

Globalization, Water & Health

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Paradigm Change

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This is a book about crimes and passions, about greed and global reach, illness and death, but also about the results of paradigmatic change—from the idea of health as a human right to one that elevates economics as the determinant of health. That change is played out through control of the very essence of life, water. In short, this is a book about the global contradictions in water use, ownership, and commodification, even in the very access to water. The crimes committed take the form of international contracts, corporate agreements, and local practices that divert water from small communities to larger cities and from households to agribusiness, that flood valleys to create dams, that shift resources from one state to another or from one country to another. This book is about the ongoing struggle for scarce resources among local communities, national governments, and international agencies such as the World Bank and the International Development Bank. In this struggle, even “virtual water” is commodified for future use, bought and sold in futures, and scarcity is manufactured to justify the diversion of water.

The anthropological contributions in this volume illuminate the

cultural and political relations in a global arena where children die, adults sicken, and lives are cut short because of resource management techniques that privilege some over others. The authors combine their expertise in medical and ecological anthropology to challenge and deepen our understanding about water—its management, sale, and conceptualization—and its bearing on human health and well-being within the global nexus. The chapters are rich in ethnographic texture, history, and ironies as the authors offer in-depth insight into the cultures they discuss and the global political and economic processes they analyze.

It is no exaggeration to state that two major threats to world stability are the global disparities in health and in access to natural resources such as water—disparities that globalization only exacerbates. Drawing on anthropological studies and using social science theories, methods, concepts, and techniques, the authors explain the global processes affecting water management and health equity. The conclusions they draw should shape future policies and practices.

Most of the chapters in this book are based on long-term fieldwork, often carried out by teams of researchers. Increasingly, funders seek multidisciplinary teams because the problems under investigation are complex. The composition of each team reflects the subjects of inquiry. For example, research on resource management, health, and economic change frequently involves colleagues from disciplines such as medicine, geography, economics, and public health. This challenges many university-training paradigms that prepare anthropologists to work alone rather than in collaboration. Research on environmental and health issues, in particular, can be best accomplished by interdisciplinary teams of experts who can measure water quality, evaluate water structure delivery systems, define the economics of waste, understand the hydrology of a region or its ecosystems, draw blood samples, use field labs to diagnose samples, and analyze differential patterns of health system access and household use patterns, epidemiology, and political analysis.

Defining a study's boundaries is difficult, especially when examining health and social and environmental change in an era of globalization. Disease vectors such as mosquitoes, for instance, rarely if ever respect national or international boundaries unless these align with

physical boundaries, such as mountains or lakes. The nature of the research problem defines the units of analysis. The chapters in this volume focus on individuals, households, watersheds, irrigation districts, and communities. Simultaneously, they examine vectors, hosts, and reservoirs of disease, as well as international discourses, power structures, and commodity chains. The authors creatively struggle with how to trace linkages in those chains, relating individuals to their larger, physical, social, and political surroundings. We want to point out that the units of study examined here differ drastically in size, but all fall within the purview of anthropological research and analysis. The authors take various theoretical perspectives—critical medical anthropology, economic anthropology, political economy, and political ecology—but all deal with the interplay between global and local forces and their effect on the environment and health.

Like many terms that have moved into the popular vernacular, *globalization* has multiple meanings. It has become important for anthropologists to examine the global network of cultural, economic, and political processes spurred by new technologies, and the consequences of these processes. Globalization is a theme and subject of inquiry in this volume for several reasons. First, world organizations such as the World Bank and the World Health Organization (WHO) have been disseminating an ideology of economic reform and waging global health campaigns, be they privatization or prevention campaigns, with worldwide effect. Greatly influenced by these ideologies, populations throughout the world have, in many cases, mobilized to resist, have reinterpreted, or have acquiesced to programs imposed by their nation-state government. International nongovernment organizations of many kinds have also engaged in global campaigns to stop HIV/AIDS, conserve virgin forests, or oppose modification of water. Transnational corporations such as General Motors, Upjohn, and Nestle have extended their markets and operate processing plants throughout the world with tremendous environmental and health consequences. These processes are occurring simultaneously in an era of neoliberal economic policies and global capitalism that characterized the decades (1980s and 1990s) before the eve of the new millennium.

This volume addresses changes occurring in response to global forces, translated in nation-state and regional agency policy or in local

mobilization. As the chapters in this volume document, global processes transcend national borders, creating new, complex forms of organization. How social scientists and anthropologists, in particular, conceptualize the linkages between levels and forms of organizations as they trace meanings, power, and systems of power is one of the key issues for the future. We give different emphasis to global processes, even configuring them in diverse ways because of the diverse emphases of the questions they raise. The challenge we face is complicated by issues of scale, space, and time. As anthropologists, the authors' starting point is the local, defined in multiple ways, but in every case, their research methodology has extended beyond the local, to national and international policies or programs. This volume grapples with these challenges of scale and the complexity of interacting connections between levels and localities as the authors examine issues of poverty, illness, scarcity, power, local knowledge, resource degradation, and agency.

The authors used a wide range of research methods: surveys, life histories, discourse analysis, participant observation, epidemiological and clinical record reviews, water testing, soil testing, physical exams, focus groups, participatory research, cost benefit analysis, archival research, spatial and institutional analysis, and clinical laboratory analysis. The diversity of methodological strategies attests to the complexity of the issues studied, the strength of forming interdisciplinary teams to tackle these highly complex issues, and the expansive and inclusive scope of anthropology.

Anthropology has a history of using local people as research assistants, and more recently as research partners. Structural and employment differences, however, often limit the equality of the partnership (Trostle 2000). Increasingly, community members of low-income neighborhoods are organizing to pressure the government for better water or health care, to address problems of contamination or failure of access. Participatory research is one way that scholarly inquiry can directly help local communities while also contributing to scholarly knowledge, enriched by the level of equality between the academic researcher and his or her research partner(s) from the community.

Most of the research in this volume not only stems from a collaborative effort but also is marked by an emphasis on historical analysis.

We agree with Farmer (2004:308) in his 2001 Sidney W. Mintz Lecture: “Erasing history is perhaps the most common explanatory sleight-of-hand relied upon by the architects of structural violence. Erasure or distortion of history is part of the process of desocialization necessary for the emergence of hegemonic accounts of what happened and why.” We would like to underline the importance of historical research on patterns of water use, water access, and water conflicts. Relating water histories to health problems can provide an in-depth frame through which to connect issues that often appear disparate: resource management and health outcomes.

As mentioned earlier, whether in Africa, Latin America, or China, research almost always was conducted with colleagues from the country of study. This is increasingly important in anthropology, where both the Society for Applied Anthropology and the American Anthropological Association (among other professional associations) clearly identify in their ethical codes or guidelines the commitment to make one’s research relevant to those with whom one works, that is, lending or service agencies, community members, and academics. This is particularly true in the fields of health and resource management because they so powerfully impact people’s lives. Equally important is the commitment to publish or, in some other appropriate form, disseminate research results in the country where the research was carried out. Although this is a traditional component in anthropological discussions of methods and ethics, it is, unfortunately, frequently forgotten in the rush of academic or practitioner life.

Anthropology and the social sciences in general have an important role, to inform policy. The critical, structural approaches often employed in anthropology recognize that the social and political causes of the structural violence against people by gender, ethnicity, and economics require insertion into policy analysis. The policy issues addressed in this volume raise questions and issues such as whether water is a human right; how people should address the legitimacy of unequal access to safe drinking water within and among communities, regions, or nations; and what role public institutions, nongovernment organizations, and the private sector should play in policy debates over decentralization, ethically based resource rights, and appropriate ways to price water to encourage equitable distribution and conservation.

These issues affect people in local communities all over the world; global influences are shaping policy and debate. Resolving disputes before they become violent is critical and requires interdisciplinary, international approaches using the watershed and community as units of management. Research needs to focus on how assumptions about the sustainable use of resources, growth, and environmental balance are similar or divergent and on the health implications of those assumptions. Research needs to expose the basis of assumptions and determine the forces leading to their creation and contributing to their maintenance. Research needs to be “ethnographically visible” and more, to expose the “materiality of the social” (Farmer 2004:305). Again quoting Farmer (2004:308), “I find it helpful to think of the ‘materiality of the social,’ a term that underlies my conviction that social in general and structural violence in particular will not be understood without a deeply materialist approach to whatever surfaces in the participant-observer’s field of visions—the ethnographically visible.”

Farmer’s concept of “structural violence” provides the framework upon which this book rests. Whether the discussion centers on globalization processes, water use and misuse, or health and illness, we believe that the social, historical, economic, and political processes that underlie and are reified in social structures and organizations privilege some at the cost of others. Good health, like access to clean water, is never randomly distributed across sectors of society but rather advantages certain groups. Age, wealth, gender, ethnicity/race, and religion are examples of social categories often used to disenfranchise groups. We suggest that, in the study of globalization, resource management, and health, mechanisms of oppression must be made explicit, both as ethnographically visible and as the materialist conditions supporting that visibility.

Structural violence is a concept that makes explicit its focus on inequality and the mechanisms supporting it, and is therefore appropriate and necessary for our analysis. “The concept of structural violence is intended to inform the study of the social machinery of oppression. Oppression is a result of many conditions, not the least of which reside in consciousness” (Farmer 2004:307). The authors attempt to make explicit those cultural constraints whose sources lie in the invisible landscapes of history, politics, and dominance.

Why are we so interested in globalization, water, and health? To answer that question, we need to talk about people. The World Health Organization reports that 25,000 children die daily from illnesses associated with drinking water, that approximately four billion cases of diarrhea occur each year, killing more than 2.2 million people, and that some 1.7 billion people, more than a third of the world's population, live without access to a safe water supply (UNESCO 2003a). Water covers more than 70 percent of the earth's surface area, yet less than 1 percent of the world's water is available for human consumption. The extensive pumping of groundwater (Glennon 2002), increasing corporate purchase of water (Barlow with Clark 2002:130), and urban and agricultural divertissement of water (S. Whiteford and Melville, eds., 2003) are altering the world's water supply. The new millennium is seeing the intensification of the age-old robbery of water (and health) from the poor as global patterns of trade and consumption commodify water to increase capital generation.

One might ask, why do so many people suffer and die from diseases related to water? Not only is water an element essential for human survival, but it is also a medium for a wide range of diseases. Diseases related to water—such as cholera, types of diarrheas, amoebic dysentery, schistosomiasis, and onchocerciasis—are usually discussed in terms of four conceptual disease categories: waterborne, water-washed, water-based, and water-related.

Waterborne diseases result from the ingestion of water containing pathogenic organisms: bacteria, viruses, or protozoa (cholera is a well-known example). Other waterborne diseases are typhoid, hepatitis, and giardia. All of these can be controlled through personal hygiene using safe water.

Water-washed diseases, also known as “water-scarce” diseases, occur when too little water is available for washing or personal hygiene. Water-washed diseases are often found when people who must conserve water do not have enough to wash their hands and face after defecating or when they endure common exposure to flies.

Water insecurity results when a history of water shortages causes people to adopt behaviors counter to hygiene practices recommended by public health standards, resulting in diseases such as scabies. Trachoma, pinworm, tinea, conjunctivitis, skin sepsis, and ulcers are

also common outcomes of poor water quality, lack of access to soap, or failure of hygiene education.

Water-based diseases encompass a wide variety of illnesses linked by water. That is, humans are exposed to nonhuman hosts in which parasites live out part of their life cycle. Water in which people bathe, swim, or wash their clothing may be, for instance, contaminated by snails in which schistosomiasis or dracunculiasis (guinea worm) parasites and lung flukes live. The parasite is transferred as humans come into contact with the water in which the snails or flukes exist. Water access and management of black waters are critical to controlling the spread of water-based diseases.

The fourth category is *water-related* and includes diseases such as dengue and West Nile fevers, malaria, yellow fever, filariasis, and onchocerciasis (river blindness). The insect vector uses the water as a breeding ground, from which the vector emerges. Water is necessary, for instance, for the *aedes Egypti* mosquito to complete its life cycle. The mosquito is the vector (mode of transference) for diseases such as dengue fever that spread from one infected person to another by the blood meal process of the female mosquito. To reproduce, the female *aedes Egypti* mosquito must deposit her larvae in clear, still water, similar to the water often stored in and around homes.

Where sanitary systems are incomplete or absent, the disposal of water from households also is implicated in the spread of disease. Gray waters and black waters—waters containing household waste, including feces—may flow unchecked into streams and rivers, down gullies, and through peoples' yards and the ditches along roads. These water runoffs provide the breeding ground for other disease vectors, contaminate downstream water sources, and spread parasitic and vector-borne diseases.

Water quality, as well as water security, directly affects people's use of water to maintain their health through hydration and hygienic habits, to wash their foods, and even to keep their homes free of the vectors that carry disease. When water is scarce, unreliable, or of questionable quality, people reduce their use of it, often endangering their health. Thus, when water—the "blue gold," "human right," "liquid health," "fountain of youth and revival"—becomes commodified by trade agreements channeling it to some and excluding others, it

becomes a mechanism that exacerbates already existing inequities and furthers the structural violence visited upon the poor and powerless.

Thirty years ago, Omran (1977) published an article describing a series of mutations in the interaction of humans, crops, and culture and the resultant health changes. What he referred to as “The Epidemiological Transition: A Theory of the Epidemiology of Population Change” was a sequence of complex interrelationships among increased population size, the domestication of grains and animals, and altered agricultural patterns and the effects of these on morbidity and mortality. Building on Omran’s ideas and moving from the first epidemiological transition (occurring in prehistoric times, ten thousand years ago) through the second epidemiological transition (occurring in the late nineteenth and early twentieth centuries), Armelagos and others have identified what they refer to as the “Third Epidemiological Transition,” occurring in the last third of the twentieth century. In the third epidemiological transition, societies have already conquered infectious and contagious diseases, and populations are faced with death and disability due not to infectious and contagious diseases, but rather to genetics and lifestyle.

The idea behind the epidemiological transition framework rests on the foundations of epidemiology (the population-based study of the determinants and distribution of disease) as applied to understanding emerging patterns of disease (Armelagos 1990). Human cultural changes producing new behavior and consumption patterns were analyzed to understand how population pressures, combined with access to newly domesticated foods or other resources, affect mortality and morbidity rates.

The second epidemiological transition was based, in part, on resource management of water and the capability of states to provide a reliable, potable supply of drinking water for their populace. Countries such as the United States emphasized the development of a public health infrastructure in the late nineteenth and early twentieth centuries, concomitant with the development of a Fordist workforce. As a result of adequate, publicly provided sanitation and potable water, reductions in the levels of infectious and contagious diseases transformed the US health profile, preparing for the third (and current) epidemiological transition. The development of vaccines to combat

early-childhood diseases such as measles, mumps, and whooping cough, in combination with widespread access to potable water and sewerage disposal, created a health profile in which a larger number of children than ever before survived childhood.

Those who lived through childhood tended to succumb to diseases incurred through genetics, lifetime exposure, and lifestyle. In the early 1900s, the five leading causes of death in the United States were pneumonia, tuberculosis, diarrhea and enteritis, heart disease, and chronic nephritis. By 1990, the five leading causes of death in the United States were heart disease, cancer, stroke, injury, and lung disease. Cardiovascular diseases, malignant neoplasms, diabetes, and Alzheimer's disease replaced acute respiratory and diarrheal diseases as the primary killers of the population.

Understanding epidemiological transitions—for instance, from death and disability due to preventable diseases, to death and disability due to chronic and lifestyle diseases—is important because it provides the conceptual foundation for understanding potential health transitions generated by the globalization of commodities such as water. The second epidemiological transition occurred because public policies provided potable water and sanitary disposal of wastes as a public right. As world trade patterns increasingly determine access to water, basic health conditions and the assumptions about the role of the “public” in public health are changing. A brief recounting of the classic story of the Bank Street pump and its role in the history of protecting public health through supplying clean water and sanitation shows that those resources are necessary to achieving and sustaining the second health transition. Countries with little access to a reliable supply of clean water face almost insurmountable odds as they try to improve their health profile.

The second epidemiological transition was made possible because of informed, enlightened public policy and access to a reliable water supply. In the nineteenth century, cholera and other waterborne diseases were common killers. Cholera—the “blue death,” that age-old and still current waterborne killer—was responsible for the first recorded documentation of disease transmission through water. During a cholera outbreak in London in the 1850s, thirty years before Robert Koch first identified the cholera vibrio, John Snow (1855

[1979]) identified and isolated water from a particular water pump as the source of the cholera infection. Snow, a physician and epidemiologist, mapped the topography of a cholera outbreak in a section of London by means of a door-to-door survey that enabled him to isolate the Broad Street pump as the source of contaminated water. After identifying the source, Snow removed the handle of the pump, thereby eliminating access to the contaminated water.

Not satisfied by merely eliminating access, Snow traced the way in which the Broad Street water supply became contaminated. He found that two water lines served a common neighborhood in London. One line, however, ran close to and was infected by a break in a sewage pipe. That water line provided water to those who used the Bank Street pump. Snow found that those who drank the water from the Bank Street pump (the most contaminated with sewerage) had a death rate nine times higher than neighbors who drank water drawn from a less polluted source.

In addition to tracing the mode of transmission, Snow identified the source of the infection and its consequences for the human gastrointestinal system. He conducted subsequent studies analyzing seasonal factors, gender differences in water-related behaviors, and occupational variables in the transmission of cholera. The scientific documentation from these early studies supported the national public-health policies aimed at public provision of clean water and safe waste disposal. The success of those initiatives made possible the second health transition, which dramatically improved the health profiles of countries such as the United Kingdom and the United States by the early part of the twentieth century.

WHO estimates that the quantity of water necessary for health varies not only with individuals' physical attributes (age, size, health status), but also with the climate in which they live. According to WHO, people living in temperate climates need 2 to 3 liters of water a day; those living in hot climates need between 6 and 10 liters of water a day. Although these amounts may be disputed, they give a rough idea of how much water is minimally required for sustainability. The UN High Commission of Refugees (UNHCR) suggests that a minimal amount of water is 10–11 liters during periods of high stress. In some countries, women expend up to kilocalories a day collecting water (see Ferguson,

chapter 3 in this volume). Some estimates suggest that people can survive one month without food but only five to seven days without water. Those with limited access to water adapt their behaviors to accommodate water insecurity, often resulting in unhealthy patterns of water usage (L. Whiteford 1999).

Now that we understand why water is critical to health, we may ask this question: why doesn't everyone agree that water and health are human rights and should be protected for everyone? The answer can be found in the paradigm shift. In this new era of globalization, health and water as human rights have been reconceptualized in an economically driven formula. Writing about this shift, Craig Janes describes a program called "New Century Scholar," which brought together thirty scholars from nineteen countries to discuss "Challenges of Health in a Borderless World." Janes (2004) writes that they were to "reflect on public health and health policy in a qualitatively new era of globalization. This era is marked in particular by the emergence of new, and powerful, non-state actors; shifts in health governance as the power of nation-states erodes; the ascendancy of the development banks as the drafters of health policy; the emergence of economics as the core social science of global health; and the dismantling of public health systems of health care and public health, increasingly replaced by private systems and NGOs."

Janes recounts his distress with the results of the WHO Commission on Macroeconomics and Health (Commission on Macroeconomics and Health 2001) and the Bill and Melinda Gates Foundation conceptualizations of global health challenges. Those challenges were constructed in terms of potential technological advances created by science and scientists and were measured by economics. Again quoting from Janes (2004), "the commission explained the relationship between poverty and disease, and their proposed solutions, illustrates the movement in global health policy from a focus on health as a human right to a utilitarian economics-based discourse which, in this case posits health as a determinant of global economic development." As the chapters in this volume clearly demonstrate, the shift in priorities from human welfare to economic development is not isolated to health but is a dominant theme in the commodification of water as well. Both the water and health discourses masquerade as

means to reduce poverty and facilitate economic development but succeed best in continuing the structural violence visited on the least powerful.

In closing this first chapter, we find ourselves drawn to the eloquent writing of Vandana Shiva (2002; quoted in Hyatt 2004:x): “Paradigm wars over water are taking place in every society, East and West, North and South. In this sense, water wars are global wars, with diverse cultures and ecosystems, sharing the universal ethic of water as an ecological necessity, pitted against a corporate culture of privatization, greed, and the enclosures of the water commons.” We hope that the following chapters will help students, colleagues, practitioners, and policy makers better understand the relationship between health and water and the necessity of restoring the human rights paradigm.

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