Water wars? The Role of Hegemony in the Jordan River, Nile River and Columbia River Basins

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Chapter 1: Introduction

"Water is affected by everything, and water affects everything and everyone."
-World Commission on Water for the 21st Century, A Water Secure World
(Conca 2006, 123)

Background: What Exactly is the Problem?

The world is running out of water. The UNDP's 2006 Human Development Reports entitled "Beyond Scarcity: Power, Poverty and the Global Water Crisis," which state that the world's freshwater resources, particularly in the Middle East and Africa, are rapidly dwindling. According to the report in 2004, about 15% of the world's population had no access to an improved water source. In Sub-Saharan Africa those without access numbered almost 50% of people. In East Asia and the Pacific, about 28% of people lacked this access, in South Asia, more than 15%, in the Arab states, more than 15% and in Latin America and the Caribbean almost 10% of people lacked access to an improved water source (UNDP 2006, 11). Furthermore, the Intergovernmental Panel on Climate Change has projected that climate change will expose between 75 and 250 million *more* Africans to increased water stress in 2020 (The Chicago Council on Global Affairs 2009, 31). According to the Comprehensive Assessment of Water Management in Agriculture, approximately 1.2 billion people in the world live in a river basin experiencing absolute scarcity, 478 million live in river basins where scarcity is rapidly approaching, and 1.5 billion more people in total suffer from inadequate access to water, due to a lack of infrastructure or financial ability to tap water resources (The Chicago Council in Global Affairs 2009, 33).

The causes of water scarcity can be explained by global problems that defy national borders and the global governance reach of international institutions. These global problems including population growth, climate change, pollution, urbanization and even changing diets due to economic growth: it takes 2,000 litres of water to grow one kilo of vegetables, but 15,000 litres to produce a kilo of beef. And these problems are only getting worse: farmers will need 60% more water than they currently use to feed the estimated 2 billion extra people who will be born by 2025 ("Water Rights: Awash in Waste" 2009, 13). Since 1950, the renewable water supply per individual in the world has fallen by 58%, even as the world's population has exploded from 2.5 billion to more than 6 billion (Postel and Wolf 2001, 60). The movement of water through the hydrologic cycle "comprises the largest flow of any material in the biosphere, delivering about 110,000 km^3 of water yearly in precipitation, driven by solar energy (Jackson et al. 2001, 1027).

By 2001, human appropriation of global accessible runoff totaled 6,700 km^3 per year, about half of the total 12,500 km^3 per year of runoff available, and that number has only increased since. According to Jackson et al, of the global

yearly freshwater runoff of 40,700 km^3, 7,800 km^3 is in remote, inaccessible basins, and 20,400 km^3 is uncaptured floodwater. Human extractive uses of water can be placed in three broad categories: irrigation for crop production, industrial and commercial activities and residential activities. Agricultural use constitutes the largest human appropriation globally (Jackson et al. 2001, 1035).

Many people currently lack access to water for economic reasons, including an inability to purchase water or a lack of distributing infrastructure. However, as more and more people tap into the same exiting resources, water scarcity is becoming a more important reason that people have less access to water. Although freshwater supply is already a "limiting resource" in many parts of the world, in the next century, it will become significantly more limiting due to factors like increased population, urbanization and climate change (Jackson et al. 2001, 1038). Climate change's potential impact is difficult to gauge because of the complexity of its effects, and regional changes will be more variable and more difficult to predict, with many areas experiencing increased summer drying from greater evaporation rates, and in some cases lower precipitation. However, scientists agree with limited certainty that, as the earth warms, a "general intensification of the hydrologic cycle will occur," and precipitation, evapotransipration and runoff will increase globally while hydrologic extremes, such as floods and droughts will become more frequent and more intense (Jackson et al. 2001, 1036).

In reality, the impending water scarcity crisis is a combination of three factors: population growth that causes actual scarcity, economic access and wastage. Although water is a renewable resource, there is only a fixed amount of it in the world and each human being needs a minimum amount of it to survive; thus there is a theoretical population threshold after which there will not be enough water for everyone in the world. Furthermore, humans are currently depleting nonrenewable sources of freshwater at an unsustainable rate, which will only put more pressure on the fixed amount of aboveground sources that are already drying up. Finally, plenty of water is still wasted every year. Irrigation practices are the biggest culprit, and it is estimated that changing irrigation practices globally could save 30% of the water that is currently consumed ("Water Rights: Awash in Waste" 2009, 13). Aging infrastructure is another problem: in water-poor Jordan, it is estimated that leaking sewage systems waste up to 50% of the clean water that is transported through them (USAID 2008). Most importantly, the present patterns of consumption by individuals and countries reflect a lack of emphasis on ideas like preservation and discourage sharing, thus encouraging wasteful patterns of use. There is significant argument about whether water scarcity comes mostly from a simple lack of water or from lack of economic access, and there are considerable gaps in our current understanding of how much water people use. Regardless, the drying out of rivers globally poses a unique and challenging problem to the international governance of rivers. That is because unlike oil or any other strategic resource that is becoming increasingly scarce, water has no substitute, whether consumed by humans and animals, for agricultural purposes or in the manufacture of many goods.

Scarcity will also be exacerbated by the fact that humans are currently withdrawing water from underground aquifers at an unprecedented rate, putting more pressure on above-ground resources like lakes and rivers. Renewable freshwater comprises only 3% of the total amount of water on earth. Of that, more than two-thirds is locked in ice caps and glaciers, so freshwater lakes and rivers hold 100,000 km^3 globally, or less than 0.01% of all water on earth (Jackson et al. 2001, 1029). Even then, the "distribution of this water is not well matched geographically or temporally to human needs," with some areas with high populations receiving low rainfall and little runoff, while other less populated areas receive more (Jackson et al. 2001, 1034). Furthermore, about half of the global renewable supply of freshwater runs rapidly into the sea through floods, unless it is controlled by a managed river system, where spring floodwaters from snowmelt can be stored in reservoirs (Jackson et al. 2001, 1034).

At least one fourth of the world's total population draws water from underground aquifers, and about 99% of all liquid freshwater is stored in underground aquifers. This water is turned over much more slowly than groundwater resources, "often in hundreds to tens of thousands of years," although turnover rates can range to a large extent (Jackson et al. 2001, 1030). Furthermore, many aquifers are actual leftovers of wetter historical climate conditions or the previous melting of Pleistocene ice sheets. This "fossil water," accumulated over tens of thousands of years, is non-replenishable (Jackson et al. 2001, 1030). Some underground aquifers are renewable, although more than three-quarters are not, meaning that they have a recharge rate of a century or more. However, even so-called renewable aquifers depend on current precipitation for refilling and are "vulnerable to changes in the quantity and quality of

rechargeable water," and even many of these aquifers around the world are being depleted (Jackson et al. 2001, 1030). Unlike rivers, these aquifers have hardly any established regimes to regulate their usage. However, an examination of the regulatory systems that currently exist in other types of international basins will help to achieve a better understanding of how these aquifers can also be effectively shared and regulated amongst riparian states.

Rivers are one of the most important sources of water for many people, particularly for small-scale farmers and individuals in developing countries. From farmers in dry countries who use river water to irrigate their crops, such as along the Nile River basin, to religious groups who view river water as sacred, such as Hindus along the Ganges, river water serves a vital purpose in the lives of people from different countries, cultures and religious backgrounds all across the globe. At the center of the issue of water scarcity in rivers for all of these people is that water is vital to human survival: humans simply cannot live without it. Water also serves a multitude of integral functions in the life of every individual human being, from ingestion, to bathing, cooking and crop irrigation. Put simply, it is impossible to imagine a world that functions without enough water for everyone, and in which major rivers that serve all of these functions are being rapidly depleted. And yet, the world is quickly moving closer to this 'impossible' scenario.

Transboundary Water and International Law

Despite the rapidly growing importance of transboundary water in the world, international law regarding water management is quite weak: Wolf calls it "poorly developed, contradictory and unenforceable" (Wolf 1998, 251). The water of international river basins is currently solely governed by bilateral, and occasionally multilateral, treaties between riparian states. The Transboundary Freshwater Dispute Database project of Oregon State University has identified a total of 150 accords involving 52 rivers or lake basins for the period 1874 to the present. 86% of these agreements are bilateral. This is out of a total of 263 existent international rivers, where 145 countries in the world have territory in at least one international river basin. River basin-specific treaties "constitute a large and growing body of international law": 111 of these agreements occurred in the period since 1980 alone (Conca 2006, 103). Thus, it is increasingly the norm for states to settle water scarcity conflicts concerning international rivers with bilateral agreements.

However, this growing body of international law does not represent a convergence of global norms about how transboundary rivers should be governed. According to Conca, an empirical analysis of the norms encoded in these relatively few existing agreements does not suggest the widespread diffusion of an overall global norm. Some core principles related to developments in environmental law as a whole such as information exchange and consultation are represented in a majority of agreements, while principles such as equitable use and "no significant harm" are not. Furthermore, 80% of agreements contained no enforcement mechanism, and more than half (54%) contained no mechanism for conflict resolution, rendering them relatively weak in the face of increasing scarcity (Conca 2006, 105). Finally, about two thirds of the existing treaties have been in North America or Europe, where the "modern development of water resources has proceeded the furthest," suggesting that there is even less of a norm of signing transboundary agreements in other parts of the world, including the Middle East and North Africa (Frey 1993, 58).

Several principles of international law have been applied to international river negotiations by riparian states in the absence of commonly agreed upon norms. These principles exist competitively rather than in harmony, and are invoked by riparians only when they are seen as beneficial. The first and most basic dueling principles are those of absolute sovereignty versus absolute riverine integrity. Absolute sovereignty is often referred to as the Harmon Doctrine, and argues that a state has absolute rights to water flowing through its territory. It is invoked most often by upstream riparians (Wolf 1999, 6). In contrast, the doctrine of absolute riverine integrity states that every riparian is entitled to the natural flow of the river system that crosses its borders, and is most often invoked by downstream riparians (Wolf 1999, 6). A third doctrine, that seeks to strike a balance between the latter two extreme principles is the doctrine of limited territorial sovereignty. Advanced by the 1997 Convention (see below), this doctrine gives each riparian state the right to use waters within its own borders according to the terms of 'reasonable and equitable use,' with the obligation to not cause 'significant harm' (Wolf 1999, 6). However, terms like 'significant,' 'reasonable' and 'equitable' are undefined and left intentionally vague within the text of the Convention for reasons of legal

interpretation and political expediency (Wolf 1999, 7). The doctrine also does not set a clear priority between the two concepts, and for these reasons its specific meaning is still hotly contested (Wolf 1999, 6-7).

In addition to these doctrines, two other concepts exist. 'Restricted sovereignty' refers to the idea that each riparian state should be entitled to specific allocations of the total flow of river water each year, tied to such criteria as historical use, total population or amount of arable land. Finally, the doctrine of optimal development, or the shared benefits model, calls for the development of the river basin without regard to national boundaries, such that maximum river flow is captured and redistributed to riparians, or alternatively one riparian may compensate others for its use of the water it receives because of optimal development (Frey 1993, 58).

The closest approximation for global governance of international rivers is the 1997 UN Convention of the Non-Navigational Uses of International Watercourses, which was not ratified by enough member states to enter into force. The Convention represented the culmination of three decades of efforts towards developing a framework of globally applicable legal principles for the governance of international waters. After two decades of debate, the International Law Commission approved a set of draft articles on the Law of Non-Navigational Uses of International Watercourses, which formed the basis of negotiations within the Sixth (Legal) Committee of the UN General Assembly. These negotiations, meant to set out the general principles that should guide development of basic-specific agreements, resulted in a draft version of the Watercourses Convention that was voted upon by the General Assembly in 1997 (Conca 2006, 96).

The Convention articulates the principles by which basic-specific agreements should be negotiated and enumerates the rights that should be accorded to each riparian state within a shared river basin. It was meant to serve as a template for "the negotiation and strengthening of accords governing specific international river basins" (Conca 2006, 96). Included in its principles is the right of every riparian state to be party to an agreement that governs the entire river basin, the "equitable and reasonable use" of a river as it passes through a state's territory, regular consultation and information exchange, an obligation to cause no significant harm to other watercourse states and explicit principles for environmental protection and the prevention and control of pollution (Conca 2006, 99). Thus the Convention set out to create a global normative structure for the methods by which international river basin agreements should be negotiated, as well as the norms that these agreements should be based on.

The Convention's failure to be ratified by the General Assembly, reflecting concerns from influential upstream riparian states including Turkey and China, demonstrates the difficulties inherent in the effort to establish global norms for the governance of international rivers. The Convention was also criticized because of a perceived lack of features that would have made it easier to implement. Conca argues that the Convention would have enforced "traditionally statist presumptions of authority," leaving little room for the entry of non-state actors (Conca 2006, 96). According to the Convention, the only legitimate actors in agreements over the governance of transboundary waters are "watercourse States" and "regional economic integration organizations…constituted by sovereign states" (text of the Convention-quoted in Conca 2006, 99).

"Water Wars?"

Predictions of "water wars" have become an important and even customary part of global diplomatic discourse. In 1995, the World Bank's vice president for environmentally sustainable development famously asserted "if the wars of this century were fought over oil, the wars of the next century will be fought over water," (Conca 2006, 93). The popular publication *The Economist* has predicted that river water shortages would constitute "the stuff of future wars…conditions are ripe for a century of water conflicts" ("Water Rights: Awash in Waste" 2009, 13). United Nations Secretary General Kofi Annan said in 2001 that "fierce competition for freshwater may well become a source of conflict and wars in the future" (Postel and Wolf 2001, 60). A United States National Intelligence Council report concluded that the likelihood of interstate conflict over water will increase in the near future "as countries press against the limits of available water" (Postel and Wolf 2001, 60). What is the truth about transboundary water and the potential for war?

There are two traditional schools of thought in the academic literature about the potential for 'water wars' to occur.

The first, led by Thomas Homer-Dixon, predicts that freshwater scarcity will be "one of the chief resource issues of…the [21st] century" (Homer-Dixon 1993, 26). As water consumption increases exponentially due to population growth and industrialization amongst other factors many countries, particularly those in the driest areas, are taking more and more water from rivers, depleting river water and causing shortages downstream. This classic Malthusian dilemma will cause more and more people to have to share the same amount of river water in the future, and many experts including Homer-Dixon assert that "water wars" are an inevitable result. Downstream riparians are at a distinct disadvantage because upstream states have the opportunity to remove as much water as they want from the river before the downstream riparians can. Water shortages have caused downstream riparians to make claims that counter upstream riparians', causing intense conflict between states. Similarly, riparians that are located alongside one another often make claims and counterclaims to water allocations, and even at the extreme, to build diversions upstream to ensure their own access to water allocations (Conca 2006, 27).

Water scarcity in arid and semi-arid environments can therefore lead to intense political pressures, coined "water stress" by Falkenmark (1989) (quoted in Wolf 1998, 252). Homer-Dixon asserts that it is highly likely that water shortage disagreements between states will lead to regional crises by 2025, just as history has seen exponentially increasing instances of water conflict between states, particularly through the 20th century and the present. Others have joined the growing "water wars" literature: Westing (1986) asserts that "competition for limited…freshwater…leads to political tensions and war," while Butts (1997) has suggested that "history is replete with examples of violent conflict over water," citing four Middle Eastern water sources that are at particular risk (quoted in Wolf 1998, 253).

The second group, led by Shlomi Dinar, Aaron Wolf and others, counters that in fact there has never been a historical incidence of a "water war." Using an exhaustive dataset of 261 international river basins, Wolf concludes that "only seven minor skirmishes are found in this century; no war has ever been fought over water" (Wolf 1998, 251). There have been perhaps countless incidences of water-related violence at the sub-national level, but this finding suggests that in fact "geographic scale and intensity of conflict are inversely related" (Wolf 1998, 255). Similarly, Dinar contends that "the existence of hundreds of treaties signed among nations over water for non-navigational uses is evidence that countries pursue cooperation over shared water resources and that the pessimistic outlook on international freshwater is not entirely justified" (Dinar 2002, 236). Furthermore, he argues that conflicts over transboundary rivers may in fact "eventually lead to joint exploitation of the resources and a network of common interests. Similarly, resource scarcity based on environmental degradation tends to encourage joint efforts to halt the degradation" (Dinar 2002, 236).

Wolf gives three reasons that water wars have not occurred. First, in terms of strategy, it would be almost impossible to launch a war that actually guaranteed the aggressor access to the river water itself. The basin's hegemon, which would have to be the downstream state (since the upstream state has no need to fight for its allocation) would have to effectively invade and occupy its upstream, weaker neighbor, an essentially impossible task (Wolf 1998, 257). Second, he argues that riparians have shared interests so that there are far greater benefits to cooperating with other riparians. Comprehensive river development can benefit all riparians, and usually involves cooperation (Wolf 1998, 257). Third, Wolf finds that "once cooperative water regimes are established through treaty, they turn out to be tremendously resilient over time, even between hostile riparians, and even as conflict is waged over other issues" (Wolf 1998, 258). He also advances a fourth argument, that there is no economic benefit to going to war because processes like desalination would be relatively cheaper, but notes that it is difficult to prove conclusively (Wolf 1998, 258).

Given these findings this group of scholars also recognizes that political pressures and tensions unquestionably exist in international river basins: "although wars over water have not occurred, there is ample evidence showing that the lack of clean freshwater has led to intense political instability and that acute violence has occasionally been the result" (Wolf et al. 2003, 30). Wolf et al. conducted a study of international rivers, assessing all relevant biophysical, socio-economic and geopolitical data, to "determine history-based indicators for future tensions along international waterways" (Wolf et al. 2003, 31). They found that most water interactions are mild and cooperative. Water "acts as a unifier," and while the majority of water-related conflicts have to do with allocation quantity and infrastructure, nations tend to cooperate over a much wider variety of issues (Wolf et al. 2003, 40).

Their findings also dispute the prevailing wisdom that "countries which cooperate in general cooperate about water; countries which dispute in general dispute over water," finding only a mild positive correlation between these two factors, and that "the higher the GDP per capita, or lower the population density, the greater the cooperation," (Wolf et al. 2003, 43). They also found that water stress, government type (measured as level of democracy) and regional climate all show "no discernable pattern" in relation to the frequency of water conflicts. They did find that the two indicators that had a major bearing on the presence of conflict were basin development and cooperative transboundary institutions, in that unilateral basin development and a lack of institutional capacity contributed to higher levels of conflict. In other words, their most significant finding was that "institutions matter" (Wolf et al. 2003, 45).

There is a way to reconcile the existence of these two perspectives, which are equally supported by fact and which are both correct in many respects. Conca and others support a view of transboundary rivers that emphasizes a legal, liberal, international regime framework that assumes that agreements are signed amongst supposedly equal powers. Yet, even Conca notes that "central norms… [including] sovereign cooperation, equitable use of resources, information sharing, avoidance of significant harm, and peaceful resolution of disputes-fit comfortably within the standard regime framework. In most international basins, however, these pressures have fallen short of generating instruments of shared governance. Nor is there a clear pattern of normative convergence across the subset of basins where such instruments have been created" (Conca 2006, 123). Global norms of transboundary river governance have failed to emerge because of the existence of underlying issues of power differences in international river basins, that both of the prevailing modes of discourse- those that predict future wars and those that do not- are unable to address.

In this thesis, I will be furthering a currently emerging research tradition that is able to explain why it is possible for both of these findings to exist at once. This tradition takes note of the fact that underlying tensions and currents of power exist within transboundary basins, and that power differences exert a complex and forceful effect on outcomes in these basins. The existence of these underlying tensions of power, previously unacknowledged in the literature, explain why a semblance of cooperation, or at least the lack of conflict, coexists with huge and increasing tensions between riparian states: power differences between riparians, and more importantly the way that power is exercised in transboundary basins, can prevent the outbreak of violent conflict while simultaneously preventing sustainable, fair cooperation. This school of academic thought is encapsulated in the Framework of Hydro-hegemony.

The Framework of Hydro-hegemony

This analytical framework, originally laid out by Zeitoun and Warner in 2006 and supported by Allan (2008), Cascao (2009), Kistin (2009), Mirumachi (2009), Daudy (2008) and others, provides a context to make sense of the dynamics of power and political-economy that play out in river basins in the driest areas in the world, but that are often shrouded in other terminology. According to the Framework, "power relations between riparians are the prime determinants of the degree of control over water resources that each riparian attains" because "control over water resources is not achieved through water wars but through a suite of power-related tactics and strategies" (Zeitoun and Warner 2006, 436).

This Framework is an important new understanding of international water conflict because it recognizes that the status quo reflects the presence of pervasive, low-level conflict, rather than a false dichotomy of either violent conflict or cooperation. The Framework of Hydro-hegemony takes Frey's (1993) definition of conflict, which says that conflict exists whenever "one actor attempts to exert power over another to overcome that actor's perceived blockage of the first actor's goal and faces significant resistance" (quoted in Zeitoun and Warner 2006, 440). Conflict comes in a spectrum of types and degrees of intensity, and as such has traditionally been placed on scales. Perhaps the most famous was developed by Azar and students, and altered by Yoffe to the context of water conflict, which categorizes conflict between 7 and -7, with 7 being the highest level of cooperation and -7 the highest level of conflict. However, these scales fail to reflect the fact that conflict can exist in a situation veiled in cooperation. This is especially true in the case that one party uses the tactics of a hydro-hegemon (Zeitoun and Warner 2006, 442).

A static river basin system with a great deal of underlying conflict, like the Jordan River basin, is maintained through

a suite of tools used by the basin's Hydro-Hegemon. However, it is essential to note that Zeitoun and Warner's conception of hegemony encompasses a range of definitions, reflecting the fact that there are more overt coercive methods that can be used to achieve the compliance of weaker riparians, as well as more subtle, less easily detected methods. They draw on Lustick's work (2002), which identifies four different mechanisms that are used to produce compliance: *coercive*, the use or threat of direct force, *utilitarian,* the use of bribes or trades of services, *normative agreement,* "a conscious belief that it is in the non-hegemon's best interest to comply, thereby reinforcing the legitimacy of the hegemon," and *ideological hegemony* (Zeitoun and Warner 2006, 438). This fourth mechanism draws on Gramsci's notion of hegemony, and reflects the idea that "beliefs manufactured by hegemons provide them with 'an even more efficient mechanism for eliciting compliance than normative appeals to the legitimacy of state laws and decrees'" (Lustick quoted in Zeitoun and Warner 2006, 438). Furthermore, they point out that there is a hierarchy of efficiency with regards to these four mechanisms: for the hegemon, coercion is the least efficient method, followed by utilitarian, then normative agreement, with ideological hegemony being the most efficient mechanism (Zeitoun and Warner 2006, 438).

This spectrum of power resources also reflects Lukes' concept of the three dimensions of power, first set forth in his 1974 work *Power-A Radical View*, which seeks to answer the question "how do the powerful secure the compliance of those they dominate-and, more specifically, how do they secure their *willing* compliance?" (quoted in Zeitoun and Warner 2006, 443). The first and most easily recognizable face of power which allows hegemons to use *coercive* resources, is known as 'hard' or 'structural' power, and comes from "the material capacity of one party to gain the compliance of the other," or power that can be "measured in tanks and dollars" (Zeitoun and Allan 2008, 7). Lukes' second dimension of power "refers to control over the rules of the game- the power to decide where the goalposts are, and to move them at will" (Zeitoun and Allan 2008, 7). This is the power to take away the weaker party's ability to choose between compliance or non-compliance in the face of hegemonic demands. This form of power is analogous to Nye's (2004) conception of 'soft' power, and is often referred to elsewhere as 'bargaining power' (Zeitoun and Allan 2008, 8). It corresponds with Lustick's *normative agreement*, in that the hegemon's ability to "control the rules of the game" enables it to force normative agreement from the weaker party. The third face of power allows the hegemon to "(re)write the rules of the game, to represent the world in a particular way-and find these representations accepted and reproduced by those not in power," or according to Lukes, "to prevent people, to whatever degree, from having grievances by shaping their perceptions, cognitions and preferences in such a way that they accept their role in the existing order of things" (Zeitoun and Allan 2008, 8). The third form of power corresponds with Lustick's *ideological hegemony* and also owes a great deal to Gramsci. This form of power is also the most difficult to recognize, because when it works effectively it is actually disguised as cooperation.

There are three broad control strategies that states can use to capture or maintain their command of the water resources of an international river. A *resource capture strategy*, according to Homer-Dixon (1999), occurs when "powerful groups within a society…shift resource distribution in their favor (quoted in Zeitoun and Warner 2006, 444). Resource capture occurs when a riparian makes a unilateral move to affect water flow or quality by creating 'facts on the ground.' These methods can include the forceful annexation of land or the unilateral construction of large-scale hydraulic works. By annexing land or building infrastructure projects, the riparian has "the ability to change the hydrogeology of the resource, thereby creating new hydro-strategic and hydro-political realities (Zeitoun and Warner 2006, 444). The second strategy is *containment*, which requires some level of engagement with competitors, unlike the resource capture strategy. In this strategy, the basin's hegemon would seek to contain competitor riparians in the most asymmetric position possible, by "seek[ing] to influence the weaker riparian(s) towards compliance with its preferred order of affairs" (Zeitoun and Warner 2006, 445). The final strategy, *integration*, encourages other riparian states' compliance with agreements through the use of incentives. International rivers are particularly appropriate for this method because of the wide variety of benefits that they can provide. According to Zeitoun and Warner, "by 'building-in' to a regime benefits that may be more equitably distributed than the water itself, a hydro-hegemon may concede some of the privileges offered through its relative power" (Zeitoun and Warner 2006, 445). By using this method, a basin's hegemon would be moving the basin towards a more cooperative model.

The Framework of Hydro-Hegemony, keeping these different concepts in mind, has sorted the tactics and coercive resources that a basin hegemon can use to exert control over water resources into four categories, which correspond to the four different kinds of hegemonic power. The first, known as "coercive compliance-producing mechanisms,"

corresponds to the first face of power and reflects different methods that the hydro-hegemon can use to effect unilateral resource capture. These include military force, which is rarely used in water conflicts, as well as covert action and coercion-pressure, the most commonly used of the coercive methods, which is the *threat* of more forceful action, such as military action, economic sanctions or political isolation.

The second category is called "utilitarian compliance-producing mechanisms," and relates to the second form of power. In this category, hydro-hegemons use incentives as 'carrots' to encourage the compliance of weaker riparians, using an *integration strategy* to achieve compliance. The incentives are the direct opposite of coercive tactics, and can include trade incentives, diplomatic recognitions or military protection, or "shared interest" water projects that result in a positive-sum configuration by distributing the benefits of the resource across riparians, while encouraging further cooperation (Zeitoun and Warner 2006, 447). This method is most often accomplished through a treaty regime. Sometimes the establishment of the treaty itself can be seen as an incentive for the other riparian party to cooperate.

The third category is "normative compliance-producing mechanisms." This corresponds to Lustick's *normative agreements* category, and is not easily distinguishable from the second category because it also involves treaties. However in this case, the signing of an agreement is used by the hydro-hegemon to essentially institutionalize and ossify the status quo. Treaties are a particularly useful mechanism in this regard because "a number of weaknesses inherent in treaties make them particularly well-suited for exploitation towards a negative outcome of hydro-hegemony" (Zeitoun and Warner 2006, 447). First, under current international law, treaties are not easily enforceable, especially with regards to violations of the spirit of the document versus the letter. Second, treaties can be easily structured by the hydro-hegemon to "reflect existing inequalities and then coercion may be used to get the weaker to sign" (Zeitoun and Warner 2006, 447). Third, bilateral treaties in a multi-riparian basin effectively rule out the participation of any other riparian besides the hydro-hegemon and the party that it chooses to work with, "thereby pre-empting the rights of the non-signatory states and once again leaving the issue unresolved," probably compromising the chances of a more sustainable, long-term solution (Zeitoun and Warner 2006, 447).

The fourth category is "hegemonic compliance-producing mechanisms." This category encompasses a longer list of methods that correspond to the idea of *ideological hegemony*, including securitization, knowledge construction, sanctioned discourse, the coercive resources of international support and financial mobilization, and riparian position. These hegemonic compliance-producing mechanisms are the most significant of the four categories because they embody what the "water wars" controversy in the literature fails to address: the existence of power differentials that operate in a less obvious way than the use of overt coercive force. These mechanisms explain how it is possible for political scientists to predict both the imminent outbreak of water wars, and the lack of historical and future water wars despite rapidly increasing tensions and causal factors. This is because the existence of underlying differences in power can prevent the outbreak of conflict and still prevent future fair, sustainable cooperation.

Securitization is an act of speech that "legitimizes a state to take exceptional measures over an issue by propelling it into the realm of security" (Zeitoun and Warner 2006, 448). The discourse of securitization relates any criticism of government policy with regard to transboundary waters as treasonous, thus effectively silencing any dissenting voices. This discourse enables politicians to "construct knowledge" and maintain "a form of hegemonic thought control," in line with Gramsci's proposition that certain beliefs are "held by people who do not experience them as beliefs" but as facts, because securitization enables governments and leaders to create a discourse in which their views and preferences are perceived as facts (Zeitoun and Warner 2006, 448).

Knowledge construction, often considered a variant of sanctioned discourse, is defined by Feitelson (1999) as "a normative delimitation separating the types of discourse perceived to be politically acceptable from those that are deemed politically unacceptable at a specific point in time" (quoted in Zeitoun and Warner 2006, 448). Often thought of as "received wisdom" or "manufactured consent," the concept means that any full understanding of the issue is guided by subjective, popular belief as much as objective, science-based knowledge. This allows the hydro-hegemon to give different perspectives on its position in a transboundary basin to international donors, or to other riparians and allies, and creates more room for the hydro-hegemon to maneuver by reducing external pressure (Zeitoun and Warner 2006, 448).

The concept of *sanctioned discourse* itself actually evolved from the world of water policy research (Zeitoun and Warner 2006, 449). It accepts the premise of the concept of knowledge construction, and the existence of multiple contending alternative discourses which results in each actor supporting its own definition of reality. The triumph of one discourse means that one is heard above all others: the discourse that is sanctioned by the most powerful riparian. The existence of a sanctioned discourse can aid the hydro-hegemon in concealing certain aspects of riparian dynamics, such as inequitable distributions, and emphasizing others, such as 'cooperation' on small projects or agreements. The sanctioned discourse, which is regularly expressed as the prevailing view at international fora and in academic journals, drowns out opposing viewpoints, often from civil society, which in these situations sits well outside the halls of power. The 'cooperative' tone that the sanctioned discourse often takes "sit[s] well with the international donor community, which thereby assists in sanctioning the prevailing discourse while excluding the alternatives," further perpetuating the cycle (Zeitoun and Warner 2006, 449). Kistin points out that the sanctioned discourse of cooperation has been able to effectively veil the existence of underlying tensions between riparian states, because "the discourse appears to have been sanctioned by the global water community to the point that cooperation over transboundary water resources has emerged as an end-goal in and of itself," which ignores the fact that cooperative measures themselves are often coerced and unfair (Kistin 2009, unpublished). This "discourse of cooperation" is encouraged by the academic focus on the likelihood of water wars (Kistin 2009, unpublished).

The final tactic of the Framework of Hydro-Hegemony is *riparian position*, which refers to whether a riparian lies upstream or downstream along a transboundary river. If a riparian lies the farthest upstream, it has a much greater ability to build diversions, overuse or pollute. However, riparian position is the most static form of coercive resources, because of geographical realities, and "one that is essentially outside the struggle for a better position in the balance of power between two states. Political entities blessed with such a coercive resource are not likely to have it eroded, short of territorial conquest by another" (Zeitoun and Warner 2006, 450).

These mechanisms, particularly sanctioned discourse and knowledge construction, stand in contrast to the assumptions of all previous schools of thought, which conceive of knowledge as a purely objective force, unconnected to power differences. Wolf, Conca and even Homer-Dixon see knowledge as a neutral player. The institutional perspective in particular relies on a perception of the epistemic community as a neutral, fair broker, one that has the potential to accelerate and increase cooperation: Conca advocates an institutionalization of transboundary basins that is "grounded in authoritative expert knowledge and transnational professional networking," (Conca 2006, 128). He argues that in the past several decades, "many water analysts, scientists, managers, and advocates began to seek a more conceptual framework that could incorporate" a more "complex, comprehensive construction of problems surrounding water in general and rivers and watersheds in particular" (Conca 2006, 130). Similarly, Dinar argues that "epistemic communities may be crucial for the perpetuation of cooperation" (Dinar 2002, 244). Yet this approach, which values the contribution of expert networks positively towards increased sustainability, fairness and cooperation, ignores the fact that these individuals, along with the knowledge that is imparted to them, *themselves* are imbued by a more subjective agenda that is informed by power. Their perspective ultimately fails because it does not problematize the discourse of knowledge and securitization itself, or to connect the knowledge discourse to power. In contrast, the Framework of Hydro-hegemony actively problematizes power, acknowledging the link between knowledge-power and physical-power that others do not recognize.

The second half of the "hegemonic compliance-producing mechanisms" category, coercive resources, reflects the idea that interactions over transboundary basins are set within an existing international context, which is itself "beset by inequalities such as global political trends, partisanship and the absence of universally-recognized and enforceable international water law," and that these inequalities in the international system "yield unequal opportunities for generating funds and support" (Zeitoun and Warner 2006, 449). In the absence of any effective mechanisms to equalize power discrepancies, hydro-hegemons are able to draw upon these resources to effectively neutralize the claims of weaker riparians.

The first coercive resource, *international support*, is premised on the idea that "enjoying a favorable political position globally can directly result in a favorable position in the competition over water" (Zeitoun and Warner 2006, 449). International support also takes into account colonial legacies (Zeitoun and Warner 2006, 449). *Financial*

mobilization is related to international support, referring to the hydro-hegemon's ability to access funds to implement unilateral water infrastructure projects and other policies. Hydro-hegemons are often the recipients of far more development funding than other riparians, because they are able to "exploit the mutually dependant nature of lending institutions and loan recipients" (Zeitoun and Warner 2006, 450). Waterbury (2002) shows that bilateral donor and multilateral bank funding is not neutrally or equitably distributed, because "their policies and priorities reflect and unstable balance of the professional preference of the experts who staff them with the national objectives of their member states. Their analyses and recommendations are the product of bargaining and compromise between these constituents and the richer contributing nations can steer the interventions" (quoted in Zeitoun and Warner 2006, 450).

The Framework of Hydro-Hegemony understands riparian interactions over transboundary waters as somewhere between absolute cooperation and conflict. They assume that "each riparian will act to maximize their objectives with the resource, however these may be perceived. Where water is physically scarce, the interaction could be expected to be competition fought for control over greater volume of flows" (Zeitoun and Warner 2006, 443). Broadly, control can resemble one of three situations: *shared*, where some form of cooperation exists (as in the Columbia River basin), *consolidated in favor of the hegemonic riparian* (as with the Jordan River basin), or *contested*, when the competition over water resources is at its fiercest (as in the Nile River basin) (Zeitoun and Warner 2006, 443). The *shared* situation is most likely to be the most stable, and the *contested* the least stable (Zeitoun and Warner 2006, 444). However, the *consolidated* situation, in which a hydro-hegemon uses the tactics at its disposal to maintain its control over the resource, is most likely to be the most static and unchanging situation.

But where does hydro-hegemony come from in the first place? In other words, how do hydro-hegemons gain access to the power resources that allow them to engage in these tactical methods? Why are some transboundary river basins in a shared, cooperative situation, while others are highly polarized, static and consolidated in favor of the hydro-hegemon? This thesis has three main goals. The first is to set the Framework of Hydro-hegemony into the context of the previous academic discourse of "water wars," which the first Chapter has accomplished. Second, no major exploration of the Jordan River basin or Nile River basin riparian dynamics involving all of the riparians has been attempted with regards to the Framework of Hydro-hegemony, the framework that is currently emerging as the most persuasive means of explaining the true existing riparian dynamics in many international river basins. Many assert without evidence that Israel and Egypt act as hydro-hegemons. I attempt to show in Chapters 2 and 3 the specific ways that Israel and Egypt deploy the tactics of a hydro-hegemon, and furthermore how these tactics affect the perceptions of "fairness," and therefore the long-term sustainability of cooperation, in their respective basins. For the purposes of simplicity and of applying the most relevant concepts, I have narrowed the categories in the Framework of Hydro-hegemony in my analyses. I will make reference to the first category, coercive compliance-producing mechanism, the third category, normative compliance-producing mechanism, and the fourth category, hegemonic compliance-producing mechanisms. I have also narrowed the tactics within the hegemonic group to two broad categories that subsume all of the other tactics included within this category, to the sanctioned discourse of securitization and coercive resources, including financial mobilization and international support.

Finally, I attempt to answer the question of where these power imbalances come from in the first place, and the mechanisms that can change a static and unbalanced system into a changing and uncontested one. For this reason, my third case study, Chapter 4, is the Columbia River basin. This basin is perceived as fair and cooperative, and despite the United State's superior power position, it does not utilize the tactics of a hydro-hegemon. In the conclusion, Chapter 5, I will compare these three transboundary river basin systems. They fall along a spectrum, with the Columbia River on one end as a fair, cooperative basin, the Jordan River on the other as an unfair, minimally cooperative basin, and the Nile River as an unfair but increasingly cooperative basin in between.

These three case studies constitute an exploratory study that will help to better understand the important and complex role that power differences play in conflict, cooperation and regulation of transboundary river basins. In the concluding chapter, I will attempt to draw out the implications of the second two case studies for the Jordan River basin, noting why the Columbia is cooperative and why the Nile is increasingly so. I will conclude with a general discussion of the best ways to alleviate power imbalances and improve cooperation in transboundary river basins globally. I believe that these lessons will have major implications in the future, as the Middle East and Africa become

drier, and states compete more and more heatedly for water, an input that is vital for every aspect of development in these regions, and indeed for life itself.

Chapter 2: The Jordan River

Introduction

The Jordan River, immortalized in the texts of the three Abrahamic religions, is not only an important cultural symbol but also vital regional source of water. The Jordan River flows from its farthest upstream point in Lebanon, along the border of Israel and the contested Israeli-occupied Golan Heights, and then through Lake Tiberias along the border between Israel, Jordan and the occupied West Bank, until it terminates in the Dead Sea. Its most important tributary, the Yarmuk River, begins in Syria and along the border of the Golan Heights and Jordan, and connects with the Jordan on the border between Israel and Jordan (Wolf 1995, 18). For thousands of years, the river carried 1.3 billion cubic meters of fresh water from Lake Tiberias to the Dead Sea every year. It is also an important regional source of biodiversity, serving as one of the most significant migratory flyways on the globe, with about 500 million birds that travel its length two times every year (Mehyar, Khateeb and Bronberg 2009, 27).

Yet today the Jordan River has been reduced to little more than a muddy trickle by the time it reaches the Dead Sea. In the past several years, long stretches of the Lower Jordan have had such a small flow in the summertime that vegetation covers the little amount of water that is left. 95% of the river's flow is diverted in Israel, Jordan and Syria to meet primarily agricultural and also domestic needs, leaving only 70-100 million cubic meters per year (Mehyar, Khateeb and Bronberg 2009, 27). The reduced flow of the Jordan River and its tributaries has drastically reduced biodiversity, devastated the Dead Sea, an important source of mineral and tourism income for both Jordan and Israel, and placed a great strain on the farmers along its banks that rely on its flows for irrigation of their arid and extremely dry farmland (Mehyar, Khateeb and Bronberg 2009, 27).

Before World War I, the entire Levantine region, including the current Jordan River riparians, was controlled by the Ottoman Empire. After the war, the winning colonial powers split the Middle East into nation-states based on complex political debts and alliances, including the Sykes-Picot agreement between Great Britain and France, as well as various other factors like spheres of influence and the locations of rail lines, oil and Biblical sites. As such, these new and somewhat arbitrary borders paid scant attention to distributing water resources evenly between water-scarce nations, and further placed several important bodies of water between two nations (Wolf 1995, 81).

Partially as a result of the way that these borders were drawn, there has been a modern history of conflict in the Jordan River Basin since at least the beginning of the 20th century. In the 1930's through 1950's, rapid population growth and economic growth in all of the states surrounding the Jordan River Basin, including Jordan, Israel and Palestine as well as Syria and Lebanon, began to stress scarce water resources. As a result, water use became the subject of several regional reports, most conducted by the United States, that sought to determine the "absorptive capacity of the land," and tried to determine an acceptable allocation of water between all states, in order to prevent potential conflict in the strategically important Middle East (Wolf 1995, 81). Most importantly, in 1953-55, Eric Johnston, special envoy to US President Eisenhower, shuttled between states working to create a water sharing agreement for the Jordan River area. Although his plan, the Johnston Plan, was never ratified, the recommended allocation amounts were used as guidelines between Jordan and Israel for the purpose of sharing water until the 1990's (Wolf 1995, 81).

The period of 1964-1967 is characterized as a period of "water wars" in the Jordan River basin because it was the phase of most direct and intense conflict between states (Lowi 1993, 119). In 1959, Israel began work on the National Water Carrier Project, through which it planned to pump water from Lake Tiberias for internal use. This would have cut off a significant amount of water from the flow of the river, directly affecting Jordan's water supply. In retaliation, the Arab League began construction in 1964 of a diversion above the Lake, which would deprive the Israeli project of water. As a result the Arab Diversion and water conflict between the Arab states and Israel was the main regional political issue throughout the year 1965, and a huge source of contention, until Israeli tanks and air strikes halted its construction (Lowi 1993, 119-125). In 1967, in a war motivated by other political issues between

Israeli on one hand and Syria, Jordan and Egypt on the other, Israel seized new territories, including two of three headwaters to the Jordan River, and aquifers in the still-occupied territories that continue to provide Israel with over half of its total water supply. Since 1967, there have been a multitude of bilateral political conflicts over ownership and management of resources (Wolf 1995, 82).

By the early 1990's, relations between the Arab states and Israel had warmed, and although a state of conflict persisted, the countries involved began to cooperate more broadly on practical matters. With reference to water, the conflict became a "silent war" in which each side recognized the other's rights to water, but did not agree on the quantities involved (Lowi 1993, 119-125). Aside from the bilateral peace agreement signed between Israel and Jordan in 1994 and the bilateral Joint Water Committee comprised of officials from Israel and the Palestinian Authority, there is no explicit cooperation or cooperative body that exists currently, and there is certainly no cooperation that includes all five riparians.

On the other hand, the historical and persisting tensions amongst the riparian states reflect the lack of cooperation over this important source of fresh water. These tensions have been exacerbated by prevailing intense political conflict in the region, which intensifies and hardens animosities, and also by specific climatic and hydrological conditions. The Levantine region, encompassing the entire territory of all five riparians, is characterized by a climatic zone of semi-arid to arid conditions, with rainfall amounts that undergo "high seasonal, annual and spatial variations and topographical formations [that] drain rainfall across political boundaries" (Dombrowsky 1998, 91). Further, while Syria and Lebanon have access to other fresh water catchment areas, but Israel, Jordan and the Palestinian West Bank rely on the Jordan River and underground, unreplenishable aquifers as their main source of fresh water. The total amount of renewable fresh water within these riparians is currently sufficient to meet household and municipal demand, as well as light industry, but there is certainly not enough to meet the needs of sustainable food production through heavily irrigated agricultural in semi-arid or arid conditions. In addition to the limited amount of fresh water availability in the region, these climate and geographic conditions require more energy-intensive and technologically sophisticated methods of agriculture and resource management than most other regions of the world, further complicating any attempts at cooperation (Dombrowsky 1998, 92-93).

This lack of concrete cooperation, however, stems mainly from Israel's position as a "hydro-hegemon" in the Jordan River basin. According to Woodhouse and Zeitoun, Israel plays a "dominative" role in the basin, effectively coercing other states into complying with allocations that are most favorable to Israel (Woodhouse and Zeitoun 2008, 114). The Israeli hydro-hegemon is the "hegemon at the river basin level, achieved through resource control strategies…that are enabled by the exploitation of existing power asymmetries" (Zeitoun and Warner 2008, 435). Despite its status as a downstream riparian, Israel is able to use the manipulation of these deep power asymmetries to determine the volumetric allocations that all other states, including the upstream riparians, can receive (Zeitoun and Warner 2008, 435).

In the case of Syria and Lebanon, Israel uses more straightforwardly coercive tactics. However, with respect to Jordan and the Palestinian West Bank, an "ideational" approach that often masquerades as cooperation is used in order to establish allocations that are nevertheless unfair. According to the hydro-hegemon analysis, "power relations between riparians are the prime determinants of the degree of control over water resources that each riparian attains," yet the same hydro-hegemon can use different tactics with each riparian to achieve the goal of resource capture (Zeitoun and Warner 2008, 436). Lukes' third form of power, in which the hegemon controls the normative discourse surrounding cooperation itself, allows Israel to control allocations in the river basin though the guise of 'cooperation' (Zeitoun and Allan 2008, 8).

Israel: The Hydro-Hegemon

Zeitoun and Warner define hegemony as "leadership buttressed by authority:" in other words, dominance in terms of relative power that gives a state authority over others (Zeitoun and Warner 2006, 438). Israel's position as a hydro-hegemon is reinforced by its status as a regional political hegemon, with vastly greater military and economic power

than surrounding states. Just as importantly, support from the world's major powers, most markedly the United States, in terms of foreign aid and policy support in international forums like the UN, reinforces Israel's regional hegemonic status. Israel has an advanced market economy, with a focus on the manufacture of technically advanced machinery and equipment. Agriculture is also practiced intensively, using technological equipment. Its GDP per capita was $28,300 in 2008 (CIA World Factbook-Israel). The Human Development Index ranking of 27th in the world means that in terms of individual income, health and education, living conditions are broadly comparable to the OECD countries (UNDP 2009 Report-Israel). This economic power gives Israel a huge advantage over the other riparian states, which are all developing rather than developed countries.

Israel's military is also one of the most advanced and well-equipped militaries in the world. The Israeli Defense Forces, comprised of the ground forces, navy and air force, received a yearly budget of $12.47 billion in 2008, or about 7.6% of total GDP, and own top-of-the-line weapons and computer technologies (The Institute for National Security Studies 2009, 3). A great deal of this spending is linked to US support: in 2008, the United States gave Israel $ 2.3806 billion in military aid, and a total of $ 2.4238 billion in all types of aid, making Israel the number one recipient of US foreign aid in the world (McArthur 2008, 10-11). The relative power of Israel's military over other riparian states is clear from its victories against various Arab coalitions in the wars of 1948, 1967 and 1973. Israel also enjoys US support in international forums like the UN, most recently against the report issued by the UN Human Rights Council documenting the abuses of the 2009 war in Gaza. In other words, according to Miriam Lowi, "Israel's power resources are far superior" to those of the other riparian states (Lowi 1993, 163).

Israel's position as a regional hegemon, strengthened by an extreme difference in economic and military power between Israel and the surrounding Arab states, has contributed to Israel's position as a hydro-hegemon in the Jordan River basin. The capture of fresh water resources has become an important, securitized issue for Israel because of water scarcity and the role of agriculture in the economy and national narrative. Israel, like Jordan and Palestine, is currently facing a water scarcity crisis due to a combination of an arid climate and a lack of territorial water resources. According to the Water Stress Index, the annual minimum water requirement to sustain life is 500 cubic meters per capita: in Israel, only 300 cubic meters per capita are available. This severe scarcity has led the intense exploitation of non-replenishable underground aquifers, and Israel currently meets more than 20% of its fresh water needs this way. The excess demand for water is further exacerbated by water-intensive agricultural practices, and the growth of certain fruits and vegetables that require greater levels of irrigation (Renger 1998, 50). According to the Israel Ministry of Foreign Affairs itself, the crisis may soon come to a head: "the situation has developed into a crisis so severe that it is feared that by the next summer it may be difficult to adequately supply municipal and household water requirements" (Israel Ministry of Foreign Affairs, "Israel's Chronic Water Problem"). It estimates that by 2010, the total demand for water from all sectors will be 2,680 million cubic meters, and that supply will be only 2,430 million cubic meters (Israeli Ministry of Foreign Affairs, "Israel's Chronic Water Problem,").

For Israel, "water is a question of existence for the Jewish state" for two reasons (Renger 1998, 50). First, the Zionist philosophy that has guided the founders and citizens of the Israeli state calls for the intensive use of water and irrigation systems in farming, in order to 'green' the desert. In particular, the National Water Carrier of the 1960's was carried out with the aim of allowing agricultural development in the Negev. As such, politicians and citizens "regard the development of water resources…as a vital mission of the development of the country" (Galnoor quoted in Dombrowsky 1998, 97). Second, water has come to be regarded as a 'securitized' issue in Israel, part and parcel of the strategic security of the state, driven by the escalating water scarcity crisis and increasing water shortages. The Arab Diversion Plan is remembered in Israel as an experience in which water was used as a weapon. Since the 1967 war in which Israel seized the territories of Gaza, the West Bank and the Golan Heights, half of the Israeli water supply comes from water resources located outside of internationally recognized borders (Renger 1998, 50). Thus, maintaining access to a maximal allocation of water from the Jordan River is a vital strategic issue for Israel.

Syria and Lebanon

Syria and Lebanon have a relatively powerful position as riparians compared to Palestine and Jordan, and a relatively weak one with regards to Israel. Their lack of 'power resources' in comparison to Israel allow Israel to function as the basin's uncontested hydro-hegemon. However, their relative power as compared to Palestine and

Jordan, their access to a greater amount of fresh water resources and their position as upstream riparians also give them an advantage. Thus, it is necessary for Israel to use its status as a hydro-hegemon to secure resource capture of the waters of the Jordan in a different way than it does with Palestine and Jordan.

Both Lebanon and Syria are far less powerful in the international system than Israel. Syria, with an HDI rank of 107th in the world and GDP per capita $4,511 in 2007, has less economic power than Israel, and is far less developed in terms of education, literacy, income and health indicators (UNDP 2009 Report-Syria). Syria is ranked 79th in the world in terms of total export value. Although it does export a significant amount of crude oil, it is only ranked 58th in terms of total exported barrels today, meaning that it is not a vital international player in this respect. In terms of international standing, Syria has been increasingly marginalized by the United States' inclusion of it in the umbrella "axis of evil" (BBC 2002). This, combined with instability brought by a large number of migrant Iraqi and Palestinian refugees, as well as Internally Displaced Peoples fro the Golan Heights, has resulted in less international influence and power (CIA World Factbook-Syria). Similarly, Lebanon's HDI ranking of 83rd and income per capita of $10,109 in 2007 gives it far less relative economic power than Israel (UNDP Report-Lebanon). Lebanon is ranked 109th in the world in terms of total value of exports, and has a current account deficit of $2.9 billion (in 2008), making it a relatively weak player in the international market. Furthermore, wracked by frequent civil war and political discord, as well as an Israeli incursion in 2006 that destroyed a large amount of infrastructure, Lebanon has been unable to gain significant international economic power. Syria's frequent interference in Lebanese politics, as well as border disputes between the two states, has also led to a great deal of instability and therefore a weaker international influence (CIA World Factbook-Lebanon).

Similarly, Syria and Lebanon both have militaries that are on a global average comparatively strong, but still weaker than Israel's army. Syria spent 5.9% of total GDP on the military in 2005, making it the 12th highest spender on the military compared to a global average (CIA World Factbook-Syria). Lebanon spent 3.1% of total GDP and was ranked 45th in the world in the same year (CIA World Factbook-Lebanon). Particularly, Israel's repeated defeat of a coalition of Arab states including Syria, most recently in 1967 and 1973, and Israel's frequent military interference in Lebanon, most recently in 2006, emphasizes these states' comparative weaknesses.

However, Syria and Lebanon's relative water abundance in the region put them at an advantage compared to much drier Israel, the West Bank and Jordan. Lebanon receives the highest annual rainfall in the region, averaging 827mm compared for example to 630mm in Israel and 252mm in Syria (IRIN Report 2009). Yet a rapidly growing population, combined with potential temperature increases due to climate change, will put a strain on Lebanon's water resources in the very near future. These factors will also combine with a relatively high reliance on agriculture for income, as well as increasing salination of underground aquifers due to overuse, to potentially increase scarcity to a crisis level. According to an expert at the Lebanese Agricultural Research Institute, demand for water in Lebanon could rise more than 80% by 2025 due to these factors (IRIN Report 2009). Although it has a smaller volume of rainfall per year, Syria has access to several river basins, including the Euphrates and the Orontes, which fulfill 50% and 20% of total water demand per year, respectively. Yet water use in these basins has recently gone into a deficit, pushed by similar population growth, climate change and a heavy reliance on irrigated agriculture (87% of total water use goes towards agriculture) (Salman and Muwalla 2008, 1-2). In 2002, total renewable resources of water fell below the amount that the water scarcity index indicates is needed for human survival, meaning that non-renewable water resources are being mined unsustainably (Salman and Muwalla 2008, 1-2). This points to a huge potential for severe water shortages in the near future.

Lebanon and Syria have a greater amount of relative power with regards to Israel than do Palestine and Jordan. They are also the upstream riparians in the Jordan basin system, giving them a great deal of power over the Jordan's waters. Finally, they both have access to "other major water catchment areas," meaning that water scarcity is not as acute in these states and they have greater flexibility in securing access to water supplies (Dombrowsky 1998, 93). The ongoing high-level political tensions in the region have effectively taken any option of real and effective cooperation off of the table. The clash between these states and Israel when it comes to allocating the waters of the Jordan River is more obviously an intense and direct conflict than the relations between Israel, and Jordan and Palestine. Thus, Israel clearly uses the first category of tactics within the framework of Hydro-Hegemony, characterized by Lukes' first form of power: coercive compliance-producing mechanisms, including military force and

coercion-pressure. It is largely unable to draw upon the third category, normative compliance-producing mechanisms, exemplified by the complete absence of treaties and cooperative organizations between Israel, Lebanon and Syria. Less obviously, however, Israel still successfully uses the fourth category of Hydro-Hegemonic tactics, hegemonic compliance-producing mechanisms characterized by Lukes' third form of power, to ensure resource capture in the Jordan River basin. These tactics include the sanctioned discourse of securitization, and coercive resources, including financial mobilization and international support (Zeitoun and Warner 2008, 2006).

Most obviously, Israel has used military force in the past to assure its continued access to the Jordan River. The National Water Carrier project, started in 1964, was meant to divert 320 million cubic meters of the Jordan River, which was designed to remove water from the Galilee and divert it through Israeli territory, lessening the flow in Syria, Jordan and the West Bank, which at the time was part of Jordan proper (Wolf 1995). After a great deal of internal dispute, the Arab League decided to retaliate with the Headwater Diversion Plan, which would divert the Jordan River above Israel in Syria and result in a lesser flow to Israel. The plan called for the construction of a diversion of the Hasbani into the Litani in Lebanon and the Banias into the Yarmuk, "where it would be impounded for Jordan and Syria by a dam at Mukheiba" (Wolf 1995). In the summer of 1965, Israel attacked the construction in Syria, using tanks to launch long-range sniping strikes. An escalation in violent incidents along the border with Syria led to a prolonged chain of events that eventually caused the Six Day War in 1967, in which Israel seized the territories of Gaza, the Sinai, the West Bank and the Golan Heights. Military annexation of the Golan Heights effectively gave Israel control over all headwaters of the Jordan except the Hasbani, and made the construction of the Arab Diversion project impossible, thus "greatly improv[ing] its [Israel's] "hydro-strategic" position" (Wolf 1995, "1964-1982: 'Water Wars' and territorial adjustments").

Israel has also used overt military invasion and coercion in Lebanon, during its frequent occupations of southern Lebanon. Wolf notes that proponents of the 'hydraulic imperative theory' argue that the main purpose in Israel's invasion and occupation of southern Lebanon from 1982-1985, as well as the territory captured during ht 1967 war, was to secure access to water resources. For example, during the 1982-1985 occupation, Israel captured the Qir'awn Dam and "seized all hydrographic charts and technical documents relating to the Litani and its installations." Even after Israel withdrew, its retention of a "Security Zone" leaves Israel in control of the River from Taibe and slightly north where a water diversion could be effected. Although information regarding this area remains highly secretive, some theorists argue that even now Israel is secretly diverting water from the Litani in Lebanon (Wolf 1995, "Hydroconspiracy Theories: The 'hydraulic imperative,' and 'hydronationalism'"). Regardless of its intentions in its frequent invasions of Lebanon however, and whether or not these 'hydroconspiracy theories' are correct, it remains clear that the threat of military invasion remains a coercive tactic that Israel uses to keep Lebanon from closing off the flow of the Hasbani to the Jordan.

Less obvious however is Israel's use of hegemonic compliance-producing mechanisms with regards to preventing Lebanon and Syria from diverting or removing more water from the Jordan. These methods, according to the framework of Hydro-Hegemony, constitute the "ability to rewrite the rules of the game, to represent the world in a particular way- and find those representations accepted and reproduced by those not in power" (Zeitoun and Allan 2008, 8). Based on Lukes' third dimension of power, or ideational power, these tactics are part of the Hydro-Hegemon's ability to project its own version of events so that they are accepted as fact by the lesser riparians in the system as well as by the rest of the international community. These tactics most notably include the sanctioned discourse of securitization, international support and financial mobilization.

'Securitization' describes the process of promoting an issue to the level of a national security issue, thus increasing its importance and allowing the state to take exceptional measures in order to maintain this aspect of security. Securitization is a form of "hegemonic thought control" that allows politicians to "construct knowledge" around water-related issues to fit their political interests (Zeitoun and Warner 2008, 448). Since the Levantine region is such a dry area, and water is a resource that is necessary to sustain life, Israel has constructed a feeling amongst its politicians and citizens, as well as international onlookers, that access to fresh water is an essential part of Israeli state security.

The action of creating a sanction discourse is perpetuated by Israel's greater political and economic power, which ensures that "international conferences, research centres, universities, regional policy-setting agencies and other

institutions of intellectual and financial power" are filled almost completely by Israelis or supporters of Israeli policies, and that other riparian states are underrepresented (Zeitoun and Warner 2008, 454). Furthermore, as the hydro-hegemon, it has created a sanctioned discourse in which incursions and attacks by the Arab states, and specifically the two stronger upstream riparians, has 'forced' Israel to react defensively in order to preserve its access to fresh water and therefore its citizens' survival. Thus the National Water Carrier, as well as the subsequent war in 1967, are seen as defensive actions taken in the name of Israeli security. Thus, Israel's Foreign Ministry presents water as "a national resource of utmost importance. Water is vital to ensure the population's well-being and quality of life and to preserve the rural-agricultural sector" (Israeli Ministry of Foreign Affairs, "Israel's Chronic Water Problem"). Additionally, it describes the National Water Carrier project without reference to its effects on other riparians, as a simple method of augmenting Israel's own water resources in order to increase security: "the shortage of water in the southern, semi-arid region of Israel required the construction of an extensive water-delivery system that supplies water to this region from resources in the north. Thus, most of the country's fresh water resources were inter-connected into the National Water Carrier, commissioned in 1964" (Israeli Ministry of Foreign Affairs, "Israel's Chronic Water Problem").

Conversely, Israel has deliberately taken steps, up to and including military action, to show that it views water as a security issue, and that it is willing to take unconditional action as long as access to water is threatened in some way. For example, citing national security, Israel threatened to attack Lebanon in 2002 over the "relatively minor" Wazzani Springs project, which would have diverted some of these waters, which flow through Lebanon to Israel, to a few small Lebanese villages (Zeitoun and Warner 2008, 448). Securitization discourse therefore legitimates the tactics of military intervention and threats used against Lebanon and Syria to prevent them from attempting to divert any of the Jordan's headwaters.

Israel also uses coercive resources to control Lebanon and Syria's use of Jordan River tributaries. According to the framework of hydro-hegemony, coercive resources describes the ways in which the international system creates inherently unfair results in generating support and funds because of the realities of power imbalances. These inequalities arise in an international context "beset by inequalities such as global political trends, partisanship and the absence of universally-recognized and enforceable water law" (Zeitoun and Warner 2008, 449). However, coercive resources are inherently different than military or hard power coercion, because they represent a "containment strategy" that seeks to co-opt weaker riparians through normative mechanisms. In other words, the hydro-hegemon seeks to create "facts on the ground" and change the hydrogeology of the resource itself, thereby creating "new hydro-strategic and hydro-political realities" (Zeitoun and Warner 2008, 445). Coercive resources fall under the umbrella of ideational power because the hydro-hegemon manipulates sanctioned discourse so that these new realities on the ground seem spontaneous and natural, rather than a deliberate method used by the hydro-hegemon to produce compliance from weaker riparians. These coercive resources therefore both create and perpetuate the *status quo* of hydro-hegemony.

Hydro-hegemons are able to create these facts on the ground by mobilizing financial resources both domestically and internationally. Domestically, Israel is able to exploit the economic imbalance between itself and other riparians to its advantage, mobilizing superior human capital and technologies. For example, historian Avi Shlaim claims that a 1953 Israeli diversion project of the Upper Jordan away from Syria was driven by military commander Moshe Dayan's knowledge that the diversion project was illegal under international law and that "if the matter was referred to the UN, the ruling would go against Israel. He therefore decided to create facts on the ground that the UN would be powerless to reverse" (Shlaim 2000, 88.) In the cases of other more successful diversion projects, Israel similarly uses the strategy of exploiting its superior economic capabilities to create new realities in the vacuum created by the absence of international law.

Israel is also able to mobilize international financial resources, both from donor institutions and unilateral financial aid, because of international support. Israel enjoys the support of much of the developed world, while Lebanon and Syria are looked upon indifferently at best and as antagonizers at worse. Multilateral donors like the World Bank must work within the channels that have already been established, that are shaped and guided by power asymmetries that already exist. They are more likely to invest in water projects that have Israeli support, because these projects are seen as the only viable kind (Zeitoun and Warner 2008, 450). Furthermore, Waterbury notes that unilateral and

multilateral funding implicitly reflects the preferences of the professionals and experts who staff them, who are more likely to be Israeli or sympathetic to Israeli policies, and that the national objectives of wealthy member states will most often crate political pressure for donor institutions to support Israeli projects rather than Lebanese or Syrian ones (Waterbury 2002, 26). Thus inequalities that result from asymmetric power imbalances are perpetuated by donors, which provide the hydro-hegemon with coercive resources.

Jordan and the Palestinian West Bank

Jordan and the Palestinian West Bank are the weakest riparians in the Jordan River basin system. As downstream riparians, with the least power, they could be easily exploited by the hydro-hegemon. However, interactions over the Jordan River between the hydro-hegemon and these states are characterized primarily by the trappings of cooperation. Although in the past, most notably in the Six Day War, Israel did use military force and coercion against these states, it has largely abandoned that policy over the last couple of decades in favor of a supposedly 'cooperative' approach. However, a deeper examination shows that in fact Israel has used its status as a hydro-hegemon to coerce these states into cooperation that is inherently unfair.

Jordan is relatively well-developed compared to other Arab states in the region, with a global HDI ranking of 96th and income per capita of $4,901 in 2007 (UNDP Report-Jordan). However, a ranking of 96th in the world for total value of exports and a current account deficit of $2.39 billion make Jordan a very small international economic player. This is because Jordan suffers a lack of usable natural resources, aside from some phosphates mined from the Dead Sea, and a relatively small population and geographical space, which is a challenge in terms of economies of scale. Furthermore, although Jordan receives a great deal of support from the United States for strategic reasons, its support for Saddam Hussein's regime in Iraq during the First Gulf War left it largely politically isolated in the Arab world (Dr. Jawad al-Adnani, interview). Finally, a huge refugee population from Palestine and Iraq has led to some political instability. All of these factors have led to a small international presence for Jordan in terms of relative power.

The Palestinian West Bank is even more marginalized internationally. The UNDP estimates that the entire Occupied Palestinian Territories are ranked 110th in the world in terms of HDI (UNDP Report-Occupied Palestinian Territories). With an average GDP per capita of $2,900, the West Bank has seen a steady decline in development and income indicators since the second intifada in 2000 and the recent split between the governing parties Fatah and Hamas, which has created a great deal of political and economic instability. A very high level of unemployment, infrastructure destruction, periodic disruptions of aid flows and the construction of a barrier wall as well as roadblocks throughout the West Bank all stem directly or indirectly from the Israeli military occupation and effectively stymie economic growth and the PLA's political control, leaving no room for improvements in development. An export ranking of 172nd in the world means that the West Bank plays a very small role in the international economy (CIA World Factbook-West Bank). Thus, the West Bank has almost no economic or political influence internationally.

The Jordanian military is relatively strong and well-equipped for a country of its size, partially due to the British colonial legacy as well as US military aid support. Jordan spends 8.6% of it total GDP on its military, making it the 5th highest spender in the world (CIA World Factbook-Jordan). However, Israel's defeat of the coalition of Jordan, Egypt and Syria in 1967, and its seizure and occupation of the Palestinian West Bank, which had previously been Jordanian territory, illustrates Israel's military superiority. In contrast, the Occupied West Bank has no military, aside from the militias and terrorist groups that operate within the occupied territories, most notably Hamas' military wing. Israel's military occupation of the West Bank since 1967 has kept the PLA from attaining any sort of military power.

In contrast to Lebanon and Syria, Jordan and the West Bank are currently facing a more severe water scarcity crisis. Water is extremely scarce in the West Bank: a total of about 165 million cubic meters per year was consumed by Palestinians in the West Bank. Spread amongst a population of about 2.6 million, this leaves a consumption level of approximately 66 cubic meters/person/year, where the water stress index indicates that an individual needs about 100 cubic meters per year to meet the basic necessities of life. The majority of water is consumed from springs and agricultural and municipal wells. However, the crisis is exacerbated by Israeli use of water resources that are located inside the territory of the West Bank: Israel consumes about 28% of the total water resources located in the West Bank, while Palestinians consume about 72% (Zeitoun 2008, 53-55). Furthermore, Israeli use of water resources in

the West Bank has created a great deal of uncertainty about whether resources will be available to Palestinians in the near future, heightening the current crisis.

Historically a water-scarce region, Jordan is roughly 92% desert, and most of its water resources come directly from rain and non-replenishable underground aquifers. Rapid population growth in the late 20th century due to an influx of refugees from Palestine, the Gulf region and Iraq has pushed the present rate of water consumption to twice the amount of renewable supply, and has made Jordan the fourth most water-scarce country in the world. The total water supply that once provided for less than 3 million people must now provide for almost 6 million. As a result Jordan's use of water its natural water supply is no longer sustainable ("In Troubled Waters," 2008). And this trend will only worsen in the future: extrapolating from current trends, it is estimated that demand will exceed planned renewable supply of water resources by 250% by 2020 (USAID, 18). As a result, Jordan is currently relying on what USAID terms the "unsustainable pumping of groundwater to supplement renewable water supply" (USAID, 5). Environmentalist Abdel Rahman Sultan says that there is a widespread awareness amongst Jordanians and Palestinians as well as their governments that, "we are in a very bad situation, a very scary situation" (Abdel Rahman Sultan, interview).

Water interactions between Israel, the West Bank and Jordan vary noticeably from interactions between Israel, Lebanon and Syria in that overt military force or coercion-pressure are rarely used, aside from the notable annexation of the West Bank. Although Israel currently forcibly occupies the West Bank, it rarely uses military force to achieve control over water resources. Rather it relies more heavily on the third and fourth categories of hydro-hegemon tactics, normative compliance-producing mechanisms and hegemonic compliance-producing mechanisms.

The most 'visible' form of interaction over water issues between these three states involves treaties and cooperative organizations: normative compliance-producing mechanisms. Hydro-hegemons use the signing of treaties, such as the 1994 peace treaty signed between Israel and Jordan and establishment of cooperative committees, notably the Joint Water Committee between Israel and the Palestinian state, particularly following a period of *rapproachment*, to institutionalize a *status quo* that is favorable to the hegemon. These treaties are often sensationalized and treated as major breakthroughs along the road to greater cooperation amongst riparians whereas in fact they only accomplish what Selby refers to as "dressing up domination as 'cooperation'" (Selby 2003, 123). There are several inherent weaknesses in these kinds of agreements that allow the hydro-hegemon to use them as a tool to exploit the weakness of other parties, as is apparent by the inequities embodied in the treaties. First, as with any aspect of international law, they are not easily enforceable, and therefore "violations of the spirit of the letter of the treaty by the stronger side are answerable only to structures within the existing balance of power" (Zeitoun and Warner 2008, 447). The agreement is also often structured by the hegemon to reflect existing power imbalances, and may then use coercion to force the other party to sign. This coercion may be manifested rather overtly, as is the case in the West Bank, or may be seen as the best deal that can be reasonably expected, as is the case with Jordan. Finally, bilateral agreements effectively rule out the participation of the rest of the basin's riparians, thereby "pre-empting the rights of the non-signatory states" (Zeitoun and Warner 2008, 447).

The peace treaty signed between Israel and Jordan in 1994 came out of an international conference hosted by the United States and the Soviet Union in 1991 in Madrid. Two tracks of negotiation emerged: a multilateral conference, in which all of the states in the region would participate, and multiple bilateral negotiations. The bilateral track between the Israeli delegation and the joint Jordanian-Palestinian delegation first met in Washington, D.C. in December 1991. Discussion in the Committee on Water and Environment centered around, "securing rightful shares of both sides in the Jordan and Yarmouk Rivers, [and] searching for ways to alleviate water shortage" (Dr. Munther J. Haddadin, interview). According to a position paper, Jordan's goals were to "restore Jordan's water shares in the Jordan River Basin, mitigating adverse impacts…including the huge imbalance in the population-water equation, setting the stage for cooperation to control the level of the Dead Sea and reap the environmental benefits and the benefits of hydro-power generation" (Haddadin 2002, Appendix 8). Several rounds of intense negotiations took place throughout the following years, until the treaty was officially signed on October 26th, 1994 (Haddadin 2002, Appendix 8).

According to Dr. Jawad Al Anani, who participated as a delegate in the negotiations after the Madrid conference and

was appointed the head of the Ministry in charge of the entire negotiation from the Jordanian side, in the period leading up to the negotiations, "in a way, the whole atmosphere of peace was ripe to start a process" because Jordan felt pressured to relieve the "state of siege" that it felt both internally and externally (Dr. Jawad Al Anani, interview). Jordan had suffered great economic losses at the end of Iran-Iraq war, as it had been encouraged by US to support the Iraqi war efforts, so that by the end of the war Jordan had become a political ally of Iraq as well as economically dependant on Iraq. However Iraq emerged from the war with its economy and infrastructure almost completely destroyed, and Jordan suffered economically along with Iraq as the result of its economic connections. Domestically, Jordan lost a great deal of foreign exchange reserves, and the exchange rate plummeted with respect to the dollar, resulting in one of the highest inflation rates in Jordan's history in 1989. Many Jordanians felt impoverished because their wealth fell as a result of rampant inflation, resulting in grassroots protests against the government (Dr. Jawad Al Anani, interview). Further, Jordan's decision to support Iraq during the First Gulf War left the state almost completely politically isolated. Thus, as a direct result of its weakness, Jordan's political leaders felt that the text of the treaty was the best offer that they could hope to receive under the circumstances.

The treaty notably contains Annex II, entitled "Water Related Matters". The text sets out agreed upon allocations of the Yarmouk and Jordan Rivers as well as certain groundwater resources, and established a "Joint Water Committee" through which both sides "shall co-operate in developing plans for purposes of increasing water supplies and improving water use efficiency, within the context of bilateral, regional or international cooperation" (Treaty Text, The Avalon Project). However, the majority of the text is remarkably vague, including the scope and work of the Joint Water Commission, as well as references to an extra 50 million cubic meters of water from an unidentified source. Fischhendler demonstrates that the "constructive ambiguity" of the treaty's language served Israel's purpose in "shift[ing] the water resources debate from the Jordan River Basin" (Fischhendler 2004, 15). Essentially the existence of a treaty and Joint Water Committee was meant to project the veneer of cooperation over what was essentially the *status quo* arrangement between one very strong and one very weak riparian. Further, several conflicts over the allocations agreed upon in the treaty versus the amount of water that Israel actually allows to Jordan have arisen over the years, yet none has been concretely addressed aside from the occasional "goodwill gesture" from the Israelis (Fischhendler 2004, 16). These unresolved disputes reflect the fact that this treaty is essentially unenforceable in the international arena beyond the stronger state's ability to enforce its own desires.

Likewise, the 'Oslo II Agreement' in 1995 of the Oslo peace processes is celebrated as an important instance of cooperation between Israel and Palestine on West Bank water issues. According to Selby, Oslo II "contained the first explicit and unequivocal recognition of 'Palestinian water rights in the West Bank'" (Selby 2003, 124). It also committed both sides to establishing a Joint Water Committee, made up of an equal number of Israelis and Palestinians who made decisions by consensus, that would manage all water resources in the West Bank. The JWC's immediate task was to be the development of additional water resources for the use of the West Bank's Palestinian communities.

The Agreement was lauded by commentators as "the most significant result to date of the entire Oslo process," one that "'represent[s] a major step towards a permanent Israeli-Palestinian accommodation over water', a 'step in the direction of an equitable water-sharing arrangement'" (Selby 2003, 125). Yet the Oslo II Agreement actually deferred the issue of water rights for Palestinians to final status negotiations, while creating "tacit legitimation" for Israeli use of Palestinian water resources in the unending interim period. Although the agreement in theory transferred control over water policy in the West Bank from the Israeli Water Office and the Water Department of the Military Government to the JWC, the pattern of water allocations remained exactly the same: in fact, Palestinians are still completely barred from accessing any of the Jordan River's waters, and Israel continues to consume 87% of the total yield of the West Bank's two trans-boundary aquifers, while water-starved West Bank Palestinians themselves are only allowed to consume 13%.

Selby calls this phenomenon "the repackaging of occupation," since nothing about the former circumstances of water allocation or water rights has changed, except that there is now a pretense of cooperation between the two unequal sides (Selby 2003, 127). Worse, the semblance of a cooperative institution allows Israel to push the blame for a lack of further cooperation onto Palestinian shoulders, since they have an equal presence in the JWC and are therefore held equally responsible for outcomes. As a result, a 2009 World Bank reports argues that the Palestinian

government is "unable to conduct integrated management of the resource [of water] in the West Bank within the current governance framework " (World Bank Report, 2009). Thus the JWC serves as a normative compliance-producing mechanism that presents to the international community a face of cooperation while merely institutionalizing and therefore strengthening existing inequalities.

Israel also uses the sanctioned discourse of securitization with regard to Jordan and the Palestinian West Bank, but in a different way than it does with Lebanon and Syria. Lebanon and Syria are much stronger compared to Israel, and therefore are not as susceptible to Israeli control over the common discourse. Thus Israel characterizes these states as belligerents that Israel must take active measures to protect its own vital water resources from. In contrast, Jordan and the West Bank are weak enough that they have submitted to methods of 'cooperating' over water resources that are inherently unfair. Therefore in these situations the sanctioned discourse has revolved around justifying this cooperation as fair or at least as a progressive step towards a fairer allocation in the future. It highlights a 'breakthrough' in relations, so that previous to whatever has happened after the establishment of the two agreements seems somehow fairer, despite the fact that these agreements largely institutionalized exactly the system that was previously in place. According to Mark Zeitoun, "the more powerful side in any discoursive competition will be the one with an edge over its competitor in terms of intellectual capacity, eloquence, access to media, etc." (Zeitoun 2008, 114). Israel's power as a hydro-hegemon has given it ideational power over the discourse that surrounds Annex II, Oslo II and the two JWCs.

In the case of the 1994 peace treaty with Jordan, according to Fischhendler, discourse turns on the idea of 'rightful allocations' (Fischhendler 2008). The language of Annex II emphasizes the idea of "entitlements," stating many times in the body of the text itself that each state is "entitled" to certain allocations. Furthermore, Article VI, entitled "Co-operation," states that, "Israel and Jordan shall co-operate in developing plans for purposes of increasing water supplies and improving water use efficiency, within the context of bilateral, regional or international cooperation" (Avalon Project). However, Fischhendler points out that the language of cooperation is extremely vague, masking several conflicts that remain unresolved after the signing of the treaty, foremost amongst them the issue of "increasing water supplies," as referred to in the "Co-operation" Annex. During the intense negotiations leading up to the treaty's signing, Jordan had demanded an explicit recognition of its historical rights to water allocations from the Yarmouk and Jordan, while Israel preferred specific agreements about allocations quantities, qualities and pricing. In the end, because of Israel's position as the dominant riparian, the treaty was structured according to Israeli desires. The language of the treaty, pushed by Israel during the negotiations, introduces the idea of increasing freshwater quantities through development projects including storage dams and desalination plants. However, glaringly absent from the treaty is any agreement on how these projects will be planned or funded, beyond that they will be under the joint auspices of the JWC.

In fact, the signing of the treaty concealed the conflict that continues today between the two parties over these projects. Jordan argues that Israel should provide the vast majority of the funding, while Israel says that fund should be provided equally from both sides. Similarly, Jordan would like storage dams to be located farther upstream on the lower Jordan so that they would capture a greater part of the water that Israel uses, while Israel prefers them to be farther downstream so as to allow preexisting Israelis usage to precede Jordanian usage. To date, the JWC has not been able to agree on any project details, except to have commissioned multiple feasibility studies for the Red Sea-Dead Sea canal project, which would bring water from the Red Sea to increase the volume of the rapidly disappearing Dead Sea, saving some water to be desalinated and allocated to Jordanian, Palestinian and Israeli farmers, funded by the World Bank (Haddadin interview).

Furthermore, the treaty language refers to specific allocations based on recent usage patterns, which clearly benefit Israel over Jordan, and does not recognize any historical Jordanian right to access the flows of the Jordan, which would have resulted in a much fairer agreement in the eyes of Jordanians (Fischhendler 2008, 90). Yet the sanctioned discourse, perpetuated by Israeli and Jordanian politicians both domestically and internationally, is designed to leave the impression that the Water Annex effectively resolves all of these conflicts and reflects a just cooperation between both states. In a statement in the Knesset just before the treaty was officially ratified, Prime Minister Rabin said

the peace treaty that is to be signed tomorrow will raise the relations [between Israel and Jordan] to the maximum level – full peace – and contains everything beginning from the establishment of full diplomatic relations, the appointment of ambassadors and the construction of embassies, to care for environmental and economic matters, and more. What did we struggle and debate over? Over the demarcation of the international border, over water, over security, over the refugee problem, over the nature of [our] bilateral relations, and – as we like to put it – normalization (Israeli Ministry of Foreign Affairs, "240 Statement in the Knesset by Prime Minister Rabin on the Israel-Jordan Peace Treaty- 25 October 1994").

Similarly, a joint Israeli-Jordanian statement in November of 1994 said

the two countries wish to express, on this occasion, their aspiration and hope that these relations will consolidate and enhance the foundations of peace and launch and develop aspects of cooperation between them in the interest of both countries and to the benefit of expanding the horizons of a just, lasting and comprehensive peace in the region (Israeli Ministry of Foreign Affairs, "255 Israel-Jordan Statement on the Establishment of Diplomatic Relations- 27 November 1994").

Thus the sanctioned discourse around the treaty refers only to cooperation between the two states that will lead to 'normalization,' and a 'just, lasting peace.' The discourse therefore only reflects the Israeli "definition of reality," even as it "effectively drown[s] out opposing viewpoints presented…outside the halls of power," making it an important example of hegemonic compliance-producing mechanisms under the framework of hydro-hegemony (Zeitoun and Warner 2008).

Israel emphasizes a similar sanctioned discourse of cooperation and improving relations with the Palestinian West Bank when it comes to water issues. Even while Israel unilaterally controls the water resources of the occupied territories, meets half of its own water needs by extracting from resources in the West Bank and does not allow Palestinians in the West Bank to access any of the water from the Jordan River, Israel still emphasizes cooperation with Palestine through the JWC (Renger 1998, 47). Although the JWC does not have jurisdiction over transboundary water resources located within Israeli territory, it is still touted "at international fora and in the journals" by Israeli officials as a manifestation of Israel's desire to cooperate with the Palestinians. For example, in a March 2009 report, Israel's Water Authority said that "Israel is interested in practical, imaginative and just agreements, as exemplified by the Peace Treaty it signed with the Kingdom of Jordan in 1994, with its extensive water clause, and the Interim Agreement it signed with the Palestinians in 1995" ("The Issue of Water Between Israel and the Palestinians," 2009,1). It also references the 'cooperative' nature of the JWC by emphasizing its effectiveness as an institution: "this Committee has been working for the past 13 years almost without interruptions, even during difficult periods of security problems…the committee approved nearly all the projects that were submitted for its approval, even beyond the obligatory ones included in the Water Agreement" ("Issue of Water," 2009, 4). Thus the sanctioned discourse of cooperation essentially encapsulates Israel's point of view as the hydro-hegemon.

In order to achieve this domination over the discourse, according to Zeitoun, Israel often presents the issue as one of "needs, not rights," focusing on finding "solutions" rather than whether or not these solutions are fair. This, combined with the fact that Israel has militarily occupied the West Bank and therefore has complete control over water planning projects there, has created a situation in which Israel is effectively the "regional water commissioner," proposing projects to create new sources of fresh water for the West Bank, such as desalination projects and the mining of underground aquifers (Zeitoun 2008, 119). Israel has been able to accomplish this dominance over the sanctioned discourse through both its influence in donor funding to the Palestinian Water Authority and its influence over international public opinion. Israeli discourse has been taken up by USAID, the largest source of bilateral assistance to the PWA. USAID officials have chosen to adopt this discourse because it allows them to set aside the thorny issue of water rights and focus solely on funding projects that meet current needs, therefore effectively perpetuating the *status quo*. This attitude is summarized by a statement about the Hadera-Tulkarem desalination plant project by a high-ranking resident water official at USAID, paraphrased by Zeitoun:

Politically we know that the Palestinians cannot support it. But they will support it, they say, as long as it doesn't pre-empt their water rights. So USAID and the Israelis will say "fine, it doesn't pre-empt your water rights" and then we'll

build it anyway (Zeitoun 2008, 121).

The international community only hears statements from the more powerful riparian, such as the then Israeli Water commissioner Noah Kinnarty's declaration that the Hadera-Tulkarem proposal is only a contentious issue because the PWA "is still insisting on water rights from aquifers that in any case are empty and becoming saline. In other words, some of the Palestinians who deal with this issue are in the ideological phase, not the phase of pragmatic solutions" (Zeitoun 2008, 121). This 'pragmatic' approach allows the Israelis to portray Palestinian objections based on water rights issues as 'obstructionist' and therefore less valid, which in turn validates the Israeli sanctioned discourse of cooperation. The sanctioning of the Israeli view as the internationally acceptable discourse was, according to Zeitoun, "achieved contrapuntally by the most powerful riparian state through its influence on the extremely powerful main donor and mediator of the conflict" (Zeitoun 2008, 121). The fact that the PWA did not initially reject the Hadera-Tulkarem scheme proposed by Israel and the US shows the dominance of Israeli ideational power over the sanctioned discourse, such that the *only* public discourse on the matter of water sharing is in this mode.

Conclusion

The vast power imbalance among the Jordan River riparians has allowed Israel to become the river's hydro-hegemon. However, Israel exploits this power imbalance in different ways with regard to each riparian state. Jordan and the Palestinian West Bank are the two weakest riparians. Israel has been able to coerce these two riparians into signing treaties that effectively institutionalize the status quo of water usage and allocation patterns. Lebanon and Syria are more powerful riparians, and therefore Israel has not been able to coerce these two riparians into signing agreements. Instead, it uses the threat of military force and other forms of coercion to ensure that neither state removes water from the headwaters of the Jordan River. It has therefore used coercive compliance-producing mechanisms in Syria and Lebanon, whereas in Jordan and the West Bank it did not need to resort to coercive measures.

This is because of Israel's use of hegemonic compliance-producing mechanisms, or ideational power. In the Jordan River basin, Israel has used ideational power, or Lukes' third form of power, to ensure riparian compliance and the backing of the international community. In all cases, Israel has been able to effectively control the discourse surrounding the Jordan River and water rights and allocations more generally through a sanctioned discourse. With regards to Syria and Lebanon, this has been a sanctioned discourse of "securitization," which emphasizes these states' belligerence and that Israel needs access to these waters to survive. In the case of Jordan and the West Bank, Israel has institutionalized a discourse of "cooperation," which gives interactions over water allocations between Israel and these two states a veneer of mutual gain. In fact, both Israel's use of coercion and the securitization discourse, as well as 'cooperative' agreements and institutions, have simply institutionalized and ossified the status quo, which is perceived by the other four riparians as being inherently unfair.

The surprising aspect of the power relations among the Jordan River riparians is the remarkable stability of this system. While the system is inequitable, and has resulted in Israel's exploitation to various degrees of the other four riparians' water resources, the situation has not changed significantly since the war in 1967 and the occupation of the West Bank and other territories, even through the signing of supposedly breakthrough agreements in the 1990's. This is in stark contrast to the Columbia River basin and Nile River basin systems. The Columbia system is also stable, but that is because despite the presence of a hydro-hegemon, the outcome of interactions between the two riparians has been an agreement that is perceived by all as equitable and fair. In contrast, the Nile River presents a system that is similar to the Jordan, with a hydro-hegemon that uses various tactics to exploit other riparians. Although this system had remained fairly stable from decolonization, recent changes in the balance of power have lessened inequalities, leading to more dramatic changes in the discourse around the fairness of agreements and even in agreements themselves.

These findings suggest that despite the perceived unfairness of the system of allocations in a river basin, the system will remain static if the hydro-hegemon is able to continue to project a sanction discourse that legitimates its actions internationally and even to an extent to the other riparians themselves. However, when other riparians gain relative

power and are able to project their own contending discourse, the system may become destabilized, leading to changes that could lead to long-term sustainable, true cooperation, as in the Columbia River system, in which the sanctioned discourse reflects a balance between both riparians 'points of view'.

Chapter 3: The Nile River

Introduction

The Nile River has supported farming civilizations, described by Herodutus as "the gift of the Nile," in the Egyptian Nile delta for millennia. From the Pharonic wars to Nasser's Aswan High Dam, the Nile has also been a source of regional political strife. The Nile is regarded as the largest river in the world in terms of drainage area (6,825 km) as well as quantities of water that flow along its watercourse. It also has ten riparian states, more than any other international river basin in the world (Tafesse 2008, 3). Furthermore, "as significant percentage of the peoples of the Nile riparian states depend directly on the river for their livelihood and as a source of energy for industrial and domestic needs" (Tafesse 2008, 3). Thus access to its waters is a highly contested matter.

The Nile River basin includes two main river systems. The White Nile is shared by Burundi, the Democratic Republic of Congo (DRC), Kenya, Rwanda, Tanzania and Uganda and its sources lie in the Equatorial Lake Plateau. The Blue Nile/Abay and Atbara/Tekeze are located in Ethiopia and Sudan and its original source is in the Ethiopian highlands of Lake Tana. The tributaries to the Blue Nile system and the Blue Nile itself contribute more than 86% of the Nile waters during the regular season while the White Nile contributes 14%. Moreover, during the flood period, only 5% of the total water flows of the upper Nile originate from East Africa while 95% originates from Ethiopia, because the White Nile loses "a considerable amount of water to swamp areas…and to evaporation during its course through arid terrain" (Tafesse 2008, 3). The geographical and ecological systems of the Nile are characterized by a high level of variability. The basin's highest rainfall of typically 2,000 mm per year or more occurs in the mountains to the south and east, while, moving north, Sudan experiences only about 200 mm per year at the convergence of the White and Blue Niles in Khartoum. Further north, semi-desert and desert conditions prevail, and northern Sudan and most of Egypt experience hardly any rainfall in a given year (Tadesse 2008, 3).

The current power dynamics and water allocations of the Nile can be largely attributed to British colonialism in Egypt and the Sudan in the 19th and early 20th centuries. The British became interested in securing the flows of the Nile from its sources through the Sudan and Egypt in order to protect the production and export of long-staple cotton for British industry. Egypt's increasing water scarcity alarmed the colonizer so much that in 1902, Britain signed a formal agreement with Ethiopia's Emperor Menelik II. The treaty was mainly concerned with demarcating borders, but also noted that the Emperor agreed that he would not "construct or allow to be constructed any work across the Blue Nile… which would arrest the flow of their waters into the Nile, except in agreement with His Britannic Majesty's Government of Sudan" (Ullendorf 1967, 643).

Similarly, in 1929 Britain signed an agreement with Egypt on behalf of the Sudan as well as the Ugandan, Kenyan and Tanzanian colonies, which agreed to volumetric allocations of water for Egypt and the Sudan which completely excluded all eight of the other riparians. Although the vast majority of the river's waters come from the other eight riparians, the Nile Water Agreement stated that Egypt would receive 48 billion cubic meters of water per year form the Nile flows and the Sudan would be entitled to 4 Bm^3/year, while all of the upstream riparians would receive none. This agreement "institutionalized the belief that Egypt and Sudan had 'natural and historic rights' to the Nile water" (Cascao 2009, 245). Ethiopia refused to participate in the 1929 agreement, based on what it perceived to be the unfairness of allocations as well as a history of frequent clashes with Egypt and Sudan over the waters of the Nile. Because of its Christian majority, Ethiopia was framed since the Turkish invasion of the area in the 13th century as an enemy state by many of the Muslim states of North and East Africa (Tadesse 2008, 5). Waterbury notes that a modern ideology that is still largely in place today claims that "all of the people of the Nile Valley (but not the Christian populations of Ethiopian highlands) are one," and it is only the British colonial administration and its legacy that has kept them apart (quoted in Tadesse 2008, 5).

The second key Nile agreement was signed in 1959 after the independence of Egypt in 1953 and Sudan in 1956.

The *1959 Agreement for the Full Utilisation of the Nile Waters* effectively replaced the 1929 agreement, which had to be renegotiated because of Egypt's plans to build the Aswan dam. The agreement remained bilateral, this time changing the volumetric allocations that each state was entitled to take from the river: 55.5bm^3/year to Egypt and 18.5bm^3/year to Sudan (Cascao 2009, 245). The 1959 agreement remains the main contentious issue in the hydropolitics of the Nile, between Egypt and Sudan who claim that this agreement represents the "natural and historical rights" of their states to the waters of the Nile and the other eight riparians, all upstream, who want to replace this agreement with a more equitable, multilateral one (Cascao 2009, 245).

The Nile riparians had attempted since the 1960's to establish a cooperative initiative including all riparians. However, these institutions remained very limited in scope, because they did not include all of the Nile riparians and because they focused solely on technical issues and did not address the issue of allocations. However, in 1999 the ten riparians established the Nile Basin Initiative (NBI), which was the first cooperative institution that actively included all riparians as member states. The NBI's goal is to achieve "sustainable socio-economic development in the Nile Basin through the equitable utilization of, and benefit from, the common Nile Basin water resources" ("Annual Report, January-December 2008," 5). The NBI is therefore an institution based upon the principles of trans-boundary water resource management, which takes a more holistic approach to arbitrating international disputes over international rivers and lakes. The NBI hopes that increasing the number of joint projects on the Nile River basin, such as building hydroelectric plants, monitoring species loss in an ecosystem and implementing national awareness campaigns about issues concerning the Nile River, will lead to "efficient trans-boundary management and optimal use of Nile Basin water and water-related resources" ("Annual Report, January- December 2008," 5).

There are two tracks of programs to achieve this goal: the Shared Vision Program, which comprises grant-based activities "to build trust, capacity and an enabling environment for investment in Nile Basin countries," and the Subsidiary Action Programs, which comprises specific bi-lateral investment projects (such as dams and irrigation systems) on the ground ("Annual Report, January-December 2008," 1-2). This in turn will lead to "increased regional cooperation in the Nile Basin, contributing to peace and security in the region" ("Annual Report, January-December 2008," 5).

The Thus, the NBI takes the opposite approach to reforming the allocations of the 1959 agreement that are currently in place: by increasing cooperation between states, it hopes that its projects will lead to an eventual re-negotiation of the agreement, rather than attempting to reform the current allocations first. However, the framework for renegotiating the 1959 agreement exists outside of the NBI itself. There are actually two parallel processes: the NBI, which is a "transitional institutional mechanism," and the negotiations for "a new legal and institutional Cooperative Framework Agreement (CFA)" that is meant to "provide a permanent status to the cooperative institution" (Cascao 2009, 246-247).

The NBI negotiation process began in 1997 and officially concluded in 2007; however, "the draft agreement is still in the hands of heads of state for final decision-making" and is pending ratification by individual states (Cascao 2009, 247). However, as I will discuss below, the negotiations did not exist in a political vacuum, and were greatly influence by the power asymmetries of the basin: namely, Egypt's status as a hydro-hegemon. The negotiations effectively represented the same longstanding issue in the region, with Egypt and Sudan promoting an agreement that recognizes past agreements and the upstream riparians arguing for a new agreement based upon the principles of "equitable utilization" (see Chapter One). However, in many ways the situation on the Nile basin is changing rapidly, in marked contrast to the Jordan River basin. Egypt has been able to maintain its status as the basin's hydro-hegemon through ideational power, mainly the discourse of securitization, which has allowed it to effectively control any negotiations over allocations. However, Egypt's actual ability to capture the Nile's shared water resources is due to the large asymmetry in terms of riparians' ability to "technically control, utilize and allocate the water resources," which is largely determined by economic capacity (Cascao 2009, 247). However, recent changes in the regional balance of power has led to a situation whereby the less powerful riparians are "increasingly contesting and challenging the current hydropolitical regime" (Cascao 2009, 247).

This chapter will discuss three of the ten Nile riparians, which are the most important too and also reflective of the current power dynamics that exist in the Nile River basin: Egypt, Sudan and Ethiopia. According to Waterbury, "the

major conflict of interest in the Nile basin is, essentially, triadic, involving Egypt, the Sudan and Ethiopia" (Waterbury 2002, 130). Thus, the ways that Egypt extends its power as a hydro-hegemon over Sudan and Ethiopia may serve as a synopsis of the power dynamics of the entire system.

Egypt: The Hydro-Hegemon

Egypt's status as the basin's hydro-hegemon is deeply rooted in the historic Egyptian state and its ability to "successfully mobilise the Nile water resources for millennia" (Cascao 2008, 18). Historically the Egyptian position has remained uncontested, a condition that Cascao refers to as "apparent consent," because of upstream states' inability to mobilize economic resources to capture any of the Nile River's flows (Cascao 2008, 15). Thus, Egypt's economic dominance is of central importance to a discussion of Egypt as the basin's hydro-hegemon.

In 2008, Egypt's purchasing power parity-adjusted GDP was $444.8 billion, giving it a ranking of 27th in the world. Since 2006, its economy has grown at a rate of about 7% per year. Egypt does struggle with poverty, and a large amount of subsidies to impoverished people for necessities has negatively impacted the economy by creating a sizeable budget deficit (CIA World Factbook-Egypt). It is ranked by HDI as 127th in the world (UNDP 2009 Report-Egypt). However, economies of scale and agricultural abundance along the Nile make Egypt a sizable economic player in the region and the world, especially in contrast with the rest of the Nile basin riparians, which aside from Sudan are ranked along with the poorest countries in the world. Its GDP per capita in 2007 was $5,349 (UNDP 2009 Report- Egypt). Its exports totaled $29.85 billion in 2008 (CIA World Factbook- Egypt). Egypt is also receives the second largest amount of aid from the United States, in 2007 totaling $455 million. Egypt's economic power gives it a huge advantage over the other Nile riparians.

Egypt's military dominance in the region also contributes to its status as a hydro-hegemon. Egypt spent 3.4% of its total GDP in 2005 on the military budget, giving it a rank of 34th in the world in terms of military spending out of total GDP (CIA World Factbook- Egypt). According to Shapir and Brom, since the defeat of the Egyptian military by Israel in 1973 "the Egyptian armed forces have evolved into a large and highly sophisticated military machine (Shapir and Brom 2008, 45). Egypt's goal is to have a military strength on par with Israel's. With $1.3 billion per year in military aid from the US, it has invested in conventional US-made military hardware. Its navy is currently larger than Israel's, and its army trains regular with other western forces, including the US military. Furthermore, the Bush administration announced a $400 million arms deal in 2001. It provided Egypt with highly accurate surface to air missiles and four patrol boats, as well as 53 Harpoon Block II missiles, a satellite-guided anti-ship weapon manufactured by Boeing (Tafesse 2008, 10). This aid increase effectively transformed the Egyptian military, which was able to modernize its largely Soviet-era air force, and in building up its substantial domestic military industry (Shapir and Brom 2008, 45).

Egypt does not currently suffer from a severe water scarcity crisis. Out of a total amount of 56 km^3/year of renewable water resources, the water taken from the Nile makes up 55.5km^3/year, while 0.5 km^3/year comes from internal renewable surface waters. Internal renewable groundwater resources provide another 1.3 km^3/year. Egypt also treats wastewater for reuse, and has several desaliantion plants along the coast of the Red Sea and the Mediterranean. Total water withdrawal in 2000 was estimated to be 68.3 km^3/year, with 86% of this water used for agriculture (Aquastat-Egypt). However, any major decrease in the flow of the Nile's waters would therefore most likely result in disaster in Egypt, both to human consumption of water and to agriculture along the Nile (Aquastat-Egypt).

Egypt is by far the largest regional user of the Nile's waters, through the Aswan High Dam. Constructed in the 1960's under Nasser's nationalist program, the Dam gave Egypt full technical control over the Nile, effectively cutting off its seasonal floods through its storage capacity. The Dam has a storage capacity of 169 Bm^3/year, which is "more than enough to store a full flood of the Nile" (Cascao 2009, 247). The construction of the Aswan dam represented the culmination of Egypt's "hydraulic mission," beginning in the 19th century under Muhammed Ali and expanded under British colonial rule, to exert complete control over the waters of the Nile and therefore increase agricultural development (Cascao 2009, 247).

Egypt utilizes the discourse of securitization to protect its access to the water resources of the Nile River. According to Cascao, "Egypt has been able to successfully highlight its absolute dependency on Nile water, its 'historic rights'

to Nile water and to define water availability as a matter of 'national security'" (2009, 248). The former Egyptian Minister of Foreign Affairs Boutros Ghali has repeatedly affirmed the idea that "Egypt's national security is a question of water" (BBC 2003). Similarly, President Hosni Mubarak recently stated that "Egypt's national security is closely linked to water security in the Horn of Africa region and the Great Lakes region" (quoted in Cascao 2009, 248). The accumulated effect of statements like these from high-level Egyptian officials has been to securitize the issue of renegotiating Nile River water allocations. Egypt has been able to make sure that any negotiations begin with the premise that 'historic rights' should be the primary reference point for determining water allocations, effectively removing other points of view, such as the idea of upstream water resource development, from the bargaining table. Through "discursive and bargaining tools," Egypt has "developed a capacity to influence the basin's overall hydropolitical agenda" (Cascao 2009, 248).

Furthermore according to Cascao, "the Egyptian ability to influence the hydro-political relations in the Nile basin is determined by power" (Cascao 2008, 15). Thus, the influence that Egypt holds over the hydropolitical agenda stems directly from its ability to project power as a hydro-hegemon, especially through Lukes' third form of power: ideational power. Egypt aptly fits Gramsci's notion of a hegemon, because it is not just the dominant basin player, but also the leader in setting the agenda and discourse (Casca0 2008, 17). However, recent changes in the regional balance of power have begun to change that, as I will discuss below.

Sudan

Sudan is not able to mobilize the same 'power resources' (Lowi 1993) as Egypt can, allowing Egypt to remain the basin's hydro-hegemon. Sudan is also relatively stronger than any of the other Nile riparians, including Ethiopia; however, it has an advantage over Egypt in that it is an upstream riparian. Instead of trying to coercively control Sudan however, Egypt has chosen to use the hydro-hegemonic tactics associated with Lukes' third form of power, largely using ideational power buttressed by its economic superiority and ability to mobilize financial resources.

Sudan is the Nile basin's largest riparian. Located midstream, it borders six other riparian states, and has "abundant arable land and ideal hydrological conditions for water storage and capture" (Saleh 2008, 29). Sudan has more regional power than the rest of the Nile riparians including Ethiopia but less power than the basin's hydro-hegemon, Egypt, mainly because of its inability to mobilize economic resources due to civil unrest. Sudan has been classified as a 'Highly Indebted Poor Country:' with a population of 40 million that is expected to double within 20 years, economic resources will be stretched even further in the future (Saleh 2008, 36). Sudan had a GDP per capita in 2007 of $2,086, but its HDI ranking of 150th in the world shows that human development is much lower than would be expected for this income level (UNDP 2009 Report-Sudan). In 2004, 40% of the population was estimated to be below the poverty line. Sudan is also a fairly important regional economic player: it exported $11.67 billion worth of goods in 2008, mainly to its most important trade partner China (CIA World Factbook-Sudan).

Sudan also has a sizable military comprising 105,00 member as of 2004. The official military is also often supplemented with irregulars, including former rebel militias. Through the 1990's the army owned mostly outdated, Soviet-era equipment but since then has been able to purchase more modern weapons, from Libya, Russia and China. ("Sudan- National Security"). Its defense budget in 2005 was about 3% of total GDP (CIA World Factbook-Sudan).

Securing access to water flows is vital for the Sudanese economy because "agriculture is the main source of living for two in three people living in Northern rural areas and over 85% of those in the South" (Saleh 2008, 37). A combination of plentiful arable land, as well as abundant fluvial water resources has made agriculture the historic backbone of the Sudanese economy. However, recent famines and food shortages have resulted in an increased incidence of malnutrition, including a rate of 35% child malnutrition in North Sudan and 48% in the south. Thus, achieving food security through increased agricultural development is one of the government's most important objectives (Saleh 2008, 37-38).

The main methods that Egypt uses to control Sudan's extraction of the Nile River's waters are a combination of the third category of tactics within the framework of hydro-hegemony, normative compliance-producing mechanisms,

and the fourth category, hegemonic compliance-producing mechanisms characterized by Lukes' third form of power, securitized discourse and most notably financial mobilization. Egypt has used treaties with Sudan as a normative compliance-producing mechanism. According to Zeitoun and Warner's description of the framework, "the signing of an agreement to institutionalize the status quo may be a tool used to the hydro-hegemon's advantage" because "the treaty can be structured by the more powerful riparian to reflect existing inequalities, and then coercion may be used to get the weaker to sign" (Zeitoun and Warner 2006, 447).

Egypt and Sudan generally have a good political relationship, in part because of their shared history as states colonized by the British. Saleh categorizes Sudan's relations with Egypt as a "major strategic alliance" because of the "reciprocal privileges and rights of free movement, ownership, employment and residence granted to citizens of both countries" (Saleh 2008, 44). The 1959 agreement forms the basis of what would appear to be further cooperation. However, this agreement is better understood as a coercive measure taken by Egypt against Sudan to ensure Egypt's Nile allocations. According to Saleh, after Sudan achieved independence, its parliamentary democratic government demanded a renegotiation of the 1939 treaty, which was considered inequitable, and "demanded equity" in the form of a new legal regime that would "compensate the tens of thousands of Sudanese who would be displaced by the [Aswan] dam's reservoir" (Saleh 2008, 40). However, in 1958 a Sudanese officer, General Ibrahim Abboud, took over in a bloodless coup, and in the following year the 1959 agreement was officially adopted. Even so, the new agreement

became a focal point for much social agitation. The decision to agree to the 1959 Agreement was hugely unpopular because the Agreement allowed for the inundation of the historically important Sudanese city of Halfa and the displacement of at least 50,000 of its inhabitants… the Agreement's inequity in its allocation of water between Sudan and Egypt was also vocally criticized by many politicians during that period and has been more subtly criticized ever since (Saleh 208, 40).

The new agreement was, according to Saleh, "arguably of no developmental benefit" to Sudan, because although it was allowed a greater amount of water from the Nile by volume, Sudan did not receive any electricity from the Aswan dam under the agreement and the resettled Sudanese who lost their homes to the dam are "economically and developmentally worse off than they were in Halfa" (Saleh 2008, 40). Thus, it is likely that the new Sudanese government capitulated to Egypt's hydro-hegemonic tactic of institutionalizing the inequitable status quo through signing the 1959 treaty.

Egypt has also used the tactic of resource mobilization in its favor, exploiting its regional economic supremacy. The civil conflict in Sudan that existed until 2004 between the North and the South, as well as the currently ongoing conflict in the western Darfur province, have stunted economic growth and development and drew the state's focus away from potential Nile development projects. Egypt's completion of the Aswan Dam project allowed Egypt to mobilize the River' resources in a way that Sudan cannot. With little storage capacity, it cannot demand greater allocations if it has no way to effectively store and use that water. Because of civil strife, violence, and a lack of external investment and political instability, "Sudan had only a limited capacity to develop coherent water policies" (Cascao 2009, 257). In this way, the hydro-hegemon can utilize its economic dominance to develop its own water resources while manipulating time through a negative utilization of the tactic of financial mobilization. Thus, according to Saleh, "the physical reality of the Aswan Dam… [is] a tangible hydrological and hydro-political reality" (Saleh 2008, 42).

However, recent domestic changes within Sudan have created to a potential shift in relative power between Sudan and the hydro-hegemon. First, in 1999 Sudan began exporting its substantial oil reserves to the international market, using revenues to revitalize the economy as well as gaining a large source of foreign currency reserves. By 2007, Sudan was exporting 303,800 bbl/day of oil, with 5 billion bbl of further proved reserves in 2009 (CIA World Factbook-Sudan). Second, in January 2004, the Comprehensive Peace Agreement was signed between the government and the rebel movements of the South, bringing decades of civil war and destruction to a close. Although the conflict in Darfur continues, the signing of this agreement represented the end of a huge source of civil unrest and economic drain, and furthermore "open[ed] up South Sudan's vast water resources for development" (Saleh 2008, 30).

These two developments have allowed Sudan to finally mobilize its own financial resources in response to Egypt's hydro-hegemon tactics. It has begun the construction of several dam projects of its own to generate hydroelectricity and for irrigation purposes, including the Merowe Multi-Purpose Hydro-Project, the Kajbar Dam and the Kara Dobe Dam. The Merowe Dam, located on the fourth cataract of the Nile in northern Sudan, is expected to reap many development and economic benefits, including an annual electricity yield of 1250 MW and a reservoir of 12.5 billion meters^3 of water which will impound 20% of the Nile's annual flow. The expected benefits include a revitalization of Sudan's light manufacturing industries and the creation of a heavy industry sector which in turn will lead to job creation, as well as increased irrigation for surrounding farms (Saleh 2008, 33). Similarly, the Kajbar Dam, located on the second cataract of the Nile close to the Egyptian border, is expected to have a 300 MW capacity, which will provide cheap electricity to the people of South Sudan as well as the upstream countries Ethiopia and Kenya. Finally, the Kara Dobe dam project in Ethiopia represents an even more momentous event, because Sudan and Egypt both agreed to partially finance its construction. It is envisaged that the dam, along with many others in the area, will generate up to 38,000 MW, much of which will be in the long term exported to Sudan and Egypt, as part of the Nile Basin Initiative's Eastern Nile Regional Power Trade Investment Sub-Project (Saleh 2008, 32). The existence of a strong new water institution—the Dams Implementation Unit—established in 2001 to oversee the construction of all dams in the country is another indicator that Sudan is putting a great emphasis on future dam construction (Cascao 2009, 259).

Sudan's technical capacity is still less than Egypt's (Saleh 2008, 48). Furthermore, the discourse of securitization is still in place when it comes to allocations of the Nile River's water, despite the presence of the NBI. Therefore Sudan cannot completely contest Egypt's status as the basin's hydro-hegemon. Similarly, Sudan is forced to buy into the discourse of "historical rights," because its own allocations also stem from the same agreements that Egypt's discourse supports. However, Egypt's willingness to participate in the NBI and the water allocation negotiations, as well as NBI projects such as the Kara Dobe dam, suggests that Sudan's increase in power, leading to a great financial mobilization around water infrastructure, may have forced Egypt to retract some of its absolute control over the waters of the Nile River, pushing the system towards a gradual opening in which other riparians have a greater chance of participating.

Ethiopia

Of these three Nile riparian states, Ethiopia is by far the least powerful. In 2007, Ethiopia's GDP per capita of just $779 contributed to its HDI value of 0.414. Its HDI was ranked as 171st in the world, far below even the sub-Saharan African average. 77.5% of the population subsisted at less than $2 in income per day, indicating Ethiopia's deep struggle with poverty (UNDP 2009 Report-Ethiopia). Its total GDP was $70.23 billion in 2008, ranked 79th in the world in size, with a growth rate of 11.6% from the previous year. However, Ethiopia exported only $1.555 billion worth of goods, and was ranked 139th in the world in terms of the amount of exports. With a current account deficit of $1.806 billion in 2008, Ethiopia is an unimportant participant in the regional or global economy (CIA World Factbook-Ethiopia).

Ethiopia has constructed very little infrastructure along the Nile and extracts a negligible amount of its waters. This is partly because of a reliance on rain-fed agriculture, which has reduced the need for irrigation (Cascao 2009, 254). However, Ethiopia's economy relies heavily on agriculture, with agriculture accounting for 80% of total employment, 60% of exports and almost half of GDP. The country has also suffered frequently in recent years from recurrent drought, which has severely hampered the agricultural economy (CIA World Factbook-Ethiopia). Maintaining the *status quo* of water allocations from the Nile into the future would continue to obstruct agricultural development and increase poverty. It would also have a "grave impact on…conservation of the environment," and augment the environmental effects of deforestation, rapid population growth and drought" (Tadesse 2008, 4).

Thus, it is not Ethiopia's lack of need for fresh water resources that is keeping it from extracting water from the Nile River. Rather, it is Egypt's hydro-hegemon tactics that have managed to keep Ethiopia, the upstream state from which about 80% of the Nile's water flow, from accessing this water. Egypt uses the tactics of the fourth category of hydro-hegemon tactics, hegemonic compliance-producing mechanisms characterized by Lukes' third form of power, that include the sanctioned discourse of securitization (as discussed above). However, the use of sanctioned

discourse wielded against Ethiopia's water claims has recently begun to fail Egypt, as Ethiopia has fought back in public forums with its own discourse. Egypt has therefore been forced to fall back on the coercive resources of financial mobilization, and notably of international support. However, as I will show, recent changes in Ethiopia's relative power to Egypt have led to changing power relations between Egypt and Ethiopia.

Unlike with the Sudan, Egypt has not been able to use the third category of hydro-hegemonic tactics, coercive treaties, to keep Ethiopia in line. This is because of tensions between the majority Muslim states of Egypt and Sudan an the majority Christian Ethiopia, which were stoked over a long period of history in order to demonize the Ethiopian state to the extent that "Ethiopia is considered an enemy state by surrounding Muslim countries of North and East Africa"(Tadesse 2008, 5). This was probably a tactic used among other reasons to support Egypt's narrative of its own "historic rights" to the waters of the Nile (see Introduction). Egypt has neglected to use overt coercive force in the form of military intervention as well, as the hydro-hegemon Israel has used with the four other Jordan River riparians, probably because Ethiopia is so weak in comparison to Egypt in terms of military power that the threat is implied. Thus, Egypt has largely resorted to the fourth category of hydro-hegemony tactics.

According to Cascao, Ethiopia was long "considered the 'silent partner' in Nile hydropolitics" because of its lack of development of Nile waters or contestation of Egypt and Sudan's "historical rights" narrative (Cascao 2009, 254). That is because Egypt was able to successfully use the tactics of financial mobilization and international support to keep Ethiopia from mobilizing the resources to develop any part of the Nile River. According to Amare, Egypt has effectively assumed the role of gatekeeper when it comes to plans for projects on the Nile in all of the upstream riparian states, particularly in Ethiopia (Amare 2000). This is possible because of the support that Egypt has garnered at the global international level. Because of its situation at the heart of the Middle East, Egypt is usually viewed as a critical strategic ally by the West, particularly by the US. Consequentially, the US and other Western states are "unwilling to support anything upstream on the Nile that might disrupt vital flow of water to Egypt and trigger instability there" (Tadesse 2008, 10). This assessment clearly demonstrates that Egypt's narrative of securitization has had a great impact on the rest of the world, who have come to agree with Egypt's sanctioned discourse, which argues that the Nile's unimpeded flow is essential to Egyptian security.

Meanwhile, Ethiopia's economic distress and severe poverty and indebtedness precludes any major plans for building projects along the Nile. The *Wall Street Journal* in 2003 called this situation "one of Africa's cruelest ironies: the land that feeds the Nile is unable to feed itself" (quoted in Tadesse 2008, 10). Tadesse shows that Egypt has long sought to make sure that Ethiopia is unable to secure aid or loans to complete Nile projects, either bilaterally or though the multilateral international financial institutions. Egypt bases its argument on the 1902 agreement, saying that under the agreement Ethiopia may not undertake any projects on the Nile without Egyptian and Sudanese consent (Tadesse 2008, 7).

Egypt has intentionally perpetuated the traditional hatred of Arab nations towards Ethiopia in order to prevent them from giving Ethiopia loans or grants. But it has also managed to secure enough influence through allies in the West that it can move to block plans for loans to Ethiopia from international multilateral financial institutions. There are many examples of this kind of event (Tafesse 2001, 83-91). In the past, Egyptians were able to block the financing of the World Bank Fincha project in Ethiopia. Similarly, in the early 1990's, "Egypt was reported to have prevented an African Development Bank loan to Ethiopia for a project that Cairo feared would reduce downstream water supplies" (Tafesse 2008, 10). According to the *Jimma Times*, an Ethiopian national news carrier, David Shinn, a former US ambassador to Ethiopia, claimed that Egyptian officials "work behind closed doors" to block funding for planned projects upstream in Ethiopia (quoted in *Jimma Times* 2009). Furthermore, many Egyptian professionals are employed in key positions at this institutions, including a former Vice President of the World Bank, secretary of the UN until 2001, former head of the UN Environmental Program as well as senior posts in many other UN agencies, international financial institutions and international environmental institutions. This direct access to power surely helps the Egyptian government to make sure that the Egyptian sanctioned discourse is maintained and that projects in and support for Ethiopia is blocked (Tadesse 2008, 10). Finally, because of these sources of lobbying, the World Bank, as well as regional banks like the African Development Bank, have adopted Operational Directives which state that upstream projects funded by the Bank must have the permission of downstream riparians, effectively giving Egypt "veto power" over projects in Ethiopia (Cascao 2009, 260). This mobilization of international support to block

Ethiopian projects is a clear demonstration of the tactics of international support and financial mobilization, in which the hydro-hegemon uses ideational power internationally to thwart weaker riparians' access to the river.

Egypt has not only used securitized sanctioned discourse internationally, but also against Ethiopia in an effort to force it to subscribe to the same discourse. However, Ethiopia has begun to fight back against the sanctioned discourse, introducing its favored concept of "equitable use" (see Chapter 1). Ethiopia refused to be involved in the 1959 agreement because of its perceived unfairness, and renounced the 1902 treaty as obsolete after Emperor Haile Selassie's government in 1941. In renouncing the agreement it has taken the same tactic that Sudan and Egypt often do with regards to 'unequal' colonial-era treaties when they are not in their national interest (Tadesse 2008, 7).

Furthermore, since the 1990's, Ethiopia has launched an active diplomacy campaign categorized as "transnational lobbying" (Cascao 2008, 22). For example, it sent numerous "letters of protest" to international institutions, condemning the Egyptian New Valley Project and the Toshka Canal, a giant land reclamation project that would divert water into the desert from Lake Nasser (Cascao 2008, 22). It also used a tactic categorized by Waterbury as "aggressive silence,' in which it refused to cooperate in initiatives such as the Hydromet or Undugu projects because of the perception that Egypt was dominating them (Waterbury 2002, 71). Through diplomacy, Ethiopian officials argued that the Nile and its tributaries in Ethiopia provide a huge source of potential irrigation, and that in order to become self-sufficient with regards to food production it must utilize these resources (Tadesse 2008, 15).

Ethiopia had employed the same arguments for equitable use throughout the second half of the 20th century, for example at the UN Water Conference in Mar de Plata in 1977 and at the Organisation of African Unity Summit in Lagos in 1980 (Cascao 2008, 21-22). Although this concept has been the preferred argument for the Ethiopian government for the last four decades, Ethiopia has only recently been able to gain wider support for this perspective, most notably through the NBI and related allocation negotiations (Tadesse 2008, 15). This is because a series of political and economic changes that occurred in Ethiopia in the 1990's led to a rise in Ethiopia's power relative to Egypt's, allowing it to contest Egypt's absolute hegemony in the basin. Previously Ethiopia had suffered from "protracted internal conflicts,…and weak institutions," aside from crippling poverty and lack of financial resources, which led to a general "lack of priority and strategy for the water sector" (Cascao 2009, 254). In contrast, a series of changes, prompted by the rise to power of Meles Zenawi in 1991, included "a move towards a market-oriented economic model, better relations with donors and a stabilization of the economy" (Cascao 2008, 254).

These changes increased Ethiopia's power to contest Egypt's international status as a hydro-hegemon primarily by allowing it mobilize internal financial resources to push ahead with unilateral projects. The Ethiopian Prime Minister stated in 2005, that "the current regime cannot be sustained. It's being sustained because of the diplomatic clout with Egypt… the people of East Africa and Ethiopia will become too desperate to care about these diplomatic niceties. Then, they are going to act" (BBC 2005). This statement is indicative of Ethiopia's strategy in the 1990's and 2000's of the construction or expansion of several large-scale hydropower dam and irrigation projects in the Nile basin, including the Tekezze dam on a Nile tributary river (Cascao 2009, 254).

These projects have also been possible because of the rise of China as an important source of alternative financial support for Ethiopian projects along the Nile. Through China, Ethiopia has been able to mobilize international financial support in its favor. China's policy towards Africa has involved massive infrastructural construction that largely disregards domestic and regional political issues that might stand in the way. China has especially emerged as a major funder of dams in the downstream riparian states along the Nile River, and Ethiopia has been a major recipient of this kind of aid, including two major hydraulic projects (Cascao 2009, 260).

By threatening to mobilize its own as well as international economic resources to build unilateral projects that may interfere with Egypt's water allocations, Ethiopia has been able to increase its own bargaining power *vis* Egypt. This increase in Ethiopia's relative power helps explain why it was finally successful in forcing Egypt, and Sudan, to engage in multilateral negotiations in the form of the NBI and the negotiations over the Nile Cooperative Framework Agreement in 1997. Ethiopia managed to unite every one of the other upstream riparians unanimously for the first time in the Nile basin's hydropolitical history to vote in favor of a draft document that endorse the principles of equitable utilization, effectively isolating Egypt and Sudan in their defense of historic rights (Cascao 2009, 256). This

is not to say that the negotiations were not politicized or colored by Egypt's status as the basin's hydro-hegemon. Egypt does have a very strong position in the cooperative process, as witnessed by its ability to insist on the protection of legal agreements made previously and to delay the adoption of a multilateral agreement. Furthermore, many analysts have argued that Egypt still retains control over which projects under the NBI aegis are favored, and that "the projects that are moving forward are those that do not substantially affect Egypt's interests, while projects that are more advantageous for Ethiopia lag behind" (Cascao 2008, 23). However, the fact that Egypt has been forced to the negotiation table in the first place, the establishment of the NBI and cooperative, multilateral projects and that a framework based on the principles of equitable utilization has been broadly agreed to is still nothing short of revolutionary in a river basin system dominated by a hydro-hegemon.

Conclusion

The imbalance in power amongst Nile River riparians, a legacy of the colonial administration as well as more recent domestic politics, has created a basin system in which Egypt is the hydro-hegemon. Egypt has successfully constructed an internationally sanctioned discourse around the Nile River colonial water allocations, claiming that maintaining the entirety of this water source is vital to Egyptian national security. Egypt projects the discourse of "historical rights" to back up this claim, saying that a country should be entitled to the same amount and sources of water that its people have historically used. Egypt has also used several tactics associated with hydro-hegemony to effectively control Sudan and Ethiopia, two of the most important riparian states in this power system. In contrast to Israel, Egypt has not used coercive tactics aside from the occasional vague threat of military action. Perhaps this is because there are more riparians that Egypt has to control, or there is no major conflict between Egypt and any of these other states aside from their diplomatic disputes over the Nile River.

Egypt has largely used the tactic of normative compliance-producing mechanisms in Sudan with the use of unbalanced treaties that give Egypt the vast majority of the flows of the Nile River. Using colonial-era treaties as precedents as well as the 1959 agreement signed post-independence, Egypt has successfully coerced Sudan into subscribing to the notion of "historical rights." This is largely because Sudan lacks the financial resources to build water infrastructure along the Nile and mobilize it as a resource. Similarly, Egypt has tried to use the tactic of securitized discourse to force Ethiopia, the source of the majority of the Nile's waters. Egypt has buttressed these measures with the use of financial mobilization and international support. Ethiopia does not have the resources to invest in major infrastructure projects on its own, and until the recent past Egypt has been able to successfully block international funding of potential infrastructure projects.

However, two developments have begun to reverse the trend of Egyptian hydro-hegemony in Sudan and Ethiopia, as well as the other upstream riparians. First, Sudan and Ethiopia have both recently ended a long period of domestic political instability and begun to see substantial improvements to their own economies. Second, the rise of China as a large donor in Africa, who does not heed scruples over regional or global politics, has provided a hugely significant source of outside funding. These developments have allowed Ethiopia in particular to fight back against Egyptian hegemony by maintaining its own alternative discourse of "equitable utilization." The establishment of the NBI as well as the framework for negotiations over new water allocations are a stunning testament to Ethiopia's success in uniting the rest of the riparians and projecting this argument internationally.

The most interesting potential developments in the Nile River basin have yet to occur. Will Egypt eventually consent to the terms of the negotiations concluded in 2007, which would allocate the Nile's waters more fairly amongst all of the riparian states? Will the NBI's project have a tangible impact on development in the region as well as regional cooperation? If so, the recent developments in the Nile River basin system could provide a blue print for dismantling more static, closed and stagnant systems like the Jordan River basin system.

Chapter 4: The Columbia River

Introduction

The Columbia River is "arguably the most significant environmental force in the Pacific Northwest region of the

United States" (Center for Columbia River History). It flows for more than 1,200 miles, originating in Canada and terminating in the United States, covering portions of seven Western states, primarily Oregon, Washington and Idaho. About 30% of the basin is in Canada and 70% within the United States (Hamlet 2003, 264). Originating in two lakes between the Continental Divide and Selkirk mountain ranges in British Columbia, the Columbia flows on a convoluted course, first flowing north for about 200 miles, then turning south to cross the international border. The river continues southwest, skirting one of the Columbia Plateau's massive lava flows, before it turns southeast and cuts "a dramatic gorge in the volcanic shield" to its junction with the Snake River (Center for Columbia River History). Finally, it runs nearly due west, flowing out into the Pacific Ocean (Center for Columbia River History).

The Columbia River has ten major tributaries: the Kootney, Lewis, Cowlitz, Williamette, Deschutes, Snake, Yakima, Spokane, Wenatchee, and Okanagan rivers. Its largest tributary, the Snake River, is itself more than 1,100 miles long. Its basin includes a diverse ecology, ranging from temperate rain forests to semi-arid plateaus, with precipitation levels of 6 to 110 inches per year (Center for Columbia River History). It is a snow-charged river, with large fluctuations in discharge volumes by season. Its annual average discharge is about 160 million acre-feet of water, with the lowest volumes from December to February and the highest in April through September (Center for Columbia River History). Yet the Columbia's annual streamflows vary relatively little from year to year, especially in comparison with most other large water systems in the western United States (Hamlet 2003, 265). From its mountain source, at 2,650 feet above sea level, the Columbia drops an average of more than two feet per mile along its entire course, but in some places falls nearly five feet per mile (Center for Columbia River History).

The Columbia River Basin is "the most hydroelectrically developed river system in the world" (Center for Columbia River History). Of more than 400 dams, 11 lie on the main river concourse, while the rest are located on its tributaries, strategically blocking river flows and taping a large portion of the Columbia River's total generating capacity of more than 21 million kilowatts of energy. The first dam, the Rock Island Dam, was completed in 1932. The two largest—the Bonneville and Grand Coulee Dams—were completed by the United States Federal government in 1938 and 1941 respectively. The last of the mainstem dams, the Mica Dam, was completed in 1973 by the Canadian Federal government. Its completion capped off the last wave of dams to come online during the late 1960's and 1970's (Center for Columbia River History). With their completion, the Columbia River was essentially completely developed, and few feasible opportunities for further expansion exist (Hamlet 2003, 264).

The dams "provide protection from spring flooding, supply about 75% of the electrical energy for the Pacific Northwest (PNW), provide irrigation water and power for pumping to supply agricultural needs in the arid interior of the basin, and also provide opportunities for river navigation" (Hamlet 2003, 264). The dams created large reservoirs, which help to control flooding, and also provide water for vast irrigation systems on the Columbian Plateau, many of them funded by grants from the United States Federal government. The largest of them, the Columbia Basin Project, was completed in 1948 and transports water by canal to more than 600 thousand acres on farms in central Washington. The project "requires massive pumping stations, a labyrinth of canals, and enormous center-pivot sprinkler systems," and irrigates crops including alfalfa, potatoes, mint, beets, beans, orchard fruit, and wine grapes (Center for Columbia River History). Four dams on the lower Snake River, completed during the 1970s, strung together a series of slackwater lakes that allowed barges to navigate more than 465 miles from the Pacific to an inland port in Idaho. Finally, the hydroelectric projects "connect the entire region through a network of interties and relay stations into a powergrid system. A treaty with Canada in 1964 and creation of the NW-SW Intertie with California made the network inter-regional and international" (Center for Columbia River History). More recently recreation, as well as "the augmentation of regulated instream flow" to protect a species of salmon endangered by the building of the dams themselves, have also become important uses of the Columbia River's waters (Hamlett 2003, 265). In 1980, the United States' Northwest Power Planning and Conservation Act established that the maintenance of salmon populations and hydropower were of equal priority under the law, but even so the Columbia's salmon populations have continued to decline since (Hamlett 2003, 271).

Despite rapidly increasing demands for water in both Canada and the United States that pose a growing problem for human water consumption and biodiversity, shared basins in North America continue to be viewed as some of the most cooperatively managed basins in the world. In the case of the Columbia River, the International Joint Commission (IJC), based upon the provisions of the 1909 Boundary Waters Treaty, is a robust institution that has

created a mechanism to "prevent and resole disputes over the use of the waters shared by Canada and the United States and to settle other transboundary issues" ("International Joint Commission Report").

Despite criticisms of the IJC's ability to allocate scarce water resources on a national and international level over the long-term, the IJC has largely been successful not only in mitigating disputes between the riparian states but also in managing the long-term development of the river (Nitze 2008, 56). This is the case despite the fact that the United State's overwhelming military and economic superiority have easily given it the tools to use the tactics of a hydro-hegemon to control the waters of the basin. Yet to the contrary, the United States has occasionally allowed Canada to engage in building dam projects that could potentially be used to deprive the United States of the river's flows in the future, thus 'forfeiting' its hydro-hegemonic potential. Why has the United States given up its power as a hegemon? This chapter will put the cooperation in the Columbia River basin in a historical context, examining potential explanations as to why this river basin is more fairly managed than either the Jordan or Nile River basins.

The United States: Hegemonic Potential

The United States is the world's military and economic hegemon, far outweighing any other state's power. With an average income per capita of $45,592, the United States ranks 9th in the world, behind tiny countries like Lichtenstein and oil producers like Kuwait. Its HDI value of 0.956 places it at 13th (UNDP 2009 Report-United States). It is the global trade powerhouse, with a national GDP of about $14 trillion and population of about 300 million in 2008, it was ranked 3rd in the world for merchandise exports and 1st for imports, exporting about $1.3 trillion and importing about $2.2 billion in merchandise. It is ranked number 1 in the world for both exports and imports of services, with about $521 billion worth exported and $368 billion imported in 2008 (WTO Trade Profile- United States).

The United States is also the world's military hegemon, with a military budget in 2009 that was almost as much as the rest of the world's military spending combined. The United States and its close allies are responsible for two thirds to three quarters of the entire world's military spending, and in turn the United States is responsible for the majority of this amount (Executive Office of the President of the United States). According to the Congressional Budget Office, in 2009 defense spending through the Department of Defense accounted for 25-29% of budgeted expenditures, or 4.7% of GDP, a greater share of spending than any other single government expense. Furthermore, defense spending grew 9% annually on average from fiscal year 2000 to 2009 (Congressional Budget Office, "Monthly Budget Review").

The United States' economic power has allowed it to access its water resources to a great extent. The United States is one of the world's most water-rich countries, and it also the largest consumer of water resources, with an annual extraction rate of 1,730 meters^3 per capita (Nitze 2008, 66). The United States' relative water wealth has allowed it to remain lax about regulating domestic water use, allowing water infrastructure to fall out of repair and creating pricing structures that do not reflect the true economic value of the resource. These problems encourage waste rather than conservation, and have allowed for the cultural and geographical phenomenon know as "Cadillac Desert," in which Federal appropriations have been used to fund major building projects in the western deserts of the United States, essentially subsidizing water use and therefore economic growth in these areas, leading to a huge amount of water wastage (Nitze 2008, 67).

Since the 1980's, the US has begun to take concrete steps to rectify this problem, creating experimental market mechanisms for the transfer of water rights and improving efficiency, resulting in a decline in total and per capita water use (Nitze 2008, 57). To a certain extent, the water shortage is an artificial one, created by imperfect policy rather than absolute scarcity. However, underground aquifers are still being depleted, and demands on river water resources are correspondingly increasing (Nitze 2008, 56). There is an increasing perception that the western United States will soon be facing a water scarcity crises, especially with regards to agriculture, if it is not in one already. In a 2009 Reuters article, Natural Resources Defense Council President Frances Beinecke is quoted as saying that "agriculture can no longer own the water of California without drastically changing their practices or water is not going to be available for people, for cities, for industry" (Reuters, "Water Scarcity Clouds California Farming's Future").

Canada

While a relatively powerful state in the world, Canada has far less relative power than the United States. With a GDP per capita of $35,812 in 2007, it was ranked 18th in the world. Canada was also ranked 4th in the world with regards to HDI (UNDP 2009 Report-Canada). With a national GDP of about $1.4 trillion in 2008, and a total population of 33 million, Canada is a much smaller player in terms of international trade. It is ranked 11th in the world with regards to merchandise exports and 11th with regards to imports as of 2008, with total values of $456 billion and $418 billion respectively. It is also ranked 20th in commercial services exports and 12th in imports, with total respective values of about $65 billion and $87 billion (WTO Trade Profile- Canada). Canada is also a much lesser military power, with expenditures of about $10.1 billion total in 2004, as compared to the United States' $399.1 billion in the same year (Shah, "World Military Spending").

According to Nitze, "water is more central to Canadians' image of their country than it is to… the population of the United States" (Nitze 2008, 60). Canada has a large supply of water per capita relative to the United States, since it has the same total amount of water within its borders as the United States—approximately 6.5% of total world supplies—stretched over a much smaller population (Nitze 2008, 60). However, while most of the country's population is grouped in the south, the majority of water resources are located a far distance away in the north-flowing rivers; this percentage hides the high regional variability in Canada's rivers. Furthermore, the "myth of water abundance" in Canada has led to substandard management practices, similar to the United States, that include underinvestment in water infrastructure and "dysfunctional water pricing structures that are at variance with their expressed commitment to environmental values" (Nitze 2008, 61). Similarly to the United States, poor policies and management in western Canada has contributed to an acceleration of the already existing water scarcity problem.

Where does cooperation come from?

The most obvious answer to the question of why the United States has forfeited its ability to become the Columbia River basin's hydro-hegemon is that there is simply enough water to go around. Compared to North Africa and the Middle East, North America is a water-rich continent, and so there should be so much water that there is no need to contest who has access to it. On the contrary, it is clear that increasing water scarcity in western Canada and the United States has created a great deal of anxiety about water scarcity in the near future, compounded by worries about the potential effects of climate change, population growth and the unsustainable use of sources like aquifers. For example, the Canadian Federal agency, Environment Canada, produced a report in 2002 entitled "Threats to Water Availability in Canada" in response to "increased national concerns about water quantity, including recent floods… droughts, glacier retreat, and the impacts of climate change" (Overview, "Threats to Water Availability in Canada"). Similarly, numerous recent articles from both the Canadian and US presses, like the Reuters article, betray an increasing sense of popular anxiety and alarm over water shortages. Thus, the high level of cooperation that exists between the United States and Canada cannot be ascribed to an abundance of water.

Theorist who subscribe to the democratic peace theory would argue that the fact that Canada and the United States both have democratic governments makes it more likely for them to cooperate over a resource like the Columbia River. However, this theory does not hold up in comparison to both the Nile and Jordan River basin examples. The fact that both Israel and Palestine have democratically elected governments has not prevented from Israel from exerting its control as a hydro-hegemon over Palestinian water resources and West Bank access to the waters of the Jordan. Israel also exerts an equal amount of pressure on Lebanon, which has a democratically elected government, as it does against Syria, which is ruled by a hereditary dictator. Although it is probable that the fact that both the United States and Canada currently have well-functioning, liberal democratic governments contributes to their cooperation over the Columbia River, this theory does not explain the origins of this cooperation. In fact, the 1909 Treaty was signed while Canada was ruled by Great Britain, itself a Constitutional Monarchy.

Indeed, the "fairness" of the current cooperation over the Columbia River stems from this 1909 treaty itself, which established the basis of the ICJ and its decision-making process. And that fairness has lasted since 1909, practiced in almost exactly the same way, just as inequity in the Jordan River basin has lasted in the same form since the 1960's, and inequity in the Nile basin, which is perhaps just beginning to change, has lasted in the same form since the 19th century. The obvious conclusion is that the "fair" quality of cooperation today is a result of historical agreements that are fair. First, however, it is necessary to look briefly at the history of cooperation in the Columbia

River basin to understand where the "fair" qualities of the 1909 treaty come from.

The "Treaty Between the United States and Great Britain Respecting Boundary Waters between the United States and Canada" was signed on January 11, 1909, and proclaimed officially on May 13, 1910. Its preamble states that the Treaty was signed between the United States government and the King of Great Britain because both sides were "equally desirous to prevent disputes regarding the use of boundary waters and to settle all questions which are now pending between the United States and the Dominion of Canada involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along their common frontier, and to make provision for the adjustment and settlement of all such questions as may hereafter arise" (Supplement: Official Documents, *The American Journal of International Law,* 240). In Article II, both states agree that each country will have "exclusive jurisdiction" over the use and diversion of water on its own side of the border, but that any diversion that results in a decrease in flow over the border "shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs" (Supplement: Official Documents, 241). Finally, Articles VII-X provide for the establishment of the International Joint Commission, "composed of six commissioners, three on the part of the United States appointed by the President thereof, and three on the part of the United Kingdom." The IJC will "have jurisdiction over and shall pass upon all cases involving the use or obstruction or diversion of the waters with respect to which under Articles III and IV of this treaty the approval of the commission is required" (Supplement: Official Documents, 244). Any differences that arise between the two states "may be referred for decision to the International Joint Commission by the consent of the two Parties" (Supplement: Official Documents, 246).

The IJC met for the first time in 1912 and since then has worked to resolve more than 100 issues brought by both Federal governments. According to the IJC's centennial report, although the Treaty provides the general guidelines and principles by which the Commission reaches its verdicts, "the specific application of these principles is decided on a case-by-case basis. This approach has made the treaty adaptable over time as new issues arise" ("International Joint Commission Report," 2). The IJC serves two main purposes: to deliberate over the approval of new development projects, and to study and make advisory (not binding) recommendations over major transboundary issues, when asked by the two Federal governments. These requests, known as "references," can focus on water quality and air quality, or issues related to the development of shared water resources. When the IJC receives a "reference," it appoints a board, consisting of an equal number of experts from both countries. Acting as a "quasi-judicial body" to decide upon applications for projects like dams or diversions that would affect the natural flow or level of water, the IJC "considers interests in both countries in accordance with the treaty and may require, in its orders of approval, that certain conditions in project design or operation be met to protect interests on either side of the boundary" (International Joint Commission Report, 3). In these cases, the IJC determines that the operation of the new project must meet certain conditions, and appoints a special board to monitor ongoing compliance (International Joint Commission Report, 3). For example, the International Columbia River Board of Control, established by the IJC in 1941, monitors the construction and operation of the Grand Coulee dam and reservoir, which "keeps the commission apprised of streamflow and water-level data on both sides of the international boundary and reports to the Commission each April" (International Columbia River Board of Control).

The IJC is perceived of as "fair," in a way that the Nile River and Jordan River basin commissions are not. According to Le Marquand, "a recognized authority on the problems and issues of international water management," positive effects that arise from the IJC's institutional structure include "the provision of a collegial working environment, approach to problems independent of either government's influence, adaptability and flexibility, and impartiality, along with fulfilling the roles of arbiter of fact, important generator of information, facilitator of consensus, and problem-solving facilitator" (quoted in Muckleston 2003, 23). Part of this perception is linked to the structure of the Commission itself. Canada and the United States each appoint three of the six IJC commissioners, which includes one chair from each country, who serve concurrently. Each commissioner is "appointed by the highest level of government in each country, but once appointed they do not represent the national governments; the operate at arm's length. The Commissioners traditionally work by consensus to find solutions that are in the best interest of both countries" (International Joint Commission Report, 3). The IJC is also required by Treaty provisions to

listen to the views of all invested parties. Typically, the IJC meets this requirement by holding public hearings at the

onset, and before it completes its deliberations on applications and references. The IJC may also involve the public in its work through a variety of other means such as appointing stakeholders to its boards, convening advisory groups, hosting web dialogues or holding public information sessions (International Joint Commission Report, 3).

According to Becker, this direct citizen participation in the IJC decision-making process was minimal until evidence of pollution became evident in the Great Lakes in the 1960's. A public outcry, stemming from a pollution crisis and individual governments' inability to react unilaterally, resulted in the creation of the Great Lakes Water Quality Agreement. Since then, public participation has become incorporated into almost every aspect of the IJC's work (Becker 1993, 243). Becker shows that, "as an international organization with responsibilities for transboundary water resources management, the IJC has been unique relative to both quantity and quality of its public participation initiatives. It has provided for the direct access of the public to its decision-making" in several ways (Becker 1993, 267). The Commission has established a Public Information Committee, which designs and implements materials for the IJC's public information program, and also responds to requests for information from the public. It created a series of roundtables, announced in the "Background Paper on Roundtables" in June 1990, in order to consider the opinions of "persons of various backgrounds, interests and expertise, mainly from outside the Commission's traditional community of governmental and academic advisors, to consider and report to the commission on specific Agreement-related topics" (Becker 1993, 259). Finally, the IJC has increased "appointments of more citizen members to its boards and expert committees. The Science Advisory Board, for example, has a number of nongovernment members, including an environmental lawyer who is a staff member of an NGO, and a Native American environmental scientist, as well as private practitioners and academics representing various disciplinary perspectives" (Becker 1993, 259).

This "decentralized, complex and highly participatory [decision-making] process" reflects the IJC's "concern that stakeholder participation be required at all jurisdictional levels, and in all policy arenas and locations where relevant decisions are made and implemented" (Becker 1993, 267). The active involvement of all of these stakeholders contrasts sharply with the work of the commissions on the Nile and Jordan Rivers, which operate in a completely closed way, involving only the members of the commissions themselves, appointed by their respective governments. This sense of transparency and stakeholder involvement also contributes to a sense of the "fairness" of the way that the IJC conducts its work.

Because of its unique institutional structure, consisting of equal appointments of officials from both countries as well as decentralized decision-making and data-gathering structure, the IJC has developed a "reputation for impartiality that has earned it respect" (Lemarquand 1993, 77). This reputation allows the IJC to act as an "arbiter of fact," providing a

means of obtaining agreed upon and trusted technical and social data. Technical boards, usually composed of officials from both sides of the border, sort out the technical issues and come to an agreed upon basis of fact. In international environment and resource issues, agreed upon facts are the essential first step in reaching agreement. The IJC studies give each side the confidence to deal with the other's proposals without being sidetracked by endless debates about facts, effects, and opportunities. It establishes a common factual and technical, base between the governments, the essential first step in successful negotiations (Lemarquand 1993, 77).

This data-based impartiality, fostered by the IJC's structure, allows the IJC to "facilitate consensus among governments. The informal network spawned by the IJC through its reference boards, boards of control, and other institutional mechanisms… creates among senior water managers a shared experience in dealing with boundary problems and a basis for governments subsequently to accept the advice of the IJC" (Lemarquand 1993, 78). Gulden agrees that the IJC's structure helps it to act as a strong neutral arbitrator between the two states: he argues that "the Commission's long history of impartiality has resulted in only three of more than 100 cases dividing the members on national lines or resulting in deadlock," and that "much of the IJC's success can be attributed to its goal of judging each case on the merits and not making tradeoffs" (Gulden 1987, 63). Thus, a strict adherence to impartial fact-finding that excludes national rhetoric, essentially levels the playing field and allows the governments to interact on a level playing field. Because the United States has not subverted the IJC to its objectives as a hydro-hegemon, the IJC has been allowed to act as a propagator of fact instead of a proponent of one government's interests.

Of course, the IJC is not a perfect institution. Yet even impartial sources agree that the IJC has "provided valuable service…and, to differing degrees, [is] regarded as [a] model for similar regimes elsewhere in the world" (Nitze 2008, 58). According to Nitze, "the IJC has enhanced cooperation and prevented disputes between the United States and Canada on a number of contentious issues and has successfully sponsored an innovative planning process for water basins" (Nitze 2008, 59). This planning structure has also left the IJC open to criticisms that it has not been able to accomplish enough, namely a more integrated, basin-wide process: "the IJC… could cooperate on programs designed to create and support a watershed-base bi-national planning process carried out by local stakeholders within parameters established by the two federal governments" (Nitze 2008, 59). Similarly, Hamlet argues that "the basin's operating policies are shown to more fully isolate human systems from climate variability…vulnerability of the current management system to low-flow conditions, inability to meet all objectives simultaneously in low-flow conditions, and the conflicting constraints of many existing agreements make changes to the basin's operating policies problematic" (Hamlet 2003, 263). The IJC consensus-building structure contributes to its limited flexibility in creating a more integrated management system or dealing with new environmental issues. Yet, bearing these costs contributes to the "fairness" of the institution itself.

If the Treaty and the IJC have maintained a pattern of "fair" decisions about water allocations throughout the 20th and 21st centuries, where did the initial fairness in the Treaty itself come from? The most obvious answer is to assume that the Treaty was established in a non-contentious period, in which the United States and Canada agreed upon transboundary issues and simply codified these agreements into law, yet this is also incorrect. According to the IJC itself, the Treaty was established in a time when "disputes over water were already creating tension along the border" (International Joint Commission Report, 2). Toope and Brunnee point out that in the beginning of the twentieth century, "boundary waters were a significant political irritant in Canada-U.S. relations. Conflicts over navigation, power generation, and water diversions were endemic. The 1909 Boundary Waters Treaty was a significant political achievement, as the parties had entered negotiations with very different objectives, yet stable compromises were reached" (Toope and Brunnee 1998, 277). For example, settlers in Montana and Alberta were "building competing canals to divert waters of the St. Mary and Milk Rivers for their own use," and on the Niagara River, tensions were growing between the growing demand for hydroelectric power and the competing interests of navigation, along with the need to safeguard "the natural beauty of Niagara Falls" (International Joint Commission Report, 2). According to the Centennial Report, it was actually the existence of tensions like these that led to the establishment of the Treaty and Commission itself, and they were created to fill the void by providing a framework for conflict resolution (International Joint Commission Report, 2).

A more plausible explanation is issue linkage. While the Nile and Jordan River basins are the only resources shared by all of their respective riparians, the United States and Columbia share twelve major transboundary drainage basins. Issue linkage occurs when two issues, defined by Haas as "separate items that appear on the agenda of negotiators," become associated in such a way that the resolution of one is intimately connected to the resolution of all of the others in the group (Haas 1980, 364). For the United States and Canada, these transboundary basins are naturally linked, because they are overseen by the same institutional mechanisms, namely the 1909 Treaty and the IJC. Thus, while it could be potentially advantageous for the United States to exercise the authority of a hydro-hegemon in one basin, it would be disadvantageous to exert this level of control because it would allow Canada to retaliate in other basins or over other related issues. It would be far more difficult for the United States to assert control over these twelve major basins than it is for Egypt or Israel to assert control over just one basin, actions that draw negative international attention and prove costly to their won reputations.

A "low/high" politics explanation also proves to be a more plausible explanation of cooperation between the United States and Canada on transboundary water issues. The United States and Canada are already major allies and partners, cooperating on a number of issues including international military security and participation in NATO and border control. It does not make sense for either state to threaten these relations by creating a potential point of contention out of a less important issue. The disputes over transboundary water allocations began as "low" politics issues in these states because environmental issues are seen as separate from "high" politics, traditional security issues. This is probably because the issues began locally, and continue to exist between local stakeholder groups who want to use the limited water resources, as well as local and state/provincial governments, rather than between the national governments. This is the result of the federal-state/provincial system by which both countries are

governed.

The federal system almost always requires the devolvement of the power to deal with water management issues from national to state/provincial levels. Allee highlights the fact that "the focus for water management issues in both countries is on the provinces in Canada and the states in the United States" (Allee 1993, 147). In Canada, the provinces have primacy over the federal government with regards to management of water resources: for example, Environment Canada does not set standards for water quality, because that function is left up to the provinces (Allee 1993, 135). Similarly, in the United States, "water rights and water law have always been primarily a state responsibility. Federal water development projects have always been an extension of local political support into the Congress, usually frustrating executive branch attempts to apply control. The always considerable ability of the states to veto or lobby for particular projects has been increasing" (Allee 1993, 137). This has allowed the IJC to deal with subnational governments, which have come to "play important roles in the functions of the IJC" (Allee 1993, 140). The Boards of the IJC itself are often "composed of a mixture of federal and subnational government professional staff" because this structure "reflects the logic of the tasks [that the IJC must undertake]- subnational governments of both sides of the border share the locus of expertise and responsibility and to a large extent effectively represent the social interests that must be balanced" (Allee 1993, 140).

This decentralized structure for managing water resources allows for transboundary water issues to remain out of the federal governments' jurisdiction, keeping them from becoming "high" politics issues and sources of international tension. The structure of the IJC emphasizes Commissioners' roles as impartial experts rather than government representatives. Similarly, the inclusive process, which allows for stakeholder and public participation, emphasizes the local rather than national nature of these conflicts, by emphasizing the demands of local stakeholders in the conflict over the demands of the Federal government on their behalf. Elevating transboundary water conflict from a "low" to a "high" politics issue would intensify conflict throughout all issue areas, rather than solving the conflict in this one issue area. Thus, transboundary water disputes remain a largely local, rather than international, phenomenon.

Finally, one the most important defining factors of the cooperation between the United States and Canada probably stems from the access to development tools that each state had when the water Treaty was signed, particularly in contrast to the Nile and Jordan River basins. The "low/high" politics explanation helps to explain why cooperation continues today, but it does not reflect why the original 1909 Treaty set a precedent for fairness. The most interesting contrast between the Columbia River basin as opposed to the Jordan River basin, and until recently the Nile River basin, is an emphasis on increasing overall water supply through effective management rather than allocating what already exists (Cohen et al. 2004, 124). In the latter two basins, the focus is almost always on allocations of water in absolute numbers. There, conflicts are centered around how much water out of the total available will be allocated to each state. This is accentuated by the texts of river basin treaties: while the treaty between Jordan and Israel for example allocates absolute amounts of water to each state, the 1909 Treaty between the United States and Canada does not mention allocations at all. In fact, the main task of the IJC since its inception has been to approve the construction of development technologies like dams that increase the total amount of water that is available in the first place. Furthermore, the International Columbia River Board of Control uses careful monitoring, data acquisition and sharing and modeling as a means of managing the water supply (Cohen et al 2004, 122). These methods encourage cooperation, because it is vital that both riparian states work together to increase the total amount of water available: for example, both riparians must contribute to the planning of a dam to complete upstream construction, maintain downstream flows and share the outcome. By contrast, when the focus is on fighting over limited allocations, the result of interactions between riparians is more divisiveness rather than greater cooperation.

The emphasis on enhancing resources rather than dividing them is embodied in the concept of "benefits sharing." This model that has recently become more important in attempts to create fairer river basin regimes as well as in the broader disciplines of international water law and environmental law, but which actually originated in the negotiations over the 1964 Canada-United States Columbia River Treaty itself (Tarlock and Wouters 2007, 523). The "shared benefits" model stands in contrast to the more widely used "shared use" model. These are the two competing models of "equitable utilization," arising from international water law itself, which claims that "all riparian states have a right to the equitably utilization of the watercourse" (Tarlock and Wouters 2007, 525). The "shared use" or "classical apportionment" model tries to fulfill equitable utilization by allocating the flow of the river amongst the riparian states.

"Firm rights to 'water qua water' are created" and "each state is free to decide how its share will be put to use" (Tarlock and Wouters 1993, 526-527). The second model, that of "shared benefits," is derived from welfare economics, and recognizes that water is valuable "

only as a scarce resource with alternative uses, some more valuable than others. The transcendental objective of efficiency requires that the resource be allocated to the most valuable suite of uses. This means that some nations will have to forego the actual use of "wet" water but are entitled to monetary compensation for allowing other states to put the water to its most efficient use" (Tarlock and Wouters 1993, 527).

The Columbia River Treaty was originally negotiated under the auspices of the 1909 Boundary Waters Treaty. In 1951, the United States applied to the IJC for permission to construct the Libby Dam on the Kootenay River, the main tributary of the Columbia River, for the purpose of flood control and the release of water for planned downstream hydroelectric dams. The Libby Dam plan caused great concern in Canada, because the plan would foil the British Columbia Hydro company's plan to divert part of the Columbia's flow into the Fraser River, despite the fact that as the upstream state, Canada had "several desirable reservoir sites, but little domestic demand for electricity or flood control storage" (Tarlock and Wouters 2007, 530). With the Libby Dam application, the United States offered to compensate Canada for the costs of relocating people and infrastructure in inundated areas, and also to not charge Canada for augmented downstream flows, which would increase hydropower generation in Canada. Canada's response was a demand for a percentage of the hydropower output due to the increase in head contributed by Canada. According to Tarlock and Wouters, "both Canada and the United States advanced self-interested interpretations of the 1909 Boundary Waters Treaty" in their arguments to the IJC over the building of the Libby Dam, advanced by the United States, versus the diversion plan advocated by Canada (Tarlock and Wouters 1993, 530). Canada argued that Article II allowed for "reasonableness," including a reduction of border run-off by 25%, and invoked the doctrine of absolute sovereignty, while the United States made the "classic downstream argument," that the principle flow of riverine integrity requires preservation of the natural flow, and invoked the principle of historic use protection, "hardening the argument by claiming that prior diversion and dams were vested prior appropriative rights" (Tarlock and Wouters 207, 530).

The Columbia River Treaty was created to circumvent these problems by authorizing Canada to develop 15.5 million acre feet of storage in three projects. While most of this storage capacity is dedicated to flood control, the Treaty also assigns 50% of the total benefits to the United States. In return, "the United States has paid Canada US$64.4 million, primarily for the construction of Duncan and Arrow reserves. Canada has received US$254.4 million for the benefits that accrued to the United States for the generation of hydropower as a result of the 1964 sale of its entitlement" (Tarlock and Wouters 2007, 531). The construction of the Libby Dam was also authorized, and Canada is not required to share the benefits its receives from the inundation of its territories while the United States does not share either the flood control or hydroelectric benefits that it receives from the dam and reservoir (Tarlock and Wouters 2007, 531).

Thus, according to Tarlock and Wouters, the Columbia River Treaty "is widely hailed as the model for benefit sharing and of bi-national cooperation between upstream and downstream states with substantial inequalities between them. Canada traded hypothetical lost hydroelectric generating capacity and surplus flood control storage for money" (Tarlock and Wouters 2007, 529). The 'benefits sharing' model has allowed the United States and Canada to break free of the zero-sum game of 'shared use' and strict allocations. Emphasizing the joint development of the River has freed up the interactions between the two national governments, allowing them to engage in a positive-sum game.

Conclusion

There are several lessons about the origins of fair cooperation that we can draw from the Columbia River basin example. First, the existence of previous tensions and a lack of sufficient water resources cannot be used as excuse for a lack of fair cooperation by hydro-hegemons, although of course this is probably part of the explanation. The Columbia dynamic clearly demonstrates that these pre-existing conditions are not necessarily impediments to fair cooperation, as they have been in the Nile and Jordan Rivers. Second, the existence of "fair" problem-solving mechanisms perceived as neutral entities is vital. The contrast between the IJC and the other two basin commissions

shows that the vital difference lies in the dual facts that the IJC contains a problem-solving mechanism, while the other two exist only to plan development, and the IJC is perceived as a neutral entity, while the other two are not. Third, the involvement of local stakeholders and the public produces outcomes that are fairer. Finally, an emphasis on 'shared benefits' and augmenting existing water supplies, rather than divvying up what already exists, is vital. An emphasis on allocations encourages conflict in that every riparian must fight for its share of the pie. This leads the basin's hegemon to assert itself as a hydro-hegemon, believing that it must use more coercive methods in order to maintain the allocations that it has come to depend on. In contrast, an emphasis on development projects that augment the current supply encourages more even-handed cooperation.

This comparison shows that hydro-hegemony probably stems from the quality of historical agreements, rather than the hydro-hegemon's greediness for more water. If the hydro-hegemon has come to rely upon a certain allocation of water, like Israel in the Jordan River basin, it will assert all of its power as a hydro-hegemon to maintain that allocation. Conversely, if a state relies on development of a basin rather than specific allocations, like the United States in the Columbia River basin, it will not need to exert these strategies. Finally, even if a hydro-hegemon has come to rely upon specific allocations, and has exerted its power as a hydro-hegemon to maintain that allocation even in the face of environmental damage and decreasing water flows, the introduction of a benefits sharing-type model still has the potential to open up the system. In that case, the hydro-hegemon, which no longer needs to exert itself to maintain an allocation, will probably relinquish its privilege as a hydro-hegemon.

This result will be investigate in the concluding chapter, where lessons from the Columbia River and Nile River basins will be explored in more depth to see how they might be applied to the Jordan River basin, opening up the previously static riparian dynamics in order to create "fairer" cooperation. It will be shown that in the Jordan and Nile Rivers, the history of the basin has led each hydro-hegemon to rely on its allocations of water, so that it must continue to use more and more coercive tactics to maintain the same flows. The example of the Nile River's recent history shows that the spread of development technologies to the non-hegemonic riparians can allow the focus to shift from strict allocations to augmenting the total water supply, making room for the establishment of fairer institutions.

Chapter 5: Conclusion

Summary and Analysis of Findings

The research goal of this thesis was three-fold: to place the Framework of Hydro-hegemony in the context of the 'water wars' academic debate, to detail the methods that two hydro-hegemons-Israel and Egypt-have used to achieve a specific resource allocation in their own basins, and to attempt to answer the question of where these power imbalances come from in the first place, on order to gain a better understanding of the mechanisms that can change a static, unbalanced system into a shifting, uncontested one. Through the Jordan River and Nile River case studies, I have shown how the three categories of hydro-hegemonic compliance-producing mechanism are used by Israel and Egypt to coerce other, less powerful riparians. Although other authors have categorized these riparians as hydro-hegemons, and have alluded to some of the ways that these riparians fit into this category, this study is the first to my knowledge that undertakes a systematic, basin-wide analysis of the Jordan River and Nile River basins using the Framework of Hydro-Hegemony. The Nile River and Columbia River case studies have also presented specific lessons as to where power imbalances originate, how they can be changed, and also the most important factors that can determine the 'fairness' of cooperation in a basin, and therefore the long-term sustainability of cooperation there. This Chapter will clarify these findings, and explore the ways that they can be applied to the Jordan River basin and to other transboundary basins in order to alleviate power imbalances and improve the quality of cooperation over these basins' water resources.

The Framework of Hydro-Hegemony, an emerging body of scholarship, is able to reconcile the two competing bodies of scholarship that seek to explain what kind of interactions are currently taking place between riparians in transboundary river basins. The first group, lead by Homer-Dixon, argues that "water wars" will be the reality of the near-term future. The statement that "the wars of the next century will be fought over water" is predictive, they believe, because a rapidly growing population, environmental degradation and climate change will act as multipliers, pushing individuals and countries to compete more fiercely over access to water resources. This is inevitable,

because there is no substitute for water: it is essential for human (and plant and animal) survival, and unlike fossil fuels there is no other substance which can be used as an alternative.

The second group, which is led by Dinar, Wolf and others, asserts that this claim is erroneous, because there has never actually been an historical incidence of a "water war." In fact, historical trends have shown that as water stress becomes more acute, states tend to sign more cooperative agreements, rather than go to war. They argue that the costs of fighting a war over water in almost any circumstance far outweigh the benefits. They also argue that the presence of cooperative international institutions to govern basins, and a lack of unilateral development schemes, is positively associated with cooperation in international river basins. This finding implies that water wars are not occurring because as water stress increases, cooperation has become a more effective method of maintaining access to water resources.

How is it possible for these two conflicting schools of thought to exist, and to draw on the same empirical data to prove their points? The answer is that neither takes into account the fact that cooperation and conflict can exist simultaneously, and that in most transboundary basins they do. Cooperation and conflict should not be seen as dichotomous, but rather as a far more complicated set of interactions between and amongst states. Most often, cooperative measures can conceal, and even embody, the conflict of interests between riparians. Thus, there is one essential factor that these two schools of thought neglect to address to better explain this dynamic: power.

The Framework of Hydro-Hegemony is able to explain the existence of these two scholarly traditions by taking the intricate and complex dynamics of power and the effects of an imbalance of power into account. It argues that conflict is not just violence between militaries, but also occurs whenever one party attempts to exert its authority over another in order to achieve its self-interested goals. Therefore conflict can actually exist under the veil of cooperation, when the most powerful state in a basin is able to effectively wield the power resources at its disposal without actually resorting to physical violence. The Framework groups these methods and resources into four main categories, that reflect both Lustick and Lukes' work on hegemonic compliance-producing mechanisms: coercive, utilitarian, normative agreements and hegemonic. These categories exist on a scale, in that the first reflects the most overt and least effective form of the usage of power, while the fourth category reflects the most covert and most effective ways that power can be used to achieve access to water resources. The Framework's most important contribution in this sense is to show that the hegemonic compliance-producing mechanisms of a sanctioned discourse of securitization and the covert use of coercive resources actually exist and are a major, if not the main, determinant of outcomes in transboundary river basins.

In the preceding three chapters, I have used the three categories of coercive compliance-producing mechanisms, normative compliance-producing mechanisms and hegemonic compliance-producing mechanisms as my points of analysis. My findings show that in the Jordan River basin, Israel, the hydro-hegemon, has used all three categories to subdue the other four basin riparians and maintain its access to a maximum amount of water. Extreme differences in economic, military and international political power have allowed Israel to maintain this control. Israel has arguably engaged in coercive, violent measures to achieve this control, including the military strikes on the Headwater Diversion Plan in 1965 and the Six Day War in 1967.

It has also less obviously used normative compliance-producing mechanisms. Although it has refused to sign multilateral agreements, it has engaged bilaterally with both Jordan and the Palestinian West Bank, including the signing of a peace treaty with Jordan in 1994 that included a 'Water Annex' and the Joint Water Committee between Israel and the Palestinian West Bank. Finally, Israel has used hegemonic compliance-producing mechanisms to secure access to the waters of the Jordan and to limit other riparians' ability to access these waters. Israel's government has made it clear that it views access to these waters as a security issue, creating a sanctioned discourse of securitization that presents its actions as 'defensive' measures taken against aggressive Arab riparians, specifically regarding Lebanon and Syria. It has created a different discourse with regards to Jordan and the Palestinian West Bank, characterizing the bilateral treaties and international institutions that it has established with these riparians as cooperative and as positive outcomes, even as it continues to dominate these institutions with its own agenda. Furthermore, it has woven a discourse of 'rightful allocations' based on specific usage patterns, characterizing the Water Annex of the treaty signed with Jordan as a fair document that will lead to a normalization of

relations and a just peace, despite the fact that the allocations within it clearly benefit Israel over Jordan. With this discourse, it has effectively made its viewpoint the accepted source of 'objective' knowledge, drowning out opposing viewpoints. Finally, it has been able to use coercive resources to ensure its access, especially to control tributaries of the Jordan within Lebanon and Syria. Israel is able to create 'facts on the ground' by mobilizing its superior financial resources both domestically and internationally: notably, multilateral international donors like the World Bank are more likely to invest in projects that Israel supports, because these are perceived as the only viable kind. Israel also exploits the existing power imbalances in different ways: while it uses more overtly coercive tactics with the more powerful Syria and Lebanon, it has used the more subtle hegemonic tactics with the least powerful riparians, Jordan and the West Bank.

Egypt has also used the tactics of a hydro-hegemon in the Nile River basin. Specifically, it has used less overtly coercive methods with Sudan, the next strongest riparian in terms of economic and military power, and more overtly coercive ones with Ethiopia, a weaker riparian. Its 1959 agreement with Sudan gave Egypt the vast advantage with regards to specific water allocations, while excluding all of the other riparians altogether. Egypt has also used resource mobilization when it completed the Aswan dam project, creating a hydro-political reality on the ground. It has also mobilized a sanctioned discourse of 'historic rights' to water allocations and claims that access to this water is vital to national security. It has also used its economic resources to develop the river and exclude Ethiopia, a much poorer state, from water resources.

However, this basin has differed from the Jordan River basin's historical trajectory in that the power relations between riparians have recently become less stable, because of two recent developments. First, Sudan and Ethiopia have both emerged from periods of domestic instability, and have seen substantial growth in their own economies. Second, the rise of China as a donor of funding for large projects in Africa has provided a vital source of outside funding for projects to develop river resources. The creation of the Nile Basin Initiative, a cooperative institution including all of the basin's riparians with the goal of achieving sustainable development in the basin and a more equitable usage of its waters, reflects Egypt's ability to project its power to create a sanctioned discourse of cooperation, even as its development projects have the potential to change the currently existing differences in power amongst riparian states.

Finally, the Columbia River basin conspicuously lacks a hydro-hegemonic riparian, despite the fact that the US's economic and military power far outstrips Canada's. One explanation for the quality of cooperation that exists between these two riparian states is that the two states already have a highly cooperative relationship, and it is not worthwhile for the US to elevate water, an issue of low politics, to a position which would allow it to vigorously contest the waters of the River with Canada. Issue linkage is also an important explanatory factor in this case, in that the United States and Canada share more than a dozen bodies of freshwater across their common border, and therefore for the United States to contest one source of water would introduce conflict over all of these shared basins.

However, there are three more explanatory factors that are of particular significance to understanding the original source of cooperation between these two riparians. First, the decentralized, federalist structure of water management in both states makes contestation over water resources a local rather than a national issue. Conversely, the participation of local stakeholders in the decision-making process helps to keep interactions over water resources from becoming contentious, because it allows every stakeholder impacted by decisions about water resources to have a say in the decision-making process. Transboundary water disputes therefore are not international disputes in the sense that they are between states, so much as they are local disputes between individuals, who because of their direct contact with one another have a much greater ability to solve the conflicts that do arise. The structure of the International Joint Commission, the bi-national body that is in charge of regulating transboundary bodies of water between the United States and Canada, also plays an important role. The IJC stresses its own role as an essentially non-partisan body. While officials are appointed by the two countries, they function as neutral arbiters. This allows their decisions to be perceived as fair and impartial. Finally, the tools of river development have played an essential role in ensuring cooperation between the riparians. The "shared benefits" model allows states to focus on the positive-sum game of maximizing the total benefits that the river can supply, rather than on the zero-sum game of maximizing their own allocations of water. The Columbia River treaty authorizes Canada to develop the waters of the Columbia, providing much of its water to the United States in exchange for financial payments. This allows the focus to shift to

cooperation, which results in both states having more resources, and away from fighting over specific allocations of water, which with the absence of further development will provoke more conflict.

The first important finding that comes from comparing these three case studies is that international commissions play an important role in determining the quality of cooperation between states. Organizations like the JWC between Israel and the Palestinian West Bank are constructed in order to be biased, or to provide a veneer of cooperation while actually allowing the hydro-hegemon to exercise control. The commission in the Nile Basin is an interesting body that lies somewhere between the IJC and the JWC. The fact that it does not have the power to re-negotiate the Nile River allocations indicates that it is still guided by the sanctioned discourse perpetuated by the Egyptian hydro-hegemon, which argues that this allocation is necessary to its own security and that it has 'historic rights' to the basin's waters. Even so, the existence of the Nile Basin Initiative allows for all of the basin's riparians to participate in the decision-making process regarding economic development of the River. The participation of all ten of the River basin's riparians makes the process more inclusive, and therefore more likely to produce outcomes that are perceived of as fair by most stakeholders. However, the IJC has gone even a step further in terms of inclusiveness, by including all local stakeholders in the decision-making process, not just national governments. The IJC also has a distinctly 'neutral' orientation, because its ministers are encouraged to approach problems objectively, and to distance themselves from their own national governments. Although the IJC is not perfect, in terms of perceptions about its fairness as a decision-making body, it is superior to the JWC or even the NBI.

We have seen that an inclusive commission, with the ability to make decisions about allocations as well as development projects, is an important component of fair basin outcomes. A first step in the Jordan River basin would be the establishment of a joint commission that includes all of the basin's riparians, and gives them an equal say in the decision-making process. The ministers who are appointed to the commission should also be encouraged to study each situation from an objective position, distancing themselves from the state government that appointed them. This would allow them to approach the problem with the concerns of their own government in mind, but with a more impartial perspective on all sides of the issue. Ideally, this commission would include local stakeholders as well as ministers appointed by state governments in every decision-making process, including local farmers, water utilities companies, extractive industries, etc.

Incorporating all of these stakeholders would make the outcomes of its deliberations more sustainable, since every use of the River's waters would be taken into consideration. It would also ensure that its deliberations would be perceived as fairer, because stakeholders would be more willing to endorse the outcome of a process that they had participated in. It would also most likely make the decisions themselves fairer, since it would steer the usage of the River towards a more utilitarian outcome. The participation of local stakeholders would have the added benefit of helping to change transboundary river conflict from a national to a local level, making conflict between states themselves less likely, since as the Columbia River case study has shown, localization means national governments are less likely to be involved in conflicts.

The problem with this ideal commission, of course, is that the basin's hydro-hegemon would never allow for it to be established within the context of the present power imbalances and increasing water shortages. A lesson of the Columbia River basin Treaty is that fairness in treaties, and therefore in international commissions, can be a random product of the conditions that happened to exist when the treaty was created. The riparians of the Jordan River basin have been in conflict or in a state of tension since the establishment of the state of Israel after World War II, which has made it impossible for a fairer treaty like this one to be signed. We must turn our attention, then, to the ways that power imbalances between river riparians have been changed or mitigated, and examine whether these methods could be used to positive effect in the Jordan River basin.

We have seen in both the Nile River and Columbia River case studies that the economic development of a river, usually through the construction of dam systems, plays an incredibly important role in the balance of power in a river system. The construction of a dam, even one located downstream such as the Aswan Dam, can play a major role in shoring up a riparian's position by allowing it to store seasonal floods of water to be released intermittently throughout the year. A dam can play an even more important role in an upstream state by allowing it to redirect water that would normally flow to the next riparian, potentially blocking large amounts of water from being accessed by downstream

riparians. This is compounded by the fact that is is only the most economically powerful states, with considerable international assistance, that are able to construct projects of this type.

The case of Ethiopia in the Nile River basin shows that the provision of international assistance to an economically poor riparian for the purpose of building unilateral projects has the potential to change a basin's power dynamics. The rise of China as an outside financier of these kinds of projects has enabled Ethiopia to increase its own bargaining power *vis* the hydro-hegemonic Egypt and even Sudan. This explains why Egypt refused to engage in multilateral negotiations over any aspect of the Nile River until recently, and why the NBI was able to engage in cooperative, multi-lateral development projects.

A similar change has not occurred in the Jordan River basin because Israel has been able to maintain its control over coercive resources like domestic financial mobilization and international support, through its use of the sanctioned discourse of securitization. Thus, it would be hard to imagine another state or multilateral institution supporting Syria or Lebanon in building a dam project that had the potential to disrupt the flow of the Jordan River to Israel, because of the common perception that this kind of action would directly threaten Israel's security, even its very existence as a nation. Of course it is possible that these states might 'find' their own intercessor who is indifferent to the demands of the United States' government, just as many states in Africa have 'found' China. It is worth noting for example the Arab League's attempt to build the Headwater Diversion in response to Israel's National Water Carrier in the early 1960's, although the construction on this project was quickly destroyed by the Israeli army. More likely, however, the sheer differences in power between Israel and the rest of the riparians, combined with the influence of the United States in the region, would combine to thwart any similar plans today.

However, the Columbia River case study points towards a more feasible model, and one that could also lead to a more sustainable and equitable agreement: the shared benefits model. The shared benefits model originated in the Columbia basin itself, as a result of tense negotiations between the United States and Canada over the United States' plan to build the Libby Dam in 1951. The plans caused great concern in Canada, because it would ruin a Canadian hydro company's plans to divert parts of the river's flow. Canada had many potential reservoir sites but little domestic demand for the electricity or flood storage that would be created, while the United States had a much greater demand for these resources. Eventually, through the auspices of the IJC, both riparians agreed to a solution whereby Canada was authorized to develop flood storage reservoirs through three different projects, and 50% of the total benefits where assigned to the United States. In return, the United States paid Canada a sum of money for the construction of these projects. The benefits sharing model allows riparian states to transform a zero-sum game into a positive-sum game, because it allows them to maximize the river's total development potential by engaging in development projects at the most logical location, regardless of the various riparians' borders, and then to share all of the total benefits equally.

According to Zeitoun and Jägerskog, strategies of confronting power asymmetry in transboundary water settings can be mainstreamed into explicit policy and program design that "may offer a clearer path towards more effective cooperation" (Zeitoun and Jägerskog 2009, 12). The concept of benefit sharing is as important strategy that has the ability to "render power asymmetry irrelevant" (Zeitoun and Jägerskog 2009, 12). The concept of a shared benefits model is "entirely rational from a perspective seeking 'optimal' use of a river" (Zeitoun and Jägerskog 2009, 12). Similarly, Grey, Sadoff and Connors argue that riparians are most likely to cooperate when "the net benefits of cooperation are perceived to be greater than the net benefits of non-cooperation, and when the distribution of these net benefits is perceived to be fair" (Grey, Sadoff and Connors 2009, 15). They also observe that "perceptions are pivotal," in that "states must believe that greater economic benefits will be gained and distributed equally" if they do agree to cooperate with other riparian states in basin-wide development projects (Grey, Sadoff and Connors 2009, 16). Thus, the benefits sharing model has the potential to undermine static power dynamics, creating more equitable outcomes of cooperation.

This model could be useful in the Jordan River basin because an emphasis on augmenting water supplies through development projects essentially forces riparian states to cooperate. It also removes the focus on conflict, which occurs when states are focused on divvying up the allocations of the water supplies. This focus on allocations forces the basin's hydro-hegemon to assert its superior power resources in order to maintain the historical rights that it has

come to rely upon. A survey of the Columbia, Nile and Jordan Rivers shows that hydro-hegemony probably stems originally from the quality of historical agreements that form the basis of these historical rights: if agreements are inequitable, as in the case of the Nile and the Jordan with regards to Jordan and the West Bank, or non-existent, as in the Jordan's case with regards to Syria and Lebanon, hydro-hegemons will be forced to exercise their power resources in order to maintain this inequity, even in the face of rapidly growing populations, mounting environmental damage, increasing water stress and the accompanying injustice towards the people who live in less powerful states. However, a benefits sharing model has the potential to open up the previously static Jordan River basin system, and even to eventually allow Israel to relinquish its position as a hydro-hegemon, just as the United States has and as Egypt may be forced to do in the future.

Three Hopeful Signs

This possibility may seem unlikely. However, I have identified three specific promising events that may point to the creation of a benefits sharing system in the future. The first is a small change in the Israeli government's rhetoric about water. Until recently, the Israeli state has perpetuated a single sanctioned discourse, that emphasizes water as a security issue and essentially authorizes the Israeli government to take any measures necessary to maintain its access to historic water supplies. However in the past several years, Israeli government statements have begun to emphasize, alongside of the securitized discourse, a discourse that emphasizes Israel's need to augment its own water supplies and manage existing resources more effectively, using technological resources like desalination, agrotechnology and water recycling.

For example, in a speech at Wellesley College in the spring of 2010, the Israeli consul general to New England Nadav Tamir referred to the conflict between Jordan River riparians, saying that the "problem is not how to divide up water, but how to create more water" (Nadiv Tamir speech). He emphasized the idea that Israel's focus was on "enlarging the pie," not just "cutting it up," and spoke of the Israeli government's efforts to encourage water recycling, and its construction of projects like desalination projects (Nadiv Tamir speech). These statements reflect the Israeli government's strategy to deal with the impending crisis with regards to Israel's domestic water economy. The Israel Minister of Foreign Affairs' website lists a statement from August 2002, outlining the government's strategy for dealing with the depletion and degradation of water resources. The statement lists several main priorities, including

To increase considerably the supply of potable water, mainly through seawater desalination and purification of water sources; To advance the treatment of sewage, its collection and purification, turning it into the main source of water for agriculture (replacing potable water); To intensify water saving in all sectors by economic measures – raising the price, as well as by legal means, enforcement, improved management and organization; To invest in Agrotechnology, to convert agriculture to using mainly low quality water – recycled waste water, brackish and flood water (Israel Ministry of Foreign Affairs website, "Israel's Water Economy: Thinking of Future Generations")

The article includes a graphic that shows exactly how many more million cubic meters of water will be added through government actions including the construction of desalination plants, water import, rehabilitation of saline and polluted wells and treatment and recycling of sewage effluents for irrigation (Israel Ministry of Foreign Affairs website, "Israel's Water Economy: Thinking of Future Generations"). This shift in the sanctioned discourse is promising because it reflects the historical discourse that has existed in the Columbia River basin since the establishment of the Columbia River Treaty and the rise of the benefits sharing system. This addition to the sanctioned discourse implies that Israel might be becoming more open to a potential future benefits sharing system, since it reflects a shift in thinking about water from focusing solely on allocation amounts to augmenting the amount of water that is available. Although the Israeli discourse of augmenting water resources still does not make explicit mention the Jordan River or other riparian states, it is clear that Israel would have to cooperate with the other riparians, most of which lie upstream, in order to augment the Jordan's waters.

The second recent development involves a Friends of the Earth Middle East campaign to raise local awareness about the "demise of the Lower Jordan River" (Friends of the Earth Middle East, "Project-Jordan River"). Their Good

Water Neighbors project, established "in 2001 to raise awareness of the shared water problems of Palestinians, Jordanians, and Israelis," has sponsored "Neighbor's Paths tours," a tour that is based in 15 communities and aims to educate residents, including youth and adults, on the state of the Lower Jordan and its tributaries (Friends of the Earth Middle East, "Project-Good Water Neighbors"). Tours are based in Jordanian, Israeli and Palestinian communities alike, and occasionally even cross a border to give the group a sense of what is going on on the other side of the River. The local FoEME staff guides give tours in Arabic and Hebrew, and always describe the situation on the other side of the river. Through their participation, local residents learn how the River's waters are being diverted, and understand the effects of pollution. They also come to understand the "missed economic opportunities presented by the unhealthy state of the river, particularly for rural, cultural and eco-tourism uses" (Mehyar, Khateeb and Bromberg 2009, 27). Media participation helps to spread the message of the tour groups beyond the participants themselves, and to "place the river's plight at the centre of the public debate and create a constituency of local residents empowered to voice their concerns" (Mehyar, Khateeb and Bromberg 2009, 28). The Project has engaged in many other activities as well, including training 70 youths from all three communities to lead efforts to build eco-facilities in their communities, and engaging mayors to hold meetings and even sign a Memorandum of Understanding between an Israeli and a Palestinian community (Friends of the Earth Middle East, "Project-Good Water Neighbors"). The outreach programs have achieved more concrete steps too, including the construction of new sewage treatment plants and a cross-border Israeli/Jordanian "Peace Park" (Mehyar, Khateeb and Bromberg 2009, 29).

These projects help to engage the local stakeholders and 'consumers' of the Jordan River. Their collaborative nature has provided a forum for increased understanding between peoples from three of the River's riparians. This work sets the stage for the creation of a more inclusive Joint Commission, much like the IJC, that would take into account the concerns of newly empowered local stakeholders into a decision-making process that could more effectively guide the development of the River. These kinds of steps are of vital importance because a benefits sharing model would be impossible without an organized body, perceived as fair and inclusive by all stakeholders that could actively plan the optimal outcome for the development of the Jordan River.

The final and most concrete hopeful sign is the planning of a joint development project between Israel and Jordan, called the Red Sea-Dead Sea Canal Project. The plans for the project arose directly from the provisions of the 1994 peace treaty signed between Israel and Jordan. The plan's general outline came from a project originally proposed in the 1980's as a unilateral Israeli project called the Mediterranean Sea-Dead Sea project, meant to generate electricity by dropping water diverted from the Mediterranean Sea more than 400m into the Dead Sea. However, Jordan objected to the project because of the potential rise in the water level of the Dead Sea, and the project was shelved for this reason and financial considerations (Wolf 1995, 163). The project was revived as a result of the Peace Treaty as a bilateral project. Dr. Munther J. Haddadin, the Jordanian author of the original "Red-Dead" project plans, head of the Water Resources Working Group of the bilateral peace negotiations and co-author of the text of the treaty, originally created the plan to connect the Red Sea with the Dead Sea "to compete with the Israeli project" (Dr. Munther Haddadin, personal interview). Dr. Haddadin says that as head of the committee discussing water issues during the bilateral negotiations, he added the Red-Dead project to the committee's agenda and left it there "until the Israelis were ready to talk about it" (Dr. Munther Haddadin, personal interview). Both sides eventually agreed during the course of negotiations to work on the project jointly in the future.

The project's main goal is procuring desalinized water for Jordan and Israel as well as Palestine, and secondarily to restore the water level elevation of the fast-shrinking Dead Sea, which fell from -399m in 1976 to -420m in 2006. The level continues to drop by about 1m per year, mainly due to the use of its water as running water as well as extractions by the phosphate, potash, bromine and magnesium chemical industries. This rapid drop in water level causes severe environmental damage to the area, including the sudden appearance of large sinkholes, change in the microclimate, and the leakage of freshwater resources into the Dead Sea because of the resulting pressure difference (Haddadin 2008). The plans consist of a sea intake and pumping station at the port of Aqaba, then a pressure pipeline that will transmit the water to the higher elevation of the mountains between the Red Sea and Dead Sea. From there, the conveyance system will transmit the water over the mountains to the Dead Sea, where desalination plants will use the electricity generated by the drop in elevation and the process of 'hydrostatically supported reverse osmosis' to desalinate seawater. The rejected concentrates will enter the Dead Sea, and

freshwater will be transmitted to Jordan, Israel and Palestine in previously agreed-upon allocations (Beyth 2007, 364-370).

The Red-Dead project is currently in the feasibility study stage. Both countries requested help from the World Bank to finance the project, acting for both parties, as the employer of the companies that would complete the feasibility studies and the construction work itself (Haddadin 2008). The World Bank agreed, and conducted a pre-feasibility study with positive results. In May 2008 the World Bank published the tenders for two parallel feasibility studies: one to study the technical and economic feasibility of the project, and the other to study the environmental impact. According to the World Bank, the study program should be complete in June 2011(The World Bank, "Red Sea-Dead Sea Water Conveyance Study Program").

This development may be the most hopeful of all three, because it represents concrete, cooperative steps that are being taken by the two riparians to develop the Dead Sea, the terminal point of the Jordan River. Israel and Jordan have recognized that each benefits highly from the extractive and tourism industry surrounding the Dead Sea, and that each side stands to reap substantial loses if the environmental degradation of the Dead Sea is allowed to continue unabated. Furthermore, both riparians have recognized that they stand to benefit through an increased supply of freshwater if both cooperate on a development project and share the benefits. The negotiation process and construction of the Red Sea-Dead Sea canal project could serve as a model for future development projects that would gradually become part of a broader benefits sharing system to maximize the Jordan River's potential.

The Red-Dead project also represents a potential turning point in that it has received substantial funding form the World Bank, an international financial institution. This is a small step against the historical trend in which hydro-hegemons have use financial institutions and other international organizations to withhold support from weaker riparians who wish to develop their own portion of a river's resources. The difference here of course is that Israel, the Jordan River basin's hydro-hegemon, is a willing player in this project. However, the missing component in the Jordan River basin, and one that has played a large role in maintaining the static power structures in this basin, is the support of the international community for a benefits sharing model. In Chapter 2, I showed that the international community plays a vital role in ensuring that Israel is able to exercise its power as a hydro-hegemon. It does this most directly by serving as a coercive resource that traditionally refuses to support any efforts that weaker riparian states make towards developing water resources within their own borders. However, the Nile River case study shows that having an outside supporter like China may push the basin's hydro-hegemon towards a more equitable system of planning development projects, like the NBI, which points the way towards a more sustainable, long-term benefits sharing model.

Future Significance

The struggle that many international river basin riparians are having globally today, to create a more fair and equitable system of managing transboundary freshwater basins, will have huge implications for the future of international security and development. As the world's population continues to grow, and human actions continue to have terrible degrading environmental impacts, more and more people will have to make do with less and less water. Political scientists have long predicted that this perfect Malthusian storm will inevitably lead to violent international conflict, and that 'water wars' will be the new face of international security. Environmental issues are becoming more relevant to government officials, political scientists, scientists and everyday people, as they realize the incredible impact that environmental degradation will have on economic development, international security and the very well-being of every individual living in the world.

No issue is more relevant than access to water, the very input that sustains life, that is interwoven into countless religious rituals, that is vital to agriculture and industry alike, and that quite simply has no substitute. Potential conflict between river riparians has a direct bearing on many of the major problems that the international community faces in the 21st century. Future water conflict could pose a huge risk to international security, particularly to the United States. A War between Israel and Jordan for example, to important US strategic allies, would be a huge blow to US foreign policy; similarly, internecine conflict in Africa or the Middle East over water resources could lead to the existence of failed states, breeding terrorism and drug trafficking. Conversely, cooperation between riparians could

provide an important means of managing and mitigating the impacts of climate change in both the developed and the developing worlds. In terms of economic growth and development, the water of many transboundary rivers serves as a vital input to agriculture and industry, especially in the developing world; thus, cooperation between riparians could help spur major growth in individual and national incomes. Finally, cooperation between riparians over pollution issues could help to solve the health problems and diseases that come from consuming dirty water.

As water becomes an increasingly securitized issue, devastating water wars do indeed seem as if they are more likely. However until now most political scientists have failed to take into account the incredibly important and complex power relations that exist in some of the world's most contentious international river basins. Including these dynamics in the equation allows us to see that power dynamics play an essential role in the conflict and cooperation that exist simultaneously in most transboundary basins. Keeping in mind a careful analysis of how these dynamics play out in each river basin, political scientists, organization experts and government officials will not only be able to truly understand the current dynamics of these river basins, it will also allow them to explore new methods of shaking up static power relations and creating fairer and more balanced international commissions that will able to oversee more stable, sustainable, and most importantly equitable outcomes in transboundary river basins around the globe.

Sources Cited

Al Anani, Dr. Jawad. Interview. 11/12/08, 4:00 PM

Allee, David J. 1993. "Subnational Governments and the International Joint Commission: Local Management of United States and Canadian Boundary Waters," *Natural Resources Journal.* 133-151.

Amare, Girma. 26 June 2000. "Nile Waters–Hydrological Cooperation Vs Hydropolitics, Paper Presented by Girma Amare to the VIII Nile Conference," http://chora.virtualave.net/girma-nile.htm (Accessed Dec 15, 2009).

Aquastat, "Egypt," Food and Agriculture Organization of the United Nations. http://www.fao.org/nr/water/aquastat/countries/egypt/index.stm. (Accessed Dec 13, 2009).

The Avalon Project. "Israel-Jordan Peace Treaty Annex II Water Related Matters; October 26, 1994," Yale Law School Lillian Goldman Law Library. http://avalon.law.yale.edu/20th_century/jordan_treaty_annex2.asp (Accessed Nov 22, 2009).

BBC. 2005. "Nile Restrictions Anger Ethiopia" http://news.bbc.co.uk/2/hi/africa/4232107.stm (Accessed Dec 15, 2009).

BBC. 10 June 2003. "Talking Point: Ask Boutros Boutrso Ghali," http://news.bbc.co.uk/2/hi/talking_point/2951028.stm (Accessed Dec 13, 2009).

BBC. 6 May 2002. "US Expands 'Axis of Evil,'"

http://news.bbc.co.uk/2/hi/1971852.stm (Accessed 26 April, 2010).

Becker, Mimi Larson. 1993. "International Joint Commission and Public Participation: Past Experiences, Present Challenges, Future Tasks," *Natural Resources Journal* 33. 235-237.

Beyth, Michael. June 2007. "The Red Sea and the Mediterranean-Dead Sea Canal Project." Elsevier B. V.: Geological Survey of Israel. http://www.elsevier.com/locate.desal. (Accessed Nov. 7 2008)

Cascao, Ana Elisa. 2009. "Changing Power Relations in the Nile River Basin: Unilateralism vs. Cooperation?"*Water Alternatives* 2, no: 2. 245-268.

Cascao, Ana Elisa. 2008. "Ethiopia- Challenges to Egyptian Hegemony on the Nile Basin," *Water Policy* 10,

Supplement 2. 13-28.

Center for Columbia River History, "Columbia River History," http://www.ccrh.org/river/history.php (Accessed March 23, 2010).

Central Intelligence Agency, "Egypt," *The World Factbook.* https://www.cia.gov/library/publications/the-world-factbook/geos/eg.html (Accessed Dec 13, 2009).

Central Intelligence Agency, "Israel," *The World Factbook,* https://www.cia.gov/library/publications/the-world-factbook/geos/is.html (Accessed Oct 22, 2009).

Central Intelligence Agency, "Jordan," *The World Factbook*, https://www.cia.gov/library/publications/the-world-factbook/geos/jo.html (Accessed Oct 22, 2009).

Central Intelligence Agency, "Lebanon," *The World Factbook,* https://www.cia.gov/library/publications/the-world-factbook/geos/le.html (Accessed Oct 22, 2009).

Central Intelligence Agency, "Sudan," *The World Factbook.* https://www.cia.gov/library/publications/the-world-factbook/geos/su.html (Accessed Dec 13, 2009).

Central Intelligence Agency, "West Bank," *The World Factbook,* https://www.cia.gov/library/publications/the-world-factbook/geos/we.html (Accessed Oct 22, 2009).

The Chicago Council on Global Affairs. 2009. "Renewing American Leadership in the Fight Against Global Hunger and Poverty," Independent Leaders Group on Global Agricultural Development. Catherine Bertini and Dan Glickman, co-chairs.

Cohen, Stewart J., Rob de Loe, Alan F. Hamlet, Ross Herrington, Linda D. Mortsch, and Dan Shrubsloe. 2004. "Integrated and Cumulative Threats to Water Availability." *Threats to Water Availability in Canada.* National Water Research Institute. Ontario: Environment Canada.

Conca, Ken. 2006. "Swimming Upstream: In Search of a Global Regime for International Rivers," In *Governing Water: Contentious Transnational Politics and Global Institution Building.* Ed. Ken Conca. 93-122. Cambridge: The MIT Press.

Congressional Budget Office, "Monthly Budget Review, October, Fiscal Year 2009," www.cbo.gov/ftpdocs/106xx/doc10640/10-2009-MBR.pdf (Accessed February 24, 2010).

Dinar, Shlomi. 2002. "Water, Security, Conflict, and Cooperation," *SAIS Review* 22, no:2. 229-253.

Dombrowsky, Ines. 1998. "The Jordan River Basin: Prospects for Cooperation Within the Middle East Peace Process?" In "Water in the Middle East: Potential for Conflicts and Prospects for Cooperation." Ed. Waltina Scheumann and Manuel Schliffler. 91-111. Berlin: Springer.

The Economist. April 2009. "Water Rights: Awash in Waste."Vol. 391 Number 8626, 11th-17th.

El-Naggar, Ahmad Al-Sayed. 2009. "U.S. Aid to Egypt: The Current Situation and Future Prospects," *Carnegie Endowment for International Peace* http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=23282 (Accessed Dec 13, 2009).

Executive Office of the President of the United States, "Department of Defense," http://www.whitehouse.gov/omb/rewrite/budget/fy2008/defense.html (Accessed April 21, 2010).

Fischhendler, Itay. 2004. “Legal and Institutional Adaptation to Climate Uncertainty: A Study of International Rivers”, *Water Policy* 6. 281-302.

Fischhendler, Itay. 2008. “When Ambiguity in Treaty Design Becomes Destructive: A Study of Transboundary Water,” *Global Environment Policy* 8, no:1. 111-136.

Frey, Fredrick W. 1993. “The Political Context of Conflict and Cooperation Over International River Basins,”*Water International* 18, no:1. 54-68.

Friends of the Earth Middle East, “Projects-Good Water Neighbors,” http://www.foeme.org/projects.php?ind=32 (Accessed April 13, 2010)

Friends of the Earth Middle East, “Project-Jordan River,” http://www.foeme.org/projects.php?ind=23 (Accessed April 12, 2010)

Grey, David, Claudia Sadoff and Genevieve Connors. 2009. “Effective Cooperation no Transboundary Waters: A Practical Perspective.” In *Getting Transboundary Water Right: Theory and Practice for Effective Cooperation.* Ed. Jagerskog, A. and Mark Zeitoun. 15-20. Stockholm: Stockholm International Water Institute.

Gulden, Timothy M. 1987. “Transfrontier Pollution and the International Joint Commission: A Superior Means of Dispute Resolution,” *Southwestern University Law Review* 17. 43-64.

Haddadin, Munther J. 2008. “A Brief on Environmental Concerns on the Red Sea-Dead Sea Linkage.” Presented at The Royal Scientific Society, 8/11/08. Unpublished.

Haddadin, Dr. Munther J. 2002. *Diplomacy on the Jordan: International Conflict and Negotiated Resolution.* Dordrecht: Kluwer Academic Publishers Group.

Haddadin, Dr. Munther J. 2008. “Integrated Development of the Jordan Rift Valley; A Brief Note by Dr. Munther J. Haddadin, BSCE, M.sc, Ph.D.” Unpublished.

Haddadin, Dr. Munther J. Personal interview. 11/22/08, 10:30 AM.

Hamlet, Alan F. 2003.“The Role of Transboundary Agreements in the Columbia River Basin,” In *Climate and Water,* ed. Henry F. Diaz and Barbara J. Morehouse, pp.263-289, Dordrecht: Kluwer Academic Publishers.

Homer-Dixon, Thomas F. 1993. *Environmental Scarcity and Global Security*. New York: The Foreign Policy Association.

International Joint Commission, “Annual Report for 2008: Boundary Waters Treaty Centennial Edition, 2008. www.ijc.org/php/publications/pdf/ID1629.pdf (Accessed March 22, 2010).

IRIN. 2009. “LEBANON: Climate change and politics threaten water wars in Bekaa,” UN Office for the Coordination of Humanitarian Affairs. http://www.irinnews.org/Report.aspx?ReportId=82682 (Accessed Nov 22, 2009).

Israel Ministry of Foreign Affairs, “240 Statement in the Knesset by Prime Minister Rabin on the Israel-Jordan Peace Treaty- 25 October 1994,” http://bit.ly/ewktAh (Accessed Nov 22, 2009).

Israel Ministry of Foreign Affairs. 1994.“255 Israel-Jordan Statement on the Establishment of Diplomatic Relations-27 November 1994,” http://www.mfa.gov.il/MFA/Foreign%20Relations/Israels%20Foreign%20Relations%20since%201947/1992-1994/255%20Israel-Jordan%20Statement%20on%20the%20Establishment%20o (Accessed Nov 22, 2009).

Israel's Ministry of Foreign Affairs. 2002. "Israel's Chronic Water Problem," http://www.mfa.gov.il/MFA/Facts%20About%20Israel/Land/Israel-s%20Chronic%20Water%20Problem (Accessed Oct 27, 2009).

Israel Ministry of Foreign Affairs, "Israel's Water Economy: Thinking of Future Generations," http://www.mfa.gov.il/MFA/MFAArchive/2000_2009/2002/8/Israel-s%20Water%20Economy%20-%20Thinking%20of%20future%20genera (Accessed April 13, 2010).

Jackson, Robert B. and Stephen R. Carpenter, Clifford N. Dahm, Diane McKnight, Robert J. Naiman, Sandra L. Postel, and Steven W. Running. 2001. "Water in a Changing World," *Ecological Applications* 11, no:4. Ecological Society of America. 1027-1045.

Jimma Times. 2009. "Newsweek: Egypt blocking Ethiopia funding for Nile projects,"http://www.jimmatimes.com/article/Latest_News/Latest_News/Newsweek_Egypt_blocking_Ethiopia_funding_for_Nile_projects/32811 (Accessed Dec 15, 2009).

Jordan Business. September 2008. "In Troubled Waters,". http://www.jordan-business.net/magazine/index.php?option=com (Accessed Oct 16, 2008).

Kistin, Elizabeth. 2009. "Qualifying Cooperation Over Transboundary Water." Unpublished.

Lemarquand, David. 1993. "International Joint Commission and Changing Canada-United States Boundary Relations," *Natural Resources Journal* 33, 1993. 59-91.

Nitze, William A. "Outlook for the Environment: Water Management," In *The Future of North America, 2025: Outlook and Recommendations*. Ed. Armand B. Peschard-Sverdrup. 56-83. Washington, DC: Center for Strategic and International Studies, 2008.

Lowi, Miriam. 1993. *Water and Power*. Cambridge: Cambridge University Press.

McArthur, Shirl. Washington Report on Middle East Affairs. Nov 2008. "A Conservative Estimate of Total Direct U.S. Aid to Israel: Almost $114 Billion," Congress Watch. 10-11. http://wrmea.org/component/content/article/245-2008-november/3845-congress-watch-a-conservative-estimate-of-total-direct-us-aid-to-israel-almost-114-billion.html (Accessed Oct 23, 2009).

Mehyar, Munqueth and Nader Khateeb, Gidon Bromburg. "Cooperation in a Troubled Region- The FoEME Experience from the Jordan River Basin" 2009. In "Effective Cooperation no Transboundary Waters: A Practical Perspective." *Getting Transboundary Water Right: Theory and Practice for Effective Cooperation.* Ed. Jagerskog, A. and Mark Zeitoun. 27-30. Stockholm: Stockholm International Water Institute.

Mongabay, "National Security-Sudan," http://www.mongabay.com/reference/new_profiles/2007.html (Accessed Dec 14, 2009).

Muckleston, Keith W. 2003. "International Management in the Columbia River System," UNESCO: Technical Documents in Hydrology, UNESCO-IHP, PCCP Series Publication, 47. http://www.unesco.org/water/wwap/pccp/case_studies.shtml (Accessed February 24, 2010).

Nile Basin Initiative, 2009. "Annual Report: January-December, 2008," Entebbe, Uganda: Nile Basin Initiative Secretariat.

Postel, Sandra and Aaron T. Wolf. Sept-Oct 2001. "Dehydrating Conflict," *Foreign Policy*, no: 126. 60-67.

Renger, Jochen. 1998. "The Middle East Peace Process: Obstacles to Cooperation Over Shared Waters." Waltina

Scheumann and Manuel Schliffler. "Water in the Middle East: Potential for Conflicts and Prospects for Cooperation." 47-55. Berlin: Springer.

Reuters, "Water Scarcity Clouds California's Farming Future," March 13, 2009. http://www.reuters.com/article/idUSTRE52C07R20090313 (Accessed February 24, 2010).

Saleh, Saleh M. K. 2008. "Hydro-hegemony in the Nile Basin: a Sudanese perspective," *Water Policy* 10, Supplement 2. 29-49.

Salman, M. and W. Muwalla, 2008. "Water Demand Management in Syria: Centralized and Decentralized Views," *Water Policy* 10, no:6. 549–562

Selby, Jan. 2003. "Dressing Up Domination as 'Cooperation:' The Case of Israeli-Palestinian Water Relations", *Review of International Studies* 29, no:1. Cambridge University Press. 121-138.

Shapir, Yiftah S. and Shlomo Brom. 2008. "Chapter 4, The Middle East Strategic Balance 2007-2008," Mark A. Heller. Tel Aviv: The Institute for National Security Studies.http://www.inss.org.il/publications.php?cat=23&incat=&read=1898 (Accessed Dec 13, 2009).

Shlaim, Avi. 2001. *The Iron Wall: Israel and the Arab World.* New York: W.W. Norton and Company.

Sultan, Mr. Abdel Rahman. Interview. Project Manager: Friends of the Earth, Middle East. Wednesday, November 12, 2008, 9:00 AM.

Tadesse, Debay. 2008. "The Nile: is it a curse or blessing?" Institute for Security Studies Working Paper. http://www.isn.ethz.ch/isn/DigitalLibrary/Publications/Detail/?ots591=0C54E3B3-1E9C-BE1E-2C24-A6A8C7060233&lng=en&id=98958 (Accessed May 23, 2009).

Tafesse, Tesafaye. 2001. *The Nile Question: Hydropolitics, Legal Wrangling, Modus Vivendi and Perspectives.* Berlin: Lit Verlag.

Tamir, Nadiv. Speech: Wellesley College, 2/24/10.

Tarlock and Wouters, 2007. "Are Shared Benefits of International Waters and Equitable Apportionment?" *Colorado Journal of International Environmental Law* 18, no. 3. 523-536.

Toope and Brunnee 1998, "Freshwater Regimes: The Mandate of the International Joint Commission," *Arizona Journal of International and Comparative Law.* 274-287.

Ullendorff, Edward. 1967. " The Anglo-Ethiopian Treaty of 1902,"

Bulletin of the School of Oriental and African Studies, University of London 30, No: 3, Cambridge University Press on behalf of School of Oriental and African Studies, 641-654. http://www.jstor.org/stable/612393 (Accessed Dec 13, 2009).

United Nations Development Programme. 2006. *Summary: Human Development Report 2006; Beyond Scarcity: Power, Poverty and the Global Water Crisis.* New York: UNDP.

United Nations Development Programme, "Canada," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_CAN.html (Accessed February 28, 2010).

United Nations Development Programme, "Egypt," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/data_sheets/cty_ds_EGY.html (Accessed Dec 13, 2009).

United Nations Development Programme, "Ethiopia," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/data_sheets/cty_ds_ETH.html (Accessed Dec 15, 2009).

United Nations Development Programme, "Israel," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_ISR.html (Accessed Oct 27, 2009).

United Nations Development Programme, "Jordan," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_JOR.html (Accessed Nov 22, 2009).

United Nations Development Programme, "Occupied Palestinian Territories," *2009 Human Development Report,* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_PSE.html, (Accessed Nov 22, 2009).

United Nations Development Programme, "Sudan," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_SDN.html (Accessed Dec 14, 2009).

United Nations Development Programme, "Syria," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_SYR.html (Accessed Nov 22, 2009).

United Nations Development Programme, "United States," *2009 Human Development Report.* http://hdrstats.undp.org/en/countries/country_fact_sheets/cty_fs_USA.html (Accessed February 28, 2010).

United States Agency for International Development, 2008. "The Water Crisis in Jordan." Amman, Jordan: USAID Economic Development Program.

Waterbury, John. 2002. *The Nile Basin: National Determinants of Collective Action*, New Haven: Yale University Press.

Wolf, Aaron T., Shira B. Yoffee and Mark Giordano. 2003. "International Waters: Identiying Basins at Risk,"*Water Policy* 5. 29-60.

Wolf, Aaron T. 1998. "Conflict and Cooperation Along International Waterways," *Water Policy* 1, no:2. 251-265.

Wolf, Aaron T. 1995. "Hydropolitics Along the Jordan River: Scarce Water and Its Impact of the Arab-Israeli Conflict." Tokyo: United Nations University Press.

Wolf, Aaron T. 1999. "The Transboundary Freshwater Dispute Database Project," *Water International* 24, no:2. 160-163.

The World Bank, "NBI Overview." http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTREGINI/EXTAFRNILEBASINI/0,,contentMDK:21076155~menuPK:2960065~pagePK:64168445~piPK:64168309~theSitePK:2959951,00.html (Accessed Dec 15, 2009).

The World Bank, "Red Sea-Dead Sea Water Conveyance Study Program." http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/EXTREDSEADEADSEA/0,,contentMDK:21827416~pagePK:64168427~piPK:64168435~theSitePK:5174617,00.html (Accessed April 13, 2010).

The World Bank. 2009. "Assessment of Restrictions on Palestinian Water Sector Development," http://www wds.worldbank.org/servlet/main?menuPK=64187510&pagePK=64193027&piPK=64187937&theSitePK=523679&entityID=000333037_20090630003234 (Accessed Nov 22, 2009).

World Trade Organization, "Country Trade Profile: Canada," 2010. http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=CA (Accessed February 28, 2010).

World Trade Organization, "Country Trade Profile: United States," 2010. http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=US (Accessed February 28, 2010).

Zeitoun, Mark. 2008. *Power and Water in the Middle East.* London: I.B. Tauris.

Zeitoun, Mark and Anders Jägerskog. 2009. "Confronting Power: Strategies to Support Less Powerful States." in *Getting Transboundary Water Right: Theory and Practice for Effective Cooperation.* Ed. Jägerskog, A. and Mark Zeitoun. 19-13. Stockholm: Stockholm International Water Institute.

Zeitoun, Mark and J.A. Allan. 2008. "Applying hegemony and power theory to transboundary water analysis,"*Water Policy* 10, Supplement 2. 3-13.

Zeitoun, Mark and Jeroen Warner. 2006. "Hydro-hegemony – a framework for analysis of trans-boundary water conflicts," *Water Policy* 8, No:5. 435-460.

Zeitoun Mark and Melvin Woodhouse. 2008. "Hydro-hegemony an International Water Law: Grappling with the Gaps of Power and Law," *Water Policy* 10, Supplement 2. 103-119.

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