

Hydrostrategic Decisionmaking and the Arab-Israeli Conflict

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ABSTRACT

This paper examines the idea of hydrostrategic territory (that is, territory over which sovereignty has been sought politically or militarily solely because of its access to water sources) and its role in the establishment of national boundaries, warfare, and negotiations in the Jordan River watershed. It argues that although water resources constitute a critical factor in interstate tensions and relations in the region, they have never served as the sole determinant in strategic affairs. No boundaries have been drawn, no military strategies pursued, and no negotiating positions espoused solely on hydrostrategic grounds.

INTRODUCTION

“Water” and “war” are topics being assessed together with increasing frequency. Articles in the academic literature (Cooley 1984; Gleick 1993; Starr 1991; and others) and the popular press (Bulloch and Darwish 1993; World Press Review 1995) point to water not only as a cause of historic armed conflict, but as *the* resource which will bring combatants to the battlefield in the 21st century. Invariably, writings on “water wars” point to the arid and hostile Middle East as an example of a worst-case scenario, where armies have in fact been mobilized and shots fired over this precious resource. Elaborate “hydraulic imperative” theories have been developed for the region which cite water as the prime motivator for military strategy and territorial conquest.

The argument is thus: water is a resource vital to a nation’s survival, from its inhabitants’ biology to their economy; the scarcity of water in an arid environment, often referred to as “water stress,” leads to intense political pressures; the Middle East is a region not only of extreme political conflict, but also one in which states are reaching the limits of their annual freshwater supply; therefore, Middle East warfare and territorial acquisition *must* be related to the region’s “water stress.”

This paper examines in detail the link between water and land—the nature of “hydrostrategic territory”—in this “worst-case” water conflict between Arabs and Israelis. The central question is: in the absence of any other compelling strategic or legal rationale, does territory exist (a) over which sovereignty has been sought politically or militarily, or (b) which would be insisted upon in the course of current territorial negotiations, *solely* because of its access to water sources?

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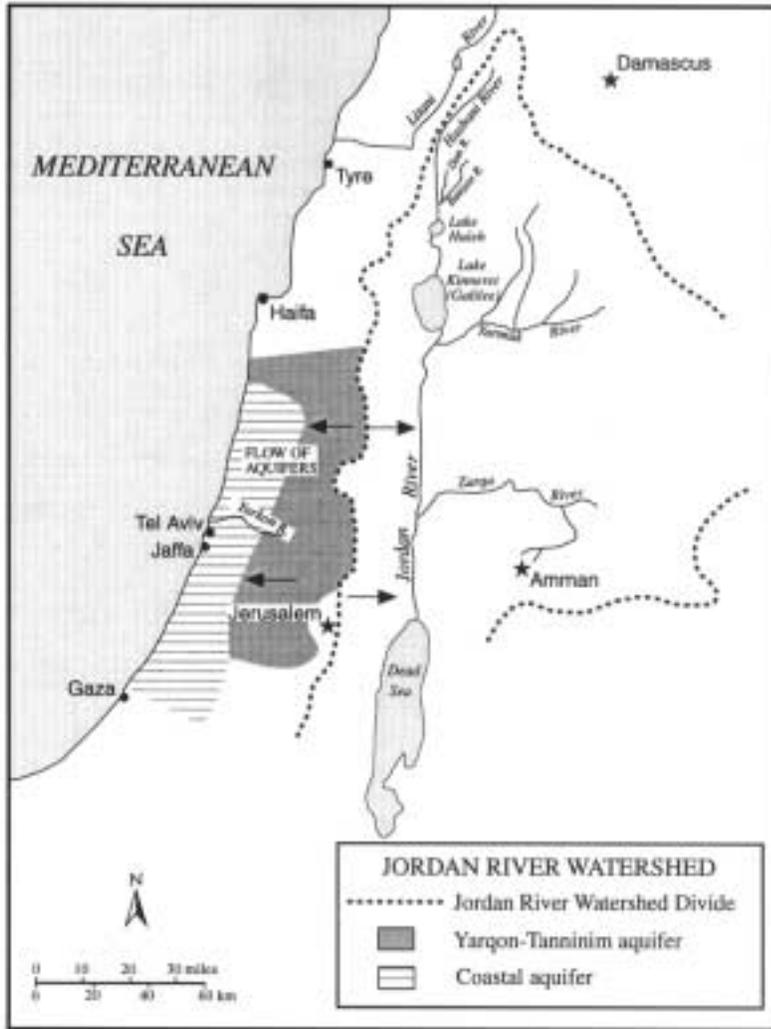


Figure 1 The Jordan River Watershed (Wolf 1995).

The approach is to subdivide the question as follows:

- Have boundaries been drawn historically on the basis of the location of water access?
- During warfare between competing riparians, has territory been explicitly targeted or captured because of its access to water sources?
- In the course of negotiations, has territory with access to water sources (but lacking any strategic component) been considered vital for retention by any of the riparians?

BORDERS, BOUNDARIES, AND HYDROSTRATEGIC TERRITORY

In order to answer these questions, it is necessary to distinguish “hydrostrategic” territory (that is, land surface which has strategic value solely on the basis of water resource access) from other territory under conflict.

Ratzel defines the difference between a border line and a border fringe: “the border fringe is the reality and the border line is the abstraction thereof” (cited in Prescott 1987). The term “boundary” has become more common for the line, while “frontier” and/or “border region” are used regularly to refer to the zone on either side of the boundary (O’Loughlin 1994). Prescott (1987) defines boundaries as “the line of physical contact between states” and identifies them as sources of both conflict and cooperation among states.

The link between the attributes of the border region and international conflict has been well documented. Ratzel emphasized the physical components of boundaries, arguing that states should establish strong military boundaries, including mountain slopes and the far banks of rivers (cited in Prescott 1965). The functional approach of political geography, as defined by Hartshorne (1950), Jones (1954), and others, describes the motives of state behavior; Douglass (1985) specifies security as the fundamental goal of a state: “security for its political system, its economic system and for its people...” Homer-Dixon (1991) offers a broad definition of security along similar lines, to include human physical, social, and economic well-being. If delineation of boundaries does not further these goals for states on both sides of the line, they themselves can become a cause of conflict. Waterman (1984) describes the hardships of the peoples of Ireland and Palestine brought about by the imposition of boundaries which insufficiently take geography into account. Cohen (1986) lists almost one hundred boundary disputes and describes the most important elements which contribute to them.

One problem is that many of these elements can be in opposition. As Tonkin (1994) points out, borders imply scarcity: “Borders now imply potential contestation and scarcity, a sense that territory is either in short supply or potentially valuable.”

Water certainly is a source of boundary conflict. Prescott (1965) describes disputes over water bodies which mark or cross a boundary (including territorial waters) as the most common source of functional disputes, and both he and Bingham *et al.* (1994) describe such examples from around the world. In contrast, ignoring water in favor of other parameters of boundary delineation has also proved unwise. The boundary between India and Pakistan, for example, was drawn mostly on the basis of religious considerations, all but ignor-

ing the dependence of populations on both sides on the waters of the Indus. Religion has been sufficient to unify either country (Donnan and Wilson 1994), and ignorance of the location of water has necessitated years of negotiations and elaborate engineering works to physically divide the river (Biswas 1992).

It is difficult to distinguish between military strategy, defined by one military officer as “from where are they shooting and from where will we shoot back” (cited in Wolf 1995), and “hydrostrategy,” the influence of the location of water resources on strategic thinking. Rivers are invaluable barriers against tanks and troop movements and are also used to delineate boundaries. High ridges, ideal for military positioning, are also often local watershed boundaries. As Minghi (1963) points out, much thought was given to the relationship between boundaries and security particularly in the periods including the two world wars—times of intense boundary delineation. In 1907, Lord Curzon (cited in Prescott 1965) described the superiority of “natural” boundaries,¹ being dependent on physical geographic features, over “artificial” boundaries of latitude and longitude. Writing during World War I, Holdich (1916) linked the concept of security with boundaries, arguing that, whether it is natural or artificial, a boundary should act as a barrier which “must be made as secure as nature or art can make it.”² Rivers, he argued, may make good boundaries (second to mountain ranges), provided “the channel is narrow in a rock-bound bed.” Lyde (cited in Minghi 1963), arguing in 1915 that the prime function of a boundary was not as a barrier, but rather as “a feature which encourages peaceful international discourse,” suggested that rivers made in fact the most desirable boundaries, providing “a maximum of peaceful associations.”

Johnson (1917), Broek (1942), and others have pointed out problems unique to river boundaries, including the difficulty in accommodating geomorphic change and the fact that rivers often flow through heavily populated areas. With World War II, however, came the development of new military technology bringing a dimension to warfare which, along with a greater awareness of the importance of ethnic and economic relations between states, obviated the role of boundary-as-barrier (Spykman 1942, cited in Minghi 1963). The war also graphically contradicted Lyde’s ideas on the boundary as an inducer of peace. With both arguments controverted, Jones (1945) concludes (not surprisingly) that rivers are especially troubling boundaries but that, “unfortunately, rivers probably [will continue to be] adopted as boundaries even though the geographer or engineer inveighs against them.” Jones is also among the earliest observers to detail the conflict-inducing aspects

¹ Prescott makes the important point that Curzon differentiated between “natural” and what Ratzel and, later, Kjellen mislabeled as the geopolitically “Natural” frontiers, to which nations ought to strive. To avoid such confusion, Broek (1940) argues for the term “physiographic” boundary.

² Holdich also suggests that annexation of any territory against the will of its inhabitants is “a political blunder” (p. 499).

of international rivers, notably the difficulty in allocating the water of a shared river.

It is precisely these conflicting elements of water sources—their strategic value in the traditional sense, their functional value in a domestic sense, and their practical role in delineating boundaries—which inform the central questions of this paper. “Hydrostrategic” territory must then be operationally defined as that territory which has strategic value *primarily* because of its access to water resources for irrigation, drinking and/or electric power. This is distinct from strategic territory in a traditional military or political sense, including what Cohen (1986) calls “strategic water space,” or water-related territory which provides traditional strategic value.

WATER AND BOUNDARIES

In this section, I seek to answer the first question posed in the introductory section: have boundaries been drawn historically in the Middle East on the basis of the location of water access?

BOUNDARY PROPOSALS AND DELINEATION: 1913-1923

After the first Zionist Congress in Basel, Switzerland in 1897, European Jewry began its efforts to gain the support of Ottoman or British authorities for a Jewish state in Palestine (which had been under Ottoman rule for 400 years). Even without commitments for independent nations, both Jewish and Arab populations began to swell in Palestine—the former in waves of immigration from Yemen as well as from Europe, and the latter attracted from other parts of the Arab world to new regional prosperity (Sachar 1969; McCarthy 1990). According to McCarthy (1990), Palestine had 340,000 people in 1878 and 722,000 by 1915.

During World War I, as it became clear that the Ottoman Empire was crumbling, the heirs-apparent began to jockey for positions of favor with the inhabitants of the region. The French held favor with the Maronite Catholics of Lebanon and therefore focused on the northern territories of Lebanon and Syria. The British, meanwhile, began to seek a coalition with (1) the Arabs from Palestine and Arabia, for military assistance against the Turks and (2) the Jews of Palestine, for both military assistance and the political support of Diaspora Jewry (Ra’anan 1955). As the course of the war became clear both the colonial powers and the local populations began to refine their territorial interests.

A detailed description of the lengthy process which led to the final determination of boundaries for the French and British mandates and informed the boundaries of modern Lebanon, Syria, Jordan, and Israel, is beyond the scope this paper.³ The influence of

³ Details of the transition can be found in the works of Ra’anan (1955), Sachar (1969, 1987), and Fromkin (1989).

The Zionist Position

The Zionists began to formulate their desired boundaries for the “national home” to be determined by three criteria: historic, strategic, and economic considerations (Zionist publications cited in Ra’anán 1955).

The Jews’ historic concerns coincided roughly with British allusions to the biblical “Dan to Beersheba” area. The Zionists articulated minimum requirements which had to be supplemented with territory allowing military and economic security. Military security required desert areas to the south and east as well as the Beka’a Valley, a gateway in the north between the Lebanon Mountains and Mount Hermon.

Economic security was defined by water resources. The entire Zionist program of immigration and settlement required water for large-scale irrigation and, in a land with no fossil fuels, for hydro-power. The plans were “completely dependent” on the acquisition of the “headwaters of the Jordan, the Litani River, the snows of Hermon, the Yarmuk and its tributaries, and the Jabbok” (Ra’anán 1955).

In a flurry of communication between world Zionist leaders, the aspects of historic, strategic, and economic security became increasingly linked with the Jordan headwaters.

The guiding force on the boundary position of the Jewish side was Aaron Aaronson. In charge of an agricultural experimental station at Atlit on the Mediterranean coast, Aaronson’s research focused on weather-resistant crops and dry-farming techniques. Convinced that the modern agricultural practices which would fuel Jewish immigration were incompatible with “the slothful, brutish Ottoman regime” (Sachar 1979), he concluded that Zionist settlement objectives required alliance with the incoming Allied Forces. Aaronson initiated contact with the British to establish a Jewish spy network in Palestine, which would report on Turkish positions and troop movements. Perhaps because of his training both in agriculture and in security matters, Aaronson became the first to argue for boundary delineation based specifically on future water needs. Aaronson’s “The Boundaries of Palestine” (January 27, 1919, unpublished, Zionist Archives), drafted in less than a day, argued that,

in Palestine, like in any other country of arid and semi-arid character, animal and plant life and, therefore, the whole economic life directly depends on the available water supply. It is, therefore, of vital importance not only to secure all water resources already feeding the country, but also to insure the possession of whatever can conserve and increase these water—and eventually power—resources. The main resources of Palestine come from the

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North, from the two mighty mountain-masses—the Lebanon range, and the Hermon....The boundary of Palestine in the North and in the North East is thus dictated by the extension of the Hermon range and its water basins. The only scientific and economically correct lines of delineation are the watersheds.

Aaronson then described the proposed boundaries in detail, as delineated by the local watershed (see Figure 2). He acknowledged that, with the exception of the Litani, the Lebanon range sends no important water source towards Palestine and could not therefore be claimed on a hydrological basis. It was the Hermon, he argued, that was the genuine ‘Father of Waters’ which could not be severed from (Palestine) without striking at the very root of its economic life.”

Returning to the Litani, Aaronson argued that

[it] is of vital importance to northern Palestine both as a supply of water and of power. Unfortunately its springs lie in the Lebanon. Some kind of international agreement is essential in order that the Litani may be fully utilized for the development of North Palestine and the Lebanon.

Aaronson’s rationale and boundary proposals were adopted by the official Zionist delegation to the Paris Peace Conference, led by Chaim Weizmann. The “Boundaries” section of the “Statement of the Zionist Organization Regarding Palestine,” which paraphrased Aaronson, read:

The economic life of Palestine, like that of every other semi-arid country depends on the available water supply. It is therefore, of vital importance not only to secure all water resources already feeding the country, but also to be able to conserve and control them at their sources.... The Hermon is Palestine’s real “Father of Waters” and [Palestine] cannot be severed from it without striking at the very root of its economic life....Some international arrangement must be made whereby the riparian rights of the people dwelling south of the Litani River may be fully protected. Properly cared for these head waters can be made to serve in the development of the Lebanon as well as of Palestine (Proposals dated February 3, 1919, Weizmann Letters 1983, Appendix II).

Aaronson thought his ideas had been misrepresented in the official Zionist position, perhaps because he was not included in the final drafting. In an angry letter to Weizmann, he complained that the draft was “*a disgrace and a calamity*” (emphasis Aaronson’s) and expressed shock that, for one of the delegates, “a ‘watershed’ is the same as a ‘thalweg.’ Incredible, but true...” (unpublished letter, February 16, 1919, Weizmann Archives).

In June of 1919 Aaronson died in a plane crash on his way to the Peace Conference and the Zionist proposals were submitted without revision. Nevertheless, the importance of the region’s water resources remained embedded in the thinking of the Zionist establishment. “So far as the northern boundary is concerned,” wrote Chaim Weizmann later that year, “the guiding consideration with us has been economic, and ‘economic’ in this connection means ‘water supply’” (Weizmann Letters, September 18, 1919).

The Arab Position

The Arab delegation to the Peace Conference was led by the Emir Feisal, younger son of Emir Hussein of the Hejaz. Working with T. E. Lawrence, Hussein and his sons had led Arab irregulars against the Turks in Arabia and Eastern Palestine. After the war, Feisal had developed a relationship with Chaim Weizmann as both prepared for the Peace Conference. After a meeting in 1918, Feisal said in an interview:

The two main branches of the Semitic family, Arabs and Jews, understand one another, and I hope that as a result of interchange of ideas at the Peace Conference, which will be guided by ideals of self-determination and nationality, each nation will make definite progress towards the realization of its aspirations (cited in Esco Foundation 1947).

Feisal also initially expressed support for Jewish immigration to Palestine, in part because he saw it as useful for his own nationalist aspirations. At a banquet given in his honor by Lord Rothschild in 1918, he pointed out that, “No state could be built up in the Near East without borrowing from the ideas, knowledge and experience of Europe, and the Jews were the intermediaries who could best translate European experience to suit Arab life” (Esco Foundation 1947).

In a meeting later that year, Feisal tried to enlist Weizmann’s support against French policies in Syria. Weizmann in turn outlined Zionist aspirations and, “asserted his respect for Arab communal rights” (Sachar 1969). The two also agreed that all water and farm boundary questions should be settled directly between the two parties.

Feisal and Weizmann formalized their understanding to support each other's national ambitions on January 3, 1919, in a document which expressed mutual friendship, recognition of the Balfour Declaration, stating that:

All necessary measures shall be taken to encourage and stimulate immigration of Jews into Palestine on a large scale, and as quickly as possible to settle Jewish immigrants upon the land through closer settlement and intensive cultivation of the soil. In taking such measures the Arab peasant and tenant farmers shall be protected in their rights, and shall be assigned in forwarding their economic development (original reproduced in Weizmann Letters), providing, Feisal hand-wrote in the margin, that Arab requests were granted. "If changes are made," he wrote, "I cannot be answerable for failure to carry out this agreement."

The Arab requests were spelled out in a memorandum dated January 1, 1919. Because the territory in question was so large—including Syria, Mesopotamia, and the Arabian Peninsula—so geographically diverse, and for the most part, well-watered, it is not surprising that water resources played little role in the Arab deliberations. Feisal requested the following (Esco Foundation 1947):

- that Syria, agriculturally and industrially advanced, and considered politically developed, be allowed to manage her own affairs;
- that Mesopotamia, "underdeveloped and thinly inhabited by semi-nomadic peoples, would have to be buttressed...by a great foreign power," but governed by Arabs chosen by the "selective rather than the elective principle;" and
- that the Hejaz and Arabian Peninsula, mainly a tribal area suited to patriarchal conditions, should retain their complete independence.

Two areas were specifically excluded: Lebanon, "because the majority of the inhabitants were Christian," and had their own delegates (Amery 1996), and Palestine, because its "universal character was left to one side for mutual consideration of all parties interested" (Esco Foundation 1947).

Once testimony was heard at Versailles, the decisions were left to the British and the French as the peace talks continued, culminating at San Remo in 1920, as to where the boundaries between their mandates would be drawn.

The French supported the Lebanese claim that the "historic and natural" boundaries of Greater Lebanon should include the sources



Figure 3 Disputed area, March–September 1919 (Hof 1985).

of the Jordan River (Sachar 1979), including the Galilee Region. They claimed that the Litani was needed for development in Lebanon, while the snows of the Hermon provided water for Damascus.

In 1919, the British first suggested the “Meinertzhagen Line” as a boundary (see Figure 2). Based mostly on British security requirements, this line was similar in the north to the Zionist proposals, and was rejected by the French for similar reasons. In September the British put forward the compromise “Deauville Proposal,” which

granted Palestine less territory than the Zionists sought, but still included the southern bank of the Litani and the Baniyas headquarters. At the time, Baniyas was thought (incorrectly) to be the biblical Dan, thereby allowing the British to remain true to their claim of Palestine “from Dan to Beersheba” (Hof 1985).

Finally, to best comply with French objections, the British proposed a border running north from Acre to the Litani bend, then east to Mount Vernon, which would increase Lebanese territory but leave the headwaters in Palestine (Ra’anan 1955).

Although the French rejected each of these proposals, Phillips Berthelot, the foreign minister and negotiator to an Anglo-French conference on the Mideast in December 1919, indicated that Prime Minister Clemenceau was insisting on the Sykes-Picot line, but that he was prepared

to agree that one-third of the waterpower of the waters flowing from Mount Hermon southwards into the Palestine of the Sykes-Picot agreement should be allotted to the Zionists under an economic arrangement with France. The French could do no more than this (cited in Ra’anan 1955).

At the San Remo Conference in April 1920, an agreement was reached in which Great Britain was granted the mandates to Palestine and Mesopotamia, and France received the mandate for Syria (including Lebanon). During the remainder of the year, last minute appeals were made both by the British and the Zionists for the inclusion of the Litani in Palestine or, at the least, for the right to divert a portion of the river into the Jordan basin for hydropower. The French refused, offering a bleak picture of the future without an agreement and suggested, referring to British and Zionist ambiguity as to what was meant by a ‘National Home,’ “Vous barboterez si vous le voulez, mais vous ne barboterez pas à nos frais” (“You will flounder if you like, but you will not flounder at our expense.” Butler and Bury 1958).

On December 4, 1920, a final agreement was reached in principle on the boundary issue which mainly addressed French and British rights to railways and oil pipelines as well as incorporating the French proposal for the northern boundaries of six months prior. The French delegation did promise that the Jewish settlements would have free use of the waters of the Upper Jordan and the Yarmuk, although they would remain in French hands (Ra’anan 1955). The Litani was excluded from this arrangement. Article 8 of the Franco-British Convention, therefore, included a call for a joint committee to examine the irrigation and hydroelectric potential of

the Upper Jordan and Yarmuk “after the needs of the territories under French Mandate,” and added that

...in connection with this examination the French government will give its representatives the most liberal instructions for the employment of the surplus of these waters for the benefit of Palestine (cited in Hof 1985).

The final boundaries between the French and British mandates, which later became the boundaries between Israel, Lebanon, Syria, and Jordan, were worked out by an Anglo-French commission set up to trace the frontier on the spot. They generally circumvented settlements, divided territory on an ethnic basis (consistent with the wishes of the inhabitants), and retained the link between settlements and their agricultural land. The results were submitted in February 1922 and signed by the British and French governments in March 1923 (Ra'anana 1955; Hof 1985).

The frontier would run from Ras en-Naqla inland in an easterly direction along the watershed between the rivers flowing into the Jordan and into the Litani; the line was then to turn sharply north to include in Palestine a “finger” of territory near Metulla and the eastern sources of the Jordan.

Rather than include the Banias spring within Palestine as in the French proposal of six months prior, the border ran parallel to and 100 meters south of the existing path from Metullah to the Banias. The French insisted on inclusion of this road in its entirety to facilitate east-west transportation and communication within its mandate, as it was a stretch of the main route from Tyre to Quneitra. This northern border meant that the entire Litani and the Jordan headwaters of the Ayoun and Hasbani would originate in Lebanon before flowing into Palestine. The Banias spring, meanwhile, would originate and flow for 100 meters in Syrian territory, then into Palestine. Since Palestine had a promise of water use, and also access to the Banias Heights which overlooked the spring, the fact that the actual spring lay outside of the boundaries was not of immediate concern. Of the headwaters of the Jordan, however, only the Dan spring remained entirely within Palestine.

From the Banias, the border turned south toward the Sea of Galilee, along the foothills of the Golan Heights, parallel and just east (sometimes within 50 meters) of the Huleh Lake and the Jordan River. Rather than passing through the middle of the Sea of Galilee, the border ran 10m east of its shores (even if the level should rise because of a proposed dam), leaving the entire lake, the town of El-Hama, and a small triangle just south of the Jordan's outflow within

the territory of Palestine. The latter two territories were already included in Zionist plans for water diversion and hydroelectricity generation. The arrangement was beneficial to Palestine's hydrostrategic positioning, and, although it was made mainly for administrative reasons, "to make customs inspection easier," it was also expressed that the development plans should proceed without international complication (Ra'anana 1955). Nevertheless, according to the agreement, fishing and navigation rights on the lake were retained by the inhabitants of Syria. Later, between 1948 and 1967, Syria claimed the shoreline as the *de facto* border, and argued for riparian rights to the lake on that basis.

At the Yarmuk, the border went eastward along the river, meeting up with the Sykes-Picot line into the Syrian desert and south of the Jebel Druze. The final agreement made no mention of joint access to French-controlled waters.

Administrative divisions would further convolute the boundaries along the Jordan. In May 1921, Churchill offered the Emir Abdullah reign over that part of the British Mandate east of the Jordan River. Transjordan became a semi-independent entity in 1923 and an independent kingdom in 1946. While the division was originally between administrative units under one authority—the British Mandate—the boundary, as defined by the center of the Jordan River, the Dead Sea, and Wadi Araba/Arava, would eventually become the international boundary between Israel and Jordan.⁴

Although the location of water resources had been an important, sometimes over-riding issue with some of the actors involved in determination of the boundaries of these territories, it is clear from the outcome that other issues took precedence over the need for water development. These other factors ranged from the geostrategic (the location of roads and oil pipelines) to the political (alliances and relationships among British, French, Jews, and Arabs) to the historical (how well versed one or another negotiator was in biblical geography).

Partition and Jewish Statehood: 1922-1948

During the 1930s and 1940s, water was a focus of several reports which tried to determine the "economic absorptive capacity" of mandate Palestine. In the absence of clear immigration policy, both Jewish and Arab residents of Palestine became increasingly frustrated, taking out their hostility on each other as well as on the British. Over time, the partition of Palestine into Jewish and Arab states increasingly became the most advocated option, first in an Anglo-American plan in 1946, and later, when Britain ceded the Mandate to the United Nations, in the U.N. Partition Plan of 1947.

⁴ The boundary was originally defined as the location of the river in 1922. However, after the Jordan shifted 800 meters westward during the winter of 1927-28, the British high commissioner decided that the boundary would henceforth be the center of the water bodies mentioned, wherever they meandered. A similar shift in the streambed, and consequently in the boundary, occurred in the winter of 1978-79 (Biger 1994).



Figure 4 United Nations plan for the partition of Palestine, November 1947 (Sachar 1979).

In the case of partition the Zionists identified three areas that were essential to a viable Jewish state: the Galilee region with the Jordan headwaters, the populated coastal zone, and the Negev Desert, to absorb “the ingathering of the exiles.” In the late 1930s, the Jewish Agency (the Zionists’ pre-state governing body), sensing that partition was imminent, embarked on an intensive settlement program, building 55 farm communities between 1936 and 1939 (Sachar 1979). The northern Galilee was targeted in order to reinforce the projected boundaries and guarantee the inclusion of those portions of the Jordan headwaters left from the Mandate process.

The Zionist position on partition and the minimum territorial requirements for a viable Jewish state was increasingly influenced by Walter Clay Lowdermilk. In 1944 Lowdermilk, the director of the U.S. Soil Conservation Service, published a plan commissioned by the Jewish Agency. In contrast to the Ionides Plan of 1939, Lowdermilk asserted that proper water management would generate resources for four million Jewish refugees in addition to the 1.8 million Arabs and Jews living in Palestine at the time. He advocated regional water management, based on work of the Tennessee Valley Authority (TVA), to develop irrigation on both banks of the Jordan River and in the Negev Desert as well as construction of a canal from the Mediterranean to the Dead Sea to generate hydro-power and replenish the diverted fresh water (Naff and Matson 1984).

Referring to Lowdermilk’s work, a 1945 *aide memoire* on Palestine described Zionist reservations on partition:

With the sea in the West, the Jordan and the Power and Potash concessions in the East, the chief water resources in the North, and the main land-reserves in the South, any partition scheme seems bound to disrupt the country’s economic frame, and wreck the chances of large-scale development (April 6, 1945, cited in Weizmann Letters).

At the same time, a 1944 study, “The Water Resources of Palestine,” undertaken by Mekorot (the national water company for Jewish Palestine) described an “All-Palestine Project,” for irrigation and hydroelectric development. The study included frontier adjustments which would be desirable for a basin-wide development scheme in Palestine.

It was suggested that the mandate border be moved upstream where it met the Hasbani, Dan, and Baniyas headwaters to allow for more effective drainage; eastward along Lake Hula to leave room for a conduit on the east side of the lake; and upstream along the Yarmuk to include an area of about 80 km² of Transjordan to

develop a series of impoundments along the river (Mekorot Water Company, Ltd. 1944). It should be noted that, although the report included plans to bring Litani water into the Jordan watershed, it was assumed that an agreement would have to be reached with the Lebanese government to do so. Lebanese territory was not included in the list of desirable frontier adjustments. It should be noted further that there is no evidence that any of the territorial suggestions of the Mekorot study were ever included in political decision making, nor were the proposed boundary modifications raised in subsequent negotiations.

Water and Boundaries—Conclusions

Prescott (1987) notes that the most common cause of boundary disputes can be found in the history of the boundary—especially where the “evolution” of the boundary is “incomplete.” In answer to the question of water’s influence on boundaries posed at the beginning of this section, it is clear that water sources have played a role, albeit one subservient to other concerns, in the delineation of international boundaries, first between the British and French Mandates, then between Israel, Lebanon, and Syria. In particular, the political and military policy makers of Israel had explicit interests in retaining the northern headwaters of the Jordan River, arguing for them in political arenas and reinforcing claims through settlement policy. The goal, however, was reached with only marginal success. While the headwaters of the Jordan originated in the territories of three separate entities, Israel had been successful in retaining riparian access to both banks of the Jordan River above the Sea of Galilee, and sovereignty over the entire lake. Yet it is also clear that once boundaries were agreed to in a legal forum in 1923, development plans were modified to fit the legal boundaries and *not vice versa*.

⁵ The wars of 1956 and 1973 are not included because, in the author’s judgment, they did not contain any hydrologic component.

WATER AND WAR

The next aspect of “hydrostrategic territory” to be addressed is the relationship between military strategic thinking during wartime and the location of water resources. During warfare between competing riparians, has territory been explicitly targeted, captured, or retained because of its access to water sources?⁵

THE WAR OF 1948

On February 2, 1947, Great Britain officially turned the fate of Palestine over to the United Nations. The U.N. Special Committee on Palestine recommended partition into two states but included a vehicle for joint economic development, “especially in respect of irrigation, land reclamation, and soil conservation.”

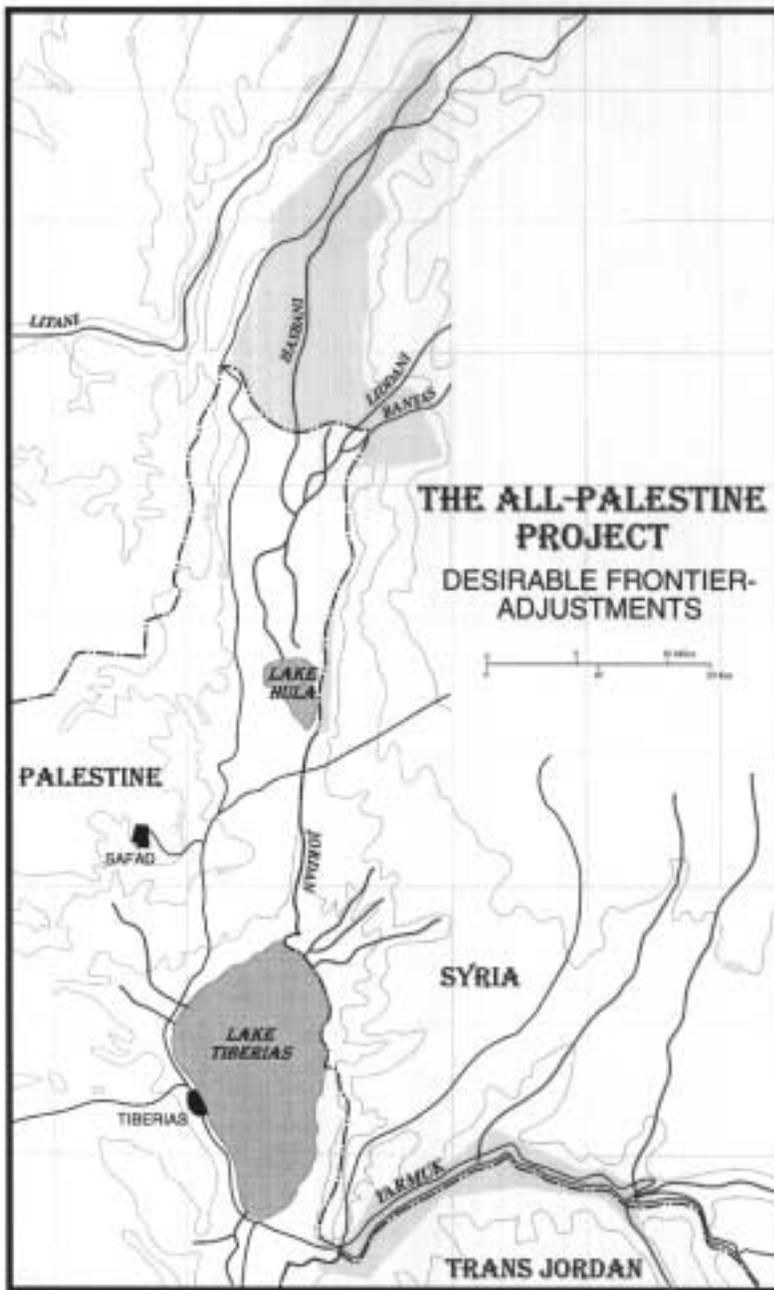


Figure 5 (Mekorot 1944).

The U.N.-delineated Arab and Jewish states are displayed in Figure 5. Jerusalem was to be an international city, and the Jewish state would pay an annual stipend of four million pounds to the

Arab state to reflect the more advanced agricultural and industrial position of the former (U.N. Resolution on the Partition of Palestine 1947, Chapter 4). The General Assembly approved the Partition Plan on November 29, 1947.

Though the Jewish Agency reluctantly accepted partition, the Arab states rejected it outright. When the British pulled out of Palestine in May 1948, Egypt, Jordan, Iraq, Syria, Lebanon and Saudi Arabia went to war against the new state of Israel. Maintaining the three aforementioned critical zones—the Galilee region with the Jordan headwaters, the populated coastal zone, and the Negev to absorb anticipated immigration—became the foci of the Israeli war effort.

Partition cost the Israelis three other strategic points along waterways, the repercussions of which would be felt through 1967.

As mentioned above, during the Mandate negotiations, the French had denied the Zionists the Banias Spring because an access road they needed crossed the waterway about 100 meters downstream. To guarantee access to the water, though, a small hill overlooking the stream, Givat Banias, had been included in Palestine. Second, the town of El-Hama, located on one of the few flat areas within the narrow Yarmuk valley, and an adjacent triangular area from the Yarmuk to the shores of the Sea of Galilee were included within Palestine territory, specifically to facilitate water resources development. Both of these areas were lost to the Syrians during fighting in 1948 (Sachar 1979). (Also, the Syrians crossed the Jordan River in the Huleh Lake/Daughters of Jacob Bridge region, an area targeted by water planners as the site of the first major Israeli reclamation project.) Finally, although the Israeli army had occupied a strip of Lebanese territory along the elbow of the Litani, they pulled back to the Mandate boundaries as part of the armistice agreement, in the unfulfilled hopes of gaining a peace treaty with Lebanon (Hof 1985).

The 1948 war added a new type of boundary to the region—the Armistice Line. While the boundary between the British and French mandates had the permanence and force of international law, the Armistice agreement which was signed separately between Israel and each of its neighbors was explicitly only a temporary military agreement (Hareven 1977). Negotiations continued in an unsuccessful quest for a permanent peace agreement culminating in Lausanne late in 1949 (Caplan 1993). Water was never mentioned during the Rhodes Armistice talks and was referred to only intermittently during the Lausanne Conference.⁶

The differences between permanent legal boundaries and the Armistice Line manifested themselves in how each boundary segment was treated by each combatant.

⁶ The eighth point of the British Eight-Point Plan submitted in July 1949 was a call for “an Israeli-Arab agreement for sharing the waters of the Jordan and Yarmuk Rivers” (Caplan 1993).

The Israel-Lebanon Boundary

Israel had occupied Lebanese territory up to the Litani River, yet withdrew its forces to the international boundary as a result of the Armistice Agreement. Amery (1996) suggests that Israel's withdrawal was based on the belief that it could make peace with a Christian-led Lebanon, and that joint Lebanese-Israeli water resources development could proceed without territorial annexation (citing Berger (1965) as arguing that Israel would not have withdrawn from southern Lebanon had it not been convinced of these results).

The Israel-Syria Boundary

Syria occupied about 60 km² of Israeli territory during the war at three locations, as described above: (1) the Banias Springs area, (2) the Huleh Lake/Daughters of Jacob Bridge region, and (3) the triangle from El-Hama to the southeastern shores of the Sea of Galilee. During the Armistice talks, Syria agreed to withdraw from all of this territory, save Givat Banias and El-Hama, provided that the remaining territory would not be militarized by Israel. While both of these were included in Israeli water development plans, Israel did not push for their return, given the presumed temporary nature of the Armistice Line.

Neff (1994) suggests that Syria withdrew with the understanding that final borders, including final sovereignty of the three demilitarized zones (DMZs), would be negotiated in the future. Israel, in contrast, considered itself the legal sovereign of these areas, legal heir to the northern territory within the British mandate.

The Israel-Jordan Boundary

The pre-war boundary between British-mandate Palestine and Transjordan, delineated when Britain split Palestine in two in 1922, followed the middle of the Yarmuk River, the Jordan River, the Dead Sea, and Wadi Araba southward to the Gulf of Aqaba/Eilat (Biger 1994). After the war, Jordan claimed jurisdiction over the West Bank. Nowhere is the assumption that the Armistice Line was to be temporary more clear, however, than in the "Green Line" dividing the West Bank from Israel. While negotiations continued officially in Rhodes, Sachar (1979) describes secret meetings which took place directly between the Israelis and King Abdullah and his advisors at the king's winter palace. The agreement which was reached was informed not only by the location of the two armies at war's end, but also by the location of roads and railways, as well as hilltops and high ground for local strategic advantage. The line, drawn in green on a map at a scale of 1:250,000,⁷ cut villages from their land, divided towns from the

⁷ At that scale, the width of the line alone allowed for territorial ambiguity of 250m along the boundary (Biger 1989).



Figure 6 Rhodes armistice demarcation line, 1948 (Sachar 1978)

springs on which they relied, and occasionally split settlements in two (Biger 1989). As Biger (1989) points out, “in no case did the terms of agreement provide for continuing rights of access by inhabitants to their vital land and water resources.”

As a result of the 1948 war, the Jordan River was even more divided than it had been under the Mandates. The Hasbani rose in Lebanon with the Wazzani, a major spring of the Hasbani, situated only a few kilometers north of the Israeli border. The Banias flowed for five kilometers in Syrian territory before crossing into Israel. The Dan rose and remained within Israeli territory. The confluence of the three, the Jordan River, flowed along the Israeli-Syrian border, often through a demilitarized zone, until it reached the Sea of Galilee. The sea lay wholly in Israel, with the Syrian border ten meters from the eastern coast. The Yarmuk rose in Syria, then became the Syrian-Jordanian border until its confluence with the Jordan. South of the Sea of Galilee, the Jordan River formed first the Israeli-Syrian border, then the Israeli-Jordanian border below the confluence with the Yarmuk, finally flowing wholly into Jordanian territory and the Dead Sea, which was about one quarter Israeli and three quarters Jordanian. Groundwater was similarly divided, with the recharge zones of two springs on which Israel increasingly relied, the Yarkon and the Tanninim, originating in the Jordanian territory of the West Bank (see Figure 6).

THE WAR OF 1967

Water Resources and Background to the War

The legacy of the partition and the 1948 war was the division of the Jordan River in a manner so convoluted that unilateral water resources development, the only strategy possible among the hostile riparians, would lead inevitably to conflict. By the early 1950s, Arab states were discussing organized exploitation of two northern sources of the Jordan—the Hasbani and the Banias (Stevens 1965). The Israelis also made public their All Israel Plan, which included the draining of Huleh Lake and swamps, diversion of the northern Jordan River and construction of a carrier to the coastal plain and Negev Desert—the first out-of-basin transfer for the watershed (Naff and Matson 1984).

Jordan, in 1951, announced a plan to irrigate the East Ghor of the Jordan Valley by tapping the Yarmuk. At Jordan’s announcement, Israel closed the gates of an existing dam south of the Sea of Galilee and began draining the Huleh swamps, which lay within the demilitarized zone with Syria. These actions led to a series of border skirmishes between Israel and Syria which escalated over the summer of 1951 (Stevens 1965). In July 1953, Israel began construction



Figure 7 Jordan/Yamuk river system (Medzini 1976).

on the intake of its National Water Carrier at the Daughters of Jacob Bridge north of the Sea of Galilee and in the demilitarized zone. Syria deployed its armed forces along the border and artillery units opened fire on the construction and engineering sites (Cooley 1984). Syria also protested to the U.N. and, though a 1954 resolution for the resumption of work by Israel carried a majority, the USSR vetoed the resolution. The Israelis then moved the intake to its current site at Eshed Kinrot on the northwestern shore of the Sea of Galilee (Garbell 1965).

Against this tense background, President Dwight Eisenhower sent his special envoy Eric Johnston to the Middle East in October 1953 to try to mediate a comprehensive settlement of the Jordan River system allocations.⁸ Johnston's initial proposals were based on a study carried out by Charles Main and the Tennessee Valley Authority (TVA) at the request of the U.N. to develop the area's water

⁸ For a detailed normative assessment of the Johnston framework, see Elmusa (this volume).



Figure 8 (Wolf 1995)

resources and to provide for refugee resettlement (Main 1953). Both Israel and a United Arab League Technical Committee responded with their own counterproposals. The Israeli “Cotton” plan included integration of the Litani River’s flow into the Jordan basin, with a subsequent increase in allocations to Israel. The Arab plan rejected integration of the Litani and substantially reduced Israel’s share as compared with the Main plan. Johnston worked until the end of 1955 to reconcile these proposals in a Unified Plan amenable to all of the states involved. In the Unified Plan, Johnston accomplished no small degree of compromise. Although they had not met face to face for these negotiations, all states agreed on the need for a regional approach. Israel gave up on integration of the Litani and the Arabs agreed to allow out-of-basin transfer. The Arabs objected, but finally agreed, to storage at both the Maqarin Dam and the Sea of Galilee so long as neither side would have physical control over the share available to the other. Israel objected, but finally agreed, to international supervision of withdrawals and construction. Allocations under the Unified Plan, later known as the Johnston Plan, included 400 million m³ (MCM)/yr to Israel, 720 MCM/yr to Jordan, 35 MCM/yr to Lebanon, and 132 MCM/yr to Syria (Unpublished summaries, U.S. Department of State).

The technical committees from all sides accepted the Unified Plan, but continuing political support could not be garnered and the Plan was never ratified. Nevertheless, Israel and Jordan have generally adhered to the Johnston allocations and technical representatives from both countries have met from that time until the present two or three times a year at “Picnic Table Talks,” named for the site at the confluence of the Yarmuk and Jordan Rivers where the meetings were held.

As each state developed its water resources unilaterally, their plans began to overlap. By 1964, Israel had completed enough of its National Water Carrier that actual diversions from the Jordan River basin to the coastal plain and the Negev were imminent. Although Jordan was also about to begin extracting Yarmuk water for its East Ghor Canal, it was the Israeli diversion which prompted President Nasser to call for the First Arab Summit in January 1964, a meeting which brought together heads of state from the Mideast and North Africa specifically to discuss a collective Arab strategy on water.

The options presented at the summit were (1) to complain to the U.N., (2) divert the upper Jordan tributaries into Arab states (as had been discussed by Syria and Jordan since 1953), or (3) to go to war (Schmida 1983). The decision to divert the rivers prevailed at a second summit in September 1964 and the Arab states agreed to finance a Headwater Diversion project in Lebanon and Syria and to

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Figure 9 (Wolf 1995)

help Jordan build a dam on the Yarmuk. They also made tentative military plans to defend the diversion project (Shemesh 1988).

In 1964, Israel began withdrawing 320 MCM/yr of flow from the Jordan water into its National Water Carrier and Jordan completed a major phase of its East Ghor Canal (Inbar and Maos 1984). In November 1964, the Arab states began construction of their Head-

water Diversion Plan to prevent the Jordan headwaters from reaching Israel. The plan was to divert the Hasbani into the Litani in Lebanon and the Baniyas into the Yarmuk where it would be impounded for Jordan and Syria by a dam at Mukheiba. The measure would divert up to 125 MCM/y, thereby cutting by 35% the installed capacity of the Israeli Carrier and increasing the salinity in the Sea of Galilee by ~60 ppm (Unpublished memorandum, U.S. Central Intelligence Agency, May 1962). In March, May, and August of 1965, Israeli tanks attacked the diversion works in Syria. The final incident, which involved both Israeli tanks and aircraft on July 14, 1966, stopped Syrian construction.

These events set off what has been called “a prolonged chain reaction of border violence that linked directly to the events that led to the (June 1967) war” (Safran, cited in Cooley 1984).

Boundaries Following the 1967 War

The boundaries following the 1967 war, determined by an unsigned cease-fire agreement, have generally held until very recently.

The boundary between Israel and Lebanon, which was not involved in the war, remained the international boundary of 1923; the boundary between Israel and Syria extended well beyond the Armistice line and demilitarized zones of 1949 to include the plateau of the Golan Heights as far as Quneitra⁹; the boundary with Jordan returned past the Green Line of 1949 to the 1922 British Mandate division between Palestine and Transjordan along the Jordan River.

In addition to the territorial gains and improvements in geostrategic positioning which Israel achieved in the war, it also improved its hydrostrategic position. With the Golan Heights, it now held two of the three northern headwaters as well as high ground over much of the Yarmuk, together making the Arab Headwaters Diversion impossible. The West Bank provided riparian access to the entire length of the Jordan River and also overlay a major aquifer system which Israel had been tapping into from its side of the Green Line since 1955 (Garbell 1965). Jordan had endeavored to transport 70-150 MCM/y from the Yarmuk River to the West Bank, but given the results of the war, its plans were abandoned.

THE WAR OF 1982

In 1982, Israel mounted its second operation against the Palestinian Liberation Organization (PLO) in Lebanon. Its first offensive, named “Operation Litani,” was conducted four years earlier. Then, Israel had stopped its advance at the Litani River and had turned over portions of southern Lebanon to the South Lebanon Army (SLA) under the command of Major Sa’ad Haddad. Haddad

⁹ There was some change along the Israel-Syria border as a consequence of the 1974 war. During that war, Syrian forces crossed westward past Quneitra but did not descend from the Golan Heights. Although the Israeli counter-attack extended east again across Quneitra, the town itself was returned to Syria following a 1974 Disengagement Agreement (Hareven 1977; Sachar 1979).

reportedly agreed to protect Israeli interests in the region, in particular to defend against attempted Palestinian incursions through the area to Israel. In addition, the militia is reported to have protected the Jordan headwaters of the Hasbani by closing some local wells and preventing the digging of others (Naff and Matson 1984). Some Israelis involved in these issues contest these reports. According to an Israeli officer who dealt with Haddad, extensively, the Lebanese major made perfectly clear to the Israeli threat, “We will cooperate with you, but there are two subjects which are taboo—our land and our water” (Wolf 1995).

In 1979, engineers from Mekorot, Israel’s water planning agency, developed plans to divert from 5-10 MCM/y from the Wazzani springs for irrigation in Shi’ite southern Lebanon and in Israel. To allow the project to flow on gravity alone, a slight northward modification of the Israeli-Lebanese border, by about one kilometer, was considered (Wolf 1995). These plans were vetoed by Major Haddad.

In the 1982 war, the Litani was again the initially stated objective, but by July, Israeli forces had surrounded Beirut. After the invasion was launched by then Defense Minister Ariel Sharon, a “water hawk” who had frequently spoken of seizing the Litani, Israel captured the Qirawn Dam and immediately confiscated all hydrographic charts and technical documents relating to the Litani and its installations (Cooley 1984). Israel retreated from Beirut but retained a “security zone” of territory extending from the international boundary north to a bend in the Litani.

WATER AND WAR—CONCLUSIONS

Evidence of a “Hydro-strategic Imperative”

In recent years, particularly since Israel’s invasion of Lebanon in 1982, the notion of a Middle East “hydraulic imperative” has been developed both in the academic literature and the popular press. The theory, which might be better termed the “hydrostrategic imperative,”¹⁰ points to some combination of the following facts (see, for example, Davis *et al.* 1980; Stauffer 1982; Schmida 1983; Stork 1983; Cooley 1984; Dillman 1989; Beaumont 1991):

- Early Zionist lobbyists and planners, from Chaim Weizmann at the Paris Peace Conference in 1919, through the Hays and Cotton plans of the 1940s and 1950s, have advocated inclusion of either the Litani River within Israeli boundaries or of Litani water into the Jordan River watershed.
- The 1967 War had been precipitated by tensions over Israeli and Arab water diversion schemes, and the war itself had greatly strengthened Israeli “hydro-strategic” positioning.

¹⁰ “Hydraulic” refers to the mechanics of water under pressure. “Hydrostrategic” as defined earlier, describes the link between the location of water resources and strategic decision-making.

- The 1979 Litani Operation left Israeli allies in control of the lower Litani river and the Hasbani headwaters.
- The 1982 Israeli invasion of Lebanon included capture of the Qirawn Dam and related data. Even after Israel's withdrawal, the "Security Zone" still leaves Israel in control of the area from Taibe and slightly north—the most likely site for any Litani to Jordan basin transfer.

Particularly during the years of Israeli occupation from 1982 to 1985, several analysts used this history to speculate about Israeli actions in Lebanon. Some predicted scenarios ranging from a simple diversion of the 100 MCM/yr available at the lower Litani and others conjectured a permanent occupation of the entire Beka'a Valley south of the Beirut-Damascus Highway which, along with the removal of Lebanese water infrastructure and the forced de-population of southern Lebanon, would allow diversion of the entire 700 MCM/yr flow of the Litani into Israel.¹¹

¹¹ This last scenario is described in detail in Stauffer (1982).

Others have argued that Israel retains access to the Litani through its "security zone" because it is, in fact, covertly diverting water into the Jordan basin. According to John Cooley, "it was small wonder that the first Israeli diversion plans for the Litani have come into being" (cited in Soffer 1991). More recently, Beaumont (1994), has written that Israel "may well be stealing Lebanese water for its own use." Frey and Naff (1985), even while arguing against the imperative theory, do suggest that:

Although water may not have been the prime impetus behind the Israeli acquisition of territory...it seems perhaps the main factor determining its retention of that territory.

Thomas Naff of the University of Pennsylvania later testified to Congress that "...Israel is presently conducting a large-scale operation of trucking water to Israel from the Litani River..." (U.S. House of Representatives 1990). Naff (1992) has since modified his position to argue that "water ... was instead trucked to units of the Israeli-supported Lebanese Army of South Lebanon in the same area as a reward for their cooperation."

Beaumont (1991) is among those who, building retroactively on the charges regarding Lebanon, now include the 1967 war as proof of water driving Israel's territorial "imperative:"

To avoid each of the states (Lebanon and Syria) controlling their own water resources, Israel invaded southern Lebanon and the Golan Heights of Syria in 1967. The

pretext given was strategic reasons, but the control of the water resources of the area seems a more compelling and realistic reason.

Rebuttal to the Imperative

The theory that water has driven strategic thinking during war-time has been critiqued on political and technical grounds by Naff and Matson (1984), Wolf (1995), Soffer (1995), and Libiszewski (1995), as well as on economic grounds, by Wishart (1989). To examine the validity of a “hydrostrategic” imperative, two questions must be answered: (1) was the location of water resources a factor in the military strategy of Israel in 1967, 1978, or 1982 and, (2) is Israel now diverting water from the Litani River?

The 1967 War

It has already been noted that conflict between Syria and Israel over water resources contributed to tensions leading to the 1967 fighting, although the hydrologic aspect ended almost a year before the beginning of the war itself, which in the south was well away from sensitive water sources (with Egypt expelling the U.N. forces in the Sinai and blocking Israeli shipping to Eilat). The Sinai was the first front when war broke out on June 5, 1967, with the straits of Sharm-el-Sheikh being the primary objective.

The hydrostrategic locations over which Israel gained control during the war were on the West Bank, including the recharge zones of the Mountain Aquifer system and on the Golan Heights, including the Baniyas headwaters of the Jordan River.

Before the war, and even in its first days, Israel had agreed not to engage in combat with Jordan, as long as Jordan did not attack. Jordan did launch several artillery barrages in the first days of the war, though, which opened up the West Bank as the second front (Sachar 1979).

Finally, despite attacks from Syria, Defense Minister Moshe Dayan was extremely reluctant to launch an attack on the Golan Heights because of the presence of Soviet advisors and the consequent danger of widening the conflict (Slater 1991). For the first three days of the war, Dayan held off arguments from several of his advisors, including the CO of the northern command, David Elazar, to launch an attack on the Golan Heights. Finally, a delegation from the northern settlements, who had often experienced Syrian sniping and artillery barrages, traveled to Tel Aviv to ask Dayan to take the Heights to guarantee their security. Only then, on June 9, did Israeli forces launch an attack against Syria (Slater 1991).

In the taking of the Golan Heights, the aforementioned water sources were incidental conquests as Israeli forces moved as far east as Quneitra. The only exception was the conquest of the town of Ghajar, an Awali village which had no strategic importance in the military sense (it neither contained combatants nor was it situated in a strategic position). Ghajar does, however, directly overlook the Wazzani springs, which contribute 20-25 MCM/y to the Hasbani's total annual flow of 125 MCM/y. During dry summer months, the Wazzani is the only flowing source of the Hasbani. Moreover, Ghajar was the site of the projected dams for the Arab Diversion project.

Oddly, Ghajar was not even taken during the hostilities. During the fighting, Israeli troops stopped directly outside of the town since they believed Ghajar to be situated on Lebanese territory (and Israel did not want to involve Lebanon in the war). It turned out that the town *was* Syrian, having been misplaced on 1943 British maps. Cut off from the rest of Syria during the war, a delegation from Ghajar traveled to Beirut to ask to be annexed but the Lebanese were not interested. Three months after the war, another delegation traveled to Israel and asked that the village become Israeli. Only then did Israeli control extend north through Ghajar (Khativ 1988; interview, Khativ, October 1991). Only the village itself was included, though, and most of its agricultural land remained in Syria. Mekorot engineers did install a three-inch pipe for drinking water for the villagers from the Wazzani springs which, although literally a stone's throw from the village, was left under Lebanese control (interviews, Khativ, Paldi, October 1991).

Extensive literature exists on the detailed decision making in the events before, during, and after the 1967 war, but there is almost a complete absence of references to water, either as strategic targets or as propaganda by either side. See, for example, Institute for Palestine Studies (1970), which includes almost no mention of water; Brecher (1974), who includes chapters on both "Jordan Waters," and "The Six Day War," but documents no link; and Laqueur (1967, 50), who claims that, "(water) was...certainly not one of the immediate reasons for hostilities." Stein and Tanter (1980) do not mention water at all.

Hostilities of 1978 and 1982

The same absence of documentation is true for the Israelis' operations in Lebanon in 1978 and 1982 (see, for example, MacBride 1982). Israel's ally in southern Lebanon, Major Sa'ad Haddad, had made clear to Israel in 1979 that water was not to be discussed. It was Haddad, too, who quashed Israel's 1979 plans for a diversion of the Wazzani springs. Tamir (1988), a major general who helped outline Israel's strategic needs in 1967 and in 1982,

described in detail the military strategy of the 1982 war. Here, too, references to water are conspicuously absent.

While the Israel Defense Forces planning branch does have an officer whose responsibilities include water resources, both the officer with those responsibilities during the 1982 war and Tamir (personal communications, 1991) insist that water was not, even incidentally, a factor in the war. When pressed on the subject, Tamir replied:

Why go to war over water? For the price of one week's fighting, you could build five desalination plants. No loss of life, no international pressure, and a reliable supply you don't have to defend in hostile territory.

Even if water was not the immediate cause of the war, another question remains: does Litani water reach Israel? Despite the inherent difficulty in proving the absence of something, my answer, after investigating as closely as possible, is no. This conclusion is based on the following (discussed in more detail in Wolf 1995):

1) The Litani River has a natural flow of about 700 MCM/y. A dam at Qirawn in the Beka'a Valley and irrigation and hydropower diversions completed in the mid-1960s reduce the lower Litani flow to 300-400 MCM/y (Kolars 1992). This lower section, flowing within kilometers of the Hasbani and the Israeli border, historically had presented the possibilities of diversions in conjunction with the Jordan system, and Israel has carried out seismic studies and intelligence reports to determine the feasibility of a Litani diversion (Naff and Matson 1984). These reports concluded that a diversion would be economically unattractive and, in any event, politically infeasible until cooperation could be developed with Lebanon (Wolf 1995). The Lebanese position was and continues to be that rights to Lebanese water should be retained for future Lebanese development.

2) Reports of a secret diversion tunnel were investigated by U.N. forces, as well as by members of the international press, to no avail (Soffer 1991). All relevant sources of spatial data indicate only two water pipelines crossing the Lebanon-Israel border previously mentioned—a three-inch pipe from the Wazzani springs in Lebanese territory to the town of Ghajar in Israel, and a ten-inch pipe from Israel into the Lebanese village of R'meish.

3) Hydrologic records show neither unaccounted-for water in the Israeli water budget after 1978 nor increases in the average flows of the Ayoun or the Hasbani, the most likely carrier streams for a diversion. Because of three years of drought, on October 14, 1991, the Israeli Water Commissioner asked the Knesset to allow pumping of the Sea of Galilee below the legal 'Red Line', the legal water level

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below which the entire lake is in danger of becoming saline. On the same day, a field investigation showed that both the Ayoun and the Hasbani above the Wazzani springs were dry.

4) A hypothetical trucking operation is even more difficult to prove or disapprove. Both Mekorot officials (interview, Turgemon, October 1991), and Israeli military officers responsible for southern Lebanon acknowledge that witnesses may have seen Israeli military water trucks in southern Lebanon. Each has suggested that the most likely explanation is that the trucks were carrying drinking water from Israel to Israeli troops stationed in the “security zone.” Israeli military code, they point out, insists that soldiers drink water only from official collection points, all of which are in Israel.

An officer who has acted as liaison officer between Israeli and South Lebanon forces doubts that anyone saw Israeli trucks filling at the Litani, pointing out that the 20-ton “Rio’s” which are used to carry water could not make the grade of the military road which leads away from the Litani, if the trucks were full (interview, October 1991). Soffer (1991) has calculated that a cubic meter of water trucked from the Litani into Israel would cost about \$4 to \$10, as compared to about \$1.50 for a cubic meter of desalinated water.

The Hydrostrategic Imperative—Conclusions

After closely examining the arguments both in favor and against a hydrostrategic imperative driving military and territorial decisionmaking, it is possible to answer the question posed at the beginning of this section: “Has territory been explicitly targeted, captured, or retained because of its access to water resources?”

I argue the following:

1) Water resources were not a factor for strategic planning in the hostilities of 1948, 1967, 1978, or 1982. By this I mean that the decision to go to war, and strategic decisions made during the fighting, including which territory was it necessary to capture, were not influenced by water scarcity or the location of water resources. The locations of water resources were not considered strategic positions (except in the purely military sense), nor were they a factor in retaining territory immediately after the hostilities.

2) There is no evidence that Israel is diverting any water from the Litani River, either by pipe or by truck. In fact, since 1985, when central southern Lebanon lost its own water supply, an average of 50,000 m³/mo has been piped into that region from wells in northern Israel (Wolf 1995). As a consequence, it is difficult to view water as a rationale for Israeli retention of Lebanese territory.¹²

¹² Nevertheless, Amery (1993) has speculated that Israel will, at a minimum, pressure Lebanon to make Litani water available as a prerequisite to Israeli military withdrawal.

WATER AND NEGOTIATIONS

As noted above, years of warfare have obscured most of the original boundaries between Israel and her neighbors. The June 1967 war erased the boundaries determined in the 1949 armistice agreement on all fronts, with the exception of the line between Israel and Lebanon, in favor of unsigned ceasefire lines between the combatants. These in turn gave way to the lines of the Disengagement Agreement of 1974 on the fronts between Israel and Syria, and Israel and Egypt. The post-1967 years, and particularly the recent period of peace talks, have been characterized by a quest for stable boundary lines, taking into account the lessons of the past. The question which remains is how much of the quest for permanent boundaries is influenced by the location of water resources.

BOUNDARY PROPOSALS: STRATEGY AND HYDROSTRATEGY

The search for acceptable boundaries began immediately after the June 1967 war. For Israel, the guiding rationale was that territorial concessions should be balanced by security needs, defined differently depending on where one was situated on the political spectrum. For the Arabs, regaining *all* land captured during the war became the operative imperative, shadowing subsequent negotiations. In the survey of boundary proposals which follows, I exclude the extreme positions of either side—from a “Greater Israel” on one side to the elimination of Israel on the other—but rather describe those which incorporate the concept of territorial compromise in exchange for peace, as provided for in United Nations Resolutions 242 (1967) and 338 (1973).¹³ Since Israel controls the territory and presumably will not withdraw unless its strategic and political goals are met in negotiations, this analysis focuses on studies which investigate Israeli interests in withdrawal.¹⁴ However, Foucher’s (1987) warning that, “in the case of the strategic debate over Israel, the West Bank and neighboring Arab states, one may have reason to consider that ‘secure border’ for Israel and ‘security for all’ are not synonymous concepts,” should be borne in mind.

Immediately after the 1967 war, the Israeli government spelled out strategic needs (none of which related to water), which, if met, would result in its withdrawal from occupied territory. According to Moshe Dayan, the Golan Heights were negotiable even without a peace treaty, and, with such a treaty, so was the rest of the territory captured in 1967, save East Jerusalem (Slater 1991). This approach was met by the “three no’s” of an Arab Summit in Khartoum in August 1967—no peace, no recognition, and no negotiations with Israel (Sachar 1979). As a consequence, Israel strengthened its position in the newly occupied territories through settlement activities: a

¹³ These U.N. resolutions, the basis for peace negotiations between Israel and each of its neighbors, call for “the right of every State in the area to live in peace within secure and recognized boundaries,” and “withdrawal of armed forces from territories occupied.” Definite articles were purposely omitted in the latter clause (i.e. ‘territories,’ not ‘the territories’), specifically allowing for some flexibility in boundary negotiations (see Julius Stone’s forward to Blum 1971).

¹⁴ I was not able to find many sources from an Arab perspective which dealt with the specifics of territorial compromise. Two exceptions are Khami (1994), who allows for Palestinian territorial adjustments in negotiations *provided* Israel reciprocates with a like amount of land from within green line Israel, and Falah (1995) who, with Newman, argues that a “good” boundary between Palestine and Israel would incorporate both internal and external perceptions of threat. Since neither study has an explicit hydrologic component, neither is described in detail here.

string of kibbutzim was established on the Golan Heights in 1967-68 from Senir, on Givat Baniyas overlooking the Baniyas headwaters, south along the ridge of the Heights overlooking the previously demilitarized zone, to Mevo Hama, adjacent to Hammat Gader with its access to the Yarmuk River. Senir and Hammat Gader were each situated in what had been until the war the demilitarized zone—territory which had been part of the British Mandate, but that Syria had occupied in the 1948 war, then had withdrawn from under demilitarized conditions as part of the 1949 Armistice Agreement.

The same strategy of holding conquered land as an inducement to peace talks was followed immediately after the 1982 war in Lebanon. In 1983, an Israeli-Lebanese agreement was signed which called for an Israeli withdrawal from all of Lebanon. The agreement was abrogated in 1984 however, and, consequently, Israel justifies its continued presence in the “security zone” (Tamir 1988).

The Allon Plan

As mentioned, Israel began to use settlement activity as a way of reinforcing its strategic interests immediately following the war of 1967. The Labor government which ruled Israel until 1977 adhered generally to guidelines devised by minister Yigal Allon to address Israeli security concerns.

The plan mainly emphasized the Jordan Valley and the eastern slope of the West Bank mountain range facing Jordan. It should be noted that the Allon Plan was neither endorsed nor ratified by any Israeli government, although it guided the Labor government’s settlement policy until 1977.

Some Israeli settlements were established outside of the Allon proposals during the Labor years—a few reportedly to help protect Israel’s groundwater resources on the northwest corner of the West Bank. As mentioned above, Israel had since 1955 been tapping into the Western sub-basin of the Mountain Aquifer (an aquifer whose recharge area occurs on the West Bank). Because of the disparate water table depths for this aquifer in the coastal plain and in the Judean hills (about 60m in the plain, 150-200m in the foothills, and 700-800m in the hills (Goldschmidt and Jacobs 1958; Weinberger 1991), and the resulting cost differences in drilling and pumping wells in these areas, this aquifer is especially vulnerable to over-pumping along a narrow westernmost band of the northern lobe of the West Bank, in the region of Galgilya and Tulkarm.

Some settlement plans for the late 1970s referred in part to this line, and about five settlements around Elkanna were reportedly sited in part to guarantee continued Israeli control of the water resources on its side of what would soon be referred to as a “red line” (Pedhatzor 1989; State of Israel memoranda, April-July 1977).



Figure 10 The Allon plan (Alpher 1994).

Post-1977 Boundary Studies

In 1977, the right-wing Likud party gained control of the Israeli parliament for the first time. As Israeli Prime Minister Menahem Begin was preparing for negotiations with Egyptian President Anwar Sadat, he asked the Water Commissioner at the time, Menachem Cantor, to provide him with a map of Israeli water usage from water originating on the West Bank, and to provide guidelines to where Israel might relinquish control, if protecting Israel’s water resources were the only consideration.

Cantor concluded that a “red line” could be drawn beyond which Israel should not relinquish control, north to south following roughly the 100-200m contour line along both “lobes” of the West



Figure 11 West Bank groundwater (Shoval 1992).

Bank (see Figure 11). Israeli water planners still refer to this “red line” as a frame of reference (interviews, Golani, October 1991; Shmuel Cantor, December 1991), and it has occasionally been included in academic boundary studies of the region. This concept was later expanded by others to areas of the northern headwaters and the Golan Heights.

A brief description of those which mention water as a territorial imperative follows:

Cohen’s “Defensible Borders”

Cohen (1986) explored “the geopolitics of Israel’s border question,” addressing possible boundary negotiations with a Palestinian political entity over the West Bank and with Syria over the Golan



Figure 12 (Wolf 1995)

Heights. His recommendations for boundary adjustments were considered from the perspective of defensible borders for Israel within the framework of territorial compromise, and included factors of a “strategic-tactical” and a “demographic-economic” nature. They included, explicitly, defensive depth, surveillance points, marshaling areas and corridors, water control, space for Israeli popula-

tion and industrial growth, absence of dense Arab populations, and psycho-tactical space.

In describing the influence of the above principles, Cohen described how water might influence territorial compromise: Israel would need to retain sovereignty over the Banias-Har Dov-Hermon shoulder headwaters region, the Golan slopes east of the Upper Jordan, and the Golan Heights that overlook the Sea of Galilee and the Lower Yarmuk and its Raqqad tributary. On the West Bank, Cohen argued that Israel should annex the territory which extends until the “subterranean water divide,” which he identifies as extending 2-6 km east of the Green Line.¹⁵ Despite his acknowledgment that this territory includes Arab population centers, Cohen argued that the substantial geopolitical advantage that Israel would gain (presumably over and above the hydrostrategic considerations) would outweigh those concerns. Overall, for all the factors listed above, Cohen advised Israel to annex approximately 20% of the West Bank, 19% of the Gaza Strip, and 50% of the Golan Heights (see Figure 13).

¹⁵ Cohen is probably referring to Cantor’s “red line.” The watershed divide is actually several kilometers inland along the ridge of the Samaritan and Judean Hills.

The Jaffee Center’s “Arrangements”

In 1991, the Jaffee Center for Strategic Studies of Tel Aviv University asked two researchers, Yehoshua Schwartz, the director of Tahal, Israel’s water planning agency, and Aharon Zohar, also at Tahal at the time, to undertake a study of the regional hydrostrategic situation and the potential for regional cooperation. The result, a 300-page document titled, “Water in the Middle East: Solutions to Water Problems in the Context of Arrangements between Israel and the Arabs,” was one of the most comprehensive studies of its kind (Schwartz and Zohar 1991). It examined a number of possible scenarios for regional water development, including possible arrangements between Israel and Jordan, Syria, Lebanon, Egypt, Turkey, Saudi Arabia, Iraq, and the Palestinians on the West Bank and Gaza. Scenarios were included both for regional cooperation and for its absence. Evaluations included hydrologic, political, legal, and ideological constraints. The impacts of potential global climatic change were also considered. The study showed, in the words of Joseph Alpher, the director of the Jaffee Center, “the potential beauty of multilateral negotiations” (interview, Alpher, December 1991).

Some of the findings of the study contradicted government policies at the time, however. In the sections on possible arrangements between Israel and the Palestinians, and between Israel and Syria, maps of the West Bank and Golan Heights included lines to which Israel might relinquish control of the water resources in each area, without overly endangering its own water supply. The line in



Figure 13 Cohen's "defensible borders" (Cohen 1986).

the West Bank, which was based on Cantor's "red line," suggested that Israel might, with legal and political guarantees, turn control of the water resources of more than two-thirds of the West Bank over to Palestinian authorities without threatening Israel's water sources from the Yarkon-Tanninim (Western Mountain) aquifer, although the authors advocated retaining control beyond the "red line." The same was true of more than half of the Golan Heights (see Figure 13).

These maps contradicted the position of the Ministry of Agriculture. Headed by Rafael Eitan of the right-wing Tsomet party, the Ministry's position was that, to protect Israel from threats to both

the quantity and quality of its water, Israel had to retain political control over the entire West Bank.¹⁶ On December 12, 1991, 70 copies of the report were sent throughout Israel for review, including to the Ministry of Agriculture. Calling the maps mentioned “an outline for retreat,” Rafael Eitan and Dan Zaslavsky, whom Eitan had recently appointed Water Commissioner, insisted on a recall of the review copies and a delay in the release of the report. In January 1992, the Israeli military censor backed the position of the Ministry of Agriculture and, citing sensitivity of the report’s findings, censored the report in its entirety.¹⁷

¹⁶ Eitan’s position, argued in full-page ads in the Israeli press, has little basis in hydrogeology, as discussed in Wolf 1995.

¹⁷ When peace talks began in 1991, the document remained censored out of fear that it would reveal an Israeli negotiating strategy. At press, the document has not been made public.

Alpher’s Proposals

Once negotiations began in 1991, boundary proposals took on new urgency. In one of the most comprehensive post-negotiation examinations of West Bank boundary options, Alpher (1994) both summarizes previous proposals for final boundary arrangements, including the recent “Third Way” and Sharon plans (neither of which have a hydrostrategic component), and offers his own. In defining Israel’s requirements in a negotiated agreement, Alpher specifies Israel’s needs according to nine parameters: security, water,



Figure 14 Alpher’s “Water Boundaries” (Alpher 1994).



Figure 15 Alpher’s “Final Boundaries” (Alpher 1994).

demography and politics, the “heritage dimension,” the “historic dimension;” Hebron; Israeli Arabs and the danger of irredentism; “the economic dimension;” and the need to straighten the borderline.

Alpher relies on the unpublished Jaffee Center report of 1991 described above for his description of hydrostrategic territory.¹⁸ He delineates West Bank territory which might be annexed to Israel in order to protect the Western sub-basin of the Mountain Aquifer, as defined first as Cantor’s “Red Line”—the westernmost section of the northern lobe of the West Bank, and a region around Jerusalem.

Alpher notes that, while annexation would guarantee Israeli control of water resources, adequate supervision and control arrangements are possible without annexation—perhaps through the implementation of a joint water regime. He also points out that the territories of the West Bank which are vital for continued control over water management have already been heavily settled because of their importance with regard to security. Thus, he concludes:

...the water issue is not necessarily a decisive rationale for annexation. At the same time, to the extent that the water issue is juxtaposed geographically with additional vital issues such as security and demography, then it may be seen to further enhance an annexation solution.

Alpher finally seems to weigh in against annexation. In his final map incorporating all of the parameters he defines as crucial, *no* territory which was identified as being important for water alone is slated for annexation.

Bilateral and Multilateral Negotiations¹⁹

The Gulf War in 1990 and the collapse of the Soviet Union caused a re-alignment of political alliances in the Mideast which finally made possible the first public face-to-face peace talks between Arabs and Israelis, in Madrid on October 30, 1991. During the bilateral negotiations between Israel and each of its neighbors, it was agreed that a second track be established for multilateral negotiations on five subjects deemed “regional,” including water resources. These two mutually reinforcing tracks—the bilateral and multilateral—have led, at this writing, to a treaty of peace between Israel and Jordan and a declaration of principles for agreement between Israel and the Palestinian Authority. Both have had a water component in terms of allocations and projects, but in *neither* has water had influence on the discussions over final boundaries.

¹⁸ Alpher was director of the Jaffee Center when it commissioned the 1991 study.

¹⁹ For a more detailed accounting of the agreements between Israel and Jordan the Palestinian Authority, see the text of the water components of the Israel-Jordan treaty and Oslo II, pp. 284-296 and Shamir’s commentary, this volume.

Israel-Jordan Treaty of Peace

Israel and Jordan have had probably the warmest relations of any two states legally at war. Communication between the two has taken place since the creation of each, ameliorating conflict and facilitating conflict resolution on a variety of subjects, including water. As noted above, the so-called “Picnic Table Talks” on allocations of the Yarmuk have taken place since the 1950s and negotiations formulating principles for water-sharing projects and allocations have occurred in conjunction with, and parallel to, both the bilateral and multilateral peace negotiations.²⁰ These principles were formalized on October 26, 1994, when Israel and Jordan signed a treaty of peace, ending more than four decades of a legal, when not actual, state of war.

For the first time since the states came into being, the treaty legally defines mutually recognized water allocations. Acknowledging that “water issues along their entire boundary must be dealt with in their totality,” the treaty spells out allocations for both the Yarmuk and Jordan Rivers and Arava/Araba groundwater, and calls for joint efforts to prevent water pollution. Also, “[recognizing] that their water resources are not sufficient to meet their needs,” the treaty calls for ways of alleviating the water shortage through cooperative projects, both regional and international.

The peace treaty also makes some minor boundary modifications. As noted above, the Israel-Jordan boundary was delineated by Great Britain in 1922 and followed the center of the Yarmuk and Jordan Rivers, the Dead Sea, and Wadi Araba. In the late 1960s and 1970s, Israel had occasionally made minor modifications in the boundary south of the Dead Sea to make specific sections more secure from infiltrators. They had also done so on occasion to reach sites from which small wells might better be developed. In the last sixteen years, no modifications were made except on the rare occasion that one of these local wells ran dry and had to be re-dug. *All* of these territorial modifications were reversed and all affected land was returned to Jordan as a consequence of the peace treaty, although Israel retains rights to the water which comes from these wells. Moreover, a small enclave of Jordanian territory in the Arava is being leased back to Israel in 25 year increments.

One other area was similarly affected. In 1926, a Jewish entrepreneur named Pinhas Rutenberg was granted a 70 year concession for hydropower generation at the confluence of the Yarmuk and Jordan Rivers on land leased by TransJordan. The dam he built for that purpose was destroyed in the fighting of 1948 and the 1949 Armistice Line left a small portion of Jordan under Israeli control. This land was farmed by the kibbutz Ashdot Ya’akov, which was estab-

²⁰ For more details on the bilateral and multilateral talks on water, see Wolf (1995b).

lished in 1933. With the 1994 peace treaty, sovereignty of the land was returned to Jordan, who in turn leased it back to the Israelis, and Israeli kibbutzniks now travel into Jordanian territory regularly to farm their land.

Israel-Palestinian Declaration of Principles and Interim Agreement

On 15 September 1993, the “Declaration of Principles on Interim Self-Government Arrangements” was signed between Palestinians and Israelis, which called for Palestinian autonomy in, and the removal of Israeli military forces from, Gaza and Jericho. Among other issues, this bilateral agreement called for the creation of a Palestinian Water Administration Authority. Moreover, the first item in Annex III, on cooperation in economic and development programs, included a focus on:

... cooperation in the field of water, including a Water Development Program prepared by experts from both sides, which will also specify the mode of cooperation in the management of water resources in the West Bank and Gaza Strip, and will include proposals for studies and plans on water rights of each party, as well as on the equitable utilization of joint water resources for implementation in and beyond the interim period.

At approximately the same time, Israeli water managers discovered an additional 70 MCM/yr of available yield in the Eastern sub-basin of the Mountain Aquifer—the only one of the three main West Bank groundwater units which was not being overpumped at the time. This probably did not hurt Jericho’s choice as the first West Bank town to be given autonomy.

Between 1993 and 1995, Israeli and Palestinian representatives negotiated to broaden the interim agreement to encompass greater West Bank territory. On September 28, 1995, the “Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip,” commonly referred to as “Oslo II,” was signed in Washington DC. The question of water rights was one of the most difficult to negotiate, with a final agreement postponed to be included in the negotiations for final status arrangements. Nevertheless, tremendous compromise was achieved between the two sides: Israel recognized the Palestinian claim to water rights, of an amount to be determined in final status negotiations, and a Joint Water Committee was established to cooperatively manage West Bank water and to develop new supplies. This committee also supervises joint patrols to investigate illegal water withdrawals—their first “action” was to discover and

put a stop to illegal drilling in the area of Jenin in December 1995 (Israeline, December 20, 1995).

According to the agreement, Israeli forces are scheduled to withdraw from six Palestinian cities in order from north to south, and from 450 towns and villages throughout the West Bank. The final status of Israeli settlements in the West Bank has yet to be determined. No territory whatsoever was identified as being necessary for Israeli annexation due to access to water resources. The second and third cities scheduled for Israeli withdrawal—Tulkarm, and Kalkilya, fall well within Cantor's "red line" delineated in Israeli studies as being necessary to retain for water security.

Negotiations among Israel, Syria and Lebanon

As of this writing, water has not been raised in official negotiations between Israel and Syria.²¹ Serious bilateral negotiations have only taken place since the fall of 1995 and, given the influence Damascus has on Beirut, Israel/Lebanon talks are not likely until Israel and Syria make more progress. Israelis had hoped to begin talks on water resources with the Syrians at a meeting in Maryland in January 1996, but the Syrians reportedly refused to broaden the scope (Israeline, January 24, 1996).

The basis for Israel/Syria negotiations is the premise of an exchange of the Golan Heights for peace. The discussions thus far have focused on interpretations of how much of the Golan, with what security arrangements, and for how much peace. The crux of the territorial dispute is the question of to which boundaries Israel would withdraw—the boundaries between Israel and Syria have included the international boundary between the British and French mandates (1923), the Armistice Line (1949), and the cease fire lines from 1967 and 1974.

The Syrian position has been an insistence on a return to the borders of June 5, 1967, while Israel refers to the boundaries of 1923. Although it has not been mentioned explicitly, the difference between these two positions is precisely over access to water resources. The only distinction between the two lines is the inclusion or exclusion of the three small areas which made up the demilitarized zone between 1949 and 1967 — Givat Baniyas, the Daughters of Jacob bridge area and the town of El-Hamma/Hamat Gader—a total of about 60 km². Each of these three territories were included in British Palestine specifically because of their access to the Jordan and Yarmuk Rivers and, since each is a relatively low-lying area with no strategic importance, their access to water is still considered paramount.

In fact, even before the Israel-Syria negotiations began, a flurry of articles has stressed the importance of water on the Golan

²¹ In unofficial "Track II" discussions, water was the focus of meetings in which Israelis and Lebanese were present as early as 1993, and in which Israelis and Syrians participated in 1994. Participants at these meetings did not necessarily have official standing.

Heights. As mentioned above, Schwartz and Zohar (1991) advised Israeli retention of the Golan Heights west of the Jordan River watershed line in order to guarantee continued control of both water quantity and quality (see Figure 13). In a 1994 study, Shalev (1994), himself a retired general in the Israeli army, cites five other retired generals on the importance of Israeli sovereignty over the Golan to the protection of water resources. Even in his small sample, Shalev finds a range of military opinions, from those who suggest that Israel retain a physical presence on the Golan Heights, to those who advocate retention of at least the plateau above the Sea of Galilee, to those (such as former Chief of Staff Mordechai Gur) who argue that the water problem can be resolved politically in a peace treaty, and that the territory is not vital. Shalev concludes that Syria would not risk a war with Israel for water, especially since a diversion would take years to construct and would constitute a clear *casus belli*. It stands to reason, Shalev argues, that countries involved in water-sharing agreements would want to maintain them.

In the meantime, Schiff (1995), Tarnopolsky (1996), and others have argued in the popular Israeli and Jewish press that water's paramount importance may scuttle negotiations over the Golan, while Israeli politicians from the Labor party, including Prime Minister Shimon Peres and his Foreign Minister Ehud Barak, argue that while the land may be negotiable, the water is not (Jerusalem Post, January 6, 1996 and January 27, 1996).

Water and Negotiations—Conclusions

In answer to the question posed at the beginning of this section, “How much of the quest for negotiated boundaries has been influenced by the location of water resources?” the evidence seems to suggest: not much. This is not to say that water has not been an important topic in each set of negotiations—quite the opposite. The questions of water allocations and rights have been intricate and have been only partially resolved, and even so with great difficulty. Nevertheless, with the concluded negotiations between Israel and Jordan and the ongoing talks between Israel and the Palestinian Authority (and despite the quantity of studies identifying hydrostrategic territory and advising its retention) *no* territory to date has been retained simply because of the location of water. Solutions in each case have focused on creative joint management of the resource, rather than insistence on sovereignty.

The pattern which does seem to be emerging, however, is that water *in addition* to one or more other concerns, may justify retention of territory. For example, in the absence of any legal claims, security interests, or settlements, Israel withdrew from territory

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which it had occupied from Jordan—even those small portions which had hydrostrategic importance. What was important was an agreement on water management, not territory.

By contrast, Israel developed some settlements on the westernmost side of the West Bank to address security and demographic concerns *in addition* to protecting its water supply. While control of much of this territory is being turned over to the Palestinians, determination of the final status of those settlements has been postponed until the final round of negotiations. Again, the solution was found through agreements guaranteeing joint water management, precluding the need for annexation of territory.

These principles may be played out in negotiations between Israel and Syria as well. While Syria insists on the Armistice Line as it stood on June 5, 1967, Israel is arguing for boundaries based on the 1923 international division between the British and French mandates—the difference being three small areas of vital hydrostrategic importance. Based on the experience of other regional boundary delineations, Israel is likely to address hydrostrategic territorial concerns *in conjunction* with its legal claims.

CONCLUSIONS

Michel Foucher (1989) describes cross-border “realities and representations” thus:

Border analysis does not only deal with space, but also with time. So boundaries can be considered as *time written in space*—not merely the past, but also a special relationship with that past which stands as an inevitable background to current geopolitical decisions.

I have sought to address in this paper the existence of hydrostrategic territory (that is, territory over which sovereignty has been sought politically or militarily *solely* because of its access to water sources) and its role in boundaries, warfare, and negotiations. Hydrostrategic behavior has occurred in the political realm but it has *not* occurred in the military realm.

Have boundaries been drawn historically on the basis of the location of water access? Beginning with the Paris Peace Talks in 1919 and ending with the 1923 mandate boundaries, the Zionist position clearly defined their future state in hydrologic terms, seeking as much of the Jordan Basin as possible, and occasionally some of the Litani as well. They were only marginally successful in achieving these goals, losing two of the three headwaters, but retaining most of the flow of the upper Jordan and all of the Sea of Galilee.

The watershed was further divided in the 1922 creation of Transjordan in territory east of the Jordan River, Dead Sea, and Wadi Araba/Arava. The Zionists attempted to reinforce their sovereignty of the headwaters region through settlement activity in the late 1930s, always within negotiated boundaries.

It seems clear that water was uppermost in the minds of planners and political decisionmakers, particularly among the Zionists, as boundaries were negotiated over the years. However, despite studies advocating the need for greater access to water through 1947, official adherence to sovereignty over such hydrostrategic territory has ceased each time negotiations over legal borders have been concluded.

During warfare between competing riparians, has territory been explicitly targeted, captured, or retained because of its access to water sources? This has been the most elaborately argued question in the literature relating water resources to Arab-Israeli relations, although it is too rarely investigated in detail. In contrast to the functionalists and advocates of a “hydrostrategic imperative,” water-related territory seems actually to have played almost no role in Arab-Israeli warfare. Close examination of strategic planning and military decision making and tactics suggest no evidence at all that water was a factor in the hostilities of 1948, 1967, 1978, or 1982. The *only* instance in which territory was sought for access to water was a brief attempt by Israel in 1979 to move the boundary with Lebanon about a kilometer north to gain access to the Wazzani Springs—an attempt quickly vetoed by the local Lebanese commander.

In the course of peace negotiations, has hydrostrategic territory been seen as vital for retention by any of the riparians? Here, too, the answer seems to be no, despite a flurry of studies recommending Israeli retention of territory to protect its water sources. That is not to say that water has not been a difficult topic for negotiations between Israel and its neighbors—again, quite the opposite, but the debate has been over rights, allocations, and management, *not* over territory. Of territory identified in Israeli studies as being vital to the protection of Israel’s water resources, *none* has been retained by Israel because of the location of water alone. This has been true of agreements completed as of this writing—the 1994 treaty of peace between Israel and Jordan, and the 1993 Declaration of Principles and the 1995 Interim Agreement between Israel and Palestinian Authority—where arrangements were made for joint management and sovereignty concerns were not highlighted.

Hydrostrategic territory *is* being insisted upon, however, in ongoing negotiations when at least one other compelling justification exists. Israel may point to demographic and/or security concerns over some Jewish settlements which were reportedly sited to

protect Israel's groundwater resources, for example. And Israel's insistence that boundaries with Syria be drawn at the 1923 mandate line rather than according to the temporary 1949 armistice agreement is based on precedent and its interpretation of international law as well as on perceived hydrostrategic needs.

The facts show that water has had much less impact on the Arab-Israeli conflict than is increasingly argued, certainly in strategic, spatial, and territorial terms. As Libiszewski (1995) concludes in a thorough study of water and security in the Middle East,

the Arab-Israeli conflict is not primarily a struggle "over water." The conflict is over national identity and existence, territory, as well as over power and national security.

In this context, water has played a minor role but only, it seems, in conjunction with one or more of these overriding imperatives. The true lesson of the Arab-Israeli experience seems not to be of water as exacerbator of conflict but rather, as the people in the region move from war to peace and the desire for sovereignty gives way to principles of joint management, of water as inducer to cooperation. As Lord Curzon (cited in Prescott 1987) said in 1907, "frontiers are indeed the razor's edge on which hang suspended the modern issues of war and peace."

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