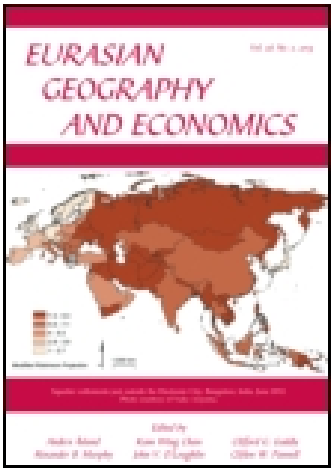

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The Geographical Dimensions of Hydro-politics: International Freshwater in the Middle East, North Africa, and Central Asia

Shlomi Dinar [a]
[a] Florida International University
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The Geographical Dimensions of Hydro-politics: International Freshwater in the Middle East, North Africa, and Central Asia

Shlomi Dinar[1]

Abstract: A U.S.-based political scientist specializing in the complexities of international freshwater basins considers the role of two fundamental factors (geography and relative power) in the study of hydro-politics. Conventional analyses claim that in asymmetric contexts the more powerful state (in relative power terms) is able to dictate the status quo. Arguing, however, that such traditional (and even some critical) analyses tend to downplay the importance of geography, the author investigates how a state's physical position along a river may provide an otherwise weaker riparian state the means to challenge the status quo. The paper considers three cases (Tigris-Euphrates, Nile, and Aral Sea basins) with lessons for the study of power in hydro-politics. *Journal of Economic Literature*, Classification Numbers: F500, F530, O180, Q250. 3 figures, 135 references. Key words: hydro-politics, freshwater basin, river basin, water scarcity, water allocation, hydropower, flood, military and economic power, upstream-downstream conflict, Tigris-Euphrates, Nile, Aral Sea, Syr Darya, Amu Darya, Turkey, Syria, Iraq, Egypt, Sudan, Ethiopia, Uzbekistan, Kyrgyzstan.

INTRODUCTION

The field of hydro-politics (politics of water) has received much attention in the past two decades from policymakers as well as scholars. Because river basins, lakes, and aquifers are in many instances internationally shared, disciplines such as international relations, political science, geography, and international law have made important contributions to the field. Studies have consisted of investigations of individual basins, comparative analyses across basins, as well as large-*n* empirical work utilizing socio-political and more technical systematic and cross-national data. Overall, the trend is to investigate inter-state conflict and cooperation within river basins with significance for national, regional, and international security.[2]

International and regional security can be compromised not only as nations conflict over the control and management of diminishing water resources but also as negotiations over the allocation and use of water break down. The characteristics that make water a source of strategic rivalry include: (1) the degree of scarcity, mismanagement, and misallocation of water in various regions and the importance of water to a particular nation; (2) the protracted conflict

[1]Associate Professor, Department of Politics and International Relations and Director, Middle East Society, Florida International University, AC 1 314, 3000 NE 151st Street, North Miami, FL 33181 (dinars@fiu.edu). I am grateful to the Smith Richardson Foundation, which supported part of the research for this paper, and to Nancy Thorwardson, Institute of Behavioral Science, University of Colorado, for producing the maps.

[2]For a review of many of these writings, see Dinar and Dinar (2003). For some recent examples of large-*n* studies, see Zawahri et al. (2011) and the various other studies cited and referenced in the special section.

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that underlies the water dispute; (3) the historical and political claims made by each country over the water; and (4) the relative power of the parties (see Gleick, 1998, p. 4).

While the intensity of these factors and their interaction influence the degree of water conflict and the subsequent security environment, the relative power of the parties shapes the power dynamic within the river basin and the hydrological regime that governs the basin's river. In addition to the relative power configuration within the basin, another important factor for understanding conflict and cooperation is the geographic location of the respective riparian states, and specifically their upstream or downstream location (LeMarquand, 1977). Interestingly, while both relative power and geography have been considered jointly by analysts as two fundamental factors in the context of hydro-politics (Naff and Matson, 1984, p. 144; Gleick, 1993, pp. 84–85; Naff, 1994, p. 278; Allan, 2000, p. 225), geography has been overlooked or given less attention. Lowi (1993, p. 169), for example, argues that militarily and economically weak states must often accept the hydro-political status quo imposed by the stronger states because the weak state has little recourse.[3] Utilizing realist arguments, Tir and Ackermann (2009, p. 627) suggest that powerful states have the capacity to extract concessions from weaker countries, including in the context of international rivers. Citing Elhance (1999), the authors further claim that a preponderant state (or hegemon) can force a weaker state into signing a treaty that allocates most of the benefits to the powerful state. In some cases, entire interdisciplinary research programs have been devised on the premise that political power is often asymmetrically distributed in transboundary freshwater contexts whereby the most powerful state is able to determine the outcome of interactions (Zeitoun and Warner, 2006, p. 436). While the existence of a so-called "hydro-hegemony" or preponderant relative power can be observed in international river basins, a focus on brute hegemonic power obscures an evolving and important counter-hegemonic trend. To be fair, the hydro-hegemony school of thought has recognized that "counter-hegemonic tactics and strategies form the basis of an interesting body of literature" (Zeitoun and Allan, 2008, p. 10). This body of literature (e.g., Phillips et al., 2006; Dauody, 2009) is also complemented by the more general negotiation and bargaining literature that considers the "issue-specific power" countries may exercise as opposed to just "aggregate power" or brute power (Habeeb, 1988, pp. 18 and 145; Dupont and Faure, 1991, p. 41; Kremenyuk and Lang, 1993, pp. 8 and 9; Hopmann, 1998, p. 107; Zartman and Rubin, 2000, pp. 289). It is the goal of this paper to contribute to this body of work by highlighting how the geographic position of a seemingly weak state along a river basin is often a foundation for its ability to either level the playing field or challenge the status quo.

This investigation does not deny the importance of military and economic power. In fact, it describes and explains the history of river basin interaction by considering the interlinkages between geography and brute power. However, the paper scrutinizes the geographical component in more detail, believing it has been under-considered in the field of hydro-politics, especially as it relates to power. Recent geopolitical shifts in particular basins provide an opportune context and "testing ground" whereby geography's import in analyzing hydro-politics may be better highlighted. As the paper makes clear, this is most apparent (and instructive) in cases where a militarily and economically weaker state is in the upstream position and has, generally, benefitted much less from the status quo dictated by the more powerful downstream state.

[3]Citing the scenario of a downstream state with superior military, economic, and political power, Lowi argues that upstream states are unlikely to engage in actions that could provoke hostile responses downstream (1999, p. 382).

By limiting its focus to geography and relative power, this paper does not intend to suggest that other variables are unimportant for understanding conflict and cooperation along international rivers or the power dynamics within a basin. There exists a rich literature on hydro-politics, which has considered other relevant factors such as scarcity (Dinar, 2009b), the dependence of the respective riparians on the water source (Espey and Towfique, 2004), the protracted conflict underlying the water dispute (Lowi, 1993), domestic politics (Giordano et al., 2002; Pachova et al., 2008), international mediators as well as river basin organizations (Browder, 2000; Zawahri, 2009; Gerlak and Grant, 2009), epistemic communities and constructed knowledge (Blatter, 2001), the type of government of the basin countries (Gleditsch et al., 2006), and the level of interdependence and institutionalization among the riparian states in a given basin (Brochmann and Hensel, 2011; Dinar et al. 2011; Zawahri and Mitchell, 2011). Recognizing these important issues, the paper nonetheless chooses to focus on the two variables that have been suggested as primary for analyzing hydro-politics in otherwise conflicting and asymmetric contexts. As suggested above, the aim of this very exercise is to provide additional examination of the geographic component and its relevance for power, asymmetry, and bargaining in international river basins. The arguments presented here thus attempt to show how geographic arrangements shape political developments in international river basins. Along the lines of what Murphy and O'Loughlin (2009) describe as regional geography, this paper investigates how a given geographical context may explain the evolution of hydro-politics in specific regions. However, the approach presented here does not claim that geographical location is deterministic. As suggested above, other variables are also important for explaining conflict and cooperation over international rivers as well as conceptualizing power in particular contexts. Yet, the purpose of this investigation is to challenge realist scholars as well as other analysts that have placed great focus on military and economic capabilities while overlooking the role of location in inter-basin affairs. Such a narrow theoretical focus has suggested that regional hydro-politics are static and shaped by the whims and desires of the strongest riparian. This paper, however, contends that by better understating the role geography plays in hydro-politics, explaining change becomes more feasible.

The paper's theoretical argument is presented below, followed by three case studies analyzing the Tigris-Euphrates, the Nile Basin, and the Aral Sea Basin. The case studies were chosen due to: (a) their current relevance for the field of hydro-politics; (b) the level of mismanagement, scarcity, and/or tension associated with the shared water source; and (c) each basin's unique geographical (as well as military and economic) characteristics. While all three case studies demonstrate the interplay of geography and relative power, the last two cases reveal the specific import of geography despite the superior power capabilities certain states may possess.

GEOGRAPHY AND RELATIVE POWER IN INTERNATIONAL RIVER BASINS

The physical geography of a river basin comprises its morphology, hydrology, climatalogy, and ecology, which together determine the physical parameters of its catchment and drainage area as well as the periodicity, amount, and rate of flow of precipitation (Elhance, 1999, p. 15). To a large extent, and most relevant for this particular discussion, physical geography pertains to river flow direction and the riparian structure of the basin. In the basins studied here, the river crosses through several countries, creating upstream and downstream states. In cases where there are more than two countries, mid-stream riparains also exist. In sheer geographical terms, the upper riparian is the most powerful. All things being equal, geographical advantage confers upon the upstream riparian the power to alter the quantity

and quality of the water by such tactics as diversion and contamination of the water flowing downstream, thus affecting the other riparian states (Amery and Wolf, 2000, p. 6).[4]

Physical geography also plays a role in formulating the bargaining positions of the riparians and shapes, to a large extent, the degree of similarity or difference of interests and capabilities among parties as well as their foreign policy considerations (Waterbury, 1994, pp. 36–64; Dolatyar and Gray, 2000, p. 7). In the case of the upstream-downstream situation, what is witnessed is the elaboration of two fundamental bargaining positions with important consequences for hydro-political relations, conflict, and cooperation. This distinct division has also allowed the involved parties to favor particular legal frameworks to argue their case. Specifically, upstream riparians often do not wish to alter the status quo if they are benefitting from the existing hydro-political regime. The same cannot be said for downstream nations. If the conditions in the basin do not benefit downstream riparians, and if the upstream nations are involved in creating or prolonging such unfavorable conditions, downstream riparians will attempt to alter the regime. In general, upstream countries argue in favor of their right and sovereignty to utilize the waters that originate in their territory. Downstream countries often utilize the principle of "acquired rights," claiming that they have been first to develop and utilize the basin's water relative to the other parties. Downstream states often utilize such principles as "appreciable (or significant) harm"—claiming that the upstream country cannot utilize the basin's water and cause harm to downstream countries. As the principle of "equitable and reasonable utilization" is broad and ambiguous, both upstream and downstream countries often find supporting clauses for their claims inherent in this principle. Still, upstream states that have generally not benefitted from the status quo and have not been able to utilize the river's water often make use of the principle of "equitable and reasonable utilization." Although these principles have been developed throughout time and are codified in several conventions, declarations, and statements, the most recent official international legal document to include both tenets as well as other legal clauses is the 1997 UN Convention on Non-navigational Uses of International Watercourses (United Nations, 1997).[5]

While an upstream location translates into geographical power, geography does not operate in a vacuum. Just because a nation is farthest upstream on a river does not mean that it can dictate the hydro-political regime of the basin. Therefore, it should be emphasized that geography is a conditioning rather than a determining factor. As Spykman attests, "the geography of a country is rather the material for, than the cause of its policy" (1938, p. 30). Military and economic power (or brute power) also play an important role. Such projectable power allows a country to impose its will on its rivals at whatever distance necessary, enabling it to influence their behavior on water issues. Such power allows an actor to shape the behavior of competing users or enforce change in the behavior of others (Naff, 1994, p. 278). If military and economic power is concentrated in states in less favorable locations on the basin, these states may still be able to dictate the basin's hydro-political regime (Waterbury, 1994, p. 43). Consequently, a country that is both the upstream riparian and the hegemon in the basin is most likely to be the country that dictates both the current and future hydro-political regime. If water occupies a large role in the national security agendas of these nations, countries with geographical, military, and economic advantages will tend to be less concerned with the positions of other riparians (Lowi, 1993, p. 10). Conversely, a country that is both

[4]This is reflected in the observation that "whoever controls the upper valley has a distinct strategic advantage as control of the upper valley is necessary in order to control and regulate the water supply" (Spykman and Rollins, 1939, p. 591).

[5]A comprehensive discussion of international water law is beyond the scope of this paper, but for additional readings, see McCaffrey (2001).

the downstream riparian and weak militarily and economically is least able to dictate the basin's hydro-political regime and affect hydro-political change. Nonetheless, and regardless of a country's geographical position, traditional scholars of hydro-politics have summarized the predicament of a militarily and economically weaker state as follows: "since the asymmetry of power is not in its favor, it is not in a position to achieve its aims and satisfy its needs in an optimal fashion. Its capabilities are inferior to those of its adversary. In effect, it has little alternative but to accept a *modus vivendi* dictated by the stronger" (Lowi, 1993, p. 169). In other words, military and economic capabilities are the primary determinant of water resources control and influence in a given basin (Zeitoun and Warner, 2006, pp. 451–452).

Military and economic power, however, only go so far. This is especially discernible when the hegemon is downstream and the current water regime is challenged or subject to renegotiation. In this context, the downstream hegemon (the riparian that has been able to largely dictate the hydro-political regime in the basin) effectively recognizes or is compelled to recognize (perhaps due to international pressure or shifting geopolitical realities in the basin) that the status quo is no longer sustainable. Similarly, downstream hegemons may be challenged by geographic realities even when renegotiation of an existing hydro-political regime is not imminent. Geographic power may also be manifest in the mere consideration of a more efficient future regime.[6]

In all, while the powerful downstream riparian state may be able to manipulate the hydro-political regime using its hegemonic status, it is continuously vulnerable to geographical realities that in certain situations and contexts may be more pervasive than others. Consequently, in the specific context of negotiations over a shared river, upstream states may hold particular bargaining power not available to downstream states (Rangarajan, 1985, pp. 187–188; Clarke, 1991, p. 94). In such cases geography affords otherwise weaker states the material on which to advance counter-hegemonic foreign policies and challenge the status quo.

It is clear from the above theoretical discussion that neither geographic position nor military and economic power alone are sufficient for understanding hydro-political relations in a given basin. It is also clear, however, that power in hydro-politics is fungible and multifaceted. Traditional and realist analysts as well as critical scholars that focus primarily on material power, therefore, under-consider another important component of state capabilities—a riparian state's geographical position along a river. Thus traditional conceptualizations of national power may miss sources of influence critical in specific episodes (Lockhart, 1979, p. 133; Habeeb, 1988, p. 30). As Gottman (1951, pp. 159–160) has argued, hydrographic considerations bind the riparians in an interdependent web and dictate their respective positions, which often conflict. And while the entire hydro-political policy of a state does not derive from its physical location along a river, geography provides the basis for understanding the hydro-political map, the analysis of power and negotiations over shared freshwater, and prospects for hydro-political change.

The section below provides a detailed synopsis of hydro-political relations in three basins. Geographic position in addition to military and economic power are highlighted so as to investigate hydro-political interactions in each basin and the evolving positions and negotiating strategies of the parties. The geographic component is highlighted in the latter two basins (where the weaker states are upstream) as a basis for discussing evolving counter-hegemonic

[6]In other words, when a new basin-wide agreement is assessed for its merit and value, analysts often point to the substantial benefits that can accrue to the parties concerned if all relevant parties are included in a more comprehensive and equitable regime. These economic or hydrological assessments often point to the effectiveness of such newly conceived regimes so long as (otherwise weaker) upstream states are properly included. In part, this line of thinking is related to so-called benefit-sharing initiatives (Phillips et al., 2006; Yu, 2008).

Fig. 1. The Tigris-Euphrates Basin.

strategies and tactics. Counter-hegemonic behavior in the first basin is considered less productive due to the power and geographical dynamic that disadvantages weaker downstream states.

TIGRIS-EUPHRATES BASIN

The Tigris and Euphrates rivers form a basin made up of three main riparian states: Turkey upstream, Syria mid-stream, and Iraq downstream (Fig. 1). Altogether Turkey provides about two-thirds of the combined flow, Iraq about 20 percent, and Syria less than 10 percent (Soffer, 1999, p. 81; Kibaroglu, 2008, pp. 184–185). In addition to being the upstream riparian and the sovereign that generates most of the water that feeds both the Tigris and Euphrates, Turkey also wields the most power, economically and militarily (Waterbury, 1994, p. 54).[7] In addition, whereas Turkey is only partially dependent on the two rivers, for the lower riparians, Syria and Iraq, these resources are of vital importance (Elhance, 1999, p. 140).

Before the collapse of the Ottoman Empire, relations among the three riparians could be characterized as harmonious. None were engaged in major development projects that could have resulted in excessive consumptive utilization of the Tigris-Euphrates basin (Allan, 2000,

[7]With the destruction of Iraq's military infrastructure during the second Gulf War, Turkey has become by far the dominant economic and military power in the basin.

p. 227). Even the inefficient and ineffective development and management practices of the three riparians did not have substantial negative impacts on the quantity and quality of the waters (Kibaroglu and Unver, 2000, p. 312). Although treaties were in place,[8] they had little significance as the riparians were utilizing very small volumes of water at the time and did not need the treaties to resolve disputes. Water became a contentious issue, however, when population numbers began to rise and the three states began to initiate major development projects, utilizing more water.[9] Beginning in the 1960s, both Turkey and Syria unveiled ambitious plans to develop the waters of the Tigris-Euphrates Basin for energy and irrigation purposes. Iraq also announced new schemes for an extension of its irrigated area. Such uncoordinated, supply-led developments directly affected riparian relations and took a toll on the already fragile security environment of the basin. In 1975, for example, Syria impounded a large portion of its spring runoff to fill the reservoir behind its Ath-Thawrah Dam. The flow into Iraq was thereby reduced, creating a severe water shortage for millions of Iraqi farmers. The situation grew tense when airline links between the two countries were severed and both dispatched armed soldiers to their borders. In the end, mediation by Saudi Arabia and the Soviet Union averted war, and Syria released additional water to Iraq (Elhance, 1999, p. 14; Wolf and Hamner, 2000, p. 57).

None of the existing treaties have much import for contemporary interstate relations and hydro-politics. According to Elhance, the only apparent legal regime currently in place in the basin is the Treaty of Friendship and Neighborly Relations between Iraq and Turkey, signed in 1946 (1999, p. 141).[10] The treaty states that Turkey shall consult with Iraq upon the building of any projects upstream and make adjustments such that the needs of both nations are satisfied. The treaty is theoretically still in force; however, by excluding Syria and not specifying how the terms of consultation will be defined or adjudicated, it falls short of providing a legal regime to govern water-sharing in the basin or for resolving disputes among the riparians (Elhance, 1999, p. 141). In an attempt to formalize riparian relations, a Joint Technical Committee (JTC), proposed by Turkey in 1964, was created to study particular legal and technical concerns but fell short of coordinating the development and use patterns of the three states (Kibaroglu and Unver, 2000, p. 318).[11]

The geographic configuration in the Tigris-Euphrates Basin has produced a fairly complex political dynamic. Whereas Turkey officially rejects the principle of "absolute territorial sovereignty," it has asserted its full right to utilize the watercourses in its territory (Zawahri, 2006, p. 1046; Williams, 2011, p. 203). In addition, Turkey claims that there is sufficient water in the basin for all countries to use, and that Syria and Iraq are mismanaging their water. An advantageous geographical position, coupled with relatively large amounts of water and a relatively robust economy, has allowed Turkey to initiate projects that have substantially upset its downstream neighbors. The major project evoking consternation has been the Southeastern Anatolia Development Project (GAP), which envisions the construction of 22 dams and 19 hydroelectric power plants on the Euphrates and Tigris rivers. The purpose of

[8]These included the Treaty of October 20, 1921; the 1923 Treaty of Lausanne; the French-Turkish Convention of 1926; the French-Turkish Protocol of 1929; the 1930 French-Turkish Protocol; and the 1946 Treaty of Friendship and Good Neighborly Relations between Iraq and Turkey (Dolatyar and Gray, 2000, pp. 133 and Kibaroglu and Unver, 2000, p. 313).

[9]Until the mid-1970s Turkey used only about 3 percent of the waters of the Euphrates, Syria nearly 10 percent, and Iraq slightly over 50 percent (Dolatyar and Gray, 2000, p. 135).

[10]Later in this section, I mention two other bilateral accords. However, these were problematic and insufficient, as they were largely narrow in scope and did not comprehensively meet the needs of the lower riparians.

[11]Meetings of the JTC took place only periodically until they were completely suspended in 1992 (Kibaroglu and Scheumann, 2011, p. 294).

GAP has been to develop the agricultural and economic potential of the southeastern region of Turkey, meet Turkey's demand for energy (through the creation of hydroelectricity), and satisfy demand for water in the urban sector.[12] Although GAP has not been fully implemented, it is likely to reduce further the downstream flow of both rivers and affect the quality of water reaching Syria and Iraq (Elhance, 1999, p. 148; Daoudy, 2009, pp. 369–370).

Although Syria and Iraq have developed some water projects of their own, the two countries have claimed that such projects are not sustainable without the release of additional water. Therefore, both countries have sought a comprehensive regime for apportioning the waters of the basin and thus weakening Turkey's hegemony over the Euphrates and Tigris. Both countries have based their claims on the international clause of appreciable harm, which requires states to take steps to refrain from causing harm to other states when using common waters. Iraq has also utilized the international clause of acquired rights, given its historical use of the waters prior to use by Syria and Turkey (Daoudy, 2009, p. 375). Turkey has claimed, however, that simply sharing the waters of the Euphrates and Tigris does not represent a long-term response to water scarcity, nor would it serve the goals of sustainable use and management of available water resources (Kramer and Kibaroglu, 2011, p. 219).

Turkey also differentiates between "transboundary" and "international" rivers. The former crosses a border whereas the latter forms the border for either part or the entire river. Both imply different utilization practices within a basin. Turkey considers the Euphrates to be a transboundary river and, in principle, argues that it has a general right to exploit the river until it reaches Syria (Williams, 2011, p. 203). Turkey also considers the Euphrates and Tigris as part of the same basin, whereas Syria and Iraq prefer to discuss the rivers separately (Turan, 2011, p. 190).[13] Consequently, Turkey has argued that the waters of the Tigris-Euphrates Basin should be allocated according to the needs of the parties within a comprehensive institutional setting, advocating a so-called Three-Staged Plan (Kibaroglu and Unver, 2000, p. 327). It is plausible that Turkey has used the above position to delay a comprehensive rights-based treaty desired by both Syria and Iraq. In any event, Turkey's superior geographic position and military and economic prowess has allowed it to make hegemonic claims vis-à-vis its downstream neighbors.

The potential for continued conflict over the sharing of the Euphrates and Tigris rivers seems likely. However, despite their geographical and brute power disadvantage relative to Turkey, Syria and Iraq have attempted to affect Turkey's progress in implementing GAP. More specifically, the two countries have worked to invert the situation of power asymmetry in their favor by limiting the options and alternatives available to Turkey (Daoudy, 2009). For example, from 1993 to 2002 Syria blocked international investment in GAP, appealing to European export credit agencies and the World Bank (Daoudy, 2004, 2009). These efforts led to the withdrawal of several private and public European investors, and in tandem with the efforts of the European environmentalist movement opposing GAP, Turkey's ability to obtain external funding has diminished (Zawahri, 2006, p. 1051). Going back even farther in history are Syria's successful efforts to link the water issue to unrelated issues. In 1987 these resulted in the signing of a bilateral Protocol on Matters Pertaining to Cooperation, which codified releases by Turkey of a set amount of water (guaranteed minimum flow) in the Euphrates downstream to Syria in exchange for concessions on border issues that ranged from

[12]Another goal has been to advance the economically and socially disadvantaged Kurdish population of the region, integrating them more fully into Turkish society (Kolars and Mitchell, 1991, p. 2; Soffer, 1999, p. 89). For details on the Kurdish minority in the four adjacent countries of Iran, Iraq, Syria, and Turkey, see Dahlmann (2002).

[13]Turkey's logic is that downstream water needs in one river (Euphrates) can be supplemented by water in another river (Tigris).

the smuggling of illegal arms and narcotics to infiltration into Turkey by separatist groups—particularly the Kurdish Worker's Party (PKK; Elhance 1999, p. 143). Syria, in turn signed an accord with Iraq in 1990 by which it would retain 42 percent of the Euphrates flow reaching its northern border and release 58 percent further downstream.

Despite the aforementioned bilateral agreements, conflict continues to characterize the relationship among Turkey, Syria, and Iraq over the Euphrates and Tigris rivers due to the lack of a tri-lateral comprehensive agreement as well a dearth of coordination among the states in the development of the two rivers (Zawahri, 2006, p. 1048–1049). With the Kurdish "card" no longer a viable negotiating tactic by the Syrians and with Iraq's military and economic power diminished given the second Gulf War (combined with the withdrawal of American troops), Turkey is the uncontested hegemon in the basin. As far as its GAP initiative is concerned, Turkey's projects have undoubtedly experienced delay due to the country's inability to secure sufficient international funding (Tigrek and Kibaroglu, 2011, p. 40). Yet despite these financial and logistical obstacles, Turkey continues to pursue plans to harness the two rivers (Kolars and Mitchell, 1991, p. 271; Kibaroglu et al. 2005, p. 10). Turkey's current economic boom is of great significance, allowing the country to increasingly turn inward in efforts to meet its financing needs.[14]

It was once thought that Turkey's bid for EU membership would help moderate Ankara's position regarding the Tigris-Euphrates (Kibaroglu et al. 2011, p. 318). However, with Turkey's growth as a regional and global power, and Europe's economic and political stagnation, Ankara is now looking beyond Europe, building a supra-European identity (Bilgin and Bilgiç, 2011; Cagaptay, 2011; Cohen, 2011). On the one hand this may mean that Turkey is no longer bent on satisfying European demands and expectations that include, among other things, cooperative behavior with its southern neighbors on the Tigris-Euphrates. On the other hand, this new orientation may just be the key to improved hydro-political relations with Syria and Iraq. In other words, as Turkey builds a new regional and global identity it may elect to act in a more accommodating manner toward its immediate neighbors, enacting its vision of a "no problems" foreign policy (Cagaptay, 2012). In the context of Turkey's hydro-political relations, this may mean demonstrating "good will" and compromising on the Tigris-Euphrates. Evidence of this new orientation may already be unfolding. In fact, since the beginning of the second Gulf War, Ankara and Damascus have become close allies,[15] which has translated into closer relations over water. For example, two framework cooperation agreements signed in 2003 and 2004 between Syria and Turkey on agriculture and health, respectively, included stipulations about water conservation in agricultural practices as well as efforts to combat waterborne diseases (Kibaroglu and Scheumann, 2011, p. 291). Memorandums of understanding were also signed between Syria and Turkey and Turkey and Iraq in 2009 pertaining to such issues as information exchange, water utilization, hydropower, drought, and water quality.[16]

[14]For example, construction of the Ilisu Dam on the Tigris River (which started in December 2008) came to halt when the German, Austrian, and Swiss export credit agencies withdrew a pledged US$610 million export credit (in July 2009). Shortly thereafter, the Turkish Prime Minister and the Minister of Environment and Forestry claimed that the dam would be built using funds from private and public banks in Turkey (Kibaroglu and Scheumann, 2011, pp. 288–289).

[15]The exception has been the recent uprising in Syria and Bashar al-Asad's crackdown against his own people, which has concerned the Turks greatly and is jeopardizing the relationship.

[16]Additional examples of cooperation in the water sphere include the reconvening of the JTC and the inauguration of the Euphrates-Tigris Initiative for Cooperation (a network of water professionals from the three countries; Kibaroglu, 2008; Kibaroglu and Scheumann, 2011, pp. 293–297).

Fig. 2. The Nile River Basin.

These recent cooperative initiatives affirm Turkey's apparent good will toward its neighbors and perhaps even signal a changing dynamic in the basin. Yet, limited bilateral understandings and initiatives, which have been the norm of Turkey's hydro-political foreign policy in the Tigris-Euphrates, cannot be equated with full-fledged trilateral basin-wide agreement, which will be the symbol of genuine cooperation. In addition, the current upheaval in Syria as well as the recent violence in Iraq (increasingly being witnessed after the withdrawal of American troops) suggests that the two downstream states may be entering a period of great political instability and consequently even less capable of challenging Turkey. In fact, some analysts view Turkey's continuing hegemonic power in the basin as making a comprehensive treaty unlikely. And in the rare instance that a basin-wide treaty would be signed, it most likely will be shaped largely according to Turkey's terms. Given Turkey's military and economic as well as geographic status in the basin, it is unrealistic to expect it to support the creation of a cooperative water distribution management regime with Syria and Iraq, inasmuch as such a regime would constrain Turkey's maneuverability (Lowi, 1993, pp. 10 and 199; 1995, p. 139).

NILE RIVER BASIN

The Nile Basin consists of 11 riparian states (Fig. 2), and includes two major rivers, the Blue Nile and White Nile. The White Nile drains portions of Burundi, Kenya, Rwanda, Sudan, South Sudan, Tanzania, Uganda, and the Democratic Republic of the Congo. The

Blue Nile, on the other hand, flows across portions of the territories of only three states—Egypt, Ethiopia, and Sudan, which share almost 85 percent of the total area of the combined Nile Basin. The White Nile originates from the Luvironza River, whose principal source is Lake Victoria, which borders Tanzania, Uganda, and Kenya. The river then flows through Sudan and Egypt. The principal source of the Blue Nile is Lake Tana in Ethiopia. The river then flows through Sudan and then Egypt. Eritrea also lies in the Nile Basin, since attaining its independence from Ethiopia in 1993. A little less than two-thirds of the entire Nile Basin lies within Sudanese territory; however, nearly 85 percent of the Nile's water reaching Egypt originates in Ethiopia (Elhance, 1999, p. 15). Because the Blue and White Nile meet in Sudan, Egypt is the most downstream riparian on the river as a whole. While Tanzania is the most upstream state on the White Nile, Ethiopia lies farthest upstream on the Blue Nile. Although the equatorial states also play a role in the basin, the most sustained and intense contention over the Nile's waters lies between Ethiopia and Egypt, and will be the focus of this discussion. As a riparian to both the Blue and White Nile, Sudan is also a very relevant player.

The flow and regulation of the Nile's waters have inevitably been the chief concern of Egyptians from antiquity. Ancient Egyptian governments did what they could to conquer lands upstream, at times even attempting to win the highlanders' favor with gifts (Whittlesey, 1953, p. 220). In the past few decades, however, all the riparians of the basin have expressed their demands and concerns for the Nile waters. And while all the inhabitants have a vital interest in the river, the nature of that interest springs from the character of the region occupied by each group.

While the Nile is especially important to its downstream riparians, Egypt and Sudan, upper riparian states are also in need of the water as their populations grow and as their economies expand. Currently, Egypt uses the Nile River more than any other country in the basin. It has developed extensive areas of land for irrigation in the last 100 years and has argued that its needs are a priority because it has no alternative resources.

While Egypt is highly dependent on the Nile, it does not contribute any substantial amounts of water to the flow of the river through its territory. Ethiopia, like Turkey, given its upstream riparian position and its large water flow contribution to the basin, would seem to have potentially the strongest position in dictating the basin's hydro-politics. Ethiopia, however, has not been able to reap the benefits conferred on it geographically. First, given its poor economic condition, the country has not been able to tap into its vast hydroelectric and irrigation potential. Second, Egypt, so desperately dependent on the Nile waters, has used its military might and hegemonic status to threaten any lower riparian, primarily Ethiopia, from undertaking any projects that would risk Egypt's current intake from the Nile. In 1978, Egypt's President Anwar Sadat stated: "we depend upon the Nile 100 percent in our life, so if anyone, at any moment thinks to deprive us of our life we shall never hesitate [to go to war] because it is a matter of life or death" (quoted in Waterbury, 1979, p. 78). Egypt has also championed the international legal concepts of historical rights, acquired rights, and established rights, basing its positions on its historic use of the Nile waters prior to any other riparian state. Lacking economic and military advantages, Ethiopia has not, until recently, attempted to challenge Egypt's resolve.

Egypt also benefited from British support during the colonial period. In particular, the potential of both Egypt and Sudan for cotton production prompted Britain to draft many Nile water treaties that would favor Egypt. In 1929, an agreement between Egypt and Britain was signed that prevented any lower stream riparians, which were at the time under British rule, from undertaking any water projects without the consent of Egypt (Naff and Matson, 1984, p. 144; Abdel Mageed, 1994, p. 167; Soffer, 1999, p. 57). In 1959, a water division treaty (Nile

Waters Agreement) was signed between Egypt (now an independent country) and Sudan, which remains the only major water treaty in force between the two signatories to this day. Not surprisingly, after achieving independence from colonial rule and acquiring some maneuverability vis-à-vis Egypt's favorable position, upper Nile riparians have, in principal, rejected all colonial-era treaties, which deliberately neglected their own interests and allowed Egypt to dictate the hydro-political regime of the region (Elhance, 1999, p. 69; Soffer , 1999, p. 61).

During the Cold War, both the United States and the Soviet Union attempted to woo Egypt into their respective spheres of influence, offering both military and economic aid to the country. Egypt's political importance in the Middle East during this period dampened international support for Nile basin regimes attempting to challenge Egypt's position within the Nile Basin.[17]

Post-colonial and post–Cold War bilateral agreements signed among several other riparians in the basin exist, but they demonstrate the power imbalances among the signatory states. Perhaps the treaties of most significance have been those signed by Ethiopia and Egypt and Sudan and Ethiopia, as they include both the main upstream and downstream riparians. The treaty between Egypt and Ethiopia (Framework for General Cooperation), signed on July 1, 1993, does not specify details, but commits the parties to agree that the use of the Nile waters shall be worked out in detail on the basis of international law. At the same time, the parties agreed that each state would refrain from engaging in any activity related to the Nile waters that could cause appreciable harm to the other. A similar agreement was signed in December 1992 between Ethiopia and Sudan. Essentially, these treaties were signed with the purpose of protecting the status quo that benefitted Egypt and to a lesser extent Sudan.

Despite Egypt's overall attempts to defend the status quo, the early 1990s witnessed serious efforts to bring together all or most of the parties of the Nile River Basin. In 1992, the Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE) was established to meet numerous long-term objectives, including the development and conservation of the Nile waters and assistance in determining the equitable entitlement of each riparian state. Egypt's participation in TECCONILE effectively signaled its recognition of the riparian rights of the upstream Nile Basin states. Nonetheless, the issue of water allocation remained highly sensitive.

Egypt's longstanding claim at the time was that regional cooperation, with an emphasis on hydrological data collection, has higher priority than water allocation in the Nile Basin. In 1993 Egypt clarified its overall position, stating that "No negotiations on international water rights are possible without an agreed data base, which must be formulated on the maximum time scale" (Ezzat and Ouf, 2002). In reality, by focusing the discourse on "data collection" and generic applications of "regional cooperation," Egypt has attempted to divert attention from the issue of water allocation and redistribution. To further reduce the risk of jeopardizing the hydro-political status quo, Egypt has also sought to intervene in the internal politics of its neighbors. For example, fearing that the civil war in Sudan between the Muslim South and Christian North would result in a separate South Sudanese state that would endanger its interests in the Nile, Egypt exerted great effort to mediate the conflict (Kliot, 1994, p. 88).[18] Over the past 50 years, and particularly between the 1950s and the mid-1990s, Egypt has also

[17]For a short yet thorough colonial and post-colonial account of the political history of the Nile basin, see Waterbury (2002, pp. 57–72).

[18]A recently released Wikileaks cable reveals that in 2009, Egypt urged the United States to help postpone a referendum on independence for South Sudan (Ross, 2010). The justification provided was that "a non-viable state" could threaten Egypt's access to the River Nile. Nonetheless, the referendum was held in January 2011 and South Sudan is now an independent state.

worked to keep the pressure on Ethiopia, diverting its attention from Nile Basin projects by supporting Eritrean rebels and separatists (fighting for independence from Ethiopia) as well as siding with Somalia during its sporadic clashes with Ethiopia (Shinn, 2006).

Similar to Turkey's negative position regarding water allocation and equitable entitlement, one can argue that Egypt has used the "regional cooperation" stance as its official position in hopes of trying to delay negotiations on equitable water divisions as long as possible. However, unlike Turkey, Egypt is aware that there may come a day where it will be forced to discuss equitable entitlement given its inferior geographical position vis-à-vis the upstream states. As Waterbury contends (1979, p. 79), so much is the Nile a geopolitical dilemma for Egypt that it has sought arrangements for regional security that would cushion it against unforeseen and uncontrollable events in and around its hinterland.

Like Egypt, Sudan also champions the concept of acquired rights, largely because it sees this as a way of securing the water allotted to it in the 1959 Agreement with Egypt. But Sudan has also acknowledged the principle of equitable and reasonable use for any future basin-wide agreement. This is especially important, because under the 1959 water division treaty Sudan was forced to compromise and claim less water than it had requested from the Nile's flow. In fact, in 1995, the Sudanese leadership even sought to amend the 1959 Nile Waters Agreement, as the relatively low quotas set for Sudan were no longer sufficient in the face of increasing requirements (Klare, 2001, p. 158). This trajectory has the potential to set the two states on a collision course as suspicion and hostility are evident (Naff and Matson, 1984, p. 152; Soffer, 1999, 63). Nonetheless, regardless of its at times ambivalent relationship with Egypt, Sudan has thus far opted for a more cautious approach toward support for equitable allocation, given its current guaranteed water flow (Waterbury, 2002, pp. 129 and 131–133). At the same time Sudan fears the more extreme Ethiopian position regarding equitable water allocation (below), which may mean decreased flow into Sudan. As such, Sudan's position has remained close to that of Egypt with respect to the Nile.

Ethiopia's position is opposed to that of Egypt and, to a lesser extent, that of Sudan. Furthermore, compared to Egypt's and Sudan's Nile water use, Ethiopia's current water consumption is negligible. Ethiopia promotes the concept of equitable entitlement because it argues that it has a huge "potential demand." More specifically, Ethiopia argues that it requires the use of Nile River waters to satisfy its growing demand for irrigation water, achieve self-sufficiency in food security, and improve its impoverished economic situation (McCaffrey, 1993, p. 99). Most importantly, Ethiopia believes that because the majority of the Nile's waters originate in its territory, it has every right to use more of these waters. The country's position on the priorities of key Nile Basin issues differs markedly from that of Egypt, in that the former believes that the water-allocation issue ought to be resolved before riparian countries promote basin-wide cooperation (Alemu et al., 1996, p. 32). Ethiopia also rejects Egypt's position of acquired rights, claiming that the treaties Egypt signed were concluded with colonial powers that no longer exist. Furthermore, these treaties did not include the other riparian states.

Although Egypt has certainly used its military and economic prowess to sustain the status quo in the region, it must nonetheless be mindful of the interests and potential maneuvers of the upstream riparians given its own weak geographical position and the basin's changing political realities. First, although Egypt remains an important player in the Middle East, it no longer enjoys the same favoritism lavished upon it during the Cold War by the USSR and then the United States. Second, observers have pointed to the mere existence of the Nile Basin Initiative (NBI) as an important indicator that the hydro-political relations in the basin are changing (Swain, 2000, pp. 302–303; Brunee and Toope, 2002, pp. 132, 137). The NBI,

which was initiated in 1999 as a successor to the TECCONILE, is focused on the pursuit of long-term development and management of the Nile waters among all the riparian countries. While the exact proceedings of this initiative have not been made public, and Egyptian intransigence to any arrangement that will challenge its set allocation is still evident, the NBI's main backer, the World Bank, has demonstrated a strong willingness to bring about a regime that would favor an equitable reallocation of the Nile waters (Waterbury, 2002, p. 173). This is significant, as the Bank effectively recognizes the main positions of Ethiopia and Sudan as well as the other upper riparians. According to the NBI's Secretariat, the participating states have moved a long way and important compromises have been reached (Nile Basin Initiative Secretariat, n.d).

Third, Egypt has gradually had to contend with more assertive riparians. Ethiopia, for example, has gradually worked to mobilize international funding for national projects and to amass expert-based knowledge (Cascão, 2008). The country has also engaged in an extensive dam construction campaign—with about 20 dams in operation or under construction (Swain, 2000, p. 301; Than, 2011). Its most significant dam construction plans, however, include the Grand Millennium Dam, which upon completion in 2015 will be the largest hydroelectric dam in Africa (Than, 2011). While Sudan remains an ally of Egypt on Nile matters, its emergence as a petroleum-exporting country (specifically to China) has nonetheless challenged Egypt's ability to mobilize financial resources and international support in the Nile. Sudan has been able to appeal for outside funding from China for different water or hydroelectric projects (Saleh, 2008, p. 42). According to some observers, Sudan's increasing population along the banks of the Nile and its tributaries may also mean that it will make additional demands on the river, and thus threaten Egypt's historical consumption level (El Zain, 2008, pp. 147–154; Waterbury, 2002, p. 172). A potential Sudanese-Ethiopian alliance on the Nile could also challenge Egyptian hegemony. The birth of the nation of South Sudan, situated on the White Nile upstream from Sudan and Egypt, may also translate into further pressure on Egypt, as well as Sudan (Salman, 2011, p. 165). In September 2011, South Sudan officially sought full membership in the NBI and has already announced plans to build a hydropower dam on a tributary of the While Nile (Ferrir, 2011; South Sudan, 2011).

Fourth, a number of upstream states have made concerted efforts to accelerate the formulation of the Nile River Basin Cooperative Framework (CFA), which was initiated in May 2010 and includes Ethiopia, Uganda, Tanzania, Kenya, and Rwanda. The CFA, contested by both Egypt and Sudan as a unilateral move, strives to transform the NBI into a permanent Nile Basin Commission and facilitate its legal recognition in the member countries as well as by regional and international organizations. Once codified and ratified, the CFA would effectively end the near monopoly Egypt and Sudan have enjoyed on the Nile Basin for so many years. To Egypt's relief, upstream states have agreed not to move forward with the CFA's ratification until a new government in Egypt is able to study the new agreement.

Finally, the political changes taking place in Egypt (as a result of the January 25 Revolution and the ouster of Hosni Mubarak) are on their own noteworthy. While Mubarak was in power he regularly leveraged Egypt's military and political weight to resist any change to the country's dominance of the Nile Basin (UPI, 2011).[19] A post-revolution Egyptian government may be no less adamant about the Nile's importance to the country's survival, yet it may feel obligated to play a more responsible role and enhance relations in the basin. Evidence of

[19]Released Wikileaks documents reveal that Hosni Mubarak was prepared to use force if upstream countries threatened Egypt's historical rights of the Nile River (Otieno, 2011). See also a Wikileaks released cable from 2009 hinting at Egyptian skepticism regarding the CFA and possible political and diplomatic efforts against it (Wikileaks, 2011).

Egypt's new orientation is already being observed. In May 2011, then–Egyptian prime minister Essam Sharaf visited Ethiopia for Nile River talks and in September 2011 Ethiopian Prime Minister Meles Zenawi met in Cairo with his Egyptian counterpart. The meetings culminated in a decision to establish a committee of technical experts (also to include Sudan) to review Ethiopia's plans to construct the Grand Millennium Dam. In an unprecedented change of tone that has not been witnessed in decades, Sharaf even proclaimed that the project "could be a source of benefit" as well as well as "a path for development and construction between Ethiopia, Sudan, and Egypt" (Egypt and Ethiopia, 2011).

Interestingly, academics, policymakers, and international institutions have for quite some time attempted to advise downstream riparians that Ethiopia's strategic location could be leveraged to create benefits for all and that cooperation and compromise over the Nile were an important prerequisite. In addition to the large amounts of hydropower that could be produced in Ethiopia and then sold to downstream states, better water storage facilities could be constructed upstream, which would reduce evaporation rates and thus make more water available to all three riparians (Waterbury and Whittington, 1998, p. 162). Furthermore, regulation of the water flow in Ethiopia could effectively eliminate the annual Nile flood, make the flow of water reaching Sudan and Egypt seasonably stable, and provide Sudan with perennial storage capacity for use in times of drought (Hillel, 1994, p. 138–139). If Egypt has indeed adopted a new orientation vis-à-vis Ethiopia, such benefits may finally be realized.

The physical geography of the Nile Basin, combined with the changing political realities, has forced even the strongest nation, currently benefitting from the status quo, to reconsider its hegemonic stance vis-à-vis the basin. Although a new basin-wide agreement has not yet been concluded, Egypt seems to be gradually recognizing that a new hydro-political reality is unfolding and it may not necessarily want to be on the wrong side of this historical turn. As Kliot (1994, p. 90) has observed in reference to Ethiopia, Sudan, and Egypt:

> It seems reasonable to assume that Egypt will eventually arrive at "new arrangements" with Ethiopia, through agreements which will not impair Egyptian water rights but will be fairer and more equitable to Ethiopia. The reconstruction of a new Ethiopia will necessitate the planned and integrated utilization of all water resources, including the Nile. Both Egypt and Sudan will have to prepare themselves for a future with less water.[20]

THE ARAL SEA BASIN

The Aral Sea Basin, of which the Syr Darya and Amu Darya are the major rivers, is shared by six riparian states (Fig. 3). On the Syr Darya, Kyrgyzstan is upstream while Uzbekistan and Kazakhstan are downstream. The Amu Darya originates on the border between Afghanistan and Tajikistan, and Turkmenistan and Uzbekistan are downstream. For the entire Aral Sea Basin, Kyrgyzstan and Tajikistan produce about 77 percent of the water. Afghanistan, which has not been a party to any management schemes, contributes about 10 percent of the inflow to the Basin (Micklin, 2002, p. 509; McKinney, 2004, p. 190). Interestingly, upstream countries use only 15 percent of the Basin's waters while downstream states utilize the rest. While the Amu Darya (and Afghanistan) is certainly relevant for the general scope of this section, the situation on the Syr Darya will be emphasized below.

[20]See also Lowi (1993, p. 10) and Whittington and McClelland (1992, pp. 87 and 90).

Fig. 3. The Aral Sea Basin.

The contemporary hydro-political situation of the Aral Sea Basin and the Syr Darya is rooted in the Soviet era, when the riparian states were part of the planned economy of the USSR. During that period the water management regime of the basin was dictated by Moscow. The Soviet system dictated that downstream parties, such as Uzbek Soviet Socialist Republic (SSR) and Kazakh SSR, would grow cotton, whereas the Kyrgyz SSR would supply the needed water from Soviet-built reservoirs (e.g., Toktugol in the Kyrgyz SSR) in the spring and summer just in time for the cotton growing season downstream (Wegerich, 2008, p. 77). Because the Kyrgyz SSR could not release this water in the winter to produce hydroelectricity for heating its major cities, Moscow directed the Uzbek SSR and Kazak SSR to supply their neighbor with coal and natural gas—basically free of charge. Furthermore, Moscow, with its national coffers now benefitting from cotton revenues, contributed capital to the maintenance and upkeep of the Toktugol Reservoir (Dinar, 2009a, p. 347).

The fall of the Soviet Union changed the geopolitical landscape in the basin. In particular, Kyrgyzstan, now an independent and sovereign state, no longer saw the benefit of continuing the old water-sharing regime, and became more interested in developing its own hydropower and agricultural sectors (Dinar, 2005, p. 150). Yet cotton continued to be the main cash crop of now independent Uzbekistan and Kazakhstan, and according to these downstream states the past water distribution system could not be altered. Despite Kyrgyzstan's protests, the weight of powerful downstream states triumphed. In 1992, a multilateral treaty was signed among downstream and upstream riparians effectively asserting that the old water-sharing regime, and cotton-growing season, would remain uninterrupted (Weinthal, 2002, p. 125).

The agreement also created a basin-wide governing body, the Interstate Coordination Water Commission (ICWC) as well as two basin management organizations (BVOs) for the Syr and Amu Darya, with the goal of contributing to regional stability. A new water regime, it was agreed, would be negotiated at a later time (Dukhovny and Sokolov, 2003, p. 13).

Yet the 1992 water distribution regime quickly had its detractors. Kyrgyzstan continued to protest its inability to develop domestic hydropower resources due to a water regime that favored cotton production. Fearing a disruption of their lucrative cotton enterprise and a possible return to an uncoordinated water distribution system, downstream states agreed to enter into additional bilateral agreements with Kyrgyzstan. To ameliorate Kyrgyzstan's annoyance with its inability to produce hydropower in the winter, downstream states agreed to buy Kyrgyz hydroelectricity in the spring and summer when water was released from the Toktugol Reservoir. In the winter, when Kyrgyzstan would refrain from releasing water (in order to produce hydroelectricity) in the greater interest of cotton production, downstream states would provide coal and natural gas. On March 17, 1998, Kyrgyzstan, Uzbekistan, and Kazakhstan signed the Long Term Framework Agreement, which effectively recognized the competing uses between upstream and downstream uses and codified past bilateral arrangements (Heltzer, 2003, p. 312). The agreement recognized the need to compensate Kyrgyzstan for energy loses involved in the storage of water in the reservoirs through energy sources (barter) or monetary terms. In fact, the agreement went even further, recognizing Kyrgyzstan's position that barter arrangements must be replaced with financial relations. However, while the Framework Agreement was a significant improvement over earlier ad hoc annual agreements, it still required annual agreements on the specific volumes of water releases and compensation, which took the form of barter (World Bank, 2004, p. 10).

While these barter deals resembled the exchange system employed during the Soviet era and have been, by some accounts, moderately successful, the sheer reality that the riparians were now independent states and the terms of the agreements were consequently different, proved to be problematic (McKinney, 2004, p. 213). According to some observers, the trade-off of free summer water for free winter fuel (which characterized hydro-relations during Soviet times) has been replaced by market prices and complex formulas (Weinthal, 2002, pp. 187–188; Wines, 2002, p. A14; Kemelova and Zhalkubaev, 2003, p. 481).

Conflict between Kyrgyzstan and Uzbekistan has been particularly sustained and intense. The two countries have cut off their energy deliveries (whether it is coal and natural gas or hydroelectricity) to one another more than once because of outstanding debts (Khamidov, 2001). The republics have also complained that they are either purchasing hydroelectricity they do not need, as in the case of Uzbekistan, or buying unnecessary coal and natural gas rather than developing their domestic hydroelectric potential, as in the case of Kyrgyzstan (Klotzli, 1997, pp. 422–423; ICG, 2002, p.15; At the Crossroads, 2003, p. 10). Because most of the water is delivered to Uzbekistan in the summer and stored in the winter, Kyrgyzstan must refrain from producing hydroelectric energy when it really needs it. This is both costly and inefficient, forcing Kyrgyzstan to rely on imported electricity from Uzbekistan to make up the shortfall (Bransten, 1997). At the same time, the barter agreements are usually delayed until late spring or even early summer—the very time when downstream countries need the water for irrigation. This means that in some years less water than anticipated is delivered in the summer and spring because it had been released earlier in the winter for the production of hydroelectricity (Horsman, 2001, p. 75). Had the energy supplies been delivered before the arrival of the warm months, Kyrgyzstan would have had less incentive to produce energy for heat and store more water for the summer (ICG, 2002, p. 14).

The barter system has been subject to other complications, such as a lack of correlation in some years between Uzbekistan's need for water and Kyrgyzstan's need for fuel. In rainy years, when downstream states irrigate less, they often return less fuel in the winter. In dry years, when Kyrgyzstan releases less water, it also receives less fuel in return (Wines, 2002, p. A14). An additional source of contention is Kyrgyzstan's position that it is operating and maintaining (at an estimated cost of more than $20 million a year) the Toktugol Reservoir on the upper reaches of the Syr Darya without any financial assistance from downstream states that are benefitting from the reservoir's flood-control, storage, and water release capabilities (ICG, 2002, pp. 7–8; Maynes, 2003, p. 126). Uzbekistan and Kazakhstan have retorted that the negotiated barter agreements are a form of payment for maintaining the water reservoirs and facilities. According to Kyrgyzstan, however, the value of the bartered goods is often less than the price of facility upkeep (Heltzer, 2003, p. 13; World Bank, 2004, p. 43).

Perhaps the most striking example of the discontent between downstream Uzbekistan and upstream Kyrgyzstan came in 1997 when Uzbekistan amassed troops near its border with Kyrgyzstan in response to the latter's reduction of water flows leaving the Toktugol Reservoir (Hanks, 2010, pp. 88–89). Although lacking the military might of its Uzbek neighbor, Kyrgyzstan utilized its strategic upstream position to display its unhappiness with the status quo and raise the stakes. That same year, Kyrgyz President Askar Akaev signed an edict codifying Kyrgyzstan's right to profit from water resources originating within its territories (Hogan, 2000). In June 2001, Kyrgyzstan adopted a law that classified water as a commodity, and in August of that year, the Kyrgyz Government announced that it was preparing regulations to charge neighboring states, including Kazakhstan and Uzbekistan, for using water (Khamidov, 2001). Kyrgyzstan has also threatened to sell water to China if Uzbekistan refuses to pay a fair price.

Kyrgyzstan's water law, however, has been more rhetoric than reality (Tarlock and Wouters, 2007, p. 532), with the riparian states generally inclined to let their respective disputes dissipate or to conclude a series of short-term negotiated arrangements. Yet, as noted above, these barter agreements devised to solve potential water-sharing and reservoir-release disputes have been negotiated on a yearly basis. Worse yet, the parties have at times failed to conclude annual agreements—as in 2003 and 2004 (Linn, 2005, p. 89). Divergent water needs, variable water availability, as well as the inherent geographical and power asymmetry in the basin have been the main reasons for the opposing strategies and positions. Downstream Uzbekistan has been able to utilize (the threat of) its military power as well as its monopoly over energy resources such as natural gas, whereas upstream Kyrgyzstan has been able to utilize its strategic position as the owner of the Toktugol Reservoir and the basin's "water supplier." The former has been able to flex its muscle mostly in winter, when its fuel is most in need upstream, while the latter has been able to show its strength during spring and summer, when water is needed for cotton production (Karaev, 2005). Yet given its upstream position and continued need for hydropower in winter, Kyrgyzstan has found itself releasing water from the Toktugol Reservoir, inflicting enormous damage on Uzbekistan in the form of reduced water allocations in the summer as well as flooding in the winter. An uncoordinated water release schedule thus has gradually become the reality on the Syr Darya.

The parties' conflicting positions have also manifested themselves in the adoption of varying international legal principles. Kyrgyzstan, for example, has appealed to the principle of reasonable and equitable utilization to support its right to utilize not only additional shares of water from the Syr Darya (for consumption uses) but also its right to utilize water releases in the winter for hydropower production. The position of upstream states regarding payment for reservoir upkeep also finds endorsement in Article 25 of the 1997 UN Convention, which

states that riparians "shall participate on an equitable basis in the construction and maintenance or defrayal of costs of such regulation works" (United Nations, 1997, p. 10). Finally, support for upstream claims that compensation be paid for foregone benefits can also be found in Article 4 of the 1992 Dublin Statement on Water and Sustainable Development. In particular, Principle No. 4 stipulates that "managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources" and that "past failure to recognize the economic value of water has led to wasteful and environmentally damaging uses of the resource" (ICWE, 1992). Heltzer (2003, p. 315) has concluded that because downstream water use for cotton and rice production has been so wasteful, a payment structure (based on Kyrgyzstan's suggestion) will make the irrigation regime much less wasteful. Such a compensation regime would also be in line with the financial arrangements envisioned in the 1998 Framework Agreement. Uzbekistan, on the other hand, has found support for its claims to existing and prior water allocations not only in the principle of significant harm but also in the principle of reasonable and equitable utilization. Based on this latter principle, Uzbekistan's line of thinking appears to suggest that using water for energy production should not deprive other riparians of their right to use water for drinking, food production, and other domestic needs. While recognizing Kyrgyzstan's interests, Dukhovny and de Schutter (2011, pp. 287 and 289) summarize Uzbekistan's position as follows: "water supply and irrigation in downstream countries should not become hostage to the energy well-being of the upstream countries."

Given these conflicting positions as well as the the water-release coordination problems, Uzbekistan has attempted to increase its self-sufficiency by planning the construction of a number of water storage reservoirs, effectively neutralizing Kyrgyzstan's uncoordinated releases. Having moved forward on two (Razaksay and Kangkulsay) of five planned dams, Uzbekistan has trended toward a unilateral stance. Kyrgyzstan too has also moved forward with unilateral hydroelectric projects (given its need for more energy), but has been somewhat less successful in their implementation. For one, the planned hydroelectric plants, Kambarata-1 and -2, to be constructed on the Naryn River, a major tributary of the Syr Darya, has been met by vocal Uzbek objections. In addition, Kyrgyzstan has been hard pressed to find a sufficient amount of funds with Russia as the only outside investor. In addition, Russia has recently reconsidered its commitment to the project based on environmental and financial grounds (Bond and Koch, 2010, p. 547–548; Shepherd, 2010). In the case of another hydroelectric initiative, CASA-1000, which also includes Tajikistan, Uzbekistan has turned to one of the project's potential benefactors, Pakistan, attempting to convince Islamabad not to import the generated electricity (Uzbeks Try, 2011).

Despite Uzbekistan's campaign to isolate Kyrgyzstan, it is noteworthy that the small upstream state has benefitted from support from important international institutions, effectively gaining some form of international and regional legitimacy for its mega-power projects. For one, the World Bank, the Asian Development Bank, and the European Bank for Reconstruction and Development have been investing in pilot projects and funding feasibility studies relating to the creation of a region-wide electrical system that will be based on the export of electricity produced in Kyrgyzstan as well as Tajikistan (Hanks, 2010, p. 90). Most recently, in late December 2011, the World Bank and the Asian Development Bank considered a loan to both Kyrgyzstan and Tajikistan to help fund a power transmission line into Pakistan (ADB, 2011; World Bank Might, 2011). In a recent U.S. Senate Foreign Relations Committee Report, Pakistani and Afghan energy and water needs were highlighted. Based on the great import of fostering stability in both Pakistan and Afghanistan, the report indicated that the United States would welcome an opportunity to help create a more equitable

and efficient water and energy arrangement in the Aral Sea Basin (Majority Staff Report, 2011, pp. 8 and 18). Interestingly, some observers have noted that attempts to commercially develop hydropower are unproductive for cooperation involving water allocation dilemmas (Dukhovny and de Schutter, 2011, pp. 337–338). This may be a valid observation, but surely these developments indicate that the status quo, which generally favors Uzbekistan, will continue to be challenged by upstream states.[21]

Regardless of the various hydropower projects that undoubtedly threaten Uzbek water needs, Kyrgyzstan's upstream position also factors into any efficient, basin-wide, and comprehensive agreement should one eventually materialize. While the Uzbek reservoirs currently under construction bring the country closer to its goal of being less dependent on timely Kyrgyz releases in summer, these reservoirs are relatively small in size, and will only provide Uzbekistan an additional 2.5 billion cubic meters (BCM) of storage capacity (Draft Sector Report on Energy, 2004). Consequently, while these reservoirs partly address intra-annual problems of water release, they do not address inter-annual problems of water sharing; they are too small to enable multi-year regulation and are unable to store water inflows in high-water years for use in low-water years (Abbink et al., pp. 285 and 297). Consequently, the regulating and storage capacity of Toktogul is particularly important, inasmuch as it has an active storage capacity of 14.5 BCM (Antipova et al., 2002, pp. 506). Experimental studies have demonstrated that while lack of trust among the parties seems to be inhibiting inter-state coordination, regional cooperation is still required for maximizing basin-wide net benefits (Abbink et al., 2010, pp. 303). Under such a scenario, analysts argue that the barter agreements could be replaced with financial compensation (Dhukovny and de Schutter, 2011, p. 282). In other words, Kyrgyzstan would be compensated in hard cash not only for reservoir upkeep but for timely releases that favor an irrigation scheme (World Bank, 2004, p. 43; Dinar 2009a, p. 348). While a side-payment regime is clearly in the interest of Kyrgyzstan, it may also prove more efficient in comparison to the high construction costs of the planned Uzbek reservoirs (Mamatkanov, 2008; Abbink et al., 2010, p. 303). Compensation for such benefits is a common element of plans to alleviate similar international water disputes between upstream and downstream states (Dinar, 2005, pp. 153–159).

The future of hydro-politics in the Aral Sea Basin seems uncertain. As Hanks (2010, p. 91) has argued, either Kyrgyzstan and Tajikistan must scale back their hydropower plans, or the downstream riparians, especially Uzbekistan, must accept a decline of their agricultural sector. A compromise is possible, but given Uzbekistan's history of cutting off energy and gas supplies to upstream states, it is clear that Kyrgyzstan and Tajikistan will pursue a policy of energy self-sufficiency, using the one resource they control and Uzbekistan desperately needs—water.

CONCLUSION

As Lord Birdwood once observed, "of the elements which make for political controversy in human affairs, the control of rivers is one of the most persistent … the last community to get the water is always suspicious of the intentions of those upstream" (quoted in Hirsch, 1956, p. 203). In no area of the world is this more prevalent than in some of the major river

[21]The present ad hoc regime actually features greater winter releases (favoring hydropower generation) from Toktugol at the expense of summer releases (favoring irrigated farming) (Dhukovny and de Schutter, 2011, p. 286). Conversely, the long-established status quo, codified by international agreements and barter agreements (which Kyrgyzstan has challenged), favors Uzbekistan and downstream irrigation.

basins of the Middle East, North Africa, and Central Asia, where geographical stratification is exacerbated by power discrepancies.

While conventional analyses regard military and economic capabilities as well as geography to be fundamental elements of state power in hydro-politics, it is the former that has received more attention. In general, traditional (as well as some critical) scholars have claimed that in asymmetric contexts more powerful states (in military and economic capabilities) are able to dictate the hydro-political status quo. Weaker states tend to have little recourse because military and economic power are the primary determinants of influence over water resources. Indeed, the geographical configuration of a given basin cannot explain the entire hydro-political scenario of any particular basin. However, by emphasizing military and economic capabilities, analysts have overlooked the links between geography and bargaining power and specifically the ability of otherwise weaker states to challenge the hegemon-led status quo. While all three basins investigated in this paper demonstrate how geography and state power help to dictate the hydro-politics of the basin, it is in the context of the Nile and Aral basins that geography's role is highlighted. In these two basins, challenges to the status quo are not only ongoing but have the potential to be most productive. This is largely a result of the strategic upstream location of otherwise weaker states.

More specifically, in all three instances, the hegemons of the basins (Turkey, Egypt, and Uzbekistan) consider the positions of co-riparians (Syria and Iraq, Ethiopia, and Kyrgyzstan, respectively) as a threat to a current status quo that generally benefits them. Only in the Tigris-Euphrates Basin can the positions of the parties continue to oppose one another, making the chances for a comprehensive and more equitable treaty low. Turkey, the upstream riparian, controls the majority of the basin's water and is the stronger nation both militarily and economically. Therefore, despite Syria's and Iraq's past efforts to balance against Turkish hydro-political influence, the two riparian states are too weak to seriously affect Turkey's position in the basin. Given Turkey's present power and influence regionally and globally, Syria and Iraq are rather clearly dependent on Ankara's "good will."

In the Nile Basin and the Aral Sea Basin, the situation is different. While both Egypt and Uzbekistan would attempt to retain their official positions and use their overwhelming military and economic power to affect a future legal regime, their inferior geographical positions force them to seriously consider the other parties involved. International recognition of the water demands of otherwise weaker states, as well as the increased assertiveness of Ethiopia (and the various equatorial states) and Kyrgyzstan (as well as Tajikistan) have shifted the hydro-political situation in the respective basins. Geographical realities and regional political changes, as described above, may ultimately push the states in the Nile and Aral Sea basins in the direction of serious negotiations for a more equitable water regime. If serious negotiations are indeed sought, geographical position will likely become an important factor. This does not deny the importance of brute power in shaping a future water regime. Nonetheless, because of the geographic realities, any future treaty is likely to be relatively more equitable. At the very least, upstream yet weaker states can up the ante, and continue to challenge and frustrate their stronger downstream neighbors and the status quo they have vociferously defended.

The framework developed in this paper attempts to contribute to the growing negotiation and hydro-politics literature that considers the importance of bargaining strategies afforded to states as they interact with otherwise more hegemonic riparians. This paper, therefore, challenges traditional conceptions of power that focus only on brute military and economic capabilities while overlooking other important factors such as geography. As the paper argues, the physical position of a state along a river (specifically, an otherwise weaker upstream state) contributes to and is the material for the formulation of that state's counter-hegemonic

strategies. While it discusses only three case studies to highlight this theoretical gap, other river basins, and their respective riparians, may be discussed in this context. They include, among others, the efforts employed by upstream Bhutan and Nepal in the face of downstream India on the Ganges-Brahmaputra-Meghna Basin and the tactics exercised by Mexico given its hydro-political interactions with the United States over the Tijuana, Colorado, and Rio Grande basins (see Verghese, 1996, pp. 38–43; Gyawali, 2000, p. 130; Salman and Uprety, 2002, p. 121; Bennett et al., 1998, p. 67; Fischhendler and Feitelson, 2003).

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