones, with specific inputs and outputs. To build a sewer system, we might calculate the waste water produced by an 'average' person and multiply by the population. To build a transport system, we might calculate the likely trips by all residents in a region and isolate a network of least-cost paths. In these planning 'games,' humans come to be inscribed into a new, imagined reality long before such pipes and highways are ever built. This new

human—an average-user-of-infrastructure—isn't so much made by infrastructure as she is made by the *dream* of infrastructure. So, too, with the Khmer Rouge, who saw the economic potential of a state built on bodies that could eat a mere 600g of rice and still move a cubic meter of dirt each day.

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¹ See “E3-781 (00523574) *Examination of control and implementation of the policy line on restoring the economy and preparations to build the country in every sector*” archived by the Extraordinary Chambers in the Court of Cambodia (ECCC) at <http://www.eccc.gov.kh/en>.

² See for example “Interview with Sinith Heng,” archived at the Documentation Center of Cambodia, Phnom Penh. See also Kiernan (2002) *The Pol Pot Regime*.