

# **Geopolitical Conflict Dynamics of Valuable Riparian Resources in the Middle East Region**

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## Geopolitical Conflict Dynamics of Valuable Riparian Resources in the Middle East Region

Natural resource management transcends simple ecological imperatives and ties itself to more complex and contentious political and economic bodies with similarly complex actors. Contemporary and historical factors combine to influence modern day riparian conflicts. Cooperation over the use and regulation of water resources in the arid desert region of the Middle East is among the most contentious of the riparian disputes that plague the globe. This paper recognizes how geopolitical factors over riparian issues are a critical element of future conflicts in the Middle East both economically and politically. Further it seeks to examine and assess the existing literature as a means to reaffirm or modify existing strategies for response to hydropolitical issues in the Middle East Region. This examination finds that there are multiple schools of thoughts for understanding hydropolitical dynamics and seeks to parse out the varying dynamics and merits of each before applying them to case studies and quantitative data representing the realities within the region.

### Introduction

Middle Eastern states contend with a host of challenges when it comes to maintaining the stability and security of their states. Geographic realities place stresses on the populations which state governments are required to give special consideration and attention to if they intend to maintain that stability and security. Among these considerations - access to freshwater riparian resources continues to be an issue of growing importance within the region. Continued uncertainty has prompted scholars to widely examine the potential for conflict, tension or, upheaval which such marked scarcity may give rise to in the future. The conclusions reached in their research dictates related policy in the region and shapes directions in the future on these issues.

Among research on states of the region and the world general diplomacy, negotiations, actions and conflict over water are considered to be aspects of "hydropolitics." This paper is designed to examine and review prior research findings and analysis in the fields of geopolitics and political science regarding riparian resources and the hydropolitics surrounding them.

### Literature Review

#### The Hydropolitical Concept & Regional Water Scarcity

A working definition for this area of study can be sourced from John Waterbury who, in his work on dynamics of the Nile River, first coined the term hydropolitics in the late 1970s as politics influenced by water access and use (Waterbury 1979, 26). Hydropolitics are the sum of myriad dynamics at play over riparian issues and serve as the political arena in which various water-related issues are addressed. Frey and Naff expand on Waterbury's term and identify three important characteristics of hydropolitics which flesh out an understanding of the concept. By noting the universality of hydrological issues, reasoning that "because water is essential not only to existence but also to the quality of life, no issue is so crosscutting as water" (Frey and Naff 1985, 66). Despite this, however, they observe that politicians ability to wrangle with the topic is imperfect "because of its sheer complexity in practical, ideological and symbolic terms the issue of water is more difficult for policymakers and scholars to grasp in its entirety and tends to be dealt with piecemeal both domestically and internationally" (Frey and Naff 1985, 67). They conclude that uncertainty and necessity culminate in a terse situation because "scarcity of water is always a zero-sum security issue and thus creates a constant potential for conflict" (Frey and

Naff 1985, 67). This places hydrogeopolitics in the awkward position of being transcendent of borders yet beholden to the domestic political factors within each country. Describing international hydrogeopolitics as "difficult because of the many intricacies of international politics, national practices and other complicating political and social factors" (Gleick 1994, 39) Gleick lays out the complicating factors inherent in negotiating any hydrogeopolitical agreement in the Middle East.

Undoubtedly the primary precipitating factor lying at the heart of the debate in the Middle East is regional water scarcity. While not in a perpetual state of acute drought, the Middle East is measurably below average in terms of available water resources. Anderson describes the region as a "hot, dry desert climate with mean annual temperature above 18 degrees Celsius" with "aridity as the dominant climatic characteristic exercising a major influence on geomorphology, soils and vegetation" (Anderson 2000, 30). A generally accepted measure for human survival is the "'Minimum Water Requirement' (MWR). Internationally this metric dictates 1,000 cubic meters/year as crucial for human survival while, in the Middle East region as a whole, "the quantity of available water per person is about 750 cubic meters/year which is well below the MWR" (Tamimi 2009, 139). Focusing in on simply the Jordan River Basin shows that local water availability is limited to 240 cubic meters/year (Fisher, et al. 2002, 25) which is roughly 75% less than the MWR. Such a reduced supply in both cases dictates public hydrogeopolitics and restricts the flexibility of affected states. Concerns about freshwater availability for the Jordan River Basin are echoed by Allan who bluntly states that "clearly, the populations of the basin currently need between four and five times the freshwater to which they have access" (J. A. Allan 2002, 269). Gleick shares this concern, saying "few of the countries in the region believe that they have adequate water for their current populations: almost none believes that it can continue to provide adequate water as its population continues to grow and as industry and agriculture increase their demands for water" (Gleick 1994, 15). Leaders must solicit means for bridging the broad resource gap. Indeed a trilateral agreement was recently reached between the Israeli, Jordanian and Palestinian governments with the goal of distributing desalinated water resources throughout the three countries at favorable costs (World Bank 2013, 2). This represents a more liberal way of addressing hydrogeopolitics - benefitting from interconnectedness rather than seeing conflict to ensure limited security.

### **Conflict and Hydrogeopolitics**

Securing resources through any means necessary is a traditional way of thinking when addressing hydrogeopolitical and does not require relationship-building or peace. Hirsch describes the nature of why this is the case. He observes that "the primary issue in nearly all the Middle Eastern river disputes is, purely and simply, the allocation of the water resources of the particular basin among the various states of the basin." He goes on to describe that this dynamic changes depending on how many states are sharing the resource but that finite resource allocation, especially between states which use the resources for irrigation, causes competition among states (Hirsch 1956, 209). Maintaining hydrogeopolitical relationships in a river basin is thusly made difficult by competition. Statistical analysis by Gleditsch et al strongly suggests that "a shared basin is positively and significantly related to conflict" (Gleditsch, et al. 2006, 379). This should not come as a surprise seeing as rivers traverse or comprise borders but mainly affect those residents located within respective basins. Gleditsch et al further describe factors complicating competition and conflict on those borders as "fuzzy." Their observation is that

"countries sharing large amounts of river boundary may not fight over the direct control of the resource per se, but rather over the political boundary. Rivers are notoriously fickle boundaries" (Gleditsch, et al. 2006, 365). Contributing to the "fuzzy" and "fickle" problem is the genesis of the borders in question. Succinctly put by Hirsch "in general, boundaries in the Middle East have been drawn without regard for the practical questions of river exploitation and river rights" (Hirsch 1956, 218). This creates situations where tension is fostered because egalitarian solutions to exploitation and rights might not be possible and puts one state at a disadvantage to another.

Senese broadens these concepts on territorial contiguity and conflict. Adding to the positions of Hirsch and Gleditsch et al on proximity and conflict Senese sees strong evidence that, for borders on a global scale, "the presence of contiguity consistency increases the likelihood of dispute onset" (Senese 2005, 778). Senese further specifies this argument by noting added frequency and violence among conflict between contiguous dyads focused over territory. Because it is the nature of rivers to flow through more than one country multiple states tend to be incorporated into various riparian basins - creating a hotbed of contiguous dyads. Hensel et al go on to describe issue salience and tangibility as another factor which would cause contiguous dyads to come into conflict. They observe that "issues involving cross-border water resources can be quite salient, particularly in water-scarce areas such as the Middle East" (Hensel, Mitchell, et al. 2008, 122). Additionally their research suggests that conflict is more likely to erupt if an issue area is more salient - as hydropolitics most certainly is. Logically it follows that, since international riparian basins concentrate state interactions between contiguous dyads over highly salient issues like hydropolitics, river basins would be geopolitically ripe for conflict and disagreements.

Owing to the relevancy and intricacy of the subject there exists a not-insignificant body of specific research regarding whether this is indeed the case. Frey and Naff conclude that "under severe shortage it [water] tends to become a highly symbolic, crisis, contagious, aggregated, intense, salient, complicated, zero-sum, power-and-prestige-packed issue, thus highly prone to conflict and difficult to resolve" (Frey and Naff 1985, 80). Echoing this sentiment is Allan, saying " In the coming decades, the Middle East will be self-sufficient in neither food nor water, and as a result will suffer some level of insecurity" (J. A. Allan 2002, 32). Gleick supplements their theoretical statements with an example from the 1991 Persian Gulf War. He observes "during this war, water and water supply systems were targets of attack, shared water supplies were used as instruments of politics, and water was considered a potential tool of warfare" (Gleick 1994, 15). These were all ways in which the combatants involved in that particular international conflict applied the theoretical stance put forward by Allan and Frey and Naff. Both the fear of scarcity and the actual political realities of natural resource politics combine to add volatility to hydropolitics at this regional level.

Application of this view requires examination of conflicts or incidents and subsequently determining in what ways hydropolitics were a dynamic in their coming about. In an effort to understand the scope of the global conflict over water Gleick created an expansive database chronicling every incident involving water around the globe stretching far back into antiquity. The expansive data set categorizes clashes and incidents by the nature of the occurrence. Categories incorporate events where actions are meant to coerce opponents by leveraging fear of water scarcity for various goals, where water is a factor in a military conflict, and where water

causes contention for socio-economic development (Gleick 2009). His data shows that roughly one-quarter of all global hydropolitical incidents have happened in the Middle East and demonstrates that hydropolitical conflict happens relatively frequently for a variety of reasons (Gleick 2009). Chronological hydropolitical analysis supports the arguments and conclusions of Frey and Naff, Allan, Gleick, and other scholars. They warn of the danger for conflict and specify very similar reasons and dynamics for occurrences. His data does not, however put the number of conflicts into the context of the total amount of conflict in a region at any given time. Information of that kind would provide for cross-analysis of hydropolitics and the rate at which it is a factor in the sum total of conflicts.

### **Hydropolitics and Cooperation**

Various scholars view the outcomes of hydropolitics in a less pessimistic light. They view water not as a source of stress but rather as a locus of co-operation. Haddadin, in a contrasting opinion to conclusions above, feels that there is "validity" in the "notion that water is a source of cooperation and can never cause a war" and states proudly that "water, after all, is used to extinguish fires, not to ignite them" (Haddadin 2002, 337). Continuing the theme of contradictory opinions, Selby seems to contradict her own arguments regarding hydropolitics. She initially says that "water is simply not that important to the region's economies, states, or ruling classes" but immediately follows this with "this is not to deny, of course, that water is a locally crucial resource or to doubt that water scarcities in the region's poorest areas are engendering local social conflicts" and concludes that "this does not translate into water being of growing geopolitical significance" (Selby 2006, 345). This argument makes no mention of the linkage between the needs of the local economy and the larger economy as a whole nor does it seem to connect the tension created by water scarcity with a growing geopolitical imperative.

Taking up the mantle of liberal cooperation within the hydropolitics of the region are Kibaroglu and Scheumann who studied hydropolitical co-operation in the Euphrates-Tigris river basin following Turkish-instigated tensions regarding river flow. They concluded "the high-level contacts have produced a framework for regional cooperation of which water is an integral component" (Kibaroglu and Scheumann 2013, 297). Progress, they argue, was made on "issues of mutual concern such as drought management, efficient management of resources and the improvement of water quality have come to the fore during the transboundary water talks." "New instruments of statecraft and nongovernmental entities" as playing a key role in the avoidance of hydropolitical conflict. Positivist approaches such as these center around the tendency for water to be an issue which, owing to its crucial importance to human life, manages to rise above the minutiae of political tension to be looked at agreeably by all engaged parties.

Geographic realities of the Middle East Region combine to make water scarcity an issue compounded in its importance by local political realities. Hydropolitics thus adopt a unique nature in this region which cannot be found elsewhere on the globe. Pessimists argue that the life-giving properties of water are what make it such a contentious issue and that a semblance of power is derived from the possession of it when others do not. They see conflict in the region as a natural progression of competition for scarce resources. Optimists rather see that tension in hydropolitics will lead to cooperation rather than conflict and that solutions will come out of each. Each of these camps has elements of their argument that they cannot explain. Pessimists cannot explain why tensions hasn't erupted into all-out war yet while optimists can't explain the

incidents outlined in Gleick's chronology of conflict. Neither viewpoint is perfect but both explain portions of hydropolitical tension sufficiently to further investigate their merits.

## Qualitative Analysis of Existing Theories

### Cooperative Theory of Hydropolitics

Various preceding statements by scholars show that a school of thought exists wherein hydropolitics are viewed as breeding cooperation rather than conflict. Their opinions create a potential framework for analyzing water dynamics which operates under the assumption that hydropolitics are inherently peaceful. Such tranquility is attributed to concerns for large scale human survival - making water generally transcendent of the usual political considerations between states. Such assumptions require that political elites are of the opinion that aquatic resources are of sufficient importance to contribute to the sense of complex interdependence between the states.

Indeed, such interdependence is generally a subject of consensus and agreement by the various states of the Middle East and North African regions. Within the scope of the few existing (Kershner 2013) regional water agreements there is general reaffirmation of the inalienable nature of access to water for survival and progress as a basic human right. The existence of so few Middle-Eastern agreements reiterating this fact can be viewed in two positivist lights. First is based on the idea that political agreements, such as peace accords and water sharing treaties, are generally born out of a concern for lack of consensus on a matter. Observed lack of imperatives for formalizing hydropolitical dynamics can be seen as signaling that it is not of immediate concern or threat to Middle Eastern states. Secondly, developing off of the previous point, formalization is not of immediate concern because of just how close the region is on agreement over cooperation on human access to water resources. Both optimistic lenses reflect how crucial it is to have good hydropolitical relations in the region and how catastrophic the human and economic consequences would be should disagreement occur in this arena. This viewpoint contributes to an environment where peoples who currently have secure access or who lack secure access can both be confident that their access will be likely be preserved or improved as doing so is in the best interest of all states.

Lack of formality forces reliance on states to individually agree on pursuing policies meant to avert those consequences. Large scale human and economic survival is therefore the foundation on which peaceful hydropolitics have been built. Much as is reality for other areas of liberal stability, this only continues to hold true for as long as states have confidence in the "institution" as a whole (Doyle 1986, 1152). Undermining the foundation of stability comes in the form of disagreements between states where one or many may specifically seek to limit the survival which water provides. Therefore breakdowns in hydropolitical stability could potentially be seen in cases of interstate wars or internal conflicts featuring actors seeking to eliminate or seriously harm their opponent's population. Confidence in hydropolitical stability is largely maintained because such an event has yet to occur.

Semi-isolated instances of lower-scale clashes involving water resources and infrastructure are not uncommon yet they fall into neither category of universal agreement or mutual conflict. What instances there have been consist of minor skirmishes usually in the

context of a much larger issue (Gleick 2009). For one they tend not to be of sufficient scale to require the creation of an explicit agreement to regain stability. For another they have yet to result in the reduction of confidence in the institution of hydropolitical stability as a whole. Perplexingly, these generally localized issues present an as-of-yet unanswered quandary for scholars who hold that political interactions over water will result in cooperation and agreement. Were their assertions to hold true then the various actors who continue to perpetrate attacks centered on water and water infrastructure would be dissuaded in their efforts by the potential for significant human and economic consequences of their actions. Perhaps, as will be considered in later sections, it is precisely the nature of those consequences which continues to provide incentive for such actions.

Overarchingly, this theory considers that hydropolitics is, in and of itself, is a form of complex interdependence between states. Interconnectedness and consensus is driven by the seemingly universal belief that mutual gains from hydropolitical cooperation serves to mitigate the potential dangers and corollaries associated with conflict. It holds that agreement is tacitly implied where it doesn't formally exist and provides states a framework wherein they can utilize common moral ground to avert conflict over riparian resources. Application of such a framework for understanding generally works well particularly when there are existing connections between states. Additionally, owing to the mutually agreeable nature of hydropolitical negotiations, water resources have the potential to be a symbolic ground level for establishing relations between two states or for the deepening of relations. Cooperative views are seemingly proficient at providing rationale for the general lack of large-scale hydropolitical conflict yet remain insufficient at explaining instances of lower-scale clashes involving water resources. Altercations such as these present justification for examining an altercation-based theory of hydropolitical relations.

### **Conflict Theory of Hydropolitics**

Efforts to maintain hydropolitical stability crucial to survival can also present states with a security problem. Perpetual potential for a breakdown in hydropolitical stability cause states to treat water resources much in the way that they would treat any other security risk. Additionally, unwanted restriction of access to riparian resources is compounded not just by the human need for sustenance but also the economic and political significance of access to water resources. Resources which, to some degree, are determinants for overall state security vis-à-vis state's allies, adversaries, or neighbors. Indeed the term Water Security is a seminal aspect of the definition of hydropolitics at large. Assuming then that hydropolitics is a miniature international system lacking central enforcement water can be thought of as a potential security risk much in the same way that food and other natural resources are crucial for states to provide for their own security.

This is the reasoning behind the mentalities of scholars who feel that the ultimate failure of riparian cooperation, full scale war over water resources, must be considered when determining hydropolitical dynamics and policies in the Middle East. Any actor who could threaten a states' access to water resources would thus be able to threaten that state's overall security on a large scale. Actively maintaining that security and planning for a situation where the worst case scenario is realized would seem, to those who subscribe to this school of thought, as logical as safeguarding a domestic military installation against foreign invaders (Frey and Naff 1985, 67). Additionally, in the event of major international conflict or negotiation over



unrelated issues, water resources and infrastructure are viewed as a distinct weakness. Weaknesses in such a regard could be exploited in order to exert pressure on a state or threaten their military security.

Exploitation of this weakness is an area where conflict theory is able to explain that which cooperation theory cannot. Capitalizing on state's vulnerability to threats to their water supply in order to gain the upper hand in an altercation unrelated to hydro-politics is a central theme which seems to appear among the data on hydro-conflicts. As previously mentioned, it is the potential for undermining security, human life, and well-being that makes hydro-systems such a tempting military target. Backing up this assertion is data which points to fairly widespread prevalence of relatively small scale skirmishes which are limited in their initial scope and of limited destructiveness but which pose a disproportionate security threat to the victim state (Gleick, Water, War & Peace in the Middle East 1994). This shows that both state and non-state actors have identified the weaknesses of riparian resources and are seeking to exploit them.

Being of a traditional nature it is clear how directly this theory pits states against each other over hydro-politics. It urges concern for "worst case scenario" situations and, as such, may cause states to act out of an abundance of caution compared to those who operate cooperatively. Subscribing to the tenets of hydro-political-conflict theory would therefore seem useful when formulating policy and actions in politically sensitive areas which depend on a larger margin of security in order to maintain stability. Considering the rash of smaller skirmishes over water security in the region the framework which promotes "quench thirst - ask questions later" would suggest that one or more of the smaller events would have blossomed into a much larger scale conflict. That this is an as-of-yet unrealized eventuality could potentially be attributed to the abundance of caution which traditionalist, conflict-minded, actors engage in when manipulating regional hydro-politics. General stability could, as shown in a case study and data below, also be rationalized by the specific tenets of the cooperative model which banks on the necessity of interdependence to provide the necessary buffer against fighting through informal yet firm agreement over mutual security interest.

#### **Case Study: Turkey and the Euphrates River Basin**

In the end of the 20th and first decade of the 21st century Turkey has been engaging in an ambitious engineering project to dam the Tigris-Euphrates rivers in order to irrigate and hydroelectrically power their undeveloped southeastern region (Southeastern Anatolia Project Regional Development Administration 2006). As the headwaters of both of these rivers are within their borders, Turkey can be considered the most "upstream" of the states utilizing these crucial rivers for resources. Sharing the Tigris and Euphrates with Turkey are Syria and Iraq - all of whom use the river as a primary source of irrigation for economic activities and human survival as well as for power generation and modernization of their own.

The Turkish project, encompassing the almost complete damming of both rivers, has grown increasingly large both in scale and its ability to harness and control the flow of the Tigris and Euphrates rivers. Ongoing construction of even more dams has resulted in reduced water flow and in dramatically low river levels in both Iraq and Syria (Mustafa 2012). These restrictions of access to crucial areas in both countries has negatively affected varying aspects of Iraqi and Syrian life including the production of farm goods and the circulating of drinking



water. Additionally, as trade travels on these rivers, which too has taken a down turn in the wake of the water level dropping precipitously.

International law is fairly egalitarian in its treatment of riparian states in situations such as this. Turkey, as the most upstream state, is required to "participate in the use, development and protection of an international watercourse in an equitable and reasonable manner" (The United Nations 1997). Following the damming of both rivers and the restriction of flow on each, their actions show anything but an equitable distribution of water to those varying states downstream of them. In response to this breach of international law and the existence of a threat to their water security both Iraq and Syria publicly condemned the new distribution of river waters and threatened hostilities if some of the project was not undone. Turkey was engaging in an action which would directly and negatively impact their security and could cause physical or economic hardships for their citizens. Both Iraq and Syria were threatened by such developments unfolding and even went so far as to characterize the dam system as a "weapon of war" (Gleick 1994, 3) which could be used against the downstream states to devastating human and economic effect. Turkey even went so far as to threaten Syria with complete cutoff from river waters if they did not meet Turkish political demands over an unrelated political issue involving Kurds in the region. Yet response from the two downstream states was generally restrained. Syrian and Iraqi reactions stopped at strong public statements condemning the development project, threats of violence which were not acted upon, and high-level discussions at the UN about the questionable legality of such an endeavor.

One would expect, if one subscribed to conflict theory that the possession and use of a "weapon of war" such as the dam project, would lead to these three states engaging each other in armed conflict over the free flow of river water to all downstream states. Yet not even a small military complication or confrontation was reported (Gleick 2009) as resulting from this. In fact, reports after the fact found that high level meetings were constantly happening between the three states and that it was their mutual interest to preserve and protect access to such a valuable resource which ultimately was the verbal hostilities over the dam and its intended purpose. (Kibaroglu and Scheumann 2013, 297)

Neither conflict theory nor cooperation theory can entirely contend with the realities which unfolded in the Fertile Crescent over the last few decades. That the establishment of relationships and interconnectedness rather than military forces played a major role in interactions was a major signal that states were acting with cooperation in mind rather than competition. However, had Turkey acted cooperatively from the very beginning of the process then tensions would not have mounted in the first place. Similarly, tensions built out of a fear that competitive Turkish actions in the restriction of water flow would have - should have- led to interstate conflict spearheaded by Iraq and Syria in order to safeguard their security through maintaining the flow along of both rivers.

By all rights this was a situation where lack of interaction by one state caused a situation where conflict *should* have sprung up yet didn't because. When faced with the potential for such international disagreements, all parties found that their needs for joint access to the rivers trumped any single state's need for the resources provided by that same river. Actions on either

side of the coin can be partially explained by each of the varying hydropolitical frameworks but none can completely vouch for actions by the three states over the course of the disagreement.

## Quantitative Analysis of Hydropolitical Conflict

### Data and Methods

Quantitative analysis of the validity of preexisting frameworks for hydropolitical relations has the potential to definitively show areas in which each mindset is proficient and insufficient at predicting and explaining actions.

The previously mentioned chronology of water conflict, assembled by Peter Gleick, provides a valuable source of data for further examination. Globally the record consists of 265 entries, 72 of which were centered in the Middle Eastern region - accounting for 27% of all water-related conflicts in the database. 55 of those have occurred since 1948 (Gleick, *Water Conflict Chronology* 2009) when the chronology began recording events in the region. The expansive data set categorizes conflict and incidents by the nature of the occurrence (e.g.: military tool/target, terrorism, development dispute, etc) and may assign multiple characteristics to the same instance. These categories are designed to incorporate events where actions are meant to coerce by leveraging fear of water scarcity for various goals, where water is a factor in a military conflict, and where water causes contention for socio-economic development. Full descriptions of each classification and Gleick's definitions are in Table 1.

Conflict Classification	Definition
Military Tool	Use of water resources or systems as weapon by military during conflict
Military Target	Water resources or systems are targets of military actions
Terrorism	Water resources or systems are targets or tools of violence by non-state actors
Development Dispute	Water resources or systems as source of contention for economic and social development.

**Table 1:** Classification of water related conflicts and incident percentage in the Middle East since 1948 (Gleick, *Water Conflict Chronology* 2009)

Gleick's dataset is laid out in terms of a short description for the various incidents which are then assigned one or multiple classifications to designate what type of conflict it was. For the purposes of this investigation we are more interested in showing overall trends in how and why hydropolitical conflict occurs and which context it occurs in. To make Gleick's data more usable for our purpose we have broken apart the classifications of each event in order to highlight the frequency of occurrence of each of the various categories. Additionally, based on the specifics of the various conflicts we have created 3 dummy variables designed to indicate increased context in terms of preexisting conflicts. The dummies "interstate conflict", "intrastate conflict" and "part of a larger conflict" will be regressed against frequencies of incidence of the four classifications in order to determine correlations. Statistical analysis will be performed using Stata12 and results will be presented in table format below.

**Results**

Regression analysis using robust standard errors proved telling on a number of fronts. The results of regressing both the various conflict styles on conflict contexts and various conflict styles on one another are in Table 2.

	<i>Military Tool</i>	<i>Military Target</i>	<i>Terrorism</i>	<i>Development Dispute</i>
<b>Conflict Context</b>				
<i>Interstate Conflict</i>	.423 (.003)	.427 (.002)	-.364(.011)	-.05(.731)
<i>Intrastate Conflict</i>	-.393(.005)	-.394(.004)	.293(.05)	.08(.57)
<i>Larger Conflict</i>	.131(.383)	.472(.000)	-.293(.053)	-.08(.57)
<i>Cause of War</i>	0	0	0	0
<b>Conflict Styles</b>				
<i>Military Tool</i>		-.17(.186)	-.44(.000)	.037(.786)
<i>Military Target</i>	-.19(.18)		-.187(.211)	-.2(.154)
<i>Terrorism</i>	-.4(.000)	-.15(.218)		-.438(.000)
<i>Development Dispute</i>	.04(.786)	-.19(.155)	-.52(.000)	

**Table 2:** Relationship between various conflict styles and contexts in the Middle East Since 1948 (Gleick, Water Conflict Chronology 2009)

Results are presented as coefficients for each relationship with associated p-values to denote statistical significance. For every change from 0 to 1 a change of probability incidence by the coefficient amount will be realized. P-values of .05 to .011 are considered to be of 95% significance while p-values of .01 and less are considered to be of 99% significance. Any p-value larger than .1 is considered insignificant.

## Discussion

Statistical analysis yields strong revelations about the relationship between hydropolitical conflict and the styles and contexts in which it takes case. Interstate conflict raises the chances of the targeting of water resources by the military by 42% as well as raises chance that water resources and systems will be used as a weapon by the military by 43%. Terrorist targeting of water resources is reduced by 36% in interstate conflict. Conversely, intrastate conflict over water resources or systems reduces the likelihood by 39% that the military will both target water resources or use them as a weapon. Terrorist attacks on water resources are shown to grow by 29% in intrastate conflict and consequently they drop 29% when considering incidents which are a part of a larger conflict as a whole. Attacks on water resources as a part of a larger international context see the likelihood of militaries targeting water resources as 47% while these are used as weapons in only 13% of cases. In summary, interstate conflict is very likely to see militaries using water resources and systems not only as a target but also as a weapon or tool for gain. Intrastate conflict over water was much more likely than all other styles of conflict to involve terrorist actions. In cases where hydro-resources are only a subset of a much larger regional conflict the military was very likely to target systems and resources in order to advance their agenda. Finally, none of the cases exhibited were the direct cause of a large interstate war.

Among the styles of conflict surrounding hydropolitics there are very few direct relationships. This would suggest that - while conflict certainly exists - there is minimal evidence to support the hypothesis that one avenue of warfare might have a positive correlation with any other. The data does suggest, however, that terrorist acts decrease by 44% in cases where the military uses water resources and systems as a weapon. Similarly, military participation is 40% to exist in the same event as terrorist attacks. As such, conflict over water in the Middle East can be seen as being perpetrated by two main groups of actors: military and terrorist organizations.

According to the context data, each of these two actors have a preferred arena in which to cause hydropolitical conflict. Military actors overwhelmingly prefer interstate conflict to intrastate fighting. Ergo, if intrastate conflict over water exists then the perpetrators are statistically more likely to be terrorists than military.

## Conclusion

Water security, like all other kinds of security, stands as a potential threat to states who would stand to lose if their security were to be undermined. Maintaining access to riparian resources, which are the foundation of life and economics in the region, is an important consideration for Middle Eastern states. Hydropolitics represent a function of both geopolitics and international relations and are the deciding factor which influences water security for states in the region.

Two contrasting schools of thoughts exist to explain how these dynamics may potentially unfold over any particular situation or interaction within regional hydropolitics. The first maintains that questions of water security will cause states to cooperate and remain peaceful whenever they attempt to address disparities in this regard. The second contends that states must treat any threat to water security as dire and react decisively to maintain their security in this regard. Optimists are unable to explain why militaries and terrorist organizations continue to

perpetrate attacks which target, threaten, or incorporate water resources and systems. Pessimists cannot explain why situations which would constitute a dire threat to water security have yet to erupt into full-blown international conflict.

Following this investigation we maintain that these contrasting theories do an admirable job of explaining their particular areas of concern. It is true, water security presents a threat to states and this causes feelings of insecurity and tension for those states. Research and data show however that, when faced with hydropolitical insecurity, states chose to respond by deepening their ties and coming together over the issue rather than allowing tension to be the catalyst for full scale interstate conflict. Complex interdependency of water resources thus ultimately makes states adopt a sense of cooperation. Such security concerns can be exploited, however, and water resources present a relatively simple target. Actors seeking to promote insecurity recognize this and clearly feel that ongoing conflicts can be furthered or pressures can be applied to negotiations by capitalizing on state security fears. Therefore the concerns of pessimists must be carefully weighed and considered by even the most optimistic hydropolitical actor as they represent areas in which states are indeed vulnerable to hostile influence. Thus we look to modify most analytical frameworks to suggest that deeper interdependency and cooperation for survival is the key to peaceful relations in the region but that special care must be paid to traditional threats to hydropolitical security. Thus water conflict may initially appear in a vacuum may actually be a pre cursor to or sign of a larger conflict to come or which may not be initially readily apparent. While ongoing low-level conflicts may not result in all-out international war, water security is a chink in every state's armor which cannot be ignored and must be given due diligence and proper attention to fully secure a state in the future.

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