

Ambiguity in Transboundary Environmental Dispute Resolution: The Israeli–Jordanian Water Agreement*

ITAY FISCHHENDLER

Department of Geography, Hebrew University of Jerusalem

Cooperation over transboundary environmental resources, water in particular, has been analyzed from various perspectives. Each study identifies the problems of cooperation differently and suggests different mechanisms to enhance it. Yet, the role of ambiguity, particularly significant in treaty design to resolve environmental disputes, has thus far been overlooked. Such a focus is warranted, since many international agreements regulating the use of natural resources are ambiguous in their schedule of resource delivery during crisis events or in their cost-sharing arrangements and may even include contradictory resource-allocation principles while remaining vague on how to settle the contradictions. This study aims to examine why, when, and how ambiguity is applied in agreements pertaining to natural resources, and water in particular. The Israeli–Jordanian peace agreement, which includes an annex on water use regulation, is used as a case study. It was found that, under asymmetric power relations, when both sovereignty costs and uncertainty are high, several types of deliberate ambiguity were intentionally incorporated into the treaty. Some ambiguities allowed each side to present the treaty differently at home, thereby defusing domestic opposition, while others provided leeway to adjust the resource allocation during a future crisis without the need to renegotiate the treaty.

Introduction

The neo-Malthusian premise, that conflicts over increasingly scarce natural resources can be expected as a result of population growth, has given rise to the notion of water conflicts (e.g. Homer-Dixon, 1991; Gleick, 1993) and even water wars (Starr, 1991). Indeed, the difficulty in regulating water-sharing in river basins (Meijerink, 1999) has led many nations to develop water projects unilaterally (World Water Assessment Programme, 2003). Having said that, some of the same properties which make water a potential flashpoint for

international conflict also allow for the possibility of regional cooperation (UNEP, 2006). A long-term broad perspective shows that water conflicts have, to date, been successfully addressed in general. Historically, over 3,600 treaties pertaining to different aspects of international water exist, some 295 of them penned since 1948 (UNEP, 2002: 3). In addition, cooperation over water in areas ridden with conflict is often sustained; examples include the Danube and Rhine Rivers, which survived two World Wars (Brochmann & Gleditsch, 2006).

The seemingly unlikely success of establishing cooperative regimes has triggered numerous extensive studies that explore what might lead states to engage in conflict and what might facilitate cooperation over shared freshwater

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resources. These studies seek to identify the physical, economic, and political conditions for collective action in the management of transboundary water resources. Some of the conditions identified are based upon the qualitative detailed analysis of a single case study (e.g. Meijerink, 1999), while other studies, though few in number, are based upon the isolation of a few explanatory variables and examine their effect through a quantitative comparative analysis (e.g. Gleditsch et al., 2006). As the Middle East is fertile ground for water conflicts (Gleick, 1993), it is not surprising that these studies have often focused on the Nile, Jordan, Tigris, and Euphrates basins and the Mountain Aquifer.

The causes of water conflicts and the mechanisms for cooperation can be clustered according to how the problem of reaching cooperation is defined. For example, understanding this problem as a result of water scarcity has often resulted in technological and market solutions being suggested to increase availability of the resource. Among them are water and virtual water imports (Allan, 2002) and the adoption of an integrated system of management (Feitelson, 2003). In contrast to economists and engineers, who often stress the physical aspects of the system, international relations (IR) experts argue that water conflicts are a function of institutional and political variables, and, thus, the solution should also address issues of politics and governance. Among the causes IR specialists stress are the degree to which cooperation infringes on the state's sovereignty over its water sources (LeMarquand, 1977), the effect of the scale of negotiations on the political cost of negotiations (Fischhendler & Feitelson, 2003), and the power structure (Frey, 1993). While some argue that power asymmetry is required for reaching an agreement, since the more powerful parties can forge a compromise (Spector, 2000), others counter that a regional power that also holds the position of an upstream riparian is better

placed to implement unilateral projects that may become flashpoints for regional conflict (Wolf, 1998).

Although the means to achieve cooperation over transboundary natural resources, water in particular, have been analyzed from many perspectives, the role of ambiguity in resolving disputes has thus far been overlooked. This is surprising, since many of the agreements and conventions pertaining to the regulation of water use are ambiguous in their schedule of water delivery during crisis events, in their cost-sharing arrangements, and may even include lists of contradictory resource-allocation principles (Giordano, 2002) while being vague as to how to settle the contradictions. The 1995 Mekong River basin treaty (Sneddon & Fox, 2006), the Indo-Bangladesh Ganges Treaty, and the Indo-Nepal 1996 Mahakli treaty (Tiwary, 2006) are just a few examples of the commonality of ambiguities in water agreements. Another is the 1997 UN Convention on Non-Navigational Use of International Water Courses. This convention also adopted ambiguity of a 'basket of Halloween candy' nature, meaning that it provides something for everyone, enabling all sides to claim partial victory (McCaffrey, 1998) while not providing any tools for resolving competing claims (UNEP, 2006). Likewise, the current implementation process of the EU Water Framework Directive, which aims to reconcile the different interests of member-states and lobby groups that took part in its creation, clearly reveals its inherent ambiguities (Kaika & Page, 2003).

The aim of the present study is to examine why and how ambiguity is so commonly incorporated in agreements pertaining to natural resources, and water in particular. Drawing on the Israeli-Jordanian case, an annex of which regulates shared water, it is argued here that several types of deliberate ambiguity may be incorporated in treaties. One aim is to allow each side to present the treaty differently at home, thereby defusing domestic opposition

to it, while other ambiguities provide leeway to adjust the resource allocation during a future crisis without the need to renegotiate the treaty. Thus, ambiguity can defuse many controversies over the appropriation of shared natural resources under power-imbalanced conditions.

Within the framework of this study's methodology, interviews were conducted with the key treaty negotiators on the Israeli and Jordanian sides. In addition, many internal documents used by both sides were reviewed to gain insight into how they presented the treaty at home.

The article begins with a brief review of why and how ambiguity is used in different disciplines. Then the next section discusses the Israeli–Jordanian case study itself. It reviews the history of the water conflicts between the two states over the Jordan River and identifies the main ambiguities in the treaty. The article then shows how the conflicting issues were resolved by adopting ambiguity. Finally, the attributes of many natural resources are discussed, along with the ability of ambiguity to address them and, as a result, to overcome any potential impasse in negotiations.

Ambiguity in Decisionmaking Processes

Over the last two decades, ambiguity has been analyzed from various perspectives and disciplines, each identifying the rationality behind the phenomenon and how it was achieved. The different approaches all concur that, generally, ambiguity is not just something that can be dismissed as a random error in decision-making; rather, it is occasionally intentional. However, different approaches are at variance on its form, purpose, and definition.

Political scientists noticed that politicians are reluctant to take clear stands on the issues of the day and, on occasion, avoid specific issues altogether, especially when facing

electoral challenges (Shepsle, 1972); also, politicians may make contradictory statements at different times (Page, 1976). The traditional explanation for this is that, by shunning a clear stand, they avoid offending constituents who hold contrary opinions – often called campaign ambiguity (Shepsle, 1972). Alesina & Cukierman (1987) have further argued that the trade-off politicians face between policies that maximize their likelihood of reappointment and those they truly believe in is circumvented by their adopting a stand that makes it difficult for voters to pinpoint their position. In other words, ambiguity helps to create a virtual consensus on policy formation (Li, 1999).

The use of 'constructive ambiguity' is also widely attributed to the field of International Relations, and especially to Henry Kissinger, the former US Secretary of State. By loosely formulating some of the US policies towards the Middle East conflict, Taiwan, and Vietnam, Kissinger was a key figure in enabling his country to sign agreements without actually reaching agreement (Klienman, 1999). Yet, many of the IR studies that stress the ability of ambiguity to bring conflicts to closure do not empirically examine the types of ambiguity and the process of how ambiguity defuses conflicts.

Another role of ambiguity in IR can be seen in studies that examined the often-ambiguous stand of the United States in its foreign affairs policy. In these cases, the scholars claimed, 'strategic ambiguity' is employed to give the United States more flexibility to respond to dangerous situations. Zhongqi (2001) and Benson & Niou (2000), for example, argue that the United States, in order to maintain the peace between China and Taiwan, deliberately introduced an unclear level of its involvement in a move that could have upset the calm in the Taiwan Strait. Lately, IR has highlighted the overlap in the jurisdiction and competence of international agreements that have different but interrelated

objectives (Young, 2002). As in the previous example, ambiguity in jurisdiction and competence led to greater leeway in implementation, which can be used by states to circumvent obligations under other agreements and to improve their negotiating positions in other ongoing processes (Young, 2002).

Economists have increasingly noted that contracts are or appear quite incomplete as they are vague or silent on a number of key features. An incomplete contract is usually explained by the limited rationale of the parties involved, as they may not foresee certain contingencies or be able to recognize the need to specify some dimensions of contractual performance (see, for example, Simon, 1981). Another argument is that ambiguity is an invocation of transactions costs (Hart & Moore, 1988). In other words, even if one can foresee all contingencies, they might be so numerous that it would be too costly to describe them, especially if the cost of processing and acting on them is too high. Thus, it is often optimal to leave some variable aspects of performance unspecified, especially if contracts can be renegotiated in the future (Nosal, 1992).

Finally, the discipline of discourse analysis has addressed the role of ambiguity in the daily language we speak. Linguistic scholars note that people often use jargon, inflated and indirect language, and obscure terms. The aim of this language – doublespeak – is to ‘mislead’, distort, deceive, and circumvent the true meaning of things (Lutz, 2004). Doublespeak is achieved by avoiding obvious statements and choosing, rather, metaphors, clichés, innuendo, and evasive language. Politicians use it to protect themselves from any unforeseen implications of speeches they make that may hinder their career (Wilson, 1990).

‘Disambiguation’ describes the process by which a specific interpretation is adopted while processing an idea (Altmann, 1998). It assumes that different sources of information constrain multiple interpretations. Ambiguity may be by design, where it is deliberately

incorporated, or by necessity, when parties are unable to reach an agreement. Regardless of its use and misuse in different disciplines, ambiguity is nevertheless a variable that allows multiple interpretations of the same contract – or, more precisely, that has more than one legitimate answer. Put differently: ambiguity may be achieved through issues about which contracts are silent. Next, the role of ambiguity in defusing environmental conflicts in the negotiations over water between Israel and Jordan is scrutinized.

The Case of the Jordan Basin

The Geopolitical Setting

The Jordan basin drains an area of 18,000 km². The headwaters of the Jordan River start in southern Lebanon (Hasbani River), northern Israel (Dan River), and Syria (Baniyas River; though the Baniyas springs are now controlled by Israel). These three spring-fed rivers merge at a point 6 km south of Israel’s northern border to form the upper Jordan Basin (Moore, 1994). The upper Jordan River empties into the Sea of Galilee (also known as Lake Tiberias or Lake Kinneret), the main storage reservoir in the basin. South of the lake the Jordan joins its main tributary, the Yarmouk River. The Yarmouk rises in Syria and Jordan and forms the international border between those two states. South of the confluence with the Yarmouk, the Jordan River flows through the Jordan Valley to the Dead Sea, where it forms the border between Israel and the West Bank, now partially under Palestinian control. The river flows through the transition zone from the Mediterranean subtropical climate of Lebanon and the Galilee region in the north to the arid conditions of the Negev Desert and the Rift Valley to the south (Wolf & Ross, 1992). As a result, the annual flow of the river varies from around 200 million cubic meters a year (mcm) in dry years up to 1000 mcm in wet years, with an average of around 500 mcm (EXACT, 2005). The river, despite its

Figure 1. The Geopolitical Units in the Jordan Basin



relatively small discharge of water, represents an important component in the water budget of the regional riparians.

A Short History of Israeli–Jordanian Water Conflicts

In 1951, three years after the establishment of Israel, Israel and Jordan each announced unilateral plans to develop the Jordan Basin. Israel planned the diversion of the northern Jordan River, through the construction of a carrier, to the Coastal Plain and Negev Desert (Naff & Matson, 1984). Jordan opposed this out-of-basin water transfer and instead announced a plan to irrigate the Jordan Valley by moving the Yarmouk into a canal 75 km long (the Ghor Channel). As Israel started implementing its plan, a series of border clashes erupted between it and Syria; these clashes escalated to an armed conflict in 1953 (Wolf & Ross, 1992).

Given these unilateral plans, US President Dwight Eisenhower appointed Eric Johnston as a special envoy to the region. His mission was to reach regional agreement between the riparian states, Israel, Jordan, Lebanon, and Syria, on the division of the waters of the Jordan and Yarmouk Rivers. Johnston proposed a water plan (the Main Plan), but it was quickly rejected. In 1955, he returned with a revised draft (the Unified Plan) that attempted to reconcile the differences between the Israeli and Arab intentions. Two different summaries of the new plan were distributed, one to the Arab countries that confined Israeli use of the Yarmouk to 25 mcmy and the other to Israel, stating it could pump 40 mcmy (Priscoli & Wolf, 2007). The Israeli Prime Minister approved the plan in October 1955. However, although supported by Jordan (Nimrod, 1966), the Unified Plan collapsed when the council of the Arab League did not approve their version.

In the aftermath of Johnston's failed mission, Jordan devised its Greater Yarmouk project. In addition to a canal running parallel to

the river, the project included the construction of two dams, at Mukheiba and Maqarin, for storage and hydro-electricity production (Wenig, 1995); see Figure 1. Jordan and Syria also began construction of a diversion plant to prevent the Jordan River headwaters from reaching Israel; it was delayed by disagreements and lack of funding. Israel, meanwhile, proceeded with its plan to integrate all the country's water resources into a comprehensive countrywide network called the National Water Carrier, completed in 1964. In the years since, Israel has gradually increased its use of the Yarmouk to three times as much as was allotted to it under Johnston's Unified Plan (Priscoli & Wolf, 2007). The Yarmouk water was diverted to the Sea of Galilee, from where it was distributed to the rest of the country via the National Carrier.

These unilateral water development projects created tension among the neighboring states and led to an exchange of threats between them. Between 1964 and 1967, these political clashes developed into several military confrontations. After the Six Day War of 1967, the geopolitical map of the Middle East changed dramatically. Apart from Israel's victory in terms of land and borders, it gained water resources by acquiring one of the three Jordan River headwaters. Israel also started drilling tube wells in Wadi Araba and cultivating the land there.

Later, in the mid-1970s, as Jordan was facing water shortages in its main cities, Amman and Irbid, it revived the plan to build a large storage facility on the Yarmouk. The plan began to take shape when, in 1987, Jordan signed an agreement with Syria allowing Jordan to build the Unity Dam in return for providing Syria with hydro-electricity generated by the dam. The dam is currently under construction and is expected to be completed around 2008.

Despite the past friction, the Israelis and Jordanians often met to discuss and regulate the water-sharing on the Yarmouk, which had

to be frequently adjusted because of the lack of maintenance of the Yarmouk intake at the diversion point (Haddadin, 2001: 259). These meetings served to create working relations and mutual respect between the water experts on both sides (Shamir, 2003). Yet, as long as the high politics of the regional conflict over territory and refugees was not resolved, talks over water were never institutionalized into a treaty and remain restricted in scope (Lowi, 1993).

The Negotiations Venue and the 1994 Treaty

Israel and Jordan entered direct negotiations following the Madrid peace conference in 1991 (Shamir, 1998). Two parallel negotiating tracks – the bilateral and multilateral tracks – were established at the peace conference. The bilateral track was between Israel and each of its immediate Arab neighbors, with the exception of the Palestinians who, at Israel's insistence, were included in the Jordanian delegation (Rubinstein, 2004). The firm hope of this track was to achieve peace treaties. It was divided into groups, which addressed water, energy, and the environment. The multilateral track focused on key issues that concern the entire Middle East and that might serve as confidence-building measures (Peters, 1996).

While the work on both tracks was progressing, Israel and the Palestinians initiated a secret negotiating track outside the framework of the Madrid conference. The bilateral talks between Israel and Jordan intensified the moment it became clear that Israel and the Palestinians were about to sign the Washington Declaration in July 1994. They were concluded three years later, with the signing of the Israeli–Jordanian peace treaty in October 1994; Annex II of the treaty pertains to the two countries' water-related matters.

The next sections identify the ambiguity in the 1994 treaty and explore its role in resolving many of the disagreements.

Ambiguity in the 1994 Treaty

Annex II of the peace treaty, as noted, outlines the process for regulating the shared water along the Israeli–Jordanian border. The ambiguities pertain to three issues, each of which contains several sub-issues. The first and main issue is the division of water between the two countries on the Yarmouk and the Jordan and in the Arava/Araba desert and the setting of guidelines for augmenting the existing water (Issue 1, Table I). The water division is based upon setting criteria for water appropriation (Issue 2, Table I). The treaty then addresses the future development of the basin, including Jordan's and Syria's plans to dam the upper Yarmouk (Issue 3, Table I).

As for Issue I, on the Yarmouk, Israel agreed to reduce its use to 25 mcmy (Article I(a,b)). The historical use of Yarmouk water was not included in the treaty language. Jordan concedes to Israel pumping rights and an additional 20 mcm from the Yarmouk in the winter (Annex II, Article I) in return for Israel delivering Jordan, in the summer, 20 mcm of water from directly upstream of the 'Deganya gates on the River' (Article I(2)(a)). Responsibility for paying capital costs, the exact location of 'directly upstream', and the legal status of the ownership of the exchange of water were left undefined.

On the Jordan River, Jordan is entitled to an annual quantity of 10 mcmy of water from the desalinization of saline springs now diverted to the river, while Israel explores the possibility of financing its operation and maintenance costs. The agreement does not state who will pay for capital costs or the meaning of 'explore'. On the lower Jordan River,¹ Jordan is entitled to store a minimum average of 20 mcm of flood waters (Article I(d)). The storage cost, location, time of construction, and meaning of 'minimum average' are not referred to. Jordan is also entitled to

¹ It is defined as between the confluence of the Yarmouk and Tirat Zvi/Wadi Yabis.

an annual water quantity equivalent to that of Israel on the lower Jordan River, provided that this does not harm Israeli uses (Article I(c)). How much water is actually available on the lower Jordan, the meaning of 'not harm', and whether the existing Israeli uses on the lower Jordan precede the right of Jordan to build the storage dam (mentioned above) were not determined by the treaty. Nor were the issues of how the water would be divided on both the Jordan and Yarmouk Rivers during a drought, except in a mutual assistance clause whose meaning was not defined (Article 6(4c)).

The two countries agreed to cooperate in finding sources for the supply to Jordan of an additional 50 mcmy of potable-standard water (Article I(3)). The source, the timing, and the cost-sharing were left vague.

In the Arava/Araba, Israel can retain the use of its existing wells on the Jordanian side of the border (Article IV(1)) and may even increase its abstraction rate by up to 10 mcmy over five years (Article IV(3)), conditional on not appreciably reducing the yield or quality of these wells (Article IV(1)). The period of Israel's use of the wells and the meaning of 'appreciably' were not defined. Similarly, whether the water Israel conceded to Jordan on the Yarmouk and Jordan Rivers is in return for the water Jordan conceded to Israel in the Arava/Araba was not addressed by the treaty either.

The two sides agreed on a general rule that 'the quality of the water supplied from one country to the other shall be equivalent to the quality of the water used from the same location by the supplying country' (Article III(3)). The purpose of use was not specified.

The above water division is based upon mutual recognition of the 'rightful allocations' of each party on both the Jordan and Yarmouk Rivers and with respect to the Arava/Araba aquifer. However, the meaning of 'rightful allocation' and its criteria for water division were left undefined (Issue 2, Table I).

The treaty addresses the future development of the shared boundary and, particularly, Jordan's right to dam the tributaries of the lower Jordan River and its right to unilaterally dam the upper Yarmouk. The treaty includes both a prior notification clause and a consultation clause concerning projects that are likely to change the flow and quality of the two rivers (Article V); which of the two precedes the other was not stated (Issue 3, Table I).

Table I presents the issues addressed by the treaty and the inherent ambiguities. It differentiates between three types of ambiguity: issues the treaty does not address (Type 1), issues addressed ambiguously (Type 2), and issues addressed in a conflicting manner (Type 3).

In order to understand why the agreement is shrouded in ambiguity, the next section presents each of the negotiation disagreements and then describes how and why ambiguity was employed to defuse them. It is structured around the same three treaty issues.

The Conflicting Issues and the Role of Ambiguity

Issue 1: Dividing the Border Water

The main disagreement between Israel and Jordan centered on dividing the water of the Jordan and Yarmouk Rivers in the north and the groundwater in the Arava/Araba in the south. Jordan expected Israel to reduce its use of the Yarmouk from around 95 to 25 mcmy, while Israel argued that its use had never exceeded 65 mcmy (Balkind interview, 2005). In addition, Jordan wanted 200 mcmy of potable water from the Jordan River, half of that from the Sea of Galilee, to secure its municipal water supply to Amman (Haddadin, 2001: 297–298). Israel, in contrast, argued that Jordan is not a riparian to the lake itself (Katz-Oz interview, 2005). To ensure that Jordan would not be recognized as such, Israel insisted that the term 'Lake Kinneret' not appear in the treaty language (Shamir interview, 2005).

Table I. Issues to be Resolved and Types of Ambiguity Incorporated in the Treaty

<i>Issues to be resolved</i>	<i>Sub-issue</i>	<i>Facets of ambiguity in treaty design</i>		
		<i>Issues not addressed (Type 1)</i>	<i>Issues addressed ambiguously (Type 2)</i>	<i>Issues addressed in a conflicting manner (Type 3)</i>
Issue 1: Water division	Historical use of the Yarmouk	✓		
	Source of 20mcm to Jordan		Upstream Deganya gates	
	Legal statutes of 20mcm to Jordan	✓		
	Cost-sharing of 10 mcm desalinated water to Jordan		Explore the possibility of financing	
	The size of Jordanian water storage on the lower Jordan			Minimum average
	Division of water on the lower Jordan			Jordan's storage versus not harming Israeli uses
	Allocation during a drought		Mutual assistance	
	Cost-sharing, location and time of additional water	✓		
Issue 2: Basis for water division	Period of Israeli use of Arava water and existing Israeli uses	✓		
	Connection between water deliveries in the north and south	✓		
	Criteria for water rights		Rightful allocation	
	Rights of Jordan to dam the upper Yarmouk and side wadis			Notification versus consultation

To support their arguments, each country adopted a different version of the summary of US envoy Johnston's Unified Plan. Jordan, by embracing the Arab version, could call on Israel to reduce its use of the Yarmouk to 25 mcmy (Haddadin interview, 2004); likewise,

Israel, by espousing the Israeli version, could argue that it need not confine its use to below 40 mcmy.

Instead of redistributing the existing water resources, Israel stressed that the regional water shortage should be addressed through

two packages of augmented water availability in the region: one employing desalinization and the other involving the construction of storage dams (Sabel interview, 2005). This solution implied a need for both sides to agree to the size of the storage facilities, their location, and the cost-sharing of the desalinization. Both now found themselves tangled in a new disagreement as Jordan expected Israel to pay the bulk of the desalinization cost, while Israel expected that it be shared equally. Agreeing on the storage size and facility location was similarly problematic. Jordan wished to have large storage units located along the upper part of the lower Jordan, so that it might capture downstream some of the water Israel uses. Israel preferred a smaller storage facility, south of the Beit Shean Valley, and wanted the existing Israeli uses to precede the Jordanian storage (Kinarti interview, 2005).

As for the Arava/Araba, Jordan, before addressing the Israeli demand to maintain its current uses of the water, argued that further studies are required and that any agreement reached should not prejudice Jordan's sovereignty over its land and water resources (Haddadin, 2001: 513).

The Role of Ambiguity in Issue 1

Many of the disagreements over the water-sharing were resolved when Prime Minister Yitzhak Rabin and King Hussein agreed to the treaty, in October 1994, and announced a water package of three components provided to Jordan, each with 50 mcmy (Haddadin, 2002). The first component was based on redividing the existing water and the two others on augmenting the water available. Yet, the problem of how to write the three components into the agreement so that both sides would be able to market it at home still had to be settled (Rizner interview, 2005).

The first component was to come from the Israeli use of the Yarmouk, which was to be reduced to 25 mcmy. Stating only the

amount Israel is permitted to pump, with no reference to its historical use and to which version of the Johnston agreement the treaty adopted, allowed Jordanian sources² to claim that Israel's water use would drop from between 120–70 to 25 mcmy, while Israel said³ that it would drop from between 65–45 to 25 mcmy. This package's component also included an additional 20 mcmy that Israel may pump in the winter from the Yarmouk, in return for Israel's transferring the same amount to Jordan from the Jordan River in the summer. This exchange enables the water Israel gets from the Yarmouk to be presented in two ways: an Israeli version that says its share was fixed to 45 mcmy as the exchange augmented the 25 mcmy mentioned above (Kinarti interview, 2005), and a Jordanian one claiming that Israel's share was confined to 25 mcmy, as the water exchange should not be counted, since the quantity Israel takes in winter has to be returned to Jordan in the summer (Elmusa, 1995). Differential accountings for Israel's historical use and the water it is allowed to use on the Yarmouk resulted in different interpretations of the water it concedes to Jordan on the Yarmouk and from the Sea of Galilee (see Table II). The exchange of water also enabled different claims about property rights over this issue; the Jordanians held that it is their water that Israel temporarily stores during the summer, while Israel claimed to pump its own water from the Yarmouk (Rizner interview, 1998).

Although it was clear that this 20 mcmy exchange would be provided from the Sea of Galilee, the lake's name was not mentioned in the treaty at Israel's insistence, so as not to allow Jordan to set foot there as a riparian. Instead, it stated that the source would be 'from the Jordan River directly upstream

² For the Jordanian interpretation of the water that was conceived by Israel, see Haddadin (2001: 513); Murad (1994a,b); Safadi & Murad (1994).

³ For the Israeli interpretation, see Kinarti interview (2005); Balkind interview (2005); Shatner interview (2005); Rizner interview (1998).

from the Deganya gates on the river'. Nor did it specify who was to bear the capital cost of these waters, as Jordan did not want to share the cost and Israel assumed that it would be borne by the international donor community (Kinarti interview, 2005). This component also included an additional 10 mcm of desalinated water, from saline springs now diverted to the Jordan River, to be provided to Jordan. Since Israel was not sure that the source of this water would be desalinization, nor did it want to irreversibly bind itself to funding on this matter, the treaty stipulated that Israel's role is limited to exploring the funding of such a venture (Rizner interview, 2005).

The second component of the package was based on the construction of two storage dams, one on the Yarmouk and the other on the lower Jordan. The size of the first was not specified. This, Israel assumed, would allow Jordan to capture more water, if it became available, without having to share it with Israel (Kinarti interview, 2005). The size of the dam on the lower Jordan River was set to a minimum average of 20 mcm. The minimum was to satisfy the Jordanian demand for a larger dam, while the average came to address Israeli needs for a smaller one (Kinarti interview, 2005). Leaving ambiguous the size of the two storage dams again resulted in two interpretations of the water Israel would concede to Jordan (Table II). Finally, this component also entitled Jordan to an annual quantity equivalent to that of Israel on the lower Jordan, as long as this would not harm the existing Israeli uses. By not stating the quantity of water available on the lower Jordan River or the meaning of 'no harm', Jordan was able to present an increase of 40 mcmy in the water it receives from Israel (Safadi & Murad, 1994), while for Israel no water was conceded since its existing use precedes that of its neighbor (Kinarti interview, 2005; see Table II).

The third component of the package included the supply of additional potable

water to Jordan. This issue became a major obstacle to the agreement, as the sides could not agree on either the water origin or how the cost of the additional water would be divided (Blitz interview, 2005). Yet, the assumption that the source of the water would be desalinization funded by the donor community resulted in leaving the source, the timing, and the cost-sharing of the water to later negotiations following the ratification of the agreement (Blitz interview, 2005). Not determining these issues allowed Israel, later on, in 1997, to assume that its responsibility is to provide Jordan with only 25 mcmy (Kinarti interview, 2005), while Jordan assumed that it would be up to Israel to supply it with the entire 50 mcmy (Hof, 1995); see Table II. In retrospect, it also gave Israel the flexibility to propose, during the implementation of the treaty, several plans about how to provide the water.

Jordan, for its part, allowed Israel to retain the use of its wells on the Jordanian side of the border and even to increase its use, without specifying the period of use or the existing abstraction rate. Both sides' interpretation was that Israel can use the Arava/Araba water as long as Jordan receives water from Israel in the north (Elmusa, 1995; Kantor interview, 2005). It was in both sides' interest that this exchange language did not appear in the treaty. Not specifying the abstraction rate resulted, during the implementation phase of the agreement, in two interpretations of the water Jordan concedes to Israel in the Arava/Araba: Israel claimed that it could use around 15 mcmy while Jordan put that figure at only 10 mcmy (Blitz interview, 2005).

In presenting the water issue ambiguously, each side conceded to the other, while agreeing on the main allocations enabled them to portray and calculate the water deliveries differently. According to the Israeli negotiators, this technique allowed the Jordanian negotiators to bring a compelling agreement

Table II. The Role of Ambiguity in Differential Water Accounting for the Water Israel Concedes to Jordan

<i>Water Israel concedes to Jordan from different sources</i>	<i>The role of ambiguity in differential accounting</i>	<i>Israeli accounting (in mcm)</i>	<i>Jordanian accounting (in mcm)</i>
Yarmouk	- Not stating the historical water use of Israel - Not defining the legal status of the exchange water	0–20	55–95
Sea of Galilee	- Not defining the legal status of the exchange water	0	20–50
Storage on the Yarmouk	- The storage capacity of the dam is not specified	0–30	30
Storage on the lower Jordan River	- Not defining the meaning of 'average minimum' - Not defining whose water use precedes the other's	0–20	20
Lower Jordan River	- The water available on the southern Jordan is not specified - 'No harm' is not defined	0	40
Desalinization of brackish water	No ambiguity around	10	10
Additional water to Jordan	- Not specifying the cost-sharing of the additional water	Around 25	50
Total		35–105	225–295

*The range is due to different Israeli and Jordanian sources.

to parliament in the face of strong internal opposition (Rizner interview, 2005; Shatner interview, 2005). Table II presents the role of ambiguity in differential water accounting for the water Israel concedes to Jordan.

Issues 2, 3: Water Rights and Unilateral Development

Jordan demanded that the pending treaty recognize its historical water rights. It is often customary law that defines the meaning of water rights according to equitable and reasonable criteria. These criteria are based on several factors, such as hydrology, geography, historical use, and needs, though the weight of each factor is not determined. Thus, it was clear to Israel that setting the allocation on the basis of disputable algorithms would result in long disagreements (Shamir, 2003). Even if the weight of each factor was agreed on, Israel feared that Jordan's water needs in the future would change, which may result in a demand

for adjusting its water rights (Sabel interview, 2005). It would be difficult to refuse those demands because of Jordan's inferior water availability and economic capacity to produce water. Finally, Israel was concerned that recognizing the Jordanian water rights on the Yarmouk may allow its neighbor to raise counter-claims on the Jordan River, which Israel wished to leave as an exclusively Israeli water body (Israeli interview, 2005). Instead, Israel preferred a definitive division of water based on defining the water source and location, quantities and qualities, and pricing (Shamir, 2003).

Another point of friction was the future plan of Syria and Jordan to build an additional 150-mcm dam (the Unity Dam) on the upper Yarmouk. Construction was already agreed on in 1987, when both sides replaced their 1953 pact with a new one to share the Yarmouk's water. A dam that size would have a critical impact on the discharge left for the

downstream riparians and would drastically affect the water availability of several Israeli agricultural settlements along the lower Jordan. During the Israeli–Jordanian water negotiations, the issue was raised again. Israel again opposed the project on the grounds that any development on a joint river requires all sides' consent (Katz-Oz interview, 2005). Jordan countered that this was not an Israeli concern, since it was already planned for in the Johnston agreement (Izraeli interview, 2005).

Several other storage dams that Jordan planned building on tributaries of the Jordan and Yarmouk Rivers also worried Israel. These dams would inevitably reduce the water available on both rivers. Prior to the agreement, Jordan had already impounded 130 mcmy on side wadis (Elmusa, 1995). Thus, Israel, already discussing the agenda for the bilateral negotiations with the Jordanians, rejected the commencement of new water projects during the negotiation process. The Jordanians protested that this was a flagrant infringement of their sovereignty (Haddadin, 2002).

The Role of Ambiguity in Issues 2, 3

It was the technique, used in the controversy over the storage dams, of coining a new term that incorporates both sides' needs in the treaty language that defused the deadlock over Jordanian water rights. This occurred only when the formula of 'rightful allocation' was introduced at the late stages of negotiations. 'Rightful allocation' implies that the Jordanian rights are the allocation both sides agree upon (Rizner interview, 2005). This term served to provide a psychological reference to 'rights' that was important to Jordan while basing the allocations on what is specified in the agreement, as that was important to Israel (Shamir, 2003). Moreover, to accommodate the Israeli needs, the treaty excluded, besides the water rights terminology, much of the customary legal jargon that is found in such documents, for example, the use of 'joint' or 'shared' basin (Sabel interview, 2005). Thus, the language of the treaty does not reveal the extent of the

direct influence international law had on the negotiations.

Resolving the Unity Dam issue posed a larger problem for Israel. Restricting the Jordanian development on the Yarmouk might lead to similar restrictions on its own development along the Jordan River. Furthermore, Israel assumed that Jordan would restrict the size of the Unity Dam, since a larger dam would reduce the Jordanian ability to use their Ghor channel downstream (Balkind interview, 2005). As Syria had a major interest in the dam, Israel further assumed that its construction was inevitable (Rizner interview, 2005). On the other hand, having a major dam on the upper Yarmouk would diminish the river's flood waters that Israel uses (Izraeli interview, 2005). The controversy was settled by including in the treaty both prior notification and consultation clauses (Article V (2)). The former clause addressed the Jordanian need for the ability to unilaterally dam the Yarmouk, while the latter allowed Israel to stop Jordan's unilateral development. This allegedly contradicting language enabled each side to assume that it was its own clause that preceded the other's (Kantor interview, 2005).

Having the two conflicting clauses in one basket also helped to resolve the impasse over Jordan's right to unilaterally build side dams on many of the Jordan River's tributaries. Again, it allowed Israel to believe that Jordan has to notify it concerning any future plans to build dams on the lower Jordan, including side dams (Kynan interview, 2005), while Jordan's interpretation was that it was allowed to proceed with its plan to dam on the Jordan's side tributaries (Haddadin, 2002).

Ambiguity and Resolving Water Disputes

Water has several attributes that turn its appropriation and management into a potential source of conflict. Among them are non-excludability, rivalry, transboundary factors, and their erratic nature. Non-excludability

means that it is costly to exclude individuals from using the resource or from enjoying its benefits (Ostrom, 1993). Because of non-excludability, countries often undertake unilateral development upstream regardless of the adverse implications downstream. Rivalry means that consumption of the resource reduces the availability of the resource to other consumers (Ostrom, 1990). Rivalry during resource scarcity often leads to a race to the bottom where extractions exceed replenishment, as is the case of the Mountain Aquifer shared by Israel and the Palestinians (Feitelson, 2003). Transboundary resources that are not confined to the jurisdiction of one country mean that property rights are difficult to define and enforce (Barrett, 1996). Controlling transboundary resources also means confronting issues of sovereignty. Sovereignty allows a state to neglect the transitional effects of their action (O'Riordan & Jordan, 1997). Finally, there is the erratic nature of the resource: its availability and demand are often uncertain. The uncertainty requires the ability to adapt management regimes to changes in the environment without opening the treaties for renegotiation (Fischhendler, Eaton & Feitelson, 2004).

The Jordanian–Israeli case, which includes a water dispute as well as a border dispute in a power-asymmetrical context, seems to correspond with these four attributes. Indeed, it is perhaps not surprising that in modern times the most pressing water conflicts in the Middle East have centered on control of the Jordan River basin (Gleick, 1993).

A major finding emerging from this study is that only by addressing these four attributes of a conflict in the Jordanian–Israeli case can workable rules to govern access and resource use be established. The extensive use of ambiguities seems to have defused these attributes and led the way to ratification of the treaty between Israel and Jordan. Rivalry was addressed by ambiguity Type 1 (issues not addressed) and Type 3 (issues defined in a

conflicting manner). Type 1 created virtual consent around the future use of the resource. This was the case of the additional 50 mcm, which, without defining its cost burden, allowed each side to assume a different allocation. Type 3, in contrast, seems to defuse the conflict by postponing its resolution to the future, hoping that the background conditions will change to facilitate that. Specifying the size of the storage on the lower Jordan to a minimum average is an example of this approach. Non-excludability was addressed by ambiguity Type 3. In this case, Israel's inability to exclude Jordan from damming the Yarmouk, despite its adverse implications to Israel, resulted in the inclusion in the treaty of both prior notification and consultation clauses.

The transboundary attribute in a power-imbalanced context was addressed by ambiguity Types 1 and 2 (issues defined ambiguously). The aim of the former was to defuse Jordanian domestic opposition to the treaty by leaving open for interpretation the water Israel concedes to Jordan while unambiguously stating how much new water Jordan is to receive from Israel. The result of ambiguity addressing the internal power process was the ratification of the agreement within Jordan. Not stating the historical use of the Yarmouk, the water available on the lower Jordan River, or the size of the storage on the Yarmouk demonstrates the frequent use of this ambiguity type with the aim of defusing opposition to the treaty. The aim of the latter ambiguity was to allow informal agreements on issues with which the sides feel uncomfortable. The case of the upstream Deganya gates and the language that omitted 'in return' are one example. Finally, the erratic nature of the water resource was addressed by ambiguity Type 2. Defining ambiguously some of Israel's water obligations to Jordan allowed flexibility to be incorporated into the future resource allocation, in order to address changes in the background conditions. The 'explore'

language and the mutual assistance clause are examples.

Table III presents the attributes of natural resources, the source of a potential conflict, the type of ambiguity adopted, and its impact on conflict defusing.

Conclusion

The study found that ambiguity, rather than being a random error in decisionmaking, is occasionally intentional, employed either by using vagueness that ignores an issue or words that can mean different things. In this case study, ambiguity is an indication of the intensity of the disagreements manifested during the negotiation process. Many of the disagreements were resolved by the adoption of three types of ambiguity. Some allowed each side to present the treaty differently at home, thereby defusing domestic opposition, while other ambiguities provided leeway to adjust the resource allocation during a future crisis without the need to renegotiate the treaty.

These three-way ambiguities to address the sovereignty and asymmetrical power trap are what hold promise for resolving disagreements over transboundary waters whose attributes make them a potential flashpoint for conflict. In particular, by adopting ambiguity that allowed Jordan to sell the agreement at home, virtual symmetrical relations were established between Jordan and Israel that allowed Jordan to go back to its constituencies and claim victory in a contentious peace agreement. Addressing power was also considered by both sides as a key for treaty implementation. Thus, the agreement was woven around creating symmetrical interdependence, by linking the water interest of Israel in the south to that of Jordan in the north and by adopting a joint management mechanism that would not present Israel as the hegemonic riparian in the basin. Therefore, this study stresses the use of ambiguity in water agreements under power imbalance, as it may serve as a shield from domestic opposition for the weak. These conclusions are in line with some of the literature

Table III. Resource Attributes, Source of Conflict, Type of Ambiguity Adopted and its Impact

<i>Attributes of natural resources</i>	<i>Source of a conflict</i>	<i>Type of ambiguity adopted</i>	<i>Ambiguity impact on defusing conflict</i>
Rivalry	- Competition over the resource - scarcity	- Issues not addressed (Type 1) - Issues defined in a conflicting manner (Type 3)	- Creates virtual consent - Postpones conflict resolution
Non-excludability	- Unilateralism	- Issues defined in a conflicting manner (Type 3)	- Postpones conflict resolution
Transboundary	- Sovereignty - domestic constraints - property rights - power asymmetry	- Issues defined ambiguously (Type 2) - Issues not addressed (Type 1)	- Allows informal agreement - Defuses opposition at home by differential water accounting
Erratic	- Denudation in resource demand and supply	- Issues defined ambiguously (Type 2)	- Allows flexibility to adjust allocations

on soft laws and informal agreements (that often contain ample ambiguities), both of which were frequently used to forge a compromise between the weak and the strong party (Lipson, 1991).

While upgrading ambiguity to a conflict-resolution mechanism that brings treaty negotiation to closure, there is a need to further examine whether such 'constructive ambiguity' is not, in fact, destructive, as it may have detrimental implications at the management phase of the regime. Special attention should be given during the implementation phase of the agreement to the volatility of the virtual power symmetry presented by the treaty. Early results from the analysis of the implementation of the Israeli–Jordanian water treaty indicate that Jordan, the weaker state, managed to overcome its disadvantage in bargaining by harnessing the ambiguities in the agreement to its advantage. That is, attempts by Israel not to provide the additional 50 mcmy in the north were blocked by Jordan's threats not to allow Israel to further develop the groundwater in the south on the pretence of its interoperation of the treaty clauses pertaining to the Arava/Araba water (Fischhendler, 2006). These results are in line with the power literature that often stresses the power of the weaker state (Olson, 1965) and confirms the Israeli fear that ambiguities play into the hands of the party with fewer alternatives, in this case, Jordan.

Since this study is partially based on interviews with the negotiators of the treaty, who might justify their behavior in retrospect, there is a critical need to further strengthen its conclusions. This can be achieved by conducting additional studies on the role of ambiguity in basins with similar conflict conditions. Yet, even if some of these interpretations of ambiguity are indeed policymakers' attempts at presenting a pretty picture of

what happened, the ability to use the ambiguity in treaties in order to get leverage in the implementation of the regime should be noted and further explored.

In conclusion, my work has documented how different types of ambiguity can cement conflicting positions over natural resources when sovereignty costs are high and there is an asymmetrical power balance. It can contribute to the limited empirical experience in conflict-resolution literature by highlighting the process of how ambiguity defuses conflicts.

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⁴ The 'Green Line' starts in the north at a point on the Jordan River, downstream from the confluence of the Yarmouk, and ends in the middle of the Dead Sea.

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ITAY FISCHHENDLER (b. 1968), PhD in Geography (Hebrew University of Jerusalem, 2003); Lecturer, Department of Geography, Hebrew University of Jerusalem (2004–). Current main interest: global environmental politics and transboundary water policy.

