Water Crisis, Water Justice and Water Democracy: One Aspect of Struggle for 'Green Social Justice' as 'Applied Complexity Green Criminology'

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1 Introduction

We are facing a global water crisis. Lots of people around the world are in a critical situation of their lives. According to a report by the United Nations, some 1.2 billion persons worldwide do not have access to safe drinking water. Their fundamental rights to live are exposed to the menace of this crisis and its mismanagement, and water privatization. Diverse environmental crimes threaten to intensify water crisis. Moreover, global warming and population explosion have made the problem of lack of water more and more serious. As the water crisis is unequally distributed and burdened among persons, in general, poor people are facing their crises of existence. In recent years there happen lots of conflicts over water all over the world.

In this paper, as one aspect of 'applied complexity green criminology', and struggling for 'green social justice', problems around water crisis are anatomized and a new direction, 'water justice and water democracy', is suggested.

2 Complexity System of Water

2.1 Climate Change and Water

IPCC Technical Paper VI (IPCCTP VI) explains that the importance of freshwater to our life support system is widely recognized in the international context. Freshwater is indispensable for all forms of life and is needed in almost all human activities. Climate, freshwater, biophysical and socioeconomic systems are interconnected in complex ways, so a change in any one of these induces a change in another. Anthoropogenic climate change adds a major pressure to nations that are already confronting the issue of sustainable freshwater use. The challenges related to freshwater are: having too much water,

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having too little water, and having too much pollution. Each of these problems may be exacerbated by climate change. Freshwater-related issues play a pivotal role among the key regional and sectoral vulnerabilities. Therefore, the relationship between climate change and freshwater resources is of primary concern and interest (Bates et al., p.7).

IPCCTP VI continues that so far, water resource issues have not been adequately addressed in climate change analyses and climate policy formulations. Likewise, in most cases, climate change problems have not been adequately dealt with in water resource analyses, management and policy formulation. According to many experts, water and its availability and quality will be the main pressure on, and issues for, societies and the environment under climate change; hence it is necessary to improve our understanding of the problems involved (Bates et al., p.7).

2.2 Socio-economic/Environmental Conditions and Water

IPCC Technical Paper VI analyzes the relationship between socio-economic/environmental conditions and water. It says that the relationship between climate change and freshwater do not exist in isolation, but in the context of, and interacting with, socio-economic and environmental conditions. Many non-climate drivers affect freshwater resources at all scales, including the global scale..Water resources, both in terms of quantity and quality, are critically influenced by human activity, including agriculture and land-use change, construction and management of reservoirs, pollutant emissions, and water and wastewater treatment. Water use is linked primarily to changes in population, food consumption, economic policy (including water pricing), technology, lifestyle and society's views about the value of freshwater ecosystems. In order to assess the relationship between climate change and freshwater, it is necessary to consider how freshwater has been, and will be, affected by changes in these non-climatic drivers (Bates et al., p.8).

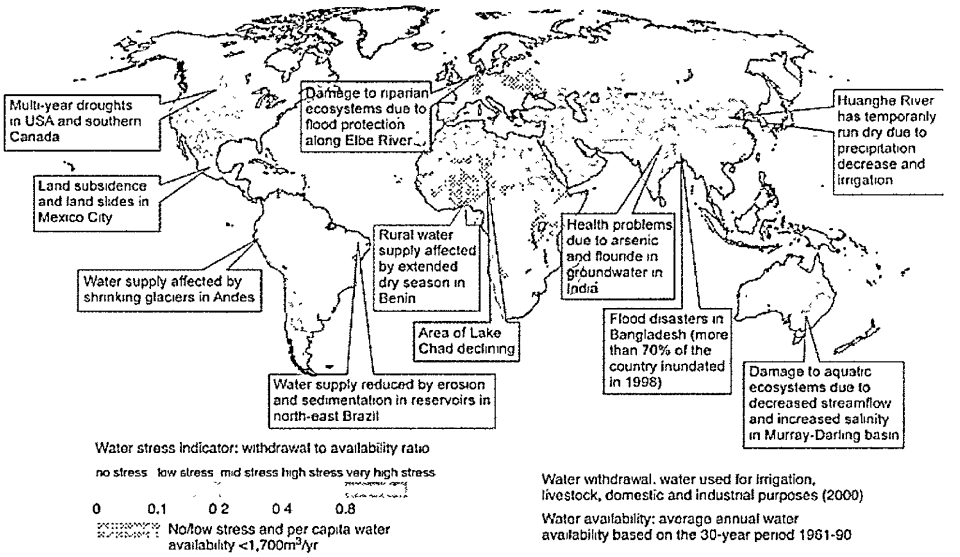
IPCCTP VI continues that in global-scale assessments, basins are defined as being water-stressed if they have either a per capita water availability below 1,000 cubic meter per year (based on long-term average runoff) or a ratio of withdrawals to long-term average annual runoff above 0.4. Such water-stressed basins are located in northern Africa, the Mediterranean region, the Middle East, the Near East, southern Asia, northern China, Australia, the USA, Mexico, north-eastern Brazil and the west coast of South America. The estimates for the population living in such water-stressed basins range between 1.4 billion and 2.1 billion (Bates et al., p.8).

Then IPCCTP VI says that in water-stressed areas, people and ecosystems are particularly vulnerable to decreasing and more variable precipitation due to climate change. In most countries, except for a few industrialized nations, water use has increased over recent decades, due to population and economic growth, changes in lifestyle, and expanded water supply systems, with irrigation water use being by far the most important cause. Irrigation accounts for about 70% of total water withdrawals worldwide and for more than 90% of consumptive water use (i.e. the water volume that is not available for reuse downstream). Irrigation generates about 40% of total agricultural output. The area of global irrigated land has increased approximately linearly since 1960, at a rate of roughly 2% per annum, from 140 million ha in 1961/63 to 270 million ha in 1997/99, representing about 18% of today's total cultivated land (Bates et al., pp.8 - 9).

Moreover, IPCCTP VI explains that although the rates of regional population change differ widely from the global average, the rate of global population increase is already declining. Global water use

is probably increasing due to economic growth in developing countries, but there are no reliable data with respect to the rate of increase. The quality of surface water and groundwater has generally declined in recent decades due principally to growth in agricultural and industrial activities. To counter this problem, many countries (e.g., in the European Union and Canada) have established or enforced effluent water standards and have rehabilitated wastewater treatment facilities (Bates et al., p.9).

Figure 1: Examples of current vulnerabilities of freshwater resources and their management (Bates et al. p.9 Figure 1.1)



3 Global Water Crises – General Remarks

3.1 World Water Assessments

The UN World Water Development Report (UNWWDR) sets the scene of world's water crisis. At the beginning of the twenty-first century, the Earth, with its diverse and abundant life forms, including over six billion humans, is facing a serious water crisis. All the signs suggest that it is getting worse and will continue to do so, unless corrective action is taken. This crisis is one of water governance, essentially caused by the ways in which we mismanage water. But the real tragedy is the effect it has on the everyday lives of poor people, who are blighted by the burden of water-related disease, living in degraded and often dangerous environments, struggling to get an education for their children and to earn a living, and to get enough to eat. The crisis is experienced also by the natural environment, which is groaning under the mountain of wastes dumped onto it daily, and from overuse and misuse, with seemingly little care for the future consequences and future generations. In truth it is attitude and behavior problems that lie at the heart of the crisis. We know most (but not all) of what the problems are and a good deal about where they are. We have knowledge and expertise to begin to tackle them. We have developed excellent concepts, such as equity and sustainability. Yet inertia at leadership level, and a world population not fully aware of the scale of the problem (and in many cases not sufficiently empowered to do much about it) means we fail to take the needed timely corrective actions and put the

concepts to work (UNWWAP 2003, p4).

UNWWDR continues that, for humanity, the poverty of a large percentage of the world's population is both a symptom and a cause of the water crisis. Giving the poor better access to better managed water can make a big contribution to poverty eradication, as *The World Water Development Report* (WWDR) will show. Such better management will enable us to deal with the growing per capita scarcity of water in many parts of the developing world. Solving the water crisis in its many aspects is but one of the several challenges facing humankind as we confront life in this third millennium and it has to be seen in that context. We have to fit the water crisis into an overall scenario of problem-solving and conflict resolution. Yet of all the social and natural resource crises we humans face, the water crisis is the one that lies at the heart of our survival and that of our planet Earth (UNWWAP 2003, p4).

3.2 Natural Water Cycle

UNWWDR looks at the natural water cycle, and explains that , although water is the most widely occurring substance on earth, only 2.53 percent is freshwater while the remainder is salt water. Some two thirds of this freshwater is locked up in glaciers and permanent snow cover. The available freshwater is distributed regionally as shown in table 1 (UNWWAP 2003, p.8).

Table 1: Water availability versus population (made from UNWWAP 2003, p.9, Figure 1)

region	water (%)	population (%)
Africa	11	13
Asia	36	60
Australia and Oceania	5	1
Europe	8	13
North and Central America	15	8
South America	26	6

UNWWDR continues that, in addition to the accessible freshwater in lakes, rivers and aquifers, man-made storage in reservoirs adds a further 8,000 cubic kilometres (km^3). Water resources are renewable (except some groundwater), with huge differences in availability in different parts of the world and wide variations in seasonal and annual precipitation in many places. Precipitation is the main source of water for all human uses and for ecosystems. This precipitation is taken up by plants and soils, evaporates into the atmosphere via evapotranspiration, and runs off to the sea via rivers, and to lakes and wetlands. The water of evapotranspiration supports forests, rainfed cultivated and grazing lands, and ecosystems. We withdraw 8 percent of the total annual renewable freshwater, and appropriate 26 percent of annual evapotranspiration and 54 percent of accessible runoff. Humankind's control of runoff is now global and we are significant players in the hydrological cycle. Per capita use is increasing (with better lifestyles) and population is growing. Thus the percentage of appropriated water is increasing. Together with spatial and temporal variations in available water, the consequence is that water for all our uses is becoming scarce and leading to a water crisis (UNWWAP 2003, pp.8 - 9).

UNWWDR analyzes that freshwater resources are further reduced by pollution. Some 2 million tons of waste per day are disposed of within receiving waters, including industrial wastes and chemicals, human

waste and agricultural wastes (fertilizers, pesticides and pesticide residues). Although reliable data on the extent and severity of pollution is incomplete, one estimate of global wastewater production is about 1,500 km^3. Assuming that 1 litre of wastewater pollutes 8 litres of freshwater, the present burden of pollution may be up to 12,000 km^3 worldwide. As ever, the poor are the worst affected, with 50 percent of the population of developing countries exposed to polluted water sources (UNWWAP 2003, pp.9 - 10).

Moreover, UNWWDR explains that the precise impact of climate change on water resources is uncertain. Precipitation will probably increase from latitudes 30°N and 30°S, but many tropical and sub-tropical regions will probably get lower and more erratic rainfall. With a discernable trend towards more frequent extreme weather conditions, it is likely that floods, droughts, mudslides, typhoons and cyclones will increase. Stream flows at low-flow periods may well decrease and water quality will undoubtedly worsen, because of increased pollution loads and concentrations and higher water temperatures. We have made good progress in understanding the nature of water in its interaction with the biotic and abiotic environment. We have better estimates of climate change impacts on water resources. Over the years, our understanding of hydrological processes has enabled us to harvest water resources for our needs, reducing the risk of extreme situations. But pressures on the inland water system are increasing with population growth and economic development. Critical challenges lie ahead in coping with progressive water shortages and water pollution. By the middle of this century, at worst 7 billion people in sixty countries will be water-scarce, at best 2 billion people in forty-eight countries (UNWWAP 2003, p.10).

3.3 Challenges of Contemporary Water Management within Socioeconomic Context

The UN World Water Development Report 2 (UNWWDR 2) mentions that the key challenges of contemporary water management can only be understood within the very broad context of the world's socioeconomic systems. The problem we face today is largely one of governance: equitably sharing this water while ensuring the sustainability of natural ecosystems. At this point in time, we have not yet achieved this balance. Decisions on water management are a top priority. Who has the right to water and its benefits? Who is making water allocation decisions on who is supplied with water - and from where, when and how? There are many demands made on the world's water resources: drinking, hygiene, food, energy and industrial goods, and the maintenance of natural ecosystems. Global water resources, however, are limited and unevenly distributed. This complicates water management, particularly for decision-makers, who are faced with the challenge of managing and developing water resources in a sustainable fashion in the face of the pressures of economic growth, major population increases and climate change (UNWWAP 2006, pp.3 - 6).

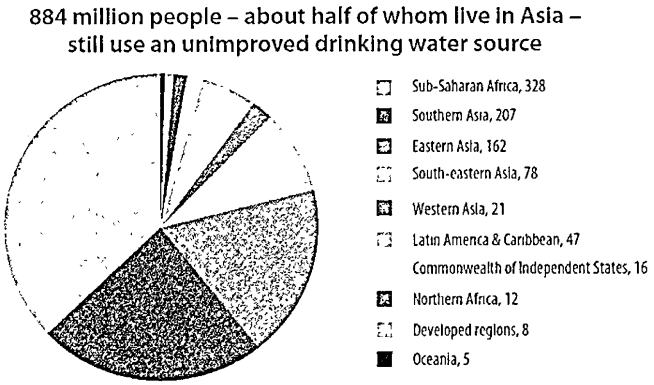
UNWWDR 2 explains that the state of human health is inextricably linked to a range of water-related conditions: safe drinking water, adequate sanitation, minimized burden of water-related disease and healthy freshwater ecosystems. Urgent improvements in the ways in which water use and sanitation are managed are needed to improve progress towards meeting the Millennium Development Goals (MDGs) related to human health. In the last decade, 90 percent of natural disasters have been water-related events. Tsunamis, floods, droughts, pollution and storm surges are just a few examples of hazards that can constitute a risk for societies and communities. These are likely to increase in the changing environmental context. Hazards like these become disasters when risks are not managed with the objective of reducing human vulnerability. Floods and droughts are the most deadly freshwater

disasters, disrupting socio-economic development in particular in developing countries. Efforts to reduce disaster risks must be systematically integrated into policies, plans and programmes for sustainable development and poverty reduction (UNWWAP 2006, pp.18 - 20)

UNWWDR 2 explains that the focus of the emerging water culture is water sharing: Integrated Water Resources Management (IWRM) looks for more effective and equitable management of water through increased cooperation. Bringing together institutions dealing with surface water and aquifer resources, calling for new legislative agreements worldwide, raising public participation, and exploring alternative solutions to resolving disputes, are all part of the process. The availability and affordability of water is of growing political and economic concern. Growing populations and rising incomes stimulate the demand for improved water supply and sanitation services, both directly and indirectly through demand for food, manufactured products, energy and environmental services. Given its unique life-sustaining properties and innumerable roles, water incorporates many values - social, cultural and environmental, as well as economic. All of these must be considered in designing water-related policies and programmes if equitable, efficient and environmentally sustainable management of water resources is to be achieved (UNWWAP 2006, pp.33 - 39)

Figure 2 : Drinking water coverage 2006 (World Health Organization and United Nations Children's Fund Joint Monitoring Programme for Water Supply and Sanitation (JMP) 2008, p.24, Figure 22)

Figure 3 : Population using an unimproved drinking water source, by region in 2006 (millions) (World Health Organization and United Nations Children's Fund Joint Monitoring Programme for Water Supply and Sanitation (JMP) 2008, p.30, Figure 32)



3.4 Water in a Changing World

The United Nations World Water Development Report 3 indicate three messages:

1) Leaders in the water sector – in water supply and sanitation, hydropower, irrigation and flood control – have long been aware that water is essential to sustainable development, but they do not make the decisions on development objectives and the allocation of human and financial resources to meet them. These decisions are made or influenced by leaders in government, the private sector and civil society, who must learn to recognize water's role in obtaining their objectives;

2) Water is essential for achieving sustainable development and the Millennium Development Goals. Properly managing water resources is an essential component of growth, social and economic development, poverty reduction and equity and sustainable environmental services – all essential for achieving the Millennium Development Goals;

3) Water is linked to the crises of climate change, energy and food supplies and prices, and troubled financial markets. Unless their links with water are addressed and water crises around the world are resolved, these other crises may intensify and local water crises may worsen, converging into a global water crisis and leading to political insecurity and conflict at various levels (UNWWAP 2009, p.3).

4 Power, Poverty and Global Water Crisis

4.1 Dealing with Climate Change

Human Development Report 2006 (HDR 2006) explains that climate change is transforming the nature of global water insecurity. While the threat posed by rising temperatures is now firmly established on the international agenda, insufficient attention has been paid to the implications for vulnerable agricultural producers in developing countries. The Framework Convention on Climate Change adopted in 1992 warned governments that "where there are risks of serious and irreversible damage, lack of full scientific certainty should not be used as a reason for postponing action". Few warnings have been more perilously ignored (Watkins 2006, p.27).

HDR 2006 continues that global warming will transform the hydrological patterns that determine the availability of water. Modeling exercises point to complex outcomes that will be shaped by micro-climates. But the overwhelming weight of evidence can be summarized in a simple formulation: many of the world's most water-stressed areas will get less water, and water flows will become less predictable and more subject to extreme events. Among the projected outcomes:

1) Marked reductions in water availability in East Africa, the Sahel and Southern Africa as rainfall declines and temperature rises, with large productivity losses in basic food staples. Projections for rain-fed areas in East Africa point to potential productivity losses of up to 33% in maize and more than 20% for sorghum and 18% for millet;

2) The disruption of food production systems exposing an additional 75–125 million people to the threat of hunger,

3) Accelerated glacial melt, leading to medium-term reductions in water availability across a large group of countries in East Asia, Latin America and South Asia;

4) Disruptions to monsoon patterns in South Asia, with the potential for more rain but also fewer rainy days and more people affected by drought;

5) Rising sea levels resulting in freshwater losses in river delta systems in countries such as

Bangladesh, Egypt and Thailand.
The international response to the water security threat posed by climate change has been inadequate (Watkins 2006, pp.27 - 28).

4.2 Managing Water Scarcity, Risk and Vulnerability

Human Development Report 2006 says that in the early 21st century debates on water increasingly reflect a Malthusian diagnosis of the problem. Dire warnings have been posted pointing to the 'gloomy arithmetic' of rising population and declining water availability. Is the world running out of water? Not in any meaningful sense. But water insecurity does pose a threat to human development for a large–and growing–section of humanity. Competition, environmental stress and unpredictability of access to water as a productive resource are powerful drivers of water insecurity for a large proportion of the global population. Viewed at a global level, there is more than enough water to go around and meet all of humanity's needs. So why is water scarcity a problem? Partly because water, like wealth, is unequally distributed between and within countries . It does not help water-stressed countries in the Middle East that Brazil and Canada have more water than they could ever use. Nor does it help people in drought-prone areas of northeast Brazil that average water availability in the country is among the highest in the world. Another problem is that access to water as a productive resource requires access to infrastructure, and access to infrastructure is also skewed between and within countries (Watkins 2006, pp.25 - 26).

HDR 2006 continues that measured on conventional indicators, water stress is increasing. Today, about 700 million people in 43 countries live below the water-stress threshold of 1,700 cubic metres per person – an admittedly arbitrary dividing line. By 2025 that figure will reach 3 billion, as water stress intensifies in China, India and Sub-Saharan Africa. Based on national averages, the projection understates the current problem. The 538 million people in northern China already live in an intensely water-stressed region. Globally, some 1.4 billion people live in river basin areas where water use exceeds sustainable levels. Water stress is reflected in ecological stress. River systems that no longer reach the sea, shrinking lakes and sinking groundwater tables are among the most noticeable symptoms of water overuse. The decline of river systems – from the Colorado River in the United States to the Yellow River in China – is a highly visible product of overuse. Less visible, but no less detrimental to human development is rapid depletion of groundwater in South Asia. In parts of India groundwater tables are falling by more than 1 metre a year, jeopardizing future agricultural production (Watkins 2006, p.26).

Then HDR 2006 concludes that these are real symptoms of scarcity, but the scarcity has been induced by policy failures. When it comes to water management, the world has been indulging in an activity analogous to a reckless and unsustainable credit-financed spending spree. Put simply, countries have been using far more water than they have, as defined by the rate of replenishment. The result is a large water-based ecological debt that will be transferred to future generations. This debt raises important questions about national accounting systems that fail to measure the depletion of scarce and precious natural capital – and it raises important questions about cross-generational equity. Underpricing (or zero pricing in some cases) has sustained overuse: if markets delivered Porsche cars at give-away prices, they too would be in short supply. Future water-use scenarios raise cause for serious concern. For almost a century water use has been growing almost twice as fast as population. That trend will continue. Irrigated agriculture will remain the largest user of water – it currently accounts for more than 80% of

use in developing countries. But the demands of industry and urban users are growing rapidly. Over the period to 2050 the world's water will have to support the agricultural systems that will feed and create livelihoods for an additional 2.7 billion people. Meanwhile, industry, rather than agriculture, will account for most of the projected increase in water use to 2025 (Watkins 2006, p.26).

4.3 Power, Water and Money: Exploring the Nexus

Erik Swyngedouw insists that providing safe and clean water to communities is not exactly rocket science: the basic technologies and engineering principles are known and mastered (although there is always scope for improvement of course), management systems understood, aquatic bio-chemical and physical processes well comprehended. Despite the relative technological and managerial ease of providing clean water for all and of evacuating and treating wastewater, it is remarkable that more than one billion people worldwide are still suffering from inadequate, unreliable (both in quantity and quality) and/or difficult access to clean water and almost two billion form unsatisfactory sanitation. While the humanitarian and socio-economic costs of inadequate water and sanitation services are well known, progress in alleviating water problems remains excruciatingly and unacceptably slow. The annual number of premature deaths or the persistence of debilitating conditions actually suffered by the poor of the world as a result of inadequate water supply far outweigh even the most pessimistic predictions of the human consequences of global warming. Yet, it would be remarkably easy to remedy this. With the possible exception of very arid regions, conditions of problematic water access have little, if anything at all, to do with water availability or absolute scarcity. It usually is a problem of access and equitable distribution of the available resources. What need to be understood better, therefore, is not how to bring water to people, but, rather, why it is that some social groups do not have adequate access to water and sanitation, while others do (Swyngedouw, p.4).

He continues that while the MDGs are committed to a significant increase of the number of people that have improved access to clean water and adequate sanitation, particularly to the poor, it can now be confidently predicted that, unless a significant effort is made from the part of national and trans-national institutions, conditions will only have improved marginally, if at all, by 2015. Despite rhetorical commitment and political support, eradicating water poverty meets with significant barriers and difficulties. The background paper of Human Development Report 2006 by UNDP will address a relatively neglected aspect of the water problem. In particular, attention will be paid to the relationship between social power and water circulation and water access. In other words, it will be argued that access to or exclusion from access to water is largely determined by relative power positions of individuals and social groups vis-à-vis each other. In other words, we argue that a focus on 'the poor' is not necessarily particularly helpful in assessing and understanding processes of access to or exclusion from access to water and sanitation. The key question is to understand why some groups in particular social and geographical location have unlimited access to water while others have no or unsatisfactory access. The paper pays relatively little attention to the problematic conditions of water access for many people around the world and the difficulties encountered in changing this condition. This is sufficiently known. Its focus is on the social power relations that produce decidedly uneven conditions through which socio-spatially stratified water access conditions are actively produced and maintained (Swyngedouw, pp.4 - 5).

Then he concludes that the terrestrial part of the hydrological cycle is considered as fundamentally

a hydro-social cycle. The water flows embodied in the networks that function as conduits for this cycle would narrate many interrelated tales: of social and political actors and the powerful socio-ecological processes that produce urban and regional spaces; of participation and exclusion; of rats and bankers; of water-borne disease and speculation in water-industry related futures and options; of chemical, physical and biological reactions and transformations; of the global hydrological cycle and global warming; of uneven geographical development; of the political lobbying and investment strategies of dam builders; of urban land developers; of the knowledge of engineers; of the passage from river to urban reservoir. The rhizome of underground and surface water flows, of streams, pipes and networks is a powerful metaphor for processes that are both social and ecological. Water is a 'hybrid' thing that captures and embodies processes that are simultaneously material, discursive and symbolic. Water networks connect the most intimate of socio-spatial relations, insert them into a mesmerizing political-economy of urban, national and international development, and are part of a chain of local, regional, national and global circulations of water, money, texts and bodies. In this sense, water embodies bio-chemical and physical properties, cultural and symbolic meanings, and socio-economic characteristics simultaneously and inseparably. These multiple metabolisms of water are structured and organized through socio-natural power relations --- relations of domination and subordination, of access and exclusion, of emancipation and repression --- which then become etched into the flow and metabolisms of circulating water. This circulation of water is embedded in and interiorises a series of multiple power relations along ethnic, gender and class lines. These situated power relations, in turn, swirl out and operate at a variety of interrelated geographical scale levels, form the scale of the body upward to the political-ecology of the city to the global scale of uneven development. The capturing, sanitizing, and bio-chemical metabolizing of water to produce 'urban' drinking or agricultural irrigation water simultaneously homogenizes, standardizes, and transforms it into a commodity as well as into the real-abstract homogenized qualities of money power in its manifold symbolic, cultural, social, and economic meanings (Swyngedouw, p.5).

5 Water Privatization and Reclaiming Public Water

5.1 Water Privatization Fiasco

Public Citizen (PC) explains that the role of multinational corporations in providing water and sanitation services is relatively new. In fact, one could say water 'privatization' is a global social experiment. Historically, water has been viewed as a public good, not a market commodity. Over the last 200 years, most water utilities have been publicly owned and managed. And, the vast majority of people around the world receive water and sanitation services from publicly owned and operated facilities. Most countries have only recently begun to consider privatization of their water utilities. Only 5% of the world' s water services are run by private companies. Water and sanitation services have been publicly run because private companies were not interested in owning or managing water utilities. There was little or no profit to be made. But, with the specter of growing freshwater scarcity and the prediction that water will be the oil of the 21st century, major global corporations have been moving into the 'water market'. The multinational water corporations, their government allies, the IMF, the World Bank and the regional development banks have claimed that water privatization (or public/private partnerships) is the answer. They claim that bringing the private sector into water and sanitation service provision will ensure access to the more than a billion people worldwide who lack clean and affordable water, and the 2.4 billion who

lack sanitation services. The water corporations and their allies argue that the private sector is more efficient, cost-effective and competitive. And, the private sector can bring needed financing. Many cases show that very few of these claims are borne out in practice (Public Citizen 2003, p.1).

PC continues that in recent years several showcase water privatizations have suffered major losses. Cases in Buenos Aires, Manila, Atlanta and Cochabamba are presented. Conflict-ridden water privatizations in Indonesia, South Africa, and the United Kingdom are also analyzed. What has now become clear is that the major multinational water corporations have no intention of making a significant contribution to the capital needed to ensure access to clean and affordable water. The rhetoric of private sector financing is a myth. There is no commitment to universal access to clean and affordable water unless significant profit can be guaranteed. These profit ratios have not been quickly nor easily forthcoming in the developing world. Now the water corporations are demanding new loans, guarantees, and currency exchange insurance from governments and the international financial institutions (IFIs). And, in some cases, if they don't get it, they are pulling out. The claim that the multinational water corporations will save government money by providing more efficient and cost-effective operation, maintenance and rehabilitation of water and sanitation services is also not borne out in practice. Instead, the cases presented below show increases in consumer water rates, public health crises, weak regulation, lack of investment in water infrastructure, jobs and trade unions threatened, pollution and other environmental catastrophes, secret deals and social turmoil (Public Citizen 2003, p.1).

PC concludes that public water utilities in many countries have been unable to provide universal access to water and sanitation services. Two decades of IMF and World Bank structural adjustment programs that cut government budgets, including government subsidies to water utilities, have worsened the problem. While it is laudable that, in recent years, there has been new-found attention to the fact that millions go without access to clean and affordable water, this new global awareness should not provide profit-making business opportunities for multinational corporations. Civil society activists are clear that the solutions will not come from the global water corporations, but rather from grassroots democratic initiatives and increased government accountability to the demands of citizens and civil society organizations, including environmental groups, women's groups, religious organizations, trade unions, farmers' organizations, students and many others (Public Citizen 2003, pp.1 - 2).

5.2 Failure of Water Privatization

Mary Ann Manahan et al. mention that Asia shows the highest number of people unserved by either water supply or sanitation. Seven hundred fifteen million people in Asia have no access to safe drinking water, while 1.9 billion or 80 percent of the population has no access to sanitation. Immense numbers give an indication of the extent of the problem, but the urgency of the matter comes from the understanding that this water crisis is largely a problem of 'governance', i.e. equitably sharing the world's freshwater while ensuring the sustainability of natural ecosystems. In achieving this balance, the main issue for many governments, water advocates, and stakeholders in the water sector is identifying the best model for improving peoples' access to safe and affordable drinking water (Manahan et al., p.1).

They explain that while public utilities and communities are still the main actors for water supply and sanitation and resource management in Asian countries, governments and international financial institutions (IFIs) aim to expand the role of private water corporations in water delivery. With the pretext that the private sector has the financial, technological and technical capacities to improve water

delivery, IFIs such as the World Bank (WB) and Asian Development Bank (ADB) continue to push for various forms of privatization, through conditions to loans, policy prescriptions or technical assistance. Unfortunately also the Asia Pacific Water Summit in Oita, Japan (December 2007) reflected this stubborn bias (Manahan et al., p. 1).

Then they insist that the pro-privatization approach is primarily ideology-driven, as the private concession model of water service provision has been tried in Asian major cities, from India to the Philippines – and clearly failed. Far from ensuring universal access and coverage of water, the reality of many privatization projects has been skyrocketing water prices, unfixed broken pipes, laying-off skilled workers, exacerbating unequal access to safe and affordable water and improved sanitation, increased debts, under-investment, etc. Against the reality of these experiences, the last few years were marked with many social mobilizations, consolidation of forces, victories and hard-won battles for peoples and communities' water struggles, particularly in defending water as a human right (Manahan et al., p.1).

5.3 Alternatives to Privatization

Manahan et al. explain their essay collection as follows. This collection of 19 new essays written by civil society activists, trade unionists and other water practitioners, presents examples of ongoing struggles against water privatization and commercialization as well as inspiring examples of people-centered public-water management from across Asia. This compilation will not only be a source of inspiration for those struggling for water for all in communities all over the continent, but also it will contribute to strengthening the discussion about the ways forward for public water delivery in Asia. The papers show that the ideology-driven privatization wave has now also reached Asian countries where public water delivery has been very successful. Examples include like Malaysia, Hong Kong, Korea and Japan, where public utilities have largely achieved water for all. But despite universal coverage, high quality drinking water and sanitation, very low leakage levels and many other indicators of successful public services, the governments of Hong Kong, Korea and Japan are planning to boost the role of the private sector. In Malaysia, this process has already resulted in widespread privatization and predictable problems (such as tariffs hiking impacting the affordability of water for the poorest) resulting from this (Manahan et al., p.1).

They continue that the essay collection also covers India, Cambodia, Indonesia and many other Asian countries where large parts of the population have for far too long remained without adequate access to water and sanitation, but where concrete, workable alternatives to water privatization exist. Public water solutions are being developed and implemented in numerous Asian countries, i.e. progressive public water management models, often involving new forms of local cooperation between public water operators, communities, trade unions and other key groups. Experiences in the Indian states Tamil Nadu and Kerala show that empowerment of communities and the democratization of governance are strong positive tools for improving public water supply. Appropriate technology and a focus on sustainable water solutions, the Tamil Nadu experience shows, can moreover result in major cost savings that allow more people to get access to clean water. An important new trend is the emergence of public-public partnerships (PUPs), in which a well-performing water operator assists a utility in need of support. This essay collection includes examples of domestic PUPs from Indonesia and Cambodia. PUPs, including cross-border partnerships between utilities, are likely to get a major boost through the UN' s new 'water operator partnerships' (WOPs) initiative, which is geared towards facilitating cooperation

among utilities on a not-for-profit basis (Manahan et al., pp.1 - 2).

Then they insist that clearly, numerous public water utilities in large parts of Asia fail to supply safe water for all, but privatization is not the answer. There is no lack of workable public service reform approaches that could dramatically improve access to water supply and sanitation for millions of people across the continent, if the political will would be there. However diverse these people-centered public water approaches are, the following words of an elected official from Tamil Nadu captures the essence:

"Only through a partnership between people who have suffered for want of water and water agencies who believe in democratic functioning can we ensure safe, equitable and adequate water and understand the need for conservation of resources and ensuring sustainable water systems" (Manahan et al., p.2).

5.4 Reclaiming Public Water

Belen Balanya et al. explains that due to the ideological obsession with private sector promotion in the last decade, the question, how public water can work, has not received a fraction of the attention it deserves in policy debates and decision-making. There is now a fundamentally new situation as a result of the many high-profile privatization failures, the withdrawal from developing countries by private water multinationals, and the realization among even privatization proponents that private investment will not deliver for the poor. It is necessary to refocus on amplifying the performance and coverage of public utilities. Significant improvements in access to clean water and sanitation have been achieved by diverse forms of public water management. These people-centered public water solutions have occurred under a variety of socio-economic, cultural and political circumstances. Examples include the accomplishments of public utilities and co-operatives in Porto Alegre (Brazil), Santa Cruz (Bolivia) and Penang (Malaysia); the improvements realized by innovative public delivery models in Caracas (Venezuera), Harrismith (South Africa) and the province of Buenos Aires (Argentina); and the achievements of community-managed water in Olavanna (Kerala, India) and Savelugu (Ghana). These diverse public approaches have all proved their potential for improving water delivery, not least to the poorest (Balanya et al, p.247).

Then they continue that these achievements have happened against lots of obstacles. Among the worst are the systematic bias against public water of international financial institutions and the privatization conditionalities attached to the decreasing amounts of development aid offered by northern governments. The political, financial, and other hurdles prevent public water management from achieving its full potential. Strengthening the democratic, public character of water service is fundamentally at odds with the currently dominant neoliberal model of globalization, which subordinates ever more areas of life to the harsh logic of global markets. In many cities citizens and user participation in various forms is an essential factor behind the improvements in effectiveness, responsiveness and social achievements of the water utility (Balanya, pp.248 - 249).

5.5 Movements, Struggles and Public Water Solutions

Balanya et al. insist that social movements contribute actively to preserving and improving the public character of water and sanitation services around the world. By exerting public pressure on governments and utilities to change and improve access to clean water, such movements have a key role in achieving sustainable water for all. In many countries, social movements are mobilizing to defend

the interests of marginalized people against the neoliberal policies promoted by political and economic elites. Social justice and democratization of water management decision-making are integrally linked. Anti-privatization campaign coalitions in countries around the world go beyond mere resistance. These movements, uniting a broad range of actors, from environmentalists, women's groups and grassroots community activists to trade unions, political parties and public utility managers, have often very elaborate visions and concrete proposals for public sector alternatives (Balanya et al., p.266 - 267).

Human Development Report 2006 explains the key role of public provider as follows. In recent years international debate on the human right to water has been dominated by polarized exchanges over the appropriate roles of the private and public sectors. Important issues have been raised – but the dialogue has generated more heat than light. Some privatization programmes have produced positive results, but the overall record is not encouraging. From Argentina to Bolivia, and from the Philippines to the United States, the conviction that the private sector offers a 'magic bullet' for unleashing the equity and efficiency needed to accelerate progress towards water for all has proven to be misplaced. While these past failures of water concessions do not provide evidence that the private sector has no role to play, they do point to the need for greater caution, regulation and a commitment to equity in public-private partnerships (Watkins, pp.21 - 22).

In sum, HDR 2006 conclude that two specific aspects of water provision in countries with low coverage rates caution against an undue reliance on the private sector. First, the water sector has many of the characteristics of a natural monopoly. In the absence of a strong regulatory capacity to protect the public interest through the rules on pricing and investment, there are dangers of monopolistic abuse. Second, in countries with high levels of poverty among unserved populations, public finance is a requirement for extended access regardless of whether the provider is public or private. The debate on privatization has sometimes diverted attention from the pressing issue of public utility reform. Public providers dominate water provision, accounting for more than 90% of the water delivered through networks in developing countries. Many publicly owned utilities are failing the poor, combining inefficiency and unaccountability in management with inequity in financing and pricing. But some public utilities – Porto Alegre in Brazil is an outstanding example – have succeeded in making water affordable and accessible to all. There are now real opportunities to learn from failures and build on successes. The criterion for assessing policy should not be public or private but performance or nonperformance for the poor (Watkins, p.22).

6 Water Justice and the Right to Water

6.1 The Right to Water as a Human Right

World Health Organization (WHO) mentions that we have entered the new millennium with one of the most fundamental conditions of human development unmet: universal access to water. Of the world' s 6 billion people, at least 1.1 billion lack access to safe drinking-water. The lives of these people who are among the poorest on our planet are often devastated by this deprivation, which impedes the enjoyment of health and other human rights such as the right to food and to adequate housing. Water is the essence of life and human dignity. Water is fundamental to poverty reduction, providing people with elements essential to their growth and development. Recently, the Committee on Economic, Social and Cultural Rights, which monitors the implementation of the Covenant, adopted General Comment No. 15 in which

water is recognized, not only as a limited natural resource and a public good but also as a human right. The right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water, and it must be enjoyed without discrimination and equally by women and men. At the Millennium Summit, States agreed to halve, by 2015, the proportion of people without access to safe drinking-water. WHO issued the report as a contribution to the International Year of Freshwater, celebrated worldwide throughout 2003 as an immense opportunity to highlight and promote the right to water as a fundamental human right (WHO, p.3).

6.2 Evolution of Water and Health-related Human Rights

WHO explains that in 2000, the United Nations Committee on Economic, Social and Cultural Rights, the Covenant's supervisory body, adopted a General Comment on the right to health that provides a normative interpretation of the right to health as enshrined in Article 12 of the Covenant. This General Comment interprets the right to health as an inclusive right that extends not only to timely and appropriate health care but also to those factors that determine good health. These include access to safe drinking-water and adequate sanitation, a sufficient supply of safe food, nutrition and housing, healthy occupational and environmental conditions, and access to health-related education and information. In 2002, the Committee further recognized that water itself was an independent right. Drawing on a range of international treaties and declarations, it stated: "the right to water clearly falls within the category of guarantees essential for securing an adequate standard of living, particularly since it is one of the most fundamental conditions for survival" (WHO, p.8).

WHO continues that regardless of their available resources, all States Parties have an immediate obligation to ensure that the minimum essential level of a right is realized. In the case of water, this minimal level includes ensuring people's access to enough water to prevent dehydration and disease. Other immediate and inexpensive obligations include non-discrimination and the respect and protection of the existing enjoyment of rights. The recognition that the realization of human rights is dependent upon resources is embodied in the principle of progressive realization. This principle mandates the realization of human rights within the constraints of available resources. It also creates a constant and continuing duty for States to move quickly and effectively towards the full realization of a right. This neither requires nor precludes any particular form of government or economic system being used to bring about such change. Steps towards the full realization of rights must be deliberate, concrete and targeted as clearly as possible towards meeting the human rights obligations of a government and may include legislative, administrative, financial, educational and social measures or the provision of remedies through the judicial system (WHO, p.9).

6.3 Rights-based Approach to Development

WHO asks why defining water as a human right makes a difference, and answers. Ensuring that access to sufficient safe water is a human right, which constitutes an important step towards making it a reality for everyone. It means that:

1) fresh water is a legal entitlement, rather than a commodity or service provided on a charitable basis;
2) achieving basic and improved levels of access should be accelerated;
3) the 'least served' are better targeted and therefore inequalities decreased;
4) communities and vulnerable groups will be empowered to take part in decision-making processes;

5) the means and mechanisms available in the United Nations human rights system will be used to monitor the progress of States Parties in realizing the right to water and to hold governments accountable (WHO, p.9).

WHO mentions that approaching development from a rights perspective informs people of their legal rights and entitlements, and empowers them to achieve those rights. Rather than seeing people as passive recipients of aid, the rights-based approach puts the individual at the centre of development. A rights-based approach has implications for a range of actors concerned directly or indirectly with water issues. Governments, as primary duty-bearers, must take concrete steps to respect, protect and fulfill the right to water and other water-related rights and to ensure that anyone operating within their jurisdiction – individuals, communities, civil society, and the private sector – do the same. This means paying attention to these rights also in processes, ensuring the right of beneficiaries to participate in decision-making that affects them and guaranteeing transparency so that individuals have access to information and are able to understand, interpret, and act on the information available to them (WHO, pp.9 - 10).

Moreover, according to WHO, a rights-based approach is also premised upon the principle of freedom from discrimination and equality between men and women. This is closely linked to the issue of accessibility. For example, the right to water specifically rules out exclusion from needed services according to ability to pay. This is crucial in ensuring the delivery of services to the poor. A central feature of a rights-based approach is the notion of accountability, which in practice requires the development of adequate laws, policies, institutions, administrative procedures and practices, and mechanisms of redress. This calls for the translation of the internationally recognized right to water into locally determined benchmarks for measuring progress, thereby enhancing accountability. A rights-based approach may deliver more sustainable solutions because decisions are focused on what communities and individuals require, understand and can manage, rather than what external agencies deem is needed (WHO, p.10).

7 Water Democracy and Water Commons

7.1 Beyond Scarcity: Power, Poverty and the Global Water Crisis

The UN Human Development Report 2006 analyzes the relationship of power, poverty and the global water crisis. The global crisis in water consigns large segments of humanity to lives of poverty, vulnerability and insecurity. The scarcity at the heart of the global water crisis is rooted in power, poverty and inequality, not in physical availability. Ensuring that every person has access to at least 20 littles of clean water each day is a minimum requirement for respecting the human right to water. "Not having access" to water and sanitation is a polite euphemism for a form of deprivation that threatens life, destroys opportunity and undermines human dignity. Water and sanitation are among the most powerful preventive medicines available to governments to reduce infectious disease. The criterion for assessing policy should not be public or private but performance or nonperformance for the poor. Even more than water, sanitation suffers from a combination of institutional fragmentation, weak national planning and low political status. Community-led initiatives are important, but they are not a substitute for government action – and private financing by poor households is not a substitute for public finance and service provision (Watkins, pp.1 - 24).

HDR 2006 continues that scarcity has been induced by policy failures – when it comes to water management, the world has been indulging in an activity analogous to a reckless and unsustainable credit-financed spending spree. Climate change is transforming the nature of global water insecurity. International aid for adaptation ought to be a cornerstone of the multilateral framework for dealing with climate change. Outcomes for the poorest, most vulnerable people in society will be determined by the way institutions mediate and manage rival claims – and by whether governments put equity concerns at the center of national policies. Transboundary water governance is a human development issue: cooperation can reduce the potential for conflict and unlock benefits by improving the quality of shared water, generating prosperity and more secure livelihoods. Unclean water and poor sanitation have claimed more lives over the past century than any other cause (Watkins, pp.1 - 24).

7.2 A New Freshwater Narrative: Our Water Commons

Maude Barlow mentions that the world's water crisis due to pollution, climate change and a surging population growth is of such magnitude that close to two billion people now live in water-stressed regions of the planet. By the year 2025, two-thirds of the world's population will face water scarcity. The global population tripled in the twentieth century, but water consumption went up sevenfold. By 2050, after we add another three billion to the population, humans will need an 80 percent increase in water supplies just to feed ourselves. No one knows where this water is going to come from (Barlow 2007a). The time has come to turn our attention to the earth's declining fresh water supplies. Water is the most crucial Commons, one of the very few things on which everyone is dependent, and approaching the future of water through the Commons lens offers the possibility of a path to a sane and just future of water use and management (Barlow 2007b, p.1).

She insists that there are two competing narratives about the earth's fresh water resources being played out in the 21st century. On one side is a powerful clique of decision-makers, heads of some powerful states, international trade and financial institutions and transnational corporations who do not view water as part of the global Commons or a public trust, but as a commodity, to be bought and sold on the open market. On the other is a global grassroots movement of local communities, the poor, slum dwellers, women, indigenous peoples, peasants and small farmers working with environmentalists, human rights activists, progressive water managers and experts in both the global North and the global South who see water as a Commons and seek to provide water for all of nature and all humans. We see the tense --- and globally threatening --- relationship between these two prominent narratives and point to ways that the life affirming water Commons can be used as a framework to bring water justice to all (Barlow 2007b, p.1).

7.3 Blue Covenant: Water Conservation, Water Justice and Water Democracy

Maude Barlow insists that the three water crises – dwindling freshwater supplies, inequitable access to water and the corporate control of water – pose the greatest threat of our time to the planet and to our survival. Together with impending climate change from fossil fuel emissions, the water crises impose some life-death decisions on us all. Unless we collectively change our behavior, we are heading toward a world of deepening conflict and potential wars over the dwindling supplies of freshwater – between nations, between rich and poor, between the public and the private interest, between rural and urban populations, and between the competing needs of the natural world and industrialized humans (Barlow

2007a).

She continues that humanity still has a chance to head off these scenarios of conflict and war. We could start with a global covenant on water. The Blue Covenant should have three components: water conservation covenant from people and their governments that recognizes the right of the Earth and of other species to clean water, and pledges to protect and conserve the world's water supplies; a water justice covenant between those in the global North who have water and resources and those in the global South who do not, to work in solidarity for water justice, water for all and local control of water; and a water democracy covenant among all governments acknowledging that water is a fundamental human rights for all. Therefore, governments are required not only to provide clean water to their citizens as a public service, but they must also recognize that citizens of other countries have the rights to water as well as and to find peaceful solutions to water disputes between states (Barlow 2007a).

She concludes that the global water justice movement is demanding a change in international law to settle once and for all the question of who controls water. It must be commonly understood that water is not a commercial good, although of course it has an economic dimension, but rather a human right and a public trust. What is needed now is binding law to codify that states have the obligation to deliver sufficient, safe, accessible and affordable water to their citizens as a public service. While 'water for all, everywhere and always' may appear to be self-evident, the fact is that the powers moving in to take corporate control of water have resisted this notion fiercely. So have many governments, either because, in the case of rich governments, their corporations benefit from the commodification of water or, in the case of poor governments, because they fear they would not be able to honor this commitment. Groups around the world are mobilizing in their communities and countries for constitutional recognition of the right to water within their borders and at the United Nations for a full treaty that recognizes the right to water internationally (Barlow 2007a).

7.4 The Principles of Water Democracy

Vandana Shiva analyzes the historical erosion of communal water rights. Examining the international water trade, damming, mining, and aquafarming, she exposes the destruction of the earth and the disenfranchisement of the world's poor as they are stripped of their rights to a precious common good. She also cerebrates the spiritual and traditional role water has played in communities throughout history, and warns that water privatization threatens cultures and livelihoods worldwide (Shiva).

She mentions that at the core of the market solution to pollution is the assumption that water exists in unlimited supply. The idea that markets can mitigate pollution by facilitating increased allocation fails to recognize that water diversion to one area comes at the cost of water scarcity elsewhere. In contrasts to the corporate theorists who promote market solutions to pollution, grassroots organizations call for political and ecological solutions. Communities fighting high-tech industrial pollution have proposed the Community Environmental Bill of Rights, which includes rights to clean industry; to safety from harmful exposure; to prevention; to knowledge; to participation; to protection and enforcement; to compensation; and to cleanup. All of these rights are basic elements of a water democracy in which the right to clean water is protected for all citizens. Markets can guarantee none of these rights (Shiva, p.34).

She continues that there are nine principles underpinning water democracy:

1) Water is nature's gift; 2) Water is essential to life; 3) Life is interconnected through water; 4) Water

must be free for sustenance needs; 5) Water is limited and can be exhausted; 6) Water must be conserved; 7) Water is a commons; 8) No one holds a right to destroy; 9) Water cannot be substituted (Shiva, pp.34 - 36).

8 Conclusions

The study of environmental harm/crime and practical politics of environmental protections is an important conundrum. It is addressed whether the harmful policies and practices against environment can be characterized as a form of crime, and whether environmental harms/crimes of globalization need to receive special attention.

Rob White addresses the conceptual foundation for a political economy of environmental harm, reviews the criminological study of environmental harm, and examines how production and consumption are organized within capitalist society. Complementing a political economy of environmental harm is the literature in theoretical environmentalism, in which "sustainability" is currently deployed globally as a political catchphrase that engenders a vague sense of goodwill toward the Third World, and the environment generally, but has done little to radically shift us away from top-down development strategies and oppressive global trading practices (White).

We must envision an alternative that provides basic human needs: water, food, clothing, shelter, energy, security, and so on. These basic human rights are the essence of democracy and quality of human life, and can be compatible with environment. A social reconstruction is called for which is based on new narrative based not on the death of nature or mechanistic science, but on a partnership with nature and environment. By the middle of the 21st century, we will be compelled to accept a different set of assumptions about production, reproduction, consumption, ecology, and consciousness, constituting a global ecological revolution (White).

The global crisis in water consigns large segments of humanity to lives of poverty, vulnerability and insecurity. The scarcity at the heart of the global water crisis is rooted in power, poverty and inequality, not in physical availability. Citizens have the right to water. Not having access to water and sanitation is a form of deprivation that threatens life, destroys opportunity and undermines human dignity. The harmful policies and practices against environment can be characterized as a form of crime, and environmental harms/crimes of globalization need to receive special attention. Facing the serious global water crisis, we have to do struggle for 'water justice and water democracy'.

Note:

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