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## Scarcity-Induced Conflict: The Lebanese-Israeli Conflict Over Water

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Scarcity-Induced Conflict:  
The Lebanese-Israeli  
Conflict  
Over Water

By

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1986.

THESIS  
Submitted to the Department of Geography  
in Partial fulfilment of the requirements  
for the Master of Arts degree  
Wilfrid Laurier University  
1987

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## Abstract

This thesis sets out to determine possible links between the depleting water resources in Israel and the country's hegemony over the water-rich area of south Lebanon. The early Zionist and later Israeli leaders have coveted the Litani river of Lebanon, to which Israel has had access since 1978. Israel's replenishable water stock is being fully utilized. This fact is the basis of the theoretical motif of the thesis, namely state conflict induced by resource scarcity. Thus conflict theory is discussed and a model of conflict process is derived.

Also discussed are 1) the reasons for the high water consumption in Israel, 2) water supply and demand in the country, 3) the degradation of fresh water sources, and 4) the domestic and foreign options available for Israel to ameliorate the impending water crisis. Lebanon's Litani river is seen as Israel's best answer to its water problem. A diversion of the Litani into the Jordan river would, however, strongly affect the economic and demographic growth in both Lebanon and Israel. Such a diversion would also have destabilising regional implications, especially for Lebanon. Against this background the conflict model is tested, and a revised one is proposed; one that is more reflective of the conflict process while under conditions of "natural" scarcity. In conclusion, there appears to be a hydrological dimension to Israel's presence in the "security belt" of south Lebanon.

## Acknowledgements

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## C H A P T E R   O N E

### Introduction

One of the most vital resources to life is water. It is essential to health, agriculture, energy, industry, transportation, and recreation; in short, to human existence, and to the economic viability and prosperity of states. This makes water a strategic resource, especially to states in arid regions.

The climate of most countries in the Middle East is arid, semi-arid, or a combination of both. Israel is an example of the latter. Prior to the establishment of Israel in 1948, the question of water was of perennial importance to the Zionist founders of the state. They sought the borders of the Jewish state-to-be to include most of Lebanon's Litani river, the Jordan river and all its tributaries. Zionist demands were, however, not realized when the United Nations partitioned Palestine in 1947 into an Arab state and a Jewish one.

Many Arab states believe that the Zionists accepted the partition as a first step towards the creation of an Eretz Israel

(i.e. the Land of Israel stretching from the Nile to the Euphrates). Arab fears of an alleged Israeli expansionist policy were compounded by pronouncements of Israeli leaders in, for example, the Israeli government's Year Book (1951: 402) which states that "Only now have we reached the beginning of independence in a part of our small country." It then added that "... to maintain the status quo will not do. We have set up a dynamic state bent upon ... expansion" (1951: 419). A similar pronouncement was made by Moshe Dayan in the 1960s when he declared that Israel's northern borders are "not satisfactory" (Naff and Matson, 1984).

The Arab states' fears of the expansionist nature of Israel were confirmed after the June War of 1967; a War in which Israel occupied territories from three of her four neighbouring states, thus greatly enlarging the area of the once-small country. The Arab concern over these expansionist tendencies was rekindled in 1978 when Israel invaded Lebanon and established the so-called "security belt/zone" in the southern part of the country. Israel's involvement in the affairs of south Lebanon is viewed by many Arab and Lebanese officials as a hydro-strategic step that would ultimately lead to the expropriation of south Lebanon and the diversion of the Litani river into Israel.

Since the 1960s Israel's water needs have been paralleled with its successive territorial gains which supplemented the country's dwindling water supplies. Due to Israel's (1) depleting water supplies, (2) its need to access new sources of water, (3) the strategic significance of the resource, and (4) the geopolitical

realities in the Middle East, territorial expansionism becomes an inevitable course of a water-deficient, advantaged, and largely isolated state of Israel.

The objective of this thesis is to determine the relationship between water scarcity in the Middle East and the Arab-Israeli conflict, in particular that between Lebanon and Israel. In pursuit of this objective, the hydrologic dimension of Israel's occupation by proxy of the so-called "security zone" is explored. Israel maintains that this zone is needed to protect its northern region from "terrorist" attacks. This research suggests that the "hidden" objective of this zone is to "secure" Israel's access to the water resources of south Lebanon, the most important of which is the Litani river.

Israel's aggressive policy towards south Lebanon is tested in the conceptual framework of conflict between states over scarce resources. A model describing the process of conflict is developed and tested in the context of water scarcity. This becomes the basis of an analysis which aims to derive a refined model that can be employed to determine the general geo-political impacts of onsetting resource scarcities.

An analysis of Israel's water policy is essential to interpret accurately the country's hydro-strategic planning, its political, economic, and perhaps territorial objectives. Once these factors/objectives are clearly understood, the broader Arab-Israeli conflict can be better understood; perhaps leading to a realistic solution to the larger conflict.

The literature that has been written on the "Arab-Israeli water conflict" is devoid of either quantitative data or of the socio-political background to the problem. Moreover, the literature is devoid of a theoretical framework that could explain the geopolitical implications of state competition for scarce resources. Hence, the methodological approach used in this research is primarily descriptive, supplemented by data from the statistical abstract of Israel, and authors on the water resources of the Middle East. There are no recent governmental data on Lebanon's water demands and supplies. Thus the data are from writers on the hydrology of Lebanon, and from recent articles that appeared on this subject in Lebanese newspapers and magazines.

Following the introduction chapter of this thesis is a discussion of conflict theory, its evolution and processes. This discussion includes a model of conflict process, which becomes the focal point of the theoretical discussion and analysis. Chapter Three provides a historical background to the water conflict between Lebanon and Israel tracing it from 1905 to 1978. Chapter Four presents an analysis of water supply and demand in both Lebanon and Israel. The latter country's need for new water resources, specifically the Litani river of Lebanon, are two of the objectives of this chapter. It also establishes the economic and political significance of the Litani river to Lebanon. Chapter Five tests conflict theory and the conceptual model presented earlier, thus a refined model of conflict process is derived. A summary of the thesis and a number of conclusions are presented in Chapter Six.

This thesis confirms the partial applicability of the process of conflict model in situations of resource scarcity from which a refined model is derived. The hydrological riches of south Lebanon are also confirmed to be a contributing factor to the state of hostilities between Lebanon and Israel, and to the latter's occupation by proxy of the "security zone."

## C H A P T E R   T W O

### The Causes, Processes, and Resolution of Conflict.

#### A Theoretical Approach

The purpose of this chapter is to present the theoretical approach within which international conflict and its developments can be analysed. The concept of conflict is far more dynamic and complicated than the common usage of the term implies. Dr. R.J. Rummel (1975, 1976, 1977, 1979, and 1981) has written, for example, a five volume series on Understanding Conflict and War, and innumerable other writers have broached the issue on both the micro and macro levels.

In this chapter, the concept of "conflict" will first be defined, and then the causes and contributing factors to it are systematically analysed. Also discussed are the various evolutionary phases of a conflict. The conclusion discusses various approaches to conflict resolution. The theoretical framework discussed here is also a testing ground for the subsequent case study and how well it fits the theory of conflict.

## 2.1 Preliminary Definition of Conflict

Throughout this thesis, the word state is used as a 'short hand expression.' Depending upon the context in which it is used, state may refer to those making decisions on behalf of the people, those influencing these decisions, or all the citizens of the political entity (Levi, 1960: 411). The state is future-oriented and this influences its behavior in identifying future goals (eg. future resource needs) and working towards them (Choucri and North, 1975). As a result, and for the sake of consistency and convenience, the state is adopted as the basic unit of analysis in the thesis.

Most studies of the theory of conflict do not deal with international conflict between states but with urban/social or domestic/family conflicts. Therefore, for the purpose of deriving a coherent-theory, concepts such as "spouses" are replaced by "states", social "values and norms" by "ideologies", and "class and status" by "state ranks". This approach is essential so that consistency is maintained in the discussion. Albeit rare, there are shadows of an analytical discourse apparent in parts of this chapter. This is due to the interdisciplinary nature of conflict theory, and the scope of the factors that contribute to the actual manifestations of conflict. This led scholars like Fink (1968) and Boulding (1957) to assert that there cannot be a single, one dimensional theory of conflict.

Disputes are defined by Rummel (1979) as "felt grievances" by states capable of waging war. But when military options are introduced, disputes become conflicts. Rummel goes on to define conflict as



the subset of all disputes between parties capable of waging war in which the military option has been introduced, and at least one party perceives the issues at stake in partially, if not wholly, military terms (Barringer, 1972 as quoted by Rummel, 1979: 190).

It is assumed that two or more states are in conflict if and when they pursue the same objective, making their interests incompatible and hence leading them to acts or gestures of hostility toward each other. The incompatible objectives may involve: competition over markets or physical resources; territorial disputes; control over human resources; or they may involve aspirational issues (Dowty and Kochan, 1976: 43).

A conflict, then, must include one or more of the following characteristics: 1) Acts of political subversion, directed by a foreign power, that do not normally violate the boundaries of the targeted state; 2) economic imposition which could include sanctions, boycotts, or blockades; 3) verbal accusations or attacks, threats to attack, or retaliate, or to continue attacking; 4) non-violent military manoeuvres, exercises, mobilization, or authorization of military action that is deemed threatening in some way; and 5) direct military confrontation which can be a limited or full-scale war between two or more states. These are the main ingredients of a conflict. But what is the process that leads to and causes tension and violent conflict?

## 2.2 Causes of International Conflict.

Conflict is viewed as a direct outcome of growth. According to Choucri and North (1975) and North (1977), the root causes of international conflict are directly related to a blend of the following factors: firstly, conditions of internal demographic and economic growth, and the external expansion of interests; secondly, competition

for resources, markets, superiority in arms, and strategic advantage. Global demographic growth, technological advancements, and the continuous improvement of living standards have all led to higher demands for additional resources and finished goods. As a result, mankind has had to employ larger amounts of energy to satisfy material needs and desires. This growth has been governed and managed according to national priorities, which are influenced by government allocation of resources, both material and human (Choucri and North, 1975). These resources in turn shape national capabilities.

Capabilities of a country include, naturally, all aspects of its military force, as well as the country's light and heavy industrial infrastructure, labour needs, and among other things, an agricultural base. In this context, Choucri and North (1975: 16) note that

When demands are unmet and existing capabilities are insufficient to satisfy them, new capabilities may have to be developed. But a society can develop particular capabilities (including resources) only if it has the necessary existing capabilities to do so. Moreover, if national capabilities cannot be attained at a reasonable cost within national boundaries, they may be sought beyond.

Capability-building activities resulting from the pressures of domestic growth more often than not necessitate expansion into foreign territory. This is referred to by Choucri and North (1977) as "lateral pressure" while the more common term for such activities is "expansionism". It is usually expressed in real terms as an external expansion of interest on a territorial, social or economic level.

A multitude of factors may induce a state to pursue expansionism. These factors are largely dependent upon the "nature of the demands that are not being satisfied domestically and on the capabilities that

are available" (Choucri and North, 1975: 17). Expansion of interests usually occurs when national demands are growing in the face of limited resources; a situation where the government feels compelled to satisfy demands in one way or another. Furthermore, (territorial) expansionism is a function of a country's need to protect its current or anticipated trade routes, or access to strategic resources and minerals (North, 1977).

As mentioned earlier, the state and its resource needs are future-oriented. Moreover, a state which is accepting of or satisfied with the status quo at one point in time, may not necessarily be in the same position in the future. Therefore, "conflict may remain latent between international actors. Leaders may change, domestic interests may shift, new ideologies may become ascendent," and technological innovations and developments may alter relative capabilities and domestic demands of states (Rummel, 1979: 167). A good example of this change of orientation is the massive Jewish immigration to Israel in the first ten years after the establishment of that state. The country's domestic demands rose sharply as a result of the rapid population growth and its strategic interests expanded beyond the initial boundaries. This pressure from within to expand in order to accommodate growth was partly to blame for the Jordan river dispute which in turn contributed to the 1967 Six Day War (Stauffer, 1982; Hof, 1985).

Knowing that growth is a continuous process, and having mentioned that states are future-oriented in their outlook, the latency of state attitudes take on particular importance. Such attitudes are defined or

governed by the rate of growth, severity of needs, level of capabilities, the rank of the states involved, or by a number of other less significant factors.

Each country has a specific latent attitude. States, however, tend to differ in their ways of expressing their latent "ends, wants, and goals, and the means to achieve them. Within the structure of conflict, these attitudes are inactive; they are dispositional forces waiting for stimulation" (Rummel, 1979: 162). Latent conflict attitudes are embodied in state relations and activated by change. These attitudes may be manifested in a number of ways such as: 1) by skyrocketing demand of a certain good or resource; 2) by political change where new ideologies (political or religious) become a dominant force; and 3) due to technological advancements whereby societies' perceptions of "need" become altered and their demands for more and better things become larger. Therefore, and as Coser (1957: 64) noted, "Change, no matter what its source, breeds strain and conflict."

Competition for human and natural resources, a better standard of living, and stronger trade links are converging and inevitable paths in the development of a state. Such competition is crucial for states' existence and prosperity. Quincy Wright (1951) asserts that in a competition,

The successful nations grow and prosper; the unsuccessful decline. It is true that, because nations are geographically circumscribed and immovable, this competition may induce efforts to expand territory at the expense of others, and thus lead to conflict. This, however, Wright claims, "is a product of civilization" and not a Darwinian "struggle for existence" from which "only the fittest survives" (198).

A society that is facing population growth and rapid industrialization often faces pressures of limited or insufficient resources. These problems are usually solved peacefully where the state imports the necessary resources or invests in related technological research projects. But if the demand for resources is a strategic one and their supply is only located in a handful of (possibly hostile) countries, the problem then takes on a whole different dimension.

Like competition, international links are essential factors in the survival and prosperity of a state. This is why blockades, boycotts or sanctions are often viewed by the inflicted state as acts of war. Coercive foreign policy decisions are sometimes taken as a response to resource scarcity. Such reaction of a state or an alliance (eg. The North Atlantic Treaty Organization or NATO) is only normal and to be expected: After all, a shortage of resources, especially of strategic minerals, will eventually lead to the decline of state capability, making the state vulnerable. The 1973 Arab oil embargo is just one such example. The oil-dependent West, especially Western Europe and Japan, were coerced by the Arab states to reconsider their "blind support" for Israel and to follow a more "balanced" foreign policy path in the Middle East. But does every state have the option to coercively realize its objectives? And, when does such a policy become imperative?

Despite possible ethnic, ideological (both religious and political), and aspirational commonalities between states, they often have vast differences in economic wealth, socio-economic and political prestige, and in their military and political capability (which may be

peaceful or coercive). Therefore, there is an accepted implicit ranking of each country based on a set of positive-valued aspects of a state's "field of expression"; meaning its capability (Rummel, 1977: 197).

The concepts of "fields" and "antifields" which characterize all modern states to some extent are described by Rummel as opposites; "as one advances, the other must recede" (1977: 15-17). For example, although the United Nations partitioned Palestine into an Arab and a Jewish state, the newly founded Jewish army of Israel expanded its territory into the Arab sector. Since then, Israel has expanded its territorial base several times. Therefore, Israel became the antifield of the larger and established Arab field. The international rank of a state is a good indicator of the possibilities that it may consider coercive-policies if competed against for resources or markets or if it is inflicted with a resource shortage. Ranking is a relative concept, and in this case a country's rank is relative to its "antifield".

Antifields are determined by interests, and influenced by distances and diverse wills, economic disparities and expectations, and by various political ranks. Therefore, a state is a space where a complex system of balance of power is maintained. For this dynamic system to exist, states must attend to both internal and external pressures. States often try to accommodate their demands peacefully, so when states' interests overlap or coincide, we then have a resultant vector of cooperation. But if states' interests differ, the resultant vector is one of coercion (Rummel, 1977: 1979).

States, like people, can be classified as advantaged or

disadvantaged in terms of those who command and lead, contrasted to those who obey and follow. The advantaged states usually have a greater authoritative power (ie. economic, socio-political, and military) than the disadvantaged ones. Clearly, advantaged states have a coercive capability which can be wielded overtly in open confrontations, or covertly such as owning a deterrence force or commodity (eg. Arab oil and South Africa's strategic minerals). Therefore, state ranking is a way of arranging conflict groups among those with the potential to disrupt, or maintain and defend the status quo (Rummel, 1977). Here the status quo is used to define what belongs to a state, and what it can lay claim to --ie. the acceptable state accesses that don't trigger change. Although status quo may be achieved explicitly through treaties, contractual documents, or even verbal agreements (say between husband and wife), it often is not. The ongoing conflict interaction between states (like "trade wars") is the process through which they understand their rights, know their space, what can be claimed and on the other hand, what is likely to trigger conflict in the system --the conflict threshold.

## 2.3 Conflict Evolution

### 2.3.1 An Introduction

According to Rummel (1979: 192), conflicts among states are usually of a particular type, namely "a clash of convictions about 'ours' and 'theirs'". An example of this is the Arab-Israeli conflict over the boundaries of historic Palestine and how much of it belongs to whom.

The seeds of tension-inducing conflict are sown when the status quo is disturbed putting a state in a position compelled to respond to an

outside request, demand, or challenge. When important issues --say, of sovereignty or rights, national demands or interests, or of international image-- are raised, the challenged state must take a stand and respond. Ignoring such challenges gives credence to the other claim or argument, and in the process, it weakens the credibility of the state to protect its own rights or to defend its claims (Rummel, 1979). An example of this is the conflict between Britain and Argentina over the Falkland (Malvinas) islands and other smaller islands in the South Atlantic, just north of Antarctica. These remote islands, located off the eastern shores of Argentina, have for many decades been controlled by Britain. The islands, which are in fact remnants of the fading British Empire, were more or less forgotten by the Crown in London. On the other hand, Argentina, which once held these islands, decided unilaterally to "re-establish" sovereignty over them. In the early 1980s, Argentina, then led by a military government, appointed an administrator, and initiated radio and television broadcasts to the contested islands. These moves enraged the British government which, through mediators, got into some hastily arranged negotiations with the Argentinians, but to no avail. Neither side was prepared to compromise their position hence the escalating tensions quickly erupted into a war.

Here is a case of a disrupted status quo due to violation of sovereignty; of a historic claim; and of a challenge to the international image and status of a country. The interests of one state were incompatible with those of its "neighbour". An Argentinian victory would have 1) meant greater domestic support for that country's



military government; and 2) it would have dealt Britain's international image a serious blow. Thus Britain felt compelled to respond. The relative speed in which this conflict escalated into a war is perhaps not typical. Having said that, the stages of opposing claims, negotiations, threats of reprisals, violent conflict (or war), conflict resolution, and then a return to the status quo are the basic evolutionary stages of any conflict and its resolution.

The preceding pages and particularly this section, have illustrated the theory of conflict and identified its parameters. Having set the context for the theory, the next stage discusses the evolutionary process of conflict.

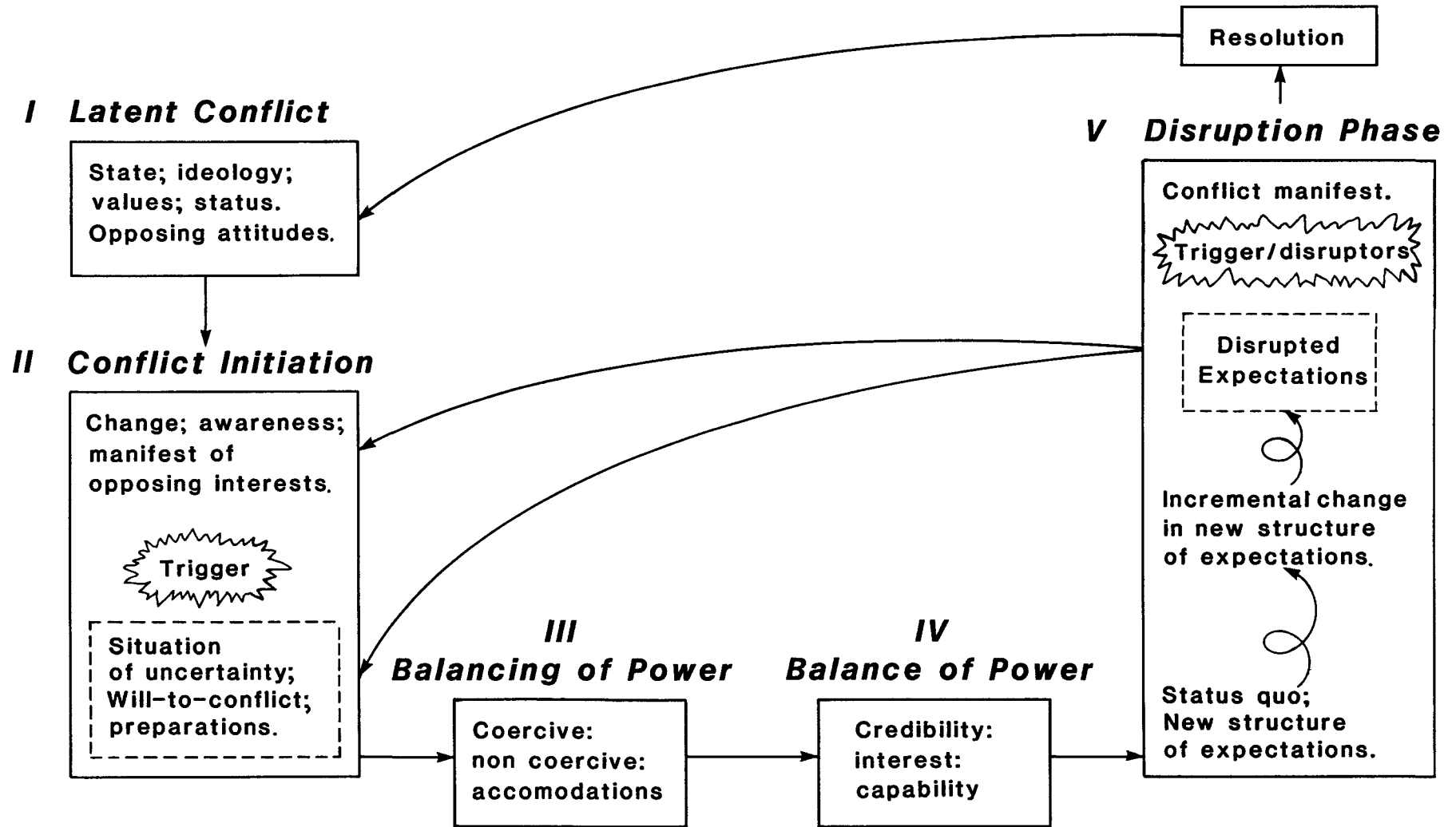
### 2.3.2 The Process of Conflict

Change is an inescapable development in the evolution of a state. Change, be it political, religious, economic, or social, tends to create tensions which have the potential of escalating to conflict. Diplomats or mediators may be able to pre-empt or put a quick end to a dispute. If they fail, a conflict may either stagnate unsolved, or escalate to bitter levels. The evolution of a dispute is greatly dependent upon the "importance of interests engaged," the impact on honor and credibility or international image (Rummel, 1979: 192-193). The latter is influenced by who the parties to the conflict are; a formerly passive neighbour, a competitor, or an enemy. Rummel (1976: 265) breaks down the process of conflict into five phases:

The first is the transformation of socio-cultural (conflict) space into opposing interests. The second involves the will's choice to manifest opposing interests and a consequent situation of uncertainty. The third is the resulting balancing of powers, may be manifested as conflict behaviour.

Figure 2.1

## THE PROCESS OF CONFLICT



Source: Adapted from Rummel, 1976

manifesting their interests coercively or cooperatively.

According to Rummel (1976: 268), a conflict begins to take shape when states become aware of their own and others long standing or evolving interests and needs. Awareness develops through the dissemination of information which can be manifest by cultural, political, or economic exchanges with one another. This awareness, which need not be realistic, has the ability to transform the hitherto veiled opposition into an opposing attitude.

In an attempt to further self-interest, one becomes active in trying to influence the attitudes and perceptions of others -- say of one's own superior or wife, political and religious groups or figures, or of entire populations. When states have false perceptions of one another it is largely due to propaganda, indoctrination and/or misinformation. For example, in the spring of 1986 the American government accused Libya of sponsoring state terrorism. Washington claimed that Tripoli was behind the bombing of a Berlin night club frequented by American troops stationed in that city "Irrefutable" evidence was later leaked by White House officials. Based on this evidence which apparently incriminated Libya, American bombers attacked various targets in Libya. A few months later, and in a court trial in West Berlin, Syria emerged as the facilitator of the initial bombing. The Manchester Guardian Weekly (28 December 1986: 16) noted that

The American people now know, also, that some of the case against Libya consisted of "disinformation" leaked by the administration and unwittingly published by the press.

In spite of the American-Libyan fiasco, it must be noted that even when states are aware of each other and of their opposing interests, they may not feel compelled or pressured toward a confrontation or conflict (Wright, 1951).

States' attitudes are actualized through awareness which, itself, becomes or induces mutually opposing attitudes. "Attitudes, however, are nonactive. They are dispositions without strength" (Rummel, 1976: 269). Attitudes are stimulated and translated by states' needs for resources, their concern over territorial sovereignty, national security, or even political prestige. States' needs become the force that activates attitudes and transforms them into actual interests and then "into vectors of power" (Rummel, 1976: 269). Therefore, an interest that was once latent is being actively pursued now.

At this early stage of conflict evolution, one can say that the evolving but hitherto stable interests lead to one states' awareness of each other, and of their incompatible interests. This is where the evolving interests of states are underscored, and their new attitudes are developed.

#### Phase Two: Conflict Initiation.

This phase moves conflict into the opposition stage. Preparations and overt actions set the stage for this phase. Countries with conflicting interests are always preparing both the people and the state (ie. its economy, army, emergency facilities...etc.) toward realizing the desired objective. These preparations "are made in an objective sense of uncertainty" (Rummel, 1976: 271). For example, Syria and Israel have different sets of incompatible interests for

which both states are always preparing their population to initiate conflict to fulfill their objectives.

A conflict is initiated when (1) the states or individuals involved have the will-to-conflict or to manifest their opposing interests, and (2) when there exists a triggering event (Rummel, 1976). Once expressed, opposing interests move states further in the process of conflict hence initiating "active opposition" (Rummel, 1976; 1977; 1979); a step that activates events. An example of that is the assassination of the Philippino opposition leader, Benigno Aquino. This was the triggering event of the active opposition of the ruling government which eventually led to the ousting of Ferdinand Marcos.

States are usually hesitant to manifest their incompatible interests by open conflict as this involves uncertainties and risks which must be carefully considered. A prerequisite to any decision that may lead to the initiation of open conflict is a careful evaluation of the benefits and costs of such a decision. This prerequisite is overwhelmed and biased by the subjective uncertainties of success that all states have (Rummel, 1976; 1979). For example, when Iran was invaded by Iraq in 1980, the latter was "certain" of a quick and decisive war in its favor. In retrospect, Iraq was neither certain of success nor did it accurately assess the new Iranian leadership's capability and attitude. Rummel believes that "subjective certainty" of success is different from "uncertainty" which is inherent in the situation (1976: 271). Rummel (1976) argues that while an "ultimate victory may be certain," neither the causes of war nor the immediate moves or responses of the opponent are predictable.

Therefore, at this stage of the conflict, the larger and more intense the latent but conflict-laden attitude becomes, the easier it is for states to find an excuse (a triggering event), to manifest their incompatible interests by initiating conflict.

### Phase Three: The Balancing of Power and Interests.

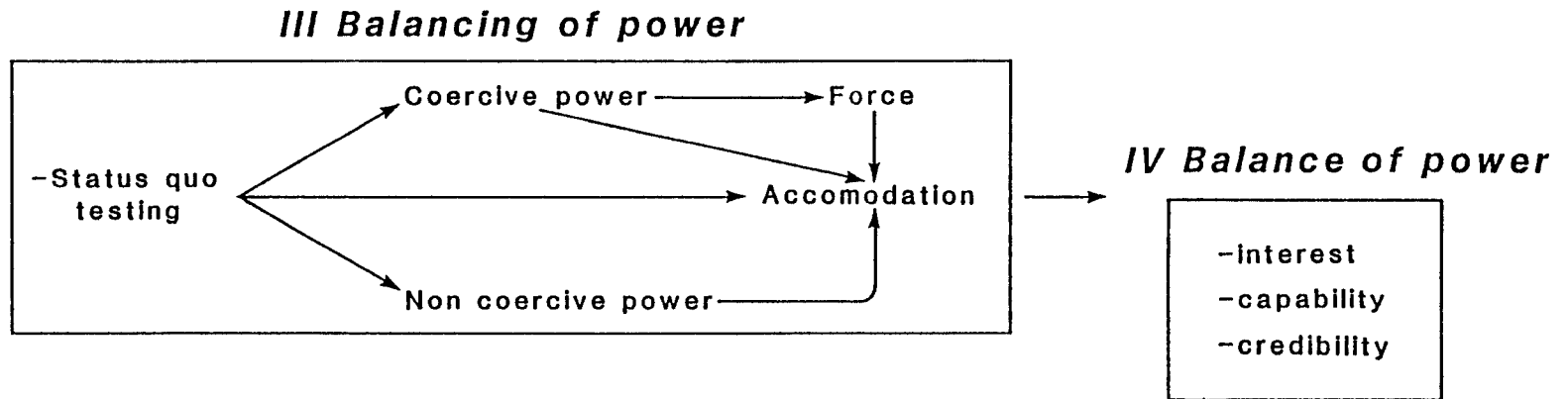
In this phase, vectors of power get adjusted by coercive or non-coercive means.' The outcome of this process is a balance of power between participants whether they be states, spouses, or animal groups. For example, states, especially the industrial powers, are always trying to balance their trade deficits. This is often pursued aggressively, sometimes necessitating radical trade measures which could lead to deterioration in inter-state relations.

The balancing of power or interests involves testing of the status quo, manifestation of power, and finally conflict termination through force or accommodation. This process is detailed in figure 2.2.

States have their idiosyncratic political and/or religious ideologies, socio-economic norms and practices. Initially, these factors influence relationships between states, and their perception of behaviour toward one another. This is also true in human behaviour. While a teacher is lecturing in a classroom, he may be confronted with some unattentive students. The teacher has two choices; either to put an end to the disturbance or ignore it at the risk of having it spread. The students' behaviour is a clear test of the status quo by challenging what they perceive as their teacher's interests, credibility, and capability. The teacher can protect his interests by exercising his capability hence asserting his credibility. However,

Figure 2.2

**CONFLICT PROCESS: *The balancing of power phase***



Source: Adapted from Rummel, 1976.

before taking a decision on how best to deal with the problem, the teacher, like the state, has to first gauge the behaviour of the actors involved, and then assess the costs and benefits of his potential response.

Preliminary testing of the status quo may yield either that gains are compatible with the costs or that they are not. The latter case indicates that unacceptable risks are involved. In other words, what may be gained by disturbing a lecture may not be worth the cost of say, being suspended from the course. After this stage, actors become either accommodating or they reach an agreement that essentially supports the existing status quo (Rummel, 1976: 273). Therefore, we can say that a balancing of power may be achieved by only testing the status quo and then by reaching accommodations [see Figure 2.2].

As mentioned, however, status quo testing may yield that gains outweigh the costs or risks of the action taken. That might precipitate an actual confrontation; a coercive and/or a non-coercive one. An example of the latter occurred in 1984-1985 when the American microchip industry was being adversely affected by the flood of cheaper Japanese chips. In response, the American government threatened to erect high tariff walls in the face of the invading Japanese products. Eventually, they negotiated a "mutually agreeable" quota on US-bound computer chips. The Japanese favored a limited access to American markets to the possible loss of these markets and to avoid creating trade tensions between the two countries. Confrontations of this type, according to Rummel (1976: 274), "will manifest love, altruism, legitimacy, expertise, persuasion, rewards, and promises." When these interests or



powers are manifested, Rummel adds, "accommodations will be determined."

Coercive confrontations are not eternal and ultimately lead to accommodations characterized by the victory of one interest over another. Obviously, coercive powers include threats or deprivations such as further torturing of political prisoners, or threats of socio-economic and political sanctions of a state or a person (Rummel, 1976: 176-179 and 274).

Some coercive situations necessitate that a choice between two alternative negative interests must be made. If a person, say, was held up by an armed mugger asking for his money and threatening his life. In this case, the choice is clear to most of us.

Coercive confrontations are governed by the actors' credibility, interest, and capability. For example, depending on what is at stake, you may want to test the violent capability of the mugger; just how willing is he to use the weapon at hand? On the other hand, it is in the interest of the mugger to execute his threat because failing to do so will tarnish his credibility on the street and among his sub-culture "colleagues."

All coercive confrontations tend toward two types of conflict: (1) Sociopolitical, including family and diplomatic disputes, and (2) manifestations of physical force such as sending an army to war. Sociopolitical conflicts include threats against the basic interests of at least one state hence forcing it to respond, usually with counter threats. The credibility of a threat-initiating state suffers if it does not defend its claim, or appear to have achieved certain desired

ends. In a situation of sociopolitical violence or conflict, states look for a negotiated settlement to their differences that will also accommodate their interests (Rummel, 1976).

Sociopolitical violence may be insufficient to make one state give into the will and interests of another. Rummel (1976) notes that the use of physical force is the ultimate and usually the conclusive approach to decide upon states' conflicts of interests. It is applied only when one state takes on an unyielding position to the interests of another state. In this case the proponents of non-violent resistance contend that the victim country has in effect won a moral victory over the coercing state. When force is used, its use does not usually stop until one state (or its capability ) is defeated. The victorious country then imposes new rules, regulations, laws, and commands on the vanquished (Rummel, 1976). Both sociopolitical and physical forces have the same net result and that is a balance of powers between actors.

Therefore, at this point of conflict evolution, states who are in pursuit of change are expected to test the status quo, evaluate the situation and their options (both internally and externally) and then choose the "best" response to the challenge, be it coercive or not.

#### Phase Four: The Balance of Power.

In this phase, a developmental process which influences the behavioral attitudes of states takes place. As a result norms, accommodations, understandings, and practices to govern are developed. The scope of this development which influences state expectations, is highly dependent on the triangle of credibility, capability, and

interests of states (Rummel, 1976: 279; Wright, 1951) [see Figure 2.1]. When this triangle reaches equilibrium, a balance of power is then established and a new structure of expectations has evolved. This equilibrium is usually reached when the conflict is resolved by coercive or non-coercive means. At this stage, states have overcome the initial misconceptions of one another and the miscalculations of each others potential. Such strategic policy errors were committed by Israel in its 1982 invasion and occupation of much of Lebanon. Then in 1985 Israel withdrew all but one thousand of its soldiers. This withdrawal was on the one hand, due to local and international pressure; and on the other hand, due to the massive human and economic losses the Israeli army had suffered. Instead, Israel reconsidered its policies and revived the local militia ("South Lebanon Army") so it can assume responsibility for the "vacated" region. In doing this, Israel had reduced its financial and personnel commitment in south Lebanon, and at the same time, it kept that area under occupation by proxy.

The structure of expectations is, therefore, formed by the adjustment of one's capability and interests to those of others. Once formed, the structure of expectations becomes a dynamic system which gets altered, adjusted, or reinterpreted over time (Choucri and North, 1975).

The non-conflict interactions of states are influenced and sometimes shaped by their structure of expectations, status quo, and the existing balance of power. Through time, however, peaceful interaction of states is threatened by one country's assessment of another; its behaviour, and rising domestic and foreign needs.

The structure of expectations has the tendency to become inactive or be disrupted (Rummel, 1976: 281). Expectations become inactive when interaction between the involved actors is halted. But if, at a future point in time these states renew their relationships and contacts, active competition and opposition will be triggered. This, however, usually results in a relationship that reaffirms or is based on the by-now established balance. This seemingly simple process can enter a level of complexity depending on just how much each state's capabilities and interests have changed.

One can then say that this balance of power is a phase where a reconstruction and/or reinterpretation of the structure of expectations takes place. This is only possible if a regional (broad) equilibrium of interests, capabilities, and credibilities is reached.

#### Phase Five: The Disruption Period.

Peace is shaped (ie. threatened or enforced) by the evolving and naturally rising demands of states (Choucri and North, 1975; Wright, 1951). As mentioned in the preceding phase, the balance of power is equivalent to the mutual interests, capabilities, and credibilities of the involved states. But as soon as interactions commence, states' expectations and subtle understandings become altered. Rummel (1976: 281) contends that with the evolution of new capabilities and interests, concessions made between actors "may seem to have been extorted or unfair". Although the structure of expectations changes the quality of interactions, there is a tendency to maintain the same general structure. The main weakness of this position is that it is not accommodating; it does not account for the changes in interests,

capabilities, and the actual or potential challenge to the credibility of the state. We can, therefore, say that in this case the structure of expectations and the balance of power lag behind its base (Rummel, 1976; 1977).

The structure of expectations can then be divided into a congruent period and an incongruent one. The former period is one that reflects the balancing phase. While attempting to rebalance the changing expectations, new and accommodating expectations evolve. These changes are called disruptors which can "upset the structure of expectations at any time" (Rummel, 1976: 282), [see Figure 2.1].

An incongruent period is one that ignores the evolving new realities of interests, credibilities, and capabilities. In this period there is usually pressure to rebalance the existing power distribution because of the changing expectations of states. Despite the strain and tension, nothing changes because states, like people, are more willing to accept known problems than to risk unknown ones.

What triggers the disruption period are explicit and "real" reasons to act, and not just simple frustration or dissatisfaction. A real cause or reason to act crystalizes a state's will-to-conflict hence another eruption of open conflict. In an incongruent period and as one ignores evolving realities (like that of rising expectations), a will-to-conflict evolves as well. There, the "final straw" is drawn when a trigger transforms dissatisfaction into opposition. Triggers are random events and their seriousness seem to correlate with the level of the preceding tension.

In other words, the greater strain and tension are, the more likely

the status quo will be disrupted by something of apparent insignificance. For example, a routine question by a husband to his wife, like "when will dinner be ready?" may unleash a violent "I am not your slave." After that, the balance of power is re-established.

The five evolutionary phases of conflict are a spiralling process of: conflict latency, uncertainty, balancing, balance, and then disruption. Two of these phases allow for conflict resolution. One is during the balancing of power, that is to pre-empt conflict and reach an accommodation. Another is during the disruption period, that is after conflict erupts.

#### 2.4 Conflict Resolution

Because many variables influence a conflict situation, the process of its resolution is often extremely difficult. As mentioned earlier, once domestic and/or peaceful options for a state run out, it looks outwards for a solution. This may pertain to resource shortages, market protection, or the maintenance of one's economic and military advantage. Invariably, such a change in orientation creates tension and may lead to conflict (Coser, 1957). Two factors characterize resource-conflicts and complicate their resolution. First, the political (including military) future of some states is dependent on their continuous supply of certain strategic resources. Second, it is usually disadvantageous for any activator of a resource-conflict to make his motives public. As a result of both factors, the activating party either disguises its "real" motives (or goals) in the conflict, or it may pursue and advance its interests by directing an unpublicized war by proxy.

One avenue of conflict resolution is accommodation which is usually achieved through negotiations. In the pre-negotiation preparations, parties to a conflict try to (1) manipulate individuals, groups or governments to strengthen their negotiating position; (2) add or delete certain issues from the agenda; and (3) include or exclude "undesired" but potential participants from the negotiation process (Mitchell, 1981). The last factor affects the relative status of a country and hence the potential outcomes of negotiations.

In the pre-conflict negotiation stages, the issue of relative status is an acute one. A country's status might be determined by an arsenal of deterrent weapons; on the battle field; in an international forum like the United Nations; or by having a formidable economic base. In this context, Mitchell (1981: 208) notes that

In many conflicts, the defined status of the parties, once generally accepted, has an important effect upon the relative position of advantage of the negotiators, on the way the subject matter to be negotiated is defined, and on the outcome of the discussions.

As an illustration of this, the Palestine Liberation Organization's (PLO) mere willingness to hold talks with Israel implies the Organization's recognition of Israel and its sovereignty over all the territories it currently holds, including the occupied ones. The implications of this for the PLO amount to a contradiction of the basic tenet of the Organization; that is to establish a national homeland for the Palestinians on the occupied West Bank and Gaza Strip. On the other hand, an Israeli recognition of the PLO would amount to the former's willingness to bargain the occupied territories-- which many Israelis perceive as the biblically promised land-- in exchange for peace.

Bargaining and negotiations are an approach that could lead to accommodating conflict resolutions. While capability and status affect the bargaining position of a state, its bargaining range may be limited by controlling the agenda. Although this option is open to all conflicting states, it is usually a tool of the currently advantaged party. "The basic process involves offering the benefits of negotiation on some relevant issues, at the cost of excluding others from consideration" (Mitchell, 1981: 215).

Negotiation is a proven approach to conflict resolution. However, to assume that all conflict can be solved by negotiation, mediation or compromise is simply dangerous because it may lead the "aggressor to assume that what is his is his, and what is yours may be negotiable" (Rummel, 1981: 247). Therefore, there may be times when aggression has to be resisted to defend ones own territorial sovereignty as well as to test the will, capability, and interest needs of the aggressor.

The mutual wills, interests, and capabilities of conflicting states are critical factors in the process of conflict resolution. This process is conceptualized within the following five approaches: The first approach asserts that once a conflict situation becomes clear and well defined, conflict intensity could be reduced, antagonists' expectations be made more realistic, and the balancing process of power be shortened. (Rummel, 1981). A look beneath a conflict may reveal the hidden or perhaps unconscious underlying goals of conflicting states; the covert stimulators of hostilities; or unveil the hidden or undeclared causes of conflict hence its resolution is made easier.

A second approach to be considered in conflict resolution is to



break down a large interest into smaller ones. This approach, strongly emphasised by Fisher (1971), will make it easier to reach an agreement on several smaller issues than on a big one. Bargaining on some issues is then made for concessions on others.

A third approach to conflict resolution is by invoking an overriding issue, usually related to morality and principle, that the antagonists can not ignore or dismiss. That overriding issue becomes a common goal of the actors. An example of that is a foreign conflict (against a "common enemy") unites the domestically conflicting or opposing parties.

A fourth approach is by not relying exclusively on force as it would only buy the advantaged states an expensive and a temporary solution. Therefore, power should only be directed towards specific goals or-interests and used in proportional terms.

A fifth and final approach to conflict resolution is by creating a distance in time and/or space hence some conflicts may fade away. This is possible only if the goals of the antagonists are not vital to their survival or damaging to their integrity. Separating antagonists by a space, demilitarized and monitored by international -- like the UN -- forces is a method of terminating conflict. Creating a distance between antagonists clearly requires the separation of actors -- like troops, withdrawal of claims, and/or correction of attitudes. Rummel (1981: 247) believes that such an approach will over time allow

the heat of battle to cool, rational perspectives on the issue to develop, and the underlying interests to change; or which gives each party an opportunity to satisfy independently their conflicting interests.

Rummel (1981), however, ignores the shortcomings of this approach, namely conflicts over dogmas or principles. Rummel's (1981: 247) last approach does lead to conflict termination, it however, does not resolve the underlying basis of that conflict. For example, UN troops in Cyprus have for over a decade been separating the Greeks from the Turkish Cypriots. Similarly, a UN buffer zone on the Golan Heights separates the Syrians from the Israelis. In spite of this, these conflicts still fester.

Needless to say, the process of conflict resolution is rather a complex matter. This is due to the multiplicity of conflict causes and effects, and the involvement of many overt and covert elements (states and organizations) in a conflict. Thus there rarely exist simple solutions to conflicts. Indeed some leading scholars on conflict and war like-Clausewitz, believe that conflict resolution is a far fetched concept. Rapoport, the editor of Clausewitz's classic On War (1985: 424), notes that

Nothing in Clausewitz's analysis corresponds to 'debate', since Clausewitz conceived conflict not as a search for truth or justice but only as a struggle of wills. The idea of conflict resolution is entirely foreign to his own way of thinking.

In spite of the complexities of conflict resolution and the pessimism of Clausewitz's, the ultimate goal for the conflicting parties is to reach a non-imposed self-supporting solution which deals with all aspects of conflict, be it latent or covert. For the solution to be long lasting, it must clear the way for cooperation between the hitherto arch-enemies.

## 2.5 Summary

States are future-oriented political entities with changing needs, interests, and capabilities. States must interact and compete in order to exist and prosper. Conflicts between states remain latent until the winds of political (eg. death of a leader), economic (eg. greater needs and limited supplies), or social (eg. a new ideology) change blow over the landscape.

The seeds of conflict are sown when established accommodations are rejected due to the sweeping processes of change. A new awareness is developed and opposing attitudes are formed. State capabilities, triggered by an event, are used to manifest the opposing interests. Conflict then enters a period of uncertainty where the status quo is tested and a decision on conflict, accommodation, and/or non-conflict is taken. Regardless of the chosen path, the net outcome is a new structure of expectations and a balance of power: A balance of the triangle of interests, capabilities, and credibilities, which is in essence a re-establishment of a status quo.

As mentioned earlier, states' needs are always changing thus straining the triangle of expectations which becomes increasingly incongruent. Whether the change of expectations is congruent or not, disruption is inevitable. This throws the situation back into the stage of uncertainty, where a new structure of expectations is formed, and a new status quo that balances states' interests, capabilities, and credibilities is established. In this web of conflict evolution, its causes and effects, conflict resolution may either pre-empt the eruption of conflict, or once it erupts to resolve it.

Conflict behaviour is manifested by the building and rebuilding, balancing and rebalancing of territorial space, interests, capabilities, and credibilities. Therefore, one can say that the evolutionary process of conflict is a spiral of uncertainty, balancing, balance, and disruption.

The outcome of a conflict is, therefore, shaped by some inter-related factors: antagonists' goals and means of conflict manifestation; the duration and intensity of conflict. All these factors are dependent on available resources, feasibility of objectives, and the extent of "acceptable" sacrifices. Typically, the smaller the sacrifices, the more limited are the aims of the antagonists. The potential loser will then presumably find it easier to negotiate a resolution to the conflict. In spite of this, it is possible to reach peaceful solutions acceptable to the antagonists without having a victor and a vanquished.

This chapter discusses theoretically the issue of conflict, its development, evolution, and resolution. The motif is competition for resources and how it could lead states or people to conflict. The process of conflict has shown that advantaged states (economically, militarily, and politically) are less tolerant of conditions of resource scarcities as it might endanger their rank in the international community. The first of the subsequent two chapters discusses the causes, effects, costs, and the geopolitical implications of water scarcity in Lebanon and in Israel. The other chapter (five) attempts to analyse if and how the theory of conflict is or is not useful in explaining the Litani river dispute, and the "security belt"

in south Lebanon. The point of the exercise is to show if scarcity of water in the Middle East is a contributing factor to the current state of hostility between Lebanon and Israel.

## C H A P T E R   T H R E E

### An Historical Background to The Litani River Dispute

This chapter traces Zionist historical efforts to either annex the Litani river's lower flow path (Upper Galilee region) to the mandate of Palestine, or to divert the river into the Jordan river system. Integral to this are details of the historical events that led to the current boundary line between Israel and Lebanon, essentially starting in 1916 and ending in 1948. The rest of the chapter is then divided into two major time periods: 1948 to 1966 and 1967 to 1978. The former focuses on the developments between Israel and Lebanon, as well as on the Jordan river dispute between Israel, Syria and Jordan. The latter focuses on the relationship between the Jordan water dispute and the 1967 Arab-Israeli (Six Day) War. Also discussed is the Israeli creation of the the so-called "security belt" in the water-rich area of southern Lebanon. A concluding discussion draws the various points together

arguing that the scarcity of water in Israel is a contributing factor to the 1967 Arab-Israeli War, to Israel's invasion of Lebanon in 1978, and its continuous presence in south Lebanon's "security belt" ever since then.

### 3.1 The Early Historical Period: 1905-1948.

It is important to begin by clarifying the word "Zionism." It is derived from "Zion" which is the name given to what the Jews believe is their biblically "promised land" or "Eretz Israel" (i.e. the Land of Israel; Kimmerling, 1983: 1-8). Theodor Herzl, an Austrian writer and journalist, is regarded as the father and founder of the modern religiously based political phenomena known as Zionism. Although Herzl was a victim of rampant anti-semitic sentiments in Europe (just before and after the dawn of the 20th. century), he remained a secular Jew. Hence, his idea of a Jewish state was not religiously motivated but a mere response to Western anti-semitism (Dossa, 1986). One can then see why Herzl did not at first covet Palestine -- The Holy Land -- as a Jewish homeland. The Zionists later (at the turn of the twentieth century) chose to reconstruct a Jewish home in Palestine. In essence, then, Zionism attempts to gather world Jewry in a national "Jewish Homeland". Besides their "spiritual claims" over the promised land, the Zionists' choice of Palestine was influenced by economics, geopolitics, and by a misconception about the demography of the area (Kimmerling, 1983: 1-8). The early Zionists believed that Palestine was sparsely inhabited, if at all. Hence, their motto: "Land without people for the people without land" encapsulates this view.

Since about 1917, the Zionist movement has geographically included

the Litani basin in its definition of "Eretz Israel" (Stauffer, 1985). Diverting the Litani river of Lebanon into the Jordan to meet the long term irrigation and power needs of Palestine was first suggested in 1905 by an engineer called N. Wilbush (Brawer, 1968: 234). Aware of the scarcity and economic value of water, the Zionist leaders of Europe actively lobbied the French and the British governments to adjust the northern and northeastern borders of Palestine so that it includes the whole catchment of the Jordan river and a large part of the Litani river. Therefore, the Litani river and the "Northern Frontier of Palestine", a water-rich area, were in the lime-light well before the creation of the Jewish State. The process of drawing the boundary line between Lebanon and Palestine started in 1916 and continued until 1923. At that time, the Zionists were trying to convince the Mandate powers to adjust Palestine's northern frontier.

The Sykes-Picot Agreement of 1916 was the first attempt to partition the Ottoman Empire's territories between the European powers. They agreed to divide the "Arab Levant" (today's Syria, Jordan, Iraq, Israel, and Lebanon) into three spheres of influence: A British sphere or rather a small enclave encompassing the two coastal towns of Acre and Haifa, A French sphere with its southern boundaries delimited, more or less, just south of the current international boundary line between Israel and Lebanon; And an international sphere located south of the French one and surrounding the British "enclave." The international sphere was to be governed by an Allied Condominium. After years of negotiations and many territorial proposals and "compromises", France controlled Lebanon and Syria of today, and Britain controlled Iraq.



Palestine and Transjordan (ie. the territory on both sides of the Jordan river). According to Frederic Hof (1985: 7), "The British had succeeded in getting Palestine for themselves through a combination of military superiority and Zionist Political support ... ."

Shortly after the Sykes-Picot Agreement, the Zionist Organization (ZO), led by Lord Rothschild, extracted the famous Balfour Declaration of 1917. On the behalf of his government, Britain's Foreign Secretary Arthur James Balfour sent a written pledge to Lord Rothschild in which he stated Britain's willingness to assist the Zionists in establishing a Jewish "national home" in Palestine. Consequently, it was only natural for the ZO to support Britain in its bid to control Palestine. Once that was secured, the ZO lobbied the British government to define the northern boundaries of Palestine according to the Organization's wishes. - As alluded to earlier, the Upper Galilee is a water-rich region, of paramount importance to the Zionists. However, unlike the Zionists, the British were indifferent to Palestine's northern boundaries and the river that it may have or not included (Hof, 1985).

The peak of the world ZO's efforts in seeking "broader economic frontiers" for Palestine was during the Paris Peace Conference in 1919. The ZO was then headed by the prominent Jewish Scientist Chaim Weizmann who had earlier secured Britain's sympathy to the idea of a Jewish homeland in Palestine. As the conference was entering its final stage of negotiations on the fate of Palestine, the ZO sought the support of the British Prime Minister, David Lloyd George. In a letter to the Prime Minister, the ZO stated that due to topography of the Litani river's flow area, especially in its southern parts, the river's water

is "valueless to the territory north of the proposed frontier. They can only be used beneficially in the country much further south." (Weisgal, 1977: 267) The letter continued to suggest that best use of that river's water was either for direct irrigation south of the proposed frontiers or for diversion into the Jordan river thus supplementing its flow so that irrigation and hydroelectric power generation downstream could be fostered (Weisgal, 1977: 266-267).

Based on the reasons mentioned above, the ZO considered it "essential" for "the (Bekaa) Valley of the Litani, for a distance of about 25 miles above the bend," as well as the "Western and Southern slopes of Mount Hermon all be included in the Northern frontier of Palestine so that control of the headwaters of the Jordan is ensured" (Weisgal, 1977: 267). The eastern frontier was to include the Yarmouk river and to stretch southwards parallel to, but few kilometers west of, the Hejaz railway line (Weisgal, 1977).

The Zionist proposal was, however, rejected by France which, in June 1920, proposed a boundary line that eventually became the internationally recognized one. It started just south of Ra's an Naqurah and proceeded eastward to then turn sharply northward to include the Jewish settlement of Metulla. This proposal left the entire Litani river within French held territory.

Clearly angered by the latest French proposal, the Zionists sought to modify it so that the Litani could be salvaged. On the 30th of October 1920, and in the name of the Zionist movement, Dr. Weizmann wrote the following letter to Lord Curzon, Balfour's successor as Britain's Foreign Secretary:

Your Lordship, I am sure, realises the enormous importance of the Litany to Palestine. Even if the whole of the Jordan and the Yarmouk are included in Palestine, it has insufficient water for its needs. The summer in Palestine is extremely dry, and evaporation rapid and intense. The irrigation of Upper Galilee and the power necessary for even a limited industrial life must come from the Litany. Experts agree that the Litany is of little use to the well-watered Lebanon and we have always agreed that the requirements of the territory not included in Palestine should be adequately met. It is hardly possible that France even realises the extent to which the frontier she has proposed would cripple the economic life of Palestine. For if Palestine were cut off from the Litany, Upper Jordan and Yarmouk, to say nothing of the western shore of the Galilee, she could not be economically independent. And a poor and impoverished Palestine would be of no advantage to any Power (as quoted by: Hof, 1985: 11-13).

Although Weizmann was successful in convincing the British to redemarcate the Northern Frontiers of Palestine, he failed to convince the French. The Franco-British Convention agreed in principle to the boundary line proposed by the French in June of 1920. Although the subject of water in the region was discussed at the Convention, there was no mention of the Litani river. The British-Franco Convention later established a joint boundary commission to demarcate the exact line between Lebanon and the emerging state of Israel. According to Hof (1985: 14), "the final boundary agreement," which was ratified by the British and the French and came into effect on the 10 March 1923, "made no further mention of Zionist access to French-controlled water".

After the British-Franco agreement of 1923, the Zionists were beginning to lose hope of ever having even limited access to the Litani. In 1936 Zionist hopes were rekindled by a study on regional needs for electric power. The study, conducted for the American University of Beirut, suggested that electric power from the Litani could be generated to serve the the region of south Lebanon and

"possibly Safad in Palestine" (Hof, 1985: 30).

In addition to that, in 1943 a joint study on the hydrology of southern Lebanon and northern Palestine was undertaken by a Jewish and a Lebanese engineering firm. This study assumed that Lebanon would use the Litani for irrigation purposes only. The study then concluded that since only one-seventh of the Litani could be usefully employed by Lebanon, most of the water should be diverted into Palestine (Schmidt, 1955; Hof, 1985). All these hydrological studies and frontier proposals and counter proposals were solely aimed toward the realization of the Zionist dream of a "national Jewish home" in Palestine. That dream became a reality in May of 1948.

### 3.2 The Period of 1948 - 1966

Upon the creation of the State of Israel in 1948, the first Arab-Israeli war erupted. This raised the levels of tension and suspicion in the area, essentially foiling any possible cooperation between Israel and Lebanon.

During that war, Zionist forces occupied an area in Lebanon adjoining the western bend of the Litani river. As a result of the 1949 General Armistic Agreement (GAA) between Lebanon and Israel, the latter country's troops withdrew to the internationally demarcated boundaries of 1923.

According to Berger (1965), Israel withdrew from South Lebanon in 1948 because it believed that a formal peace treaty was possible. Thereafter, a joint exploitation of the Litani (based on the 1943 survey) would be possible. Furthermore, the Israelis believed that territorial annexation of Lebanese territory might spark international

condemnation (Hof, 1985). Berger (1965, 30) then notes that "if they (the Israelis) had felt that... the Lebanese did not also consider the negotiations as the penultimate step towards peace they would never have withdrawn."

Due to its delicate confessional political system and the currents of Arab nationalism that were emerging in the region, Lebanon could not even consider a water-sharing agreement or a separate peace treaty with Israel. Any such consideration would have constituted a break-away from the Arab sphere. This in turn would have had heavy political and economic costs that Lebanon was not willing or able to pay. Furthermore, "if Lebanon did sell water out of the country, past the eyes of the Shi'a farmers in the South who do not have irrigation water, there would be considerable local discontent" (Hudson, 1971: 13).

The developments of 1948-1949 foiled possibilities of a water sharing agreement between Israel and Lebanon which in turn prevented any large irrigation schemes from taking place in the Negev. However, "With or without Lebanese water, Israel was determined to make patches of the desert bloom" (Hof, 1985: 31).

In order to accomplish this objective, Israel planned an extensive canal system to divert part of Jordan's water to the desert-like region in the south. As construction on the Canal [which was later called the 'National Water Carrier'] commenced in September of 1953, Syria expressed its strong objection to the project. Syria's stand, which was supported by the United States, forced Israel to halt construction in October of 1953. In the same month the American President, Eisenhower,

sent his personal representative, Mr. Eric Johnston, to the Middle East hoping to transform the potentially explosive controversy over water into a "show case" of cooperation between the Arabs and Israel (Hof, 1985).

Negotiations over the allocation of surface water in the region were facilitated by the American envoy from 1953 till 1955. The "Main Plan", Johnston's initial water cooperation proposal, tabled in 1953, did not mention the Litani river "on the grounds that it is a Lebanese national river that could not be included in an international scheme" (Schmidt, 1955: 5). However, the Arab states and Israel rejected the Main Plan. The Israeli reason was the Plan's exclusion of the Litani river.

Israel responded to the Main Plan by asking the American engineer, Joseph Cotton to study the situation. Cotton put forward his proposals which were a mere elaboration of Israel's earlier water negotiating position (Naff and Matson, 1984; Rizk, 1964). Although the disputed river was the Jordan, Cotton suggested, among other things, a peaceful sharing of the Litani waters for the purposes of power generation and irrigation in Israel.

The Cotton Plan estimated that Lebanon needed only 50 % of the Litani river's water for irrigation. This Plan, like the 1943 report, assumed that Lebanon would harness the Litani's hydroelectric potential only in cooperation with Israel. Cotton recommended that one half of the Litani's annual flow of 850 million cubic meters (MCM) be diverted into the Jordan river. In return, Lebanon would receive hydroelectric power from Israel (Schmidt, 1955; Rizk, 1964).

The "Cotton Plan" was based on the combined annual flow of the Litani and the Jordan rivers which he estimated to be 2345.7 million cubic meters (MCM). Cotton then recommended that that water volume should be shared in the following way:

1) Israel	1290.0 MCM.
2) Lebanon	450.7 MCM.
3) Syria	30.0 MCM.
4) Jordan	575.0 MCM.
TOTAL ...	2345.7 MCM.

Source: Naff and Matson, 1984.

After much negotiation, the "Main Plan" was amended and the "Johnston Plan" was reached. This Plan did not include the Litani river and gave Lebanon the right to utilize 35 MCM of the Jordan headwaters at the Hasbani tributary.

Water Distribution According to  
The Johnston Plan

Lebanon	35 MCM
Israel	400 MCM
Syria	132 MCM
Jordan	720 MCM
TOTAL	1257 MCM

Source: Naff and Matson, 1984.

This Plan was accepted by representatives of Israel and the Arab countries. It was, however, not "officially" accepted by the involved parties because that would have amounted to Arab recognition of Israel, and of Israel's renunciation of its historic claim over the Litani. In spite of this, the Plan was more or less adhered to by the riparian states, Israel, Jordan, Lebanon, and Syria.

Israel's hope to share the Litani never materialized. Furthermore, Lebanon's negotiating position was strengthened by the release of a

report in 1954 by the U.S. Bureau of Land Reclamation. The report stated that Lebanon could usefully employ almost all of the Litani's water for both its irrigation and electric power needs (Schmidt, 1955: 10).

The loud Zionist and later Israeli claims for the Litani river, and their charges that the river is "useless" for Lebanon, and that its water is flowing "wastefully" into the sea prompted the Lebanese government to eliminate the pretext under which Israel could invade and occupy southern Lebanon. Such an Israeli move would be for the purpose of harnessing the irrigation and and power potentials of the Litani river. Hence in 1955 the Lebanese government took it upon itself to approve a large development plan called the "Litani Project".

Initially, the Project was aimed at generating hydroelectric power. This objective was later modified to satisfy the irrigation needs of the southern Bekaa Valley and south Lebanon. However, the latter objective is yet to be implemented. The lack of implementation is partly due to Israel's threat "to use force against Lebanon to prevent the utilization of the Litani waters to develop South Lebanon" (Rokach, 1986: xiv).

Despite the initial political outcry by Syria over Israel's plan to divert part of the Jordan river southwards, Israel resumed construction on its "National Water Carrier" which was completed in 1964. The Arab states formulated a unified response to Israel's aggressive water policy. During an Arab Summit Conference in Cairo 1964, the Arab states decided to foil Israel's diversion plan by diverting the Jordan river's tributaries (the Hasbani and the Banias rivers) for the purposes of



irrigation in Syria, Jordan, and Lebanon (Smith, 1966).

The rugged terrain would have rendered the diversion of the Banias into the Yarmouk a difficult technical task. However, diverting the Hasbani into the Litani would have been easier as both river's are only 5 km apart. Had the diversion been successful, it would have reduced the flow of the Jordan river substantially thus thwarting Israel's water policy to irrigate the Negev.

Lebanon reluctantly accepted the Summit's controversial resolution. Not wanting to be politically and economically isolated from the Arab world, Lebanon began implementing its part of the diversion project in the early summer of 1965. According to Bar-Yaacov, the Israelis notified the Lebanese government that they were determined to stop the diversion scheme, even if Israel had to use its military force (Bar-Yaacov, 1967: 148). In July of 1965 Lebanon chose to cease working on the diversion project. Israel's intent to stop the project was underscored by its intermittent attacks on the Syrian diversion site at Banias (Hof, 1985).

### 3.3 The Period of 1967 - 1978

A number of observers believe the tensions that arose from the water dispute were a major contributing factor to the 1967 Six Day War which put a sudden and a final end to Arab river diversion plans (Hof, 1985; Stauffer, 1982).

The 1967 war involved three of Israel's four Arab neighbours, all of whom lost territory as a result of the conflict. Lebanon was the only notable exception. Its frontier remained quiet and hence unchanged. In the aftermath of the 1967 war it was quickly observed

that the Hasbani river of Lebanon was the only tributary to the Jordan river that was not in Israeli controlled territory. This prompted the victorious Defence Minister of Israel, Moshe Dayan, to declare that his country had achieved "provisionally satisfying frontiers, with the exception of those with Lebanon" (Cooley, 1978: 3).

Dayan's statement was followed by Israel's renunciation of the General Armistic Agreement with Lebanon. Furthermore, Israel's Prime Minister Levi Eshkol was quoted as saying that the thirsty state of Israel cannot sit idle while the Litani flows "wastefully" into the Mediterranean (le-Monde, 8 September, 1967). All of these declarations led the Lebanese to conclude that Israel intended to invade and occupy parts of south Lebanon to at least incorporate the remaining headwaters of the Jordan river (Jureidini and Hazen, 1976), and at most to annex the southern flow area of the Litani.

In the spring of 1964, Israeli officials debated the "size" of their young state and responsibility for "losing" the Litani. While Ben Gurion expressed his regrets for losing the Litani, Israel's Labour Minister, Yigal Allon, charged angrily that one more day of fighting in the 1948 War would have enabled the Israeli Army to "liberate the entire country" from the Litani river in the north to the Sinai desert in the south-west (Times {London}, 9 March, 1964: 8).

The water disputes of the 1950s are believed to have contributed to the 1967 War (Hof, 1985; Stauffer, 1982 and 1985). In spite of the debate in Israeli political circles about the size of the "entire country", and Israel's ability to have successfully fabricated a pretext to occupy South Lebanon in June of 1967 (Hof, 1985), Israel

opted not to delimit the Litani as its northern boundary.

Israel's restrained behaviour towards Lebanon is due mostly to the following factors: first, the newly occupied territories augmented substantially Israel's fresh water supply by up to forty percent. Second, Israel's occupation of the Golan Heights (where the Banias tributary originates) rendered the Hasbani diversion plan impossible, and served Lebanon a stern warning-by-example. Third, Hof (1985: 38) contends that "An Israeli seizure of southern Lebanon could have provoked international outrage and condemnation without significantly enhancing Israel's economic prospects".

The relative passivity of Israel's policy toward Lebanon took a downturn in 1969. The proximate reason for Israel's violent retribution against the southern Lebanese was the Palestinian "threat" to northern Israel. However, it is "reasonable to suggest", Hof writes, "that the prolonged Zionist frustration over the issue of water contributed to the violent tenor of subsequent Israeli actions in southern Lebanon" ever since the late sixties (Hof, 1985: 39).

One year after the civil war erupted in Lebanon, Israel initiated a more active policy toward south Lebanon. On July 1976, the Israeli government decided upon a "new comprehensive security" policy for its northern settlements. This policy viewed the pacification of southern Lebanon as the key to peace and security in the area (New York Times, 20 July, 1976: 3). This new policy approach, called "the good fence program", stressed humanitarian relief to villagers, who were finding it increasingly difficult to travel northwards. Another aspect of the policy was the creation of a pro-Israeli militia to help prevent

Palestinian guerillas from reaching Israel's border. The "good fence policy" was also the first open Israeli involvement in the economic, social, and political affairs of Lebanon.

Then, in 1978, Israel invaded South Lebanon and established a "security zone". It is a strip six to fifteen kilometers in width extending along Israel's entire northern frontier with Lebanon. This belt is narrow in the west and widens as it moves toward the east and north east until it reaches the western bend of the Litani river [see Figure 4.1]. This self-declared belt was turned over to Major Saad Haddad, a renegade Christian Lebanese Army Major. He established and led the South Lebanese Army (SLA). Both the belt and the SLA are now led by Haddad's successor, Anton Lahd. The SLA which numbers about two thousand men today, is trained, equipped, and paid by Israel. Hence it acts as Israel's proxy power in southern Lebanon.

In retrospect, Israel's policy towards South Lebanon seems to have been cemented in the mid-1950s. At this time, Israeli politicians were discussing the most appropriate policy toward Lebanon. The former Israeli Prime Minister, Moshe Sharett, quoted in his diary the country's Chief of Staff, Moshe Dayan as saying:

the only thing that's necessary is to find an officer, even just a Major. We should either win his heart or buy him with money, to make him agree declare himself the savior of the Maronite population. Then the Israeli army will enter Lebanon, will occupy the necessary territory, and will create a Christian regime that will ally itself with Israel. The territory from the Litani southward will be totally annexed to Israel and everything will be all right (as quoted by Rokach, 1986: 26).

Therefore, with the Christian-headed security belt, Israel once again has, and for the first time since 1948, secured an access to a new water resource, the Litani river.

Israel's biggest ever invasion of Lebanon occurred in June 1982. A few months later, the Minister of Science and Technology, Yuval Neeman, conceded that "Israeli engineers had carried out seismic soundings and tests near the Litani's westward bend", an area which is said to be "the ideal place for a diversion tunnel which would only need to be about three miles long to reach Israel's Huleh water system" (Cooley, 1983: 11).

It must be noted that the "security belt" is viewed by some as just that: a mere buffer zone between Israel and the "hostile" forces -- both Lebanese and Palestinians-- in south Lebanon. This is a shaky claim at best as it does not consider or account for the historical context of the Lebanese Israeli conflict. What can not be ignored is Israel's firm hegemony over the "belt", a task carried out by the SLA and about one thousand Israeli army "advisors". Both of these parties are hardly confined to the "security belt" zone. Their area of operation and influence tends to expand and contract depending on the situation.

These facts not only confirm Lebanon's worst fear (of Israel's need for the Litani water) but have led to the following tangible conclusions: Since 1978 it has been reported that both Saad Haddad and his successor, Anton Lahd, had put an end to all new well digging and

in some instances they ordered existing wells to close (Naff and Matson, 1984). Furthermore, Lebanon's allocated share of the Hasbani river by the Johnston Plan now flows into Israel (Naff and Matson, 1984).

### 3.4 Summary

From this chapter it is clear that Israel has had a long standing interest in the Litani river of Lebanon. Towards this end, Israel has attempted various approaches, most recent of which has been her creation of the "security belt." This belt has already resulted in some tangible water returns for Israel. But what is the long-term value (ie. cost and benefit) of this water-rich "belt" to Israel? Does Israel really need to import water? If so, why from Lebanon? Is water a transferrable resource? These questions and others pertaining to the current state of water supply and demand in both Israel and in Lebanon will be addressed in the following chapter.

## C H A P T E R   F O U R

### The Hydro-politics of South Lebanon

This chapter sets to establish a case of water scarcity in Israel, and the socio-political implications of this incipient water crisis. First, the geography of Lebanon and Israel is discussed, with an emphasis on the hydrology of both countries. An analysis of the water problem follows. This is achieved using data on water supply and demand, the quality, quantity, and sources of the available water. Domestic and foreign water-augmenting options being pursued by Israel are then discussed and evaluated. This leads to the discussion of the socio-economic and political values attached to water in both Lebanon and Israel. The chapter concludes that the "lure of the Litani" is too great to be overlooked by Israeli geostrategists and water planners.

## 4.1 The Geographical Setting

### 4.1.1 Israel

Both Lebanon and Israel are similar in that they both have climatic regions ranging from wet to arid, and both have typically Mediterranean climates-- hot and dry summers, and mild rainy winters. However, the Israeli case is more extreme. Over 50% of the country is covered by the southern Negev desert. Precipitation ranges from 1000 mm per year in Safad (north), 500 mm in Tel Aviv (coast), 200 mm in Beersheba (south central), and only about 30 mm in Eilat, the most southern tip of the Negev desert (Pohoryles, 1975: 1). There is, therefore, a dramatic decrease in rainfall from north to south. A similar but less dramatic decrease occurs from west to east.

The raised areas of the country have a north-south orientation with a tendency to drop in elevation as they stretch southwards. Hence Lebanon's mountain ranges become hills in Israel. Accordingly, precipitation is influenced by the landscape relief; whereby the western slopes receive more rain than do the areas in the "rain shadow" or on the leeward side of the hills. Moreover, the angle of the slope is also a factor that affects the precipitation level. The steeper the ascent, the smaller the area where the amount of rain yielded by the cooling of the air concentrates.

Israel's only major river with an almost constant annual flow (about 1900 million cubic meters, MCM) is the Jordan river. The headwaters of the Jordan river are in Lebanon, Jordan, Israel, and in the occupied Golan Heights of Syria. Although over 70% of the river's annual flow originates in Arab countries, Jordan and Israel are the main beneficiaries of the river. There are other perennial streams in



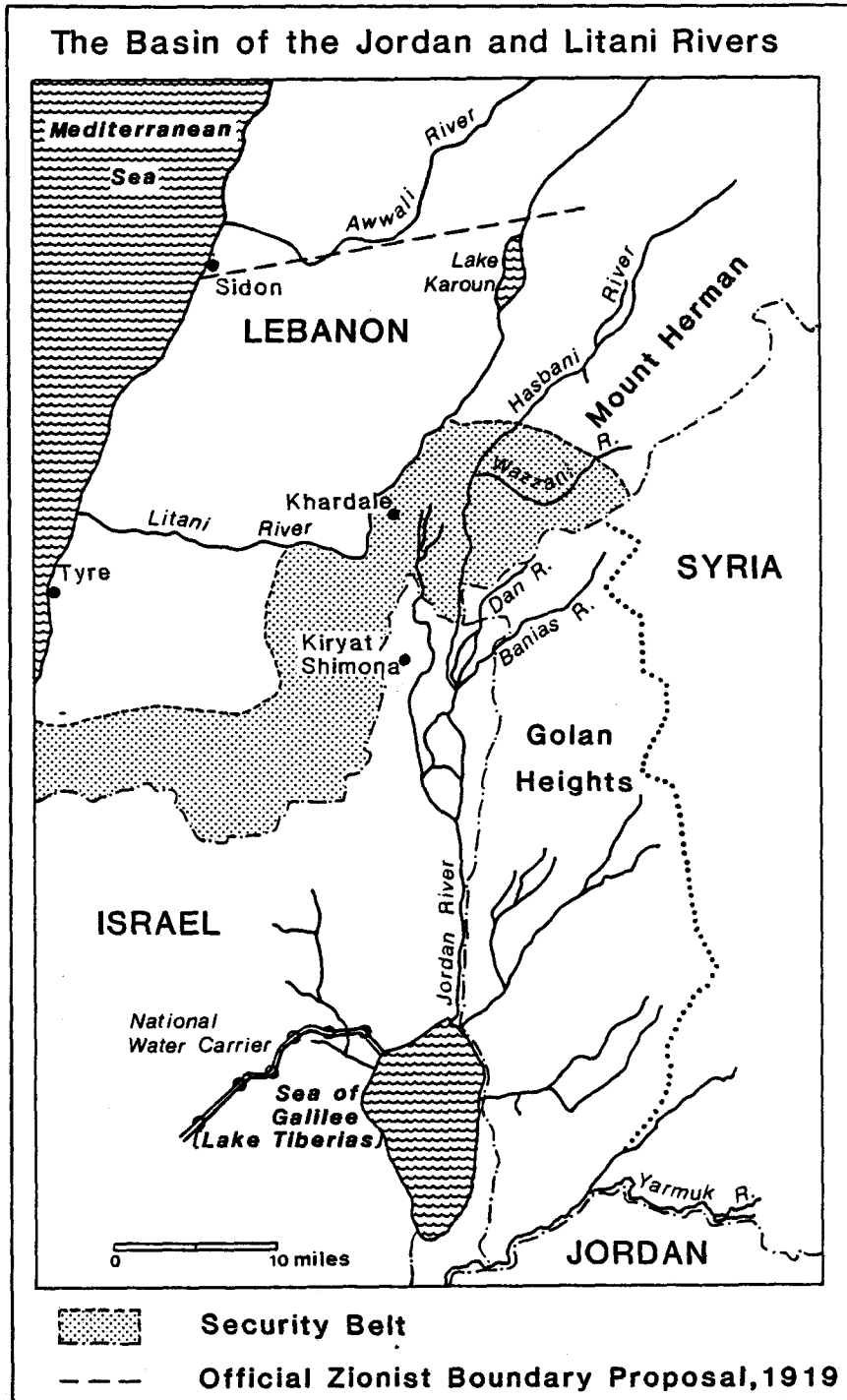
Israel such as: the Yarkon which empties near Tel Aviv, and Hadera which empties between Tel Aviv and Haifa. The flow of these streams is reduced to a trickle in the dry summer season. In spite of this, these streams and others are integrated into the huge National Water Carrier which transports and distributes water to the urban centers on the coast and the agricultural land in the south and east. The complete utilization of the water resources in Israel renders some river beds, such as the Yarkon, as "reservoirs" of sewage or as sea water marshes (Orni and Efrat, 1966: 44).

Lake Tiberias, also known as sea of Galilee or as lake Kinneret, is Israel's main reservoir of fresh water with an estimated capacity of 3000 MCM. The lake, deepest in its north east (49 meters), is also the issuing point of the National Water Carrier [see Figure 4.1]. Lake Tiberias is 165 square kilometers (km) in area and is 213 meters beneath the Mediterranean Sea level. The Jordan river and other smaller streams empty into lake Tiberias. Despite this, the lake is relatively saline. Its Chloride content ranges from 250 milligrams (mg) per liter to 400 mg/l.

#### 4.1.2 Lebanon

In Lebanon, two mountain chains run parallel to the coast, with the Bekaa Valley in between. These mountains are as high as 3090 meters in the north, and they drop in elevation as they stretch southward. Precipitation in these mountains ranges from 900 to 2000 mm/yr; over 800 on the coast and in the southern Bekaa, and less than 300 in the northern Bekaa. The climatic conditions in Lebanon are typically Mediterranean; short rainy winters, and long dry summers. Such a

Figure 4.1



Sources: HOF, 1985; Drysdale & Blake, 1985;  
The Economist, Sept. 27, 1986.

climate clearly affects the flow of rivers, many of which tend to either dry up or to have a greatly reduced flow in the summer.

The Litani river springs from a point 10 km west of the city of Baalbeck at an elevation of 1000 meters above sea level. From there the river flows southwards through the fertile Bekaa Valley for a distance of 130 km before it turns west and flows for another 40 km until it reaches the Mediterranean sea, a short distance north of Tyre. The basin of the Litani river (2170 km squared in area) lies completely within Lebanon. The flow of the river at the Karoun dam (which has the capacity to conserve 200 MCM) averages 410 MCM/yr; a flow that may vary from year to another by 300 MCM/yr. Near the town of Khardali at the western bend of the Litani [Figure 4.1], the average flow of the river is 650 MCM/yr, with a variation of 400 MCM/yr over a number years.

Unlike the Litani, the Hasbani river springs from south east Lebanon and flows southwards to become a tributary to the Jordan river [Figure 4.1]. The Hasbani's average flow is 157 MCM/yr. Although the flow in both the Litani and the Hasbani rivers is continuous, it has the tendency to fluctuate from month to month, and from year to year.

The high rate of water consumption in Israel, has largely had negative impacts on water quality, as well as simultaneously limiting supply and increasing demand. The current water crisis in Israel and the country's historical interest in the Litani water has created jitters in Lebanon since 1978.

## 4.2 Israel's High Water Consumption: An Analysis

There is a general consensus among hydrologists and water managers in Israel that the country is currently developing all of its replenishable water stock. In fact, the gap between water demand and supply has been widening. It is, therefore, imperative to analyse the factors that led to this situation. This is accomplished within two broad frameworks, one of which is demographic and cultural, and the other is ideological and agricultural.

### 4.2.1 Demography and Culture.

Prior to the establishment of Israel in 1948, Zionists popularized the theme of "a people (the Jews) without a land returning to a land (Palestine) without a people" (Kimmerling, 1983: 9). The Zionists soon discovered that Palestine was not only inhabited by more people than they had anticipated (Kimmerling, 1983: 9), but much of the land was under (largely dry) cultivation.

After the inception of Israel, thousands of Jews from around the world responded to Zionist calls and returned to "the Promised Land" [see table 4.1 and 4.2].

Table 4.1

Sources of Population Increase  
in Thousands

Period	Pop. at beginning of period	Pop. at end of period	Total increase	Yearly % of increase	% of migration balance of total increase
1948-60	805.60	2150.40	1344.8	7.6	64.6
1961-71	2150.40	3120.70	901.8	3.4	37.7
1972-82	3115.60	4063.40	948.1	2.4	19.3
1983-84	4033.70	4199.70	166.0	1.3	14.9

Source: Israel, Central Bureau of Statistics, No.36, 1985: 33.

Table 4.2

Jewish Immigration By Continent Of Origin  
in percent

Time Period	Europe	America	Africa	Asia
1919-1931	81.2	2.5	0.7	8.9
1932-1938	86.8	2.3	0.6	8.3
1948-1951	47.6	0.7	13.7	34.6
1952-1959	32.1	3.4	51.96	12.4
1975-1981	60.1	24.0	5.2	10.3

Source: Israel, Central Bureau of Statistics, No.33, 1982: 134-135.

The bulk of the early immigrants came from Developed "Western" countries: largely from Europe and North America, and less so from Australia and South Africa. These predominantly "Western" settlers "had different (higher) water consumption habits than the indigenous population" (Naff and Matson, 1984: 33).

Since 1919, the majority of immigrants to Israel have, by and large, been Ashkenazi Jews (i.e. those from Europe, America, Australia,

and South Africa --"developed") [Table 4.2]. Until the late 1960s, Ashkenazis constituted over one half of the total Jewish population (Orni and Efrat, 1966: 201-202). On the other hand, the Oriental or Sepharadi Jews (those from Asia and North Africa --"less developed") constituted 9.8% of the population in 1948 and 28.7% in 1964 (Orni and Efrat, 1966: 201-202). Since then, the Ashkenazi Jews have been steadily out-numbered by the Oriental Jews. This is largely due to the latter group's high birth rates.

Labour statistics from 1950 show that 30 % of the civilian work force (most of whom were Ashkenazi immigrants) had technical and industrial skills (Naff and Matson, 1984: 33). Most of the remaining population was placed in already established villages and in new agricultural settlements. They were given on-the-spot training as farmers.. So the early Jewish immigrants were able to lay the foundations of an industrial and a rapidly developing Israel, hence creating a higher standard of living than its neighbours. This, coupled with the large number of farming immigrants translated into a greater demand for water.

As shown in table 4.3, domestic water consumption in Israel is more than five times higher than that in Jordan, and about three times higher than Lebanon. Similarly, the Israeli newspaper Davar (26 November, 1978, as quoted by Kubursi, 1982: 82) reported a wide gap between the per capita water consumption of Jewish settlers on the West Bank and the Arab population in the same region; the former consuming 100 cubic meters annually, and the latter 40 cubic meters. After 1967, Israeli authorities imposed new strict water regulations on the

residents of the West Bank. Permits to drill water wells in Arab areas were rarely given, and even then only for domestic purposes. This new policy, according to Davar (26, November, 1978), was meant to minimize any interference with the water being pumped to Israel proper from Arab areas. So in 1977 and on the occupied West Bank, 17 wells supplying Jewish settlements (then inhabited by less than 30,000 Israelis) extracted 14 MCM/yr; 88 Arab wells (Palestinians then numbered about 600,000) were permitted to pump a mere 9.9 MCM/yr (Kubursi, 1982: 82).

This pattern of high water consumption rates domestically is due to the socio-economic background of the Ashkenazi Jews and to their high standard of living. European Jews tend to have swimming pools, green lawns, and running water in their homes in Israel. These reasons and others account for the high rate of domestic water consumption.

Table 4.3

Comparative Water Consumption  
[Figures in MCM]

Sector	Israel	Jordan	Lebanon *
Irrigation	1295	465	670
Domestic	332.5	60	135
Industrial	122.5	30	65
TOTAL	1750	555	870

Source: Naff and Matson, 1984.

\*.Source: al-Nahar, 5 August, 1985.

Table 4.4  
Water Consumption in Israel  
in MCM

Year	Total	Domestic	Industry	Agriculture
1958 *	1274	196	046	1032
1964-65	1329	199	055	1075
1969-70	1564	240	075	1249
1975-76	1728	305	095	1328
1979-80	1700	375	090	1235
1980-81	1679	367	100	1212
1981-82	1770	385	103	1282
1982-83	1759	401	103	1255

Sources: Israel, Central Bureau of Statistics, No.36, 1985: 452.

\* Darr et. al, 1976.

Although the Oriental wave of Jewish immigrants brought Israel many unskilled hands, they generally avoided the agricultural sector. Israeli farmers need to have some basic technical skills and possess the capital to invest in a large farm. Capital, farm size, and farm technology affect the feasibility, yields, and competitiveness of farms.

#### 4.2.2 Zionism and Agriculture

Zionism is the political ideology of the current Jewish state of Israel. Decades before the establishment of Israel in Palestine, Zionism had the theme of "Jews on the land" Consequently a strong emphasis on agriculture. The very early Zionists established their roots and influence in historic Palestine by purchasing arable land and establishing farms "in areas which were only sparsely populated by Jews." (Kimmerling, 1983: 87) According to Kimmerling (1983: 87), the aim of these agricultural settlements (or Kibbutz) was to create



fait accomplis before the question of Palestine was determined by the United Nations (UN). Therefore, it was not always economics but geopolitics that determined the location of the Kibbutz. Most of the land purchased in Palestine was done through or for the Jewish National Fund. By 1939, the Jews had acquired 10 percent of Palestine, seven percent of which was cultivable (Kimmerling, 1983: 89).

#### 4.2.2.1 The Economic Viability of Subsidised Agriculture.

The ideological commitment to agriculture was initially intended to make the new immigrants feel "rooted" in their new home-- Israel; to secure the "territorial integrity" of the country by firmly occupying the peripheral areas; to make the state self sufficient in food (for security reasons); and to expand the carrying capacity of the land so it could accommodate larger numbers of immigrants.

Food self sufficiency was of particular concern to Israel when the state was in its infancy years and its population was swelling with immigrants [see tables 4.1 and 4.2]. This concern is no longer a valid one as the country is now a net exporter of food. Israeli fruits and vegetables are exported to the markets of the European Community (EC) and to the distant markets of North America.

Israel's agricultural accomplishments were made possible by substantial government subsidies. Farmers enjoy "cheap or free infrastructure, tax remissions, special credit facilities and export assistance" (Stauffer, 1985: 77). Moreover, the cost of Irrigation water is highly subsidised. In the mid-1970s, Israeli farmers' water supply was up to three times cheaper than water for any other sector. This is a significant factor because agriculture consumes over 70% of

the total water stock of the country. Israeli agronomists, according to Stauffer (1985, 77), estimate that less than one half of the country's irrigated agriculture is economically productive and a "fraction" of its agricultural production is economically viable; "the rest requires not only water but steady injections of cash subsidies."

This is due to the negative "added value per unit of water for about half of the agricultural output" (Stauffer, 1982: 46-48). Therefore, economically, Israel would have benefited more

"if it had cut back on costly, highly subsidised agriculture, rather than capturing still more Arab water with which to expand its inefficient agricultural output" (Stauffer, 1985: 77).

Stauffer (1985; 1982) then argues that the value of the coveted additional water is merely ideological and not economic.

#### 4.2.2.2 Ideology and Israel's Water Policy

The water policy of Israel is still influenced by the ideological fundamentalists of the state. The water policy in Israel was guided by Zionism until 1964 after which the role of ideology was dampened. Therefore, the period of ideological supremacy was between 1948 and 1964 after which (1965 till present) ideology became more pragmatic.

In the first period of 1948-1964, the pattern of water distribution and development was as follows: "ideology dictated policy and policy guided the planning and operations of the water institutions" (Galnoor, 1980: 293). The most important of these institutions are Tahal (water planning for Israel), and Mekorot; both of which are government dominated. The strong ideological influence necessitated greater water development hence their engineering-access orientation. In this

period, "No plan for a new agricultural settlement was ever abandoned only because the cost of supplying water was too high" (Galnoor, 1980: 293). The Israeli government, the sole owner of all water resources in the state after the 1959 "Water Law", was subsidizing water cost thus providing the resource far below its real cost of supply. Therefore, Galnoor (1980: 306) asserts, "Diseconomies dictated by ideology" and manifested in subsidised water costs, "could (temporarily) be tolerated under conditions of conventional (even if merely perceived) water sufficiency." This, however, could not continue indefinitely.

In the period 1965 to the present, the ideological component of water policy started to wear off. This may have been due to two factors: Firstly, the National Water Carrier, completed in 1964, transported water to more communities in central and southern Israel thus leaving less water to go around; and secondly, the Israelis realized the scarcity and value of water when the neighbouring Arab states vowed, in effect, to reduce the flow of the Jordan river to a trickle. So it was "Water constraints that exerted strong pressure toward the modification of the of previous ideological imperatives" (Galnoor, 1980: 297).

Despite this pressure, ideological objectives are still being achieved within the limitations of water development, and the water policy is such that agricultural interests prevail. In the mid-1960s, agricultural water consumption had to be drastically curtailed [see Table 4.4] so that domestic (urban) and industrial needs could be satisfied. When this issue emerged, the Ministry of Agriculture found it very difficult to endorse openly a policy of adjusted reallocation

of water from the agricultural sector to other growing and needy sectors. Hence "the policy of assuring priority for the water needs of urban and industrial growth was started in general terms" (Galnoor, 1980: 298-299). As a result, some fundamental ideological questions were raised which affected the structure of political power.

In spite of the looming water crisis, ideology was still a shaping factor of water policy in Israel. In a 1978 article, Galnoor (1980: 297-298) wrote that the quantity of water for irrigation could not continue rising at the previous rates. He went on to say that "Such a change in the ideological component of water policy" is yet to occur.

It must be acknowledged that as the gap between water supply and demand widens, attempts are being made to reallocate agricultural water [see Table 4.4; note the years 1979-1980 where 75 MCM were reallocated to the domestic and industrial sectors]. These attempts are quickly overridden when drought strikes Israel. This happened in 1981-1982 with agriculture prevailing once more.

It is now clear how demographic composition and societal evolution contribute to the high rate of water consumption in Israel. Moreover, ideology remains an integral component of water policy; one that favors the agricultural sector and subsidizes its water supply. As a result of this high rate of water consumption, water quality is in a state of degradation.

Specifically, water quality has been of concern in Israel since the mid-1950s. This issue was highlighted in the Cotton Plan which suggested the diversion of one third of the Litani river's good quality water into the Jordan river system. Among other things, this was

supposed to reduce the salinity at lake Tiberias by diluting its water (Stevens, 1965). The rapid degradation of the water stock has certainly affected Israel's water policy. Salinity and pollution are the two main problems that water planners have to control and ameliorate.

Salinity is a problem not only in Israel's aquifers but also in the country's surface water system, especially in lake Tiberias, Israel's largest fresh water reservoir. Salinity in lake Tiberias is caused by, first, the rate of precipitation per season. As more water enters the lake, the lower the salt content is. So the seasonally fluctuating salinity level is high in the dry summers, and lower in the wet winters. A second reason for lake Tiberias salinity is the high rate of water evaporation due to the sunny and warm weather. A third reason is the mineral (salty) springs at the bottom of the lake and on its banks (Orni and Efrat, 1966: 78).

The Israeli representative to the conference on Water For Peace (1967, vol.2) noted that water in lake Tiberias contains about 1000 ppm of total dissolved solids, of which chloride accounts for 365ppm. He also said that the brackish aquifer in the Negev desert contains upto 3000 ppm of total dissolved solids. Currently, the acceptable level of chloride concentrated in agricultural water is 170-250 mg/l (Waldman and Sheval, 1985: 438). As for drinking water, the Israeli government has recommended that the maximum concentration of chlorides be set at 250 mg/l (Shuval, 1980: 315-337).

As the concentration of chlorides in Israel's water rises, so does the concentration of sodium (salt). In the past, the level of salt

concentration in potable water was judged by personal objectionable taste. Recently, however, the high sodium concentration in water is said to have direct health affects as it is viewed as a possible cause of hypertension (Shuval, 1980: 315-337).

Another form of water contamination is the accumulation of nitrates. This type of water pollution is primarily derived from human activities as nitrogen salts are rarely found in appreciable quantities in natural water. Studies of the water quality of Israel's main coastal aquifers showed that the intensive use of nitrogen fertilizer in agriculture is a major contributor to this type of pollution. Nitrogen fertilizers are the source of 60% of the nitrate level found in ground water; 10% from irrigation using reclaimed waste water and refuse disposal; another 16% of added nitrates was traced to local well irrigation, a water source already contaminated with nitrates; and the remaining 14% is from a variety of sources including sanitary land fills, nitrogen in rain water, urban return flow, and live stock excretions (Mercado, 1980: 93-146).

The discussion above identifies the causes and some of the problems associated with the over exploitation of Israel's existing water supplies in order to meet her rising water needs. The following section explores Israel's options to acquire new sources of water.

#### 4.3 Passive Acquisition of New Water Resources

Although Israel's water demand has been rising, the country's supplies have been fixed since the Arab-Israeli war of 1967. Israeli Scientists have, for many decades, been looking for scientific answers to their country's incipient water crisis. Importing water from the

Nile is another potential solution to the country's water problems. The following section looks into Israel's water alternatives which are broken into two broad categories, one domestic and the other a foreign alternative.

#### 4.3.1 The Domestic Prescription

The home-made solution to the water crisis in Israel is largely a scientific one. Its major components are water desalinization, cloud seeding, and water reclamation.

##### i. Water Desalinization

The technology for desalting sea water has been available for many decades. It is implemented to various degrees in countries such as Mexico, Israel, and in many Arab states of the Persian Gulf. As for Israel, its introduction of desalinization plants to develop new water sources could be viewed as an application of the "access" philosophy that was particularly prevalent in the 1950s and 1960s. The existing levels of water consumption were accepted as given, and access to new resources were made a policy-- this time to the Red sea water.

Israel began to experiment with the desalinization of sea water in 1964; soon after the completion of the National Water Carrier and after the Arab states pronounced their intention to divert the head waters of the Jordan river away from Israel. Encouraged by the American Administration of President Lyndon Johnson, Israel built a nuclear powered desalinization plant to augment the country's water needs. This approach was quickly realized to be uneconomical and, as a result, Israel went on to build two non-nuclear desalinization plants in the

town of Eilat, at the southern tip of the Negev desert. These plants now supply most of the town's potable water needs.

According to Kahhaleh (1981: 37), in 1973 Israel initiated a 15 year desalinization project. It included three desalination plants all of which are to be connected with a nuclear reactor during the final stage of the scheme. In 1988, the total annual output of these plants is expected to be 155.4 MCM of fresh water.

Writers such as Shuval (1980: 320) and Kahhaleh(1981: 37) agree that water desalinization is a prohibitively expensive proposition to be used for anything other than drinking. Both writers, however, disagree on the cost of desalinated water per cubic meter; the first estimates it at \$1.00 to \$2.50 and the second at \$0.30. Shuval (1980: 333) estimates the required capital investment needed to build desalinization plants capable of producing 100 MCM/year varies between \$200 million and \$300 million.

The safety requirements in building nuclear plants increased the cost of nuclear energy and hence the cost of water desalination. Nuclear plants' safety became of great concern to people and governments especially after the disasters of Three Mile Island in 1979 in Pennsylvania, and, more recently, the melt down of the Chernobyl Nuclear Reactor in the Ukraine in 1986.

Another issue of particular concern to Israel is raised by Naff and Matson (1984: 12) and by Shuval (1980: 333). They assert that one fifth of Israel's electricity production is used to pump water to its consumers, most of whom are farmers. In Israel, energy is consumed to pump water from aquifers, from lake Tiberias (210 meters below sea



level), for the country's irrigation system, and for its National Water Carrier. This is placing heavy pressure on the country's energy situation, especially since almost all of Israel's fuel needs are imported. As a result of all the above factors, the earlier plans to build nuclear desalinization plants were put on hold in the late 1970s as the high cost per unit of water could no longer be justified.

#### ii. Cloud Seeding

Injecting silver iodide and frozen carbon dioxide into clouds to induce precipitation is a method that has been well studied and experimented with in Israel. One problem with this approach is that it is not a reliable means of increasing water supply; one needs cloud cover over a certain area in a certain time of the year which one can then seed. Another problem is that the location of precipitation from the seeded clouds is difficult to predict and control, especially in the relatively narrow state of Israel. For example, if clouds were seeded above lake Tiberias, precipitation may occur over Jordan or the Mediterranean, and not over Israel. A third problem with cloud seeding is that clouds are rarely formed where and when they are most needed; that is, in the arid Negev region during the irrigation season -- the dry summer.

#### iii. Recycling/Reclaiming Waste Water

Reclamation of effluents from agricultural settlements and the reuse of that water for irrigation began in the 1950s. Although the recycling of water was then accepted as part of the national water plan, it was given a very low priority. In the decade beginning in

1950, Israeli water planners emphasised the quantitative and distributional aspect of water resources and paid little attention to water quality. During this period new agricultural settlements were developing or expanding their irrigation systems. Despite this, farmers were not allocated enough water to meet their rising needs. This is largely the reason that led Israeli farmers to suggest the recycling of waste water. By the 1970s, water reclamation went beyond recycling effluents from small agricultural communities to include municipal discharges. By then, irrigation projects using reclaimed waste water had reached 150 in number, utilizing 37.5 MCM/yr of effluent. In 1980 "some 250 small and medium sized waste water irrigation projects were in operation and effectively recycled about 20% of the urban waste water flow" (Shuval, 1980: 219).

Water planners for the Israeli government intend to develop some 300 MCM/yr of recycled water. This is to take place through the intensive utilization of 80% or more of the available waste water in all regions of the country. This target may theoretically be feasible to reach. Associated with such an ambitious plan is a complex web of environmental and social/marketing problems. The recycled water is usually not fit for drinking as it continues to have a number of contaminants. In essence, recycling treated sewage water is recycling contaminated water. Furthermore, the process of recycling often results in waste water percolating into aquifers thus polluting them (see Selbst, 1980 for a detailed study on the subject). Furthermore, treated and recycled sewage water is regarded by farmers as inferior to fresh water. The reasons for that are outlined by Selbst (1980: 250);

The source of water has an unpleasant association not only for those who work with it but also for potential customers so that it may affect the demand for certain produce. There are possible risks of long-term damage to soil and crop yields from known and unknown components of sewage. The commitment to effluent use for irrigation, once made, will be very difficult to reverse and given the disadvantages and risks involved it is not surprising that farmers feel that they have a claim on more than a cubic metre of effluent for every cubic metre of fresh water they agree to forego.

Thus for reclaimed sewage water to become a conventional and routine part of water supply, exact and responsible agricultural planning on the part of the government is needed; and an attitudinal change to reflect open-mindedness on part of the consumers is essential. In spite of the problems associated with recycling waste water, this approach appears more economical and effective than the other two options discussed above. This is evident in the water planners' decision to seriously pursue effluent reclamation.

#### 4.3.2 The Foreign Prescription.

The foreign options to Israel's water crisis are even more limited than the domestic ones. The foreign solution amounts to acquiring/importing water resources from a neighbouring country. Hence the following discussion focuses on the only two natural potential sources of water supply to Israel, namely the Nile river of Egypt and the Litani river of Lebanon.

##### i. The Nile River, The Negev Desert, and Peace

A permanent supply of a strategic resource like water is best acquired from a stable, friendly and reliable neighbour. Egypt is the only Arab country that has diplomatic relations with Israel. During the "Peace Process" between the two countries that eventually led to

the Camp David Accord, Anwar Sadat, the late President of Egypt, proposed channelling one percent of the Nile's water (ie. 800 MCM annually) into the Negev desert of Israel. That would have made the desert more inhabitable hence able to accommodate a larger population and a more diverse industrial base.

Egypt's proposal may have been one of genuine symbolism of peace and goodwill to Israel. But after some reflection, one can see the political and economic dimensions of such a proposal, especially in an area riddled with hostility and mistrust. The influential Israeli daily, Ha'aretz (21 September, 1979), wrote that importing the Nile's water to the Negev settlements might make Israel "dangerously" dependent on Egypt. As a result, and in addition to water supplies from the Nile to Jewish settlements in the Negev desert, one suggestion was to supply the Palestinian residents of Gaza Strip with Egyptian water as well. This would have presumably made Egypt reluctant to use its water "weapon" against Israel.

Shortly after Sadat's approval of the "Peace Canal" project, local and foreign academics and politicians denounced Sadat's "gesture". They said that if the Nile's water was diverted, Egypt's development projects would be gravely affected, especially in the area of food production (Zohra, 1985). Furthermore, due to Egypt's population explosion and to its ambitious agricultural programs, the country is forecasted to have an annual water deficit of 20,000 to 60,000 MCM by the year 2000 (Zuheiri, 1985; Zohra, 1985).

For Egypt, as for all other Middle Eastern states, food self sufficiency is a basic goal. Exporting part of a country's water

resources is bound to become a limiting factor to its agricultural expansion. The immediate effect of a food shortage and/or an increase in food prices are riots and demonstrations, as indicated by the events that almost toppled Sadat in the mid-1970s, and those that were partly responsible for the regime change in Sudan in 1985. Therefore, water-sharing schemes could lead to the political instability of both states, possibly to the economic decline of the supplying state.

While one state could be in dire need for water, it can not risk becoming politically unstable, or economically dependent on the "good will" of a once archenemy. The "official" state of hostility between Israel and her neighbours (i.e. Syria, Lebanon and Jordan), and the shortage of water in the region, renders this resource non-tradable. Therefore, due to its explosive potentials politically and economically, even passive cross-boundary acquisition of water is an unlikely venture.

From the discussion above, it is clear that water in the Middle East and in other environmentally similar areas is considered a "national treasure" of strategic significance. River diversions have clear geopolitical and socio-economic ramifications with potential for regional destabilization. The "peaceful" acquisition of a strategic resource such as water, has wide regional implications, especially in an environment of hostility and mistrust as is the case in the Middle East. The "scientific" approach, vigorously explored by Israeli scientists, offers thus far no more than a bandaid solution to the incipient water crisis.

The question, therefore, remains: what alternatives are there for a

developed and advantaged, but water-deficient state like Israel? Due to the nature of the water problem, namely that states are immovable territorial entities, and water being a prohibitively expensive resource to import by tankers, Israel's solution to the looming water crisis can only be a regional one. Having ruled out water imports from the Nile, the Litani appears to have the remedy to Israel's water problem.

#### 4.4 The Litani River and Israel's Water Problems

The Litani is Lebanon's longest river. It flows southwards through the country's fertile Bekaa Valley and then takes a sharp turn westwards passing through the narrow coastal strip to empty into the Mediterranean sea north of the city Sur (Tyre). The Litani river's flow and water sheds are inside Lebanese territory from its springs near Baalbeck to its mouth near Sur (Tyre) on the Mediterranean. Despite this, Rowley (1984: 145-146) asserts that, for Israel, the lure of the Litani is double pronged; namely the river's water quality and its quantity. Another luring factor is the inexpensive and the relative ease with which the Litani and the Hasbani rivers could be diverted to Israel (see Kubursi, 1982; Halawani, 1985) to supplement and/or replace her existing water sources.

##### 4.4.1 Water Quantity.

The volume of the Litani's outflow is not only an issue of contention but one of contradiction and ambiguity amongst authors on this subject. The Litani river's annual flow could be as high as 900 MCM; it is, however, estimated to average 700 MCM/yr.

Various development projects along the Litani utilize much of its water. Israel claims that over 50 % (or about 350 MCM/yr) of the Litani water flows into the sea unused; Lebanon's figure is 20 % (or about 100 MCM/yr) (Naff and Matson, 1984: 78). On the other hand, Thomas Stauffer (July, 1982: 13) contends that a

Complete control of the (Litani) river would add at least 800 million cubic metres per year to Israel's water supply, which could represent an increase of almost 50 percent of this critical resource. [Emphasis added]

Stauffer (July, 1982: 11-13) wrote his article after Israel had occupied over one third of Lebanon, including most of the Litani river's flow area; i.e. up to a point few kilometers north of the Karoun Dam [Figure 4.1]. Stauffer's diversion figure of 800 MCM is some-what realistic only if Israel can arrange for the Litani to flow uninterrupted. This could be done if the Israeli army reoccupies the same region and opens the dam's gates, or if the Dam is destroyed by "accident", i.e. by Israel or by her agents. The second suggestion is a feasible one for two reasons. First, due to Lebanon's state of anarchy, arms, explosives, and mercenaries are ubiquitous. And these are the ingredients needed to transform this suggestion into reality. Second, Israel has previously attacked dams and other water works inside her neighbouring states including Syria, Jordan and certainly inside Lebanon (Naff and Matson, 1984: 78). Such a subversive action would have the desired effect of making the Litani flow uninterrupted to a diversion point somewhere along the western bend of the river (Naff and Matson, 1984: 78).

If the Karoun dam remains operational and intact, Rowley (1984:

145) suggests that the Litani river's outflow is a mere 100 MCM/yr. It must be noted here that Rowley's figure is not referenced nor does it concur with Naff and Matson's analysis (1984: 77-78). When asked about the figure in his book, Dr. Gwyn Rowley wrote (letter dated 04 February, 1987) to the author confirming the figure and stating that "The Litani data was obtained from Dr. Moshe Inbar of the University of Haifa" in Israel.

Both Rowley (1984), and Naff and Matson (1984) overlooked a central point in Israel's hydro-strategy. Although the river's outflow may be 100 MCM/yr, its flow amounts to 400 MCM/yr at the western bend near Khardali [Figure 4.1]; the ideal point for diverting the river southwards. This point is ideal because of the sheer volume of water flow there, the proximity of the river bend to Israel (fewer than 10 km away from the border), and the relative elevation difference between the Khardali and the territory to its south east, a difference that will allow for the gravitational flow of water in the diversion canals. One of Rowley's (1984), and Naff and Matson's (1984) explanations for the Israeli occupation of the so called "security belt" is "the lure of the Litani". However, what both authors fail to discuss are the other hydrological resources of that belt, namely the water aquifers, the Hasbani and the Wazzani rivers of that region in south east Lebanon.

Academics and reporters from Lebanon believe that Israel can divert far more than the estimated and normally accepted figure of 100 MCM of the Litani water per year. Additionally, 157 MCM/yr of the Hasbani river's water has been used by Israel since it foiled Lebanon's attempts to develop that resource after the 1967 War (Halawani, 1985:



54). Moreover, the former director-general of the Litani Water Authority (the government department in charge of executing the Litani Project), Salah Halawani (1985: 55), asserts that Israel could easily divert 400 MCM/yr of the Litani into her own water systems. Based on recent hydrological studies, Lebanon's most circulated newspaper, al Nahar (24 March, 1986), has recently confirmed Halawani's figures. In addition to that, water from the Wazzani river (a tributary to the Hasbani) has been piped southwards for use in Israel's northern region, the Galilee. This is according to a letter recently (4 April, 1987) received by the author from Dr. Rowley, a geographer from Sheffield University who is currently doing research on Israel's water needs.

Baalbaki and Mahfouth (1985: 88-107) have analysed Israel's interests in the water resources of southern Lebanon, and detailed how Israel plans to divert these resources southwards. The authors point out that the flow of the Litani (between the Karoun dam and Khardali) is 400 MCM/yr, and that of the Wazzani is 67 MCM/yr [see Figure 4.1]. Baalbaki and Mahfouth (1985) are probably the first to discuss the ground water potential of south Lebanon in terms of Israel's hydraulic imperatives. Replenishable subterranean water in the foothills of Mount Hermon to the east are estimated by Baalbaki and Mahfouth (1985) to be 100 MCM/yr; and by al Nahar (24 March, 1986) to be billions of cubic meters in volume.

A foreseeable diversion scheme for which the infrastructure is already in place is that from the Litani near the village of Khardali, and from the Wazzani river (Baalbaki and Mahfouth, 1985: 88-107). From there, water from the Litani and the Wazzani rivers will be pumped to a

point 400 m above sea level to join Israel's National Water Carrier. This scheme will provide Israel with over 450 MCM of water per year.

#### 4.4.2 Water Quality

Twenty five percent of Israel's water supply comes from lake Tiberias which is largely fed by the Jordan river. Despite the construction of the National Water Carrier, the Jordan river's water is not reaching the cultivable Negev desert in the envisaged quantities. The reasons for the latter are two fold: first, water from Lake Tiberias is required for the urbanized and industrialized central and coastal parts of Israel. The springs and coastal aquifers that once supplied the urbanized north and central parts of the country have been over utilized hence their water quality is deteriorating. Second, the Lake's salinity varies from 250 ppm at its northern end to 340 ppm at its southern end. This salinity level is too high for some sensitive and pervasive crops, like citrus fruit trees.

Salinity of the Litani river averages about 20 ppm, hence Naff and Matson (1984: 65) write that "it is purity that makes the Litani very attractive to the Israelis, who have developed their National Water Carrier System with a view towards potable (as opposed to irrigation quality) water." This point is pursued further by Rowley (1984: 46) who notes that it is important to recognize that even 100 MCM/yr of the Litani's water "equals 25 percent of the flow with in the much heralded Israeli National Water Carrier." The diversion of the Litani would, therefore, benefit vast areas in Israel, far beyond the central and

western parts of the country. Once the pure water of the Litani reaches the National Water Carrier [see Figure 4.1] it would then be channelled as far south in Israel as the cultivable Negev desert, thus "making it bloom."

#### 4.5 Geopolitical Analysis of Water Scarcity

Water transfer from Lebanon into Israel has many inter-related geopolitical consequences that affect each country in a different way. In the following section, the geopolitical and socio-economic value of water to both Israel and Lebanon are analysed.

##### 4.5.1 The Value of Water to Israel

Israel is currently tapping over 95 percent of its proven renewable water resources of 1600 MCM/yr. Today Israel is consuming over 1750 MCM annually, this includes desalinated and reclaimed water, as well as water from the West Bank and to a lesser degree from the Golan Heights (Banias tributary), and from south Lebanon (the Hasbani tributary). Galnoor (1980: 304-305) asserts that even

the estimated additional water would not suffice to meet the growth in water demand expected up to 1990. The situation may be even worse if the precipitation is below average during this period and if the demand for higher quality water is accelerated.

He then adds that in the absence of curtailed demand or of the technological breakthrough in producing "artificial water," which Galnoor (1980: 304-305) believes is unlikely in the near future, "even the most optimistic forecasts are gloomy about the prospects after 1985."

The Israeli newspaper Haaretz, in an article entitled "The Dispute Over Water", as quoted by Davis (1979: 5), stated that

the future increase in urban population and in standards of living will necessitate the development of some additional 400 MCM of water toward 1990 [and 800 MCM by the year 2000, when Israel's water consumption will be 2,500 MCM annually (Naff and Matson, 1984: 53)]. If the needed quantity is not found, water have to be diverted from agriculture to domestic consumption.

Against this background of rising water demands and limited supplies, coupled with an ideological supremacy in water policy, there is a consensus in Israel's water community that "some drastic steps will have to be taken in order to cope with water shortages" (Galnoor, 1980: 304). The steps that Galnoor suggests involve a 15-20% reduction in the total agricultural water consumption by the year 2000. One problem with this suggestion is that it is unpopular and therefore politically risky. The "spiritual" value of agriculture is deeply entrenched in the Israeli society, and it transcends all political affiliations and orientations. Another problem is that even a 20 % reduction in agricultural water consumption will at best amount to 150 MCM by the year 2000 --currently, agricultural water consumption is close to 1300 MCM.

Reliance on waste water reclamation will add about 400 MCM by the year 1990 (Galnoor, 1980: 300). Here two issues must be remembered: first, heavy reliance on water reclamation is a process that utilizes energy and requires capital outlays, thus higher water costs. Second, initial studies on the environmental and health impacts resulting from treated and reused water have revealed unfavorable results (see Shuval, 1980: 211-242 for a full discussion). In spite of all this, and even

if by the year 2000, Israel was able to augment her water supply by 500-600 MCM/yr, that would still not meet her forecasted water deficit of 800 MCM/yr. This would keep Israel hostage to its water needs, especially in drought years or in times of population expansion.

Furthermore, a shortage of water could have grave economic consequences on the Israeli economy. In a study of the shadow prices of key economic indicators in the Israeli economy, Kubursi (1982: 99) concluded that water has the highest shadow price. So if there is a drop in water supplies, the shadow price of the resource will skyrocket, and its added value will rapidly decline thus negatively impacting the Israeli economy.

Israel is clearly in need of new water resources merely to maintain the current rate of water consumption. It is estimated that if 150 MCM/yr of the Litani water is diverted southwards, Israel could then irrigate 25,000 more hectares which in turn, according to the Arabic weekly magazine al-Tadamun (April 1984: 68), would permit Israel to increase its population by 25 percent, or one million immigrants. For Israel, such a population boost could "translate into an increase of 25 percent of its mobilization force, which is an increase of about 1.4 million draftees."

Baalbaki and Mahfouth (1985) believe that Israel could divert 450 MCM of water annually from both the Litani and the Wazzani rivers. The authors assert that 350 MCM of water will allow Israel to expand her irrigated land by 70,000 hectares, and the remaining 100 MCM to meet the domestic/potable needs of 1.25 million Jewish immigrants.

Moreover, additional water sources would certainly be needed if tens of thousands of Russian Jews are to emigrate to Israel and be absorbed in that society. The early waves of immigrants have had a similar effect on the rate of water consumption in the country.

For Israel to remain or indeed regain its attractiveness to the international Jewish body and to its own citizens, the standard of living and development in the country must be increased sharply. This would be difficult to achieve if the country was to try and conserve/ration water or reallocate it away from agriculture. The high rate of water consumption, the subsidy of the resource, and the water intensive aesthetic and recreation facilities will therefore have to continue.

If the current pattern of water consumption continues, Naff and Matson (1984: 12) contend that Israel will have depleted all of its renewable sources of fresh water "by the mid 1990s, which adds critical complicating factors to the issue of its [Israel's] occupation of the West Bank, the Golan Heights, and southern Lebanon." Instead of suffering the economic set backs associated with severe water shortages, Israel will finally divert the Litani into the Jordan river system [see Figure 4.1].

A number of Israeli politicians believe that south Lebanon must remain in Israel's "sphere of influence", because they believe that only the Litani offers a solution to their country's water crisis (Naff and Matson, 1984). This would partially explain why two Israeli governments under two different leaderships (Shamir for the Likud party, and Perez for Labour) have been unwilling to pull out of Lebanon

completely. This is also underlined by the fact that both party leaders have headed two minority coalition governments. Furthermore, Naff and Matson (1984: 79) note that Arab countries' promises "to finance irrigation reconstruction and development schemes in southern Lebanon (for use by indigenous Lebanese) in the event of an Israeli withdrawal may well impede Israeli willingness to withdrawl."

#### 4.5.2 The Value of Water to Lebanon

Since independence in 1943, Lebanon's successive governments have always given hydro-electrical power generation a priority over any other water related projects. For this purpose, Lebanon planned to build a series of dams, mostly along the Litani river. Pressure from the local farmers and from the World Bank convinced the government to incorporate irrigation into the hydro-electric generation plan. Initially, the government avoided the irrigation issue in order to avoid any possible sectarian outcries accusing it of setting up an irrigation scheme favoring one sect over another. Some years later, the government finally approved the "Litani Project", which incorporated irrigation schemes with hydroelectrical power generation plans. A government agency known as the "Litani Authority" was founded to manage the Project.

##### i. The Litani Project

By the mid-1970s, the area of irrigated land in Lebanon had increased sharply but it was still far below the country's potential. This was essentially due to the slow implementation of the irrigation schemes undertaken by the government. The Litani project has been

described by Sayigh (1978) and Fisher (1985) as a crowning example of slowness, indecision and wastefulness.

"The Litani Project, as (first) realized, was exclusively for hydroelectricity. Recently, pressure has been applied to use some of the water for irrigation" (Hudson, 1971: 9). This pressure was being applied internally, by local farmers, and externally by various Arab governments who wanted to mitigate any foreign threat to Lebanon's water. The urgency was partly sparked by Israeli charges that the Litani's water was "flowing uselessly" into the sea and their expressed interest in sharing that resource (Gilmour, 1984; Naff and Matson, 1984).

After much debate, the Lebanese government, with the aid of \$24m loan from the World Bank, approved the Litani Project which included irrigation and hydroelectric generation plants. Despite its financial backing, the project suffered from many setbacks due to (1) insufficient background data on the river's flow; (2) inefficiency or non-existence of aerial surveys, soil analysis, and research on farmers attitudes and the like; (3) false starts; (4) change in priorities; (5) defective work performance (resulting in the collapse of tunnels and other serious and costly results); and (6) disagreements (among the large landlords, and political pressure groups allied with them) as to the course of irrigation canals and the altitude which irrigation water is to reach. (Sayigh, 1978; Hudson, 1971).

The first phase of the Litani plan was completed in 1965. The Litani Authority built a dam on the southern part of the river in the Bekaa valley. The dam created an artificial lake capable of holding 225 MCM



of water. Both the lake and the dam were named after the bordering town of Karoun.

## ii. Irrigation And its Problems

The other aspect of the Litani project was irrigation. The complete irrigation plan was expected to provide water for 26,000 hectares in three different areas: "part of the southern Biqa' (Bekaa), scattered patches of good land in the Galilean Uplands, and parts of the Sidon-Beirut coastal area" (Hudson, 1971: 8). The last two areas were later dropped from the plan only to expand the southern Bekaa irrigation scheme.

The irrigation part of the Plan was implemented slower than the hydro-electric one. Currently, the overwhelming problem facing the irrigation plan is financial (obviously, the on-going civil war is an overriding impediment to any development project). The World Bank has agreed in principle to provide \$50 million of credits, and Abu Dhabi has promised to advance or grant LL 150 million for the project. Despite this assistance, budgetary constraints due to war damages have hampered the quick allocation of funds and caused a slow-paced execution of the project. By 1975 both the coastal and Bekaa irrigation schemes were to be completed. However, only the basic irrigation works for the Bekaa scheme were completed and became operational. The maintenance of this basic irrigation system (canals, pipes, pumps ...) is currently affected by the instability in the country which often renders the system un-operational.

The first two stages of the Litani development Plan has been implemented. They included the development of an irrigation system in

the central Bekaa, building the Karoun dam and hydroelectric power generating plants. The third and last stage of this Plan was intended to irrigate thousands of hectares of agricultural land in southern Lebanon, and to generate enough hydroelectricity to satisfy the domestic needs of that region. This necessitated the construction of a dam and a reservoir at the Khardali, just north of the western bend of the Litani. According to Naff and Matson (1984: 74), "the Lebanese government has been unable to implement this stage due to the loss of sovereignty over the south to the Israelis and the PLO." Furthermore and according to Lebanese sources, "U.S. government financial institutions", influenced by the Israeli lobby, blocked Lebanon's bid to acquire a loan from the World Bank for its development schemes (Stauffer, 20 January, 1982).

### iii. Water As a Factor of Stability.

Now that the PLO is out of south Lebanon, the only real remaining obstacle to development is the rebirth of an effective central government in Beirut, able to reestablish the sovereignty of the country. The re-emergence of an effective and uniting Lebanese government is partly dependent on its willingness to address the plight and grievances of the country's largest minority group, the Shiite Muslims. They are estimated to number over 850,000, and seem to live in higher concentrations in southern Lebanon than any where else in the country. Most of the Shiite, especially those in south Lebanon, are poor farmers that have always been largely neglected by the government in Beirut.

The lack of government programs to help develop south Lebanon led

essential steps; in their absence, the South can not be economically developed, thus Lebanon will neither regain its political stability nor its unity. Therefore, selling or diverting the Litani's water into Israel away from the Shiite farmers who do not receive enough for irrigation would foment resentment against the Christian-dominated government of Lebanon (Naff and Matson, 1984).

TABLE 4.5  
Irrigated and Irrigable  
Area Requirements

District	Irrigated Area (ha)	Irrigable Area (ha)	Total (ha)
N. Lebanon	20,000	7,000	27,000
Mount Lebanon	9,000	-	9,000
Bekaa	18,000	33,000	51,000
Southern Lebanon	7,000	48,000	55,000
TOTAL	54,000	88,000	142,000

Source: Fawaz, 1967: 297. These are also the most recent provincial figures.

TABLE 4.6  
Lebanon: Available Water Supply  
and Projected Demand [\*]

District	Water supply in 1967	Water demand in 1985	Water demand in 2005
N. Lebanon	110,000	107,000	144,000
Mount Lebanon	160,000	118,000	158,000
Beirut	125,000	132,000	177,000
Beqaa	52,000	62,000	83,000
South Lebanon	103,000	73,000	98,000
TOTAL	550,000	492,000	660,000

Source: Van der Leeden, 1975: 240.

\* All figures are in cubic meters per day.

#### iv. Current and Future Water Needs.

In 1984, Lebanon's water consumption was estimated to be 870 MCM/yr [Table 4.3], which is less than the supplied volume in an arid year. On the other hand, Al-Hawadith weekly news magazine estimated that

Lebanon's population in the year 2000 will be about five million persons, (compared to three millions in 1984). The irrigated area will have to be enlarged to 200,000 hectares (compared to 60,000 ha in 1984), ... the water requirements in the year 2000 will be close to the supply of an ordinary year which is 2,250 MCM (al-Hawadith, May 11, 1984: 52).

Therefore, by the year 2000 Lebanon will barely meet its water needs. Other forecasts are gloomier. According to Naff and Matson (1984, p.80), the World Bank reports that although Lebanon "has a relative abundance of water resources", it may "face critical shortages in the near future for both domestic and agricultural usage."

#### 4.6 Summary

Israel's pattern of high water consumption is established and reinforced by the country's ideology, Zionism. The country is utilizing all of its available and replenishable water resources. Since demand for water is out-stripping supplies, Israel has been supplementing her water resources from effluent reclamation and to a lesser extent from desalination. This high rate of water consumption has led to the over-pumping of the country's coastal aquifers as a result of which sea water has been seeping into them. Domestic attempts to augment Israel's water supplies have been partly successful but offer no real solution to the deepening water crisis in the country. The only feasible option left for Israel is to divert south

Lebanon's water resources into the National Water Carrier.

Diverting the Litani into Israel will likely solve that country's water problems but create deeper political problems for Lebanon. A diversion can only be made possible by either overt Israeli occupation of south Lebanon, or by a covert occupation by proxy through the Israeli created and supported "South Lebanese Army." So a diversion will not only kill any irrigation or development plans intended for south Lebanon, it will keep that country destabilized and in turmoil.

A diversion of the Litani will certainly fan the fires of hatred, mistrust, and renewed conflict; it will also re-enforce Arab suspicions of the expansionist nature of Israel. Diverting Lebanon's water will have destabilizing political ramifications in the whole region which could quite easily develop into a another Syrian-Israeli war. Moreover, the chances of finding a peaceful solution to the wider Arab-Israeli conflict will become slimmer or vanish completely if such a diversion takes place.

These facts have politicized and internationalized the Litani river "dispute". This case study of water conflict will next be tested within the framework of conflict theory as discussed in Chapter 2 of this thesis.

## C H A P T E R   F I V E

### Analysis of Conflict Theory

And

### Water Scarcity

The conflict over water between Lebanon and Israel is almost a century old. This conflict is being remanifested due to the rising water demands and the depletion of the resource in Israel and also in Lebanon. This chapter sets out to test the nature and development of water scarcity in the Middle East within the already discussed theory of conflict. It was determined in Chapter Four that Israel's looming water crisis due to her need for greater resources is but a complementary explanation to the state of hostilities between Israel and Lebanon. So the motif in this chapter is to determine whether or not this "scarcity induced conflict" follows the model depicting the process and phase of conflict presented in Chapter Two (Figures 2.1 and 2.2).

Scarcity of water in the Middle East is rarely viewed as a contributing factor to Arab-Israeli hostilities, most recently between

Lebanon and Israel. The approach taken in this chapter is one of analysis, correlation and integration of events (social, economic, and geopolitical) between the two Middle Eastern antagonists and conflict theory. Each phase of the model of conflict process is tested with the corresponding events in the case study. A modification of the model in Chapter Two is offered as a refinement that better describes the reason for and path of conflict process in the present context. The changes involve, in particular, the word "trigger", the introduction of the "time" factor to the conflict process, and the additional role assumed by the structure of expectations as an influencing factor in the balancing of power phase. The revised model, depicted in Figures 5.1 and 5.2, is discussed in the latter part of this chapter.

### 5.1 A Latent Water Conflict

The essence of water conflict between Israel and Lebanon is one of state "competition" for this limited resource, hence the incompatibility of their interests. The natural environment and the evolution of the geopolitical setting embody within it the seeds of a latent conflict. This may be called the latent conflict phase.

As a result of the geopolitical setting, there had always been an inherent but latent water conflict in historic Palestine. There, the indigenous population was sparsely scattered across the land and comprised prosperous traders and subsistence farmers. Hence the latent water conflict was onsetting on the area in a very slow fashion.

As discussed in Chapter Four, Zionism is an ideology that was formulated in a European setting for implementation in an Asian setting, an area referred to by the Jews as the "Promised Land." One

basic premise of Zionism was to create a Jewish State in this "Promised Land" to which millions of Jews in diaspora will immigrate. Another important pillar of Zionism is its emphasis on agriculture in, as it turned out to be, a largely arid and water-deficient land. Naturally this was a disrupting challenge to the existing ethno-political status quo in the region, and to the existing passive relation with the natural environment. The aridity of the natural environment in Palestine made Zionist leaders instantly aware of water scarcity in the country. So as early as 1918, the Zionists of Europe were demanding that the Litani river be included within the boundaries of Palestine, promised to them by Britain. They must have realized that --in addition to the availability and use of technology, and the presence of socio-political organizations to manage and direct technological applications--

The numbers of people any given piece of territory can support --and their standard of living-- may be expected to depend also upon their ability to supplement domestic resources with materials from the outside (North, 1977: 583).

As a source of potential conflict, latent awareness of resource scarcity was, for decades, only felt by one side, the Zionists. This was due to Zionist-funded hydrological studies of the area, and to the centrality of agriculture and hence water to Zionism. The Arabs of Palestine were not as aware or even concerned about the water limitations of their country. This was due to the fact that their traditional farming and trading life styles were not yet affected or actively challenged by the Zionists; nor did the Arabs anticipate a rapid population expansion. Moreover, due to the pro-Zionist British



Mandate over Palestine, and the great political organization and influence of the Zionists, the native Arabs had little control over their destiny. Therefore, the geo-political setting of Lebanon and Israel, and the challenges of an alien ideology created biases, opposing values and attitudes. These factors, as well as the latent awareness of the problem of water scarcity correspond well with the first phase in the model of conflict process.

So at this stage of the water conflict, latent awareness was a direct and an immediate consequence of Zionism. So while awareness was an early factor in the conflict process, it did not initiate active opposition to the pattern of water distribution and/or utilization; that is, it did not initiate conflict.

## 5.2 Conflict Initiation and Active Awareness

This early Zionist awareness of resource scarcity remained passively latent until the 1950s and the Jordan river dispute. These tensions over the Jordan water were a contributing cause to the 1967 Arab-Israeli War. So the Jordan river dispute and its culmination in violent conflict constitute the first and the only complete cycle in the process of conflict over water. The outcome of this conflict cycle was not just a territorial victory but a resource victory for Israel as she increased her water supply by over 400 MCM/yr, or 40% of her total water needs.

A 1964 Arab Summit adopted a resolution that required Israel's neighbours to develop and divert (away from Israel) the waters of the Jordan river's tributaries at their source. This strategy was meant to greatly reduce the water flow into lake Tiberias, Israel's largest

fresh water reservoir. Soon after its attempt to divert the Hasbani waters toward the Yarmouk river of Jordan, Lebanon became boldly aware of the incompatibility of her water interests with those of Israel. Thereupon, the latter country struck at the water diversion and development sites not only inside Lebanon, but also inside Jordan and Syria. For Lebanon this could be viewed as the point when the latent water conflict entered the phase of conflict initiation. For Israel, this was intended to underscore the value it attaches to water. This aggressive move by Israel transformed its once latent and opposing attitude into active and opposing interest.

During this phase (1964-1982) of conflict initiation, Israeli leaders began to once again express interest in sharing or buying water resources from Lebanon. In the wake of the June War of 1967 and of Israel's territorial gains from three of its four neighbours, Moshe Dayan, the Defence Minister of that country, stated that (as quoted by Hof, 1985: 36) Israel had achieved "provisionally satisfying frontiers, with the exception of those with Lebanon." Israel later charged that the Litani's water was flowing wastefully into the Mediterranean (Naff and Matson, 1984).

Being a disadvantaged state economically and militarily, Lebanon became active in developing the resource potentials of the Litani. In part, this was intended to silence Israel's charges and disperse her interest in, and claims to the river; a typical internal (versus international) policy response and passive behaviour on the part of the weaker power when challenged by a stronger one. Therefore, what we have here may be called an active awareness (as opposed to latent

awareness) of water scarcity reflected in Lebanon's use and Israel's needs. The incompatibility of these two outcomes were manifested in the opposing interests of both countries, Lebanon and Israel.

### 5.3 The Balancing and Balance of Power And Israel's Response to the Water Crisis

In the phase of balancing of power, the path or policy chosen by a state (be it coercive, non-coercive, or accommodation) directly affects and influences each component (i.e. interest, capability, and credibility) in the balance of power phase. Hence the policies or decisions considered in the balancing phase have to be carefully measured so to ensure their highest potential of yielding the desired balance of power; otherwise, they could be detrimental to the initiating state. Therefore, due to this inter-connectedness of both phases, they will be tested together in the same section.

Due to its growing water demands, the prohibitively expensive technical solution to the water problem, and the failure of the Nile-to-Negev canal proposal, Israel has had to develop (and in some cases, over-develop) all of its replenishable water resources, including those acquired in 1967. The gap between water supply and demand in Israel has gradually been widening, thus pushing the country towards a hydraulic uncertainty. By its 1978 invasion of Lebanon, Israel seems to have moved into the balancing of power phase in the country's recurring conflict for water. However, due to (1) the absence of an official Israeli request to import water from Lebanon, and (2) the lack of overt or significant coercive efforts to divert water from the "security zone", the water conflict starts to diverge from the process of conflict model suggested in Figure 2.1.

There were apparently no pressing or sudden hydrological reasons to "trigger" Israel's large scale invasions of Lebanon in 1978 as well as in 1982. By and large, the only geopolitical evidence of these invasions is the "security zone"; in other words, and notwithstanding the battles that ensued during the invasion period, this zone has mostly been free from security or water-induced conflicts. So after all the dust from both invasions settled, Israel still has 1000 of its soldiers (who are regularly attacked) as "advisors" to the SLA, an "army" of local Lebanese trained, armed, and financed by Israel.

Having established that the declared objectives of Israel in 1978 and in 1982 have not been met, why is it still willing to suffer the human and economic costs of maintaining the "security zone"? Is there a hydraulic dimension to this zone?

#### 5.4 A "Security" Belt or a Hydraulic One?

Although Israel has not yet suffered from any severe water shortages, it is expected to become water-deficient in about 20 years. So Israel's early (1976) involvement in, and its (1978) creation of a "security belt" in southern Lebanon could be explained within the context of two plausible scenarios: one is related to security and the other to long-term hydro-strategies.

##### 5.4.1 The Security-related Scenario.

The 1978 and 1982 invasions were both triggered by Palestinian commandos' raids on Israeli citizens and diplomats. Indeed, these invasions were too extensive to be considered as merely retaliatory; they constituted a bold test of the status quo between Israel and

Lebanon. What was the desired outcome of this test? In both invasions, the official objective of Israel was to protect its citizens not only at home but also abroad from the menace of terrorism emanating from Lebanon. Israel sought to pursue this objective by making southern Lebanon "terrorist free", and by establishing a narrow "terrorist free" area which became to be known as the "security zone."

The immediate (but short-lived) outcome of both invasions was the expulsion of Palestinian guerrillas ("terrorists") from southern Lebanon. Moreover, in spite of its occupation-by-proxy of the "security zone", Israel claims to have no territorial ambitions in Lebanon. This is proven by (1) the "voluntary" withdrawal of Israel's troops from the large areas they occupied in 1978 and in 1982; and (2) by transferring the command of the "security zone" over to a local militia known as the "South Lebanese Army" or SLA [Figure 5.3].

In spite of the "security belt", and of the two (1978 and 1982) severe blows to Palestinian commandos in southern Lebanon, Israel continues to be attacked --perhaps on a smaller scale, and it continues to retaliate. It is important to note that many of these attacks (which often use rockets) originate from outside the "security zone", and they are increasingly carried out by Lebanese citizens. Thus Israel's eviction of the Palestinian commandos from Southern Lebanon (who have been returning in large numbers, and re-arming), and her creation of this "security belt" have both failed to yield peace and security, the sole declared objective of Israel.

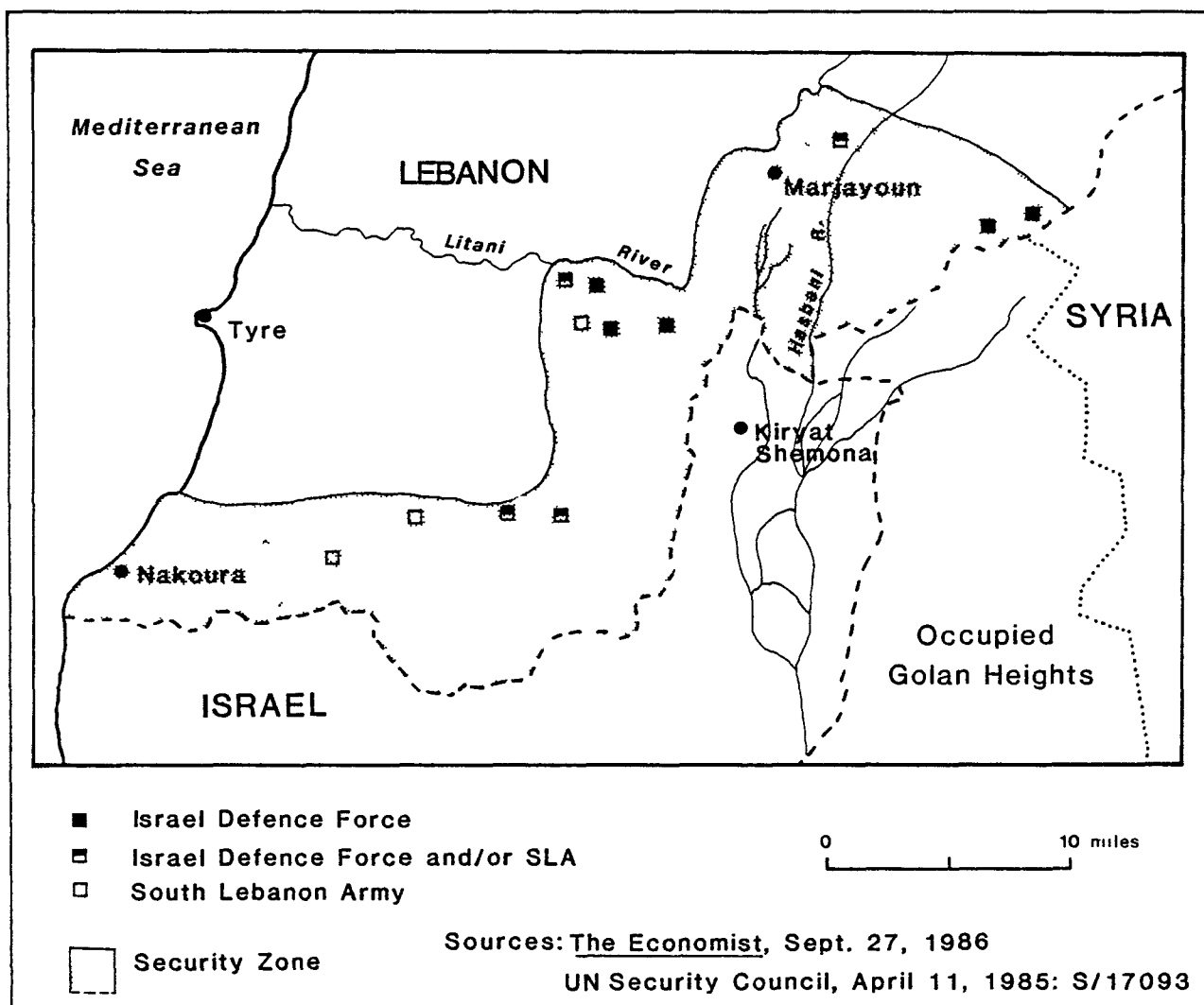
#### 5.4.2 The Water-related Scenarios

The hydro-strategic significance of southern Lebanon is rarely considered as an explanatory factor to Israel's continued occupation-by-proxy of territory in south Lebanon. It was deduced in Chapter Four that the only feasible solution (in terms of water quality, volume and the proximity of the resource) to Israel's growing water problem is an external one, namely from southern Lebanon. The outbreak of civil war in Lebanon in 1975 was an opportune time for Israel to strengthen her long-term political posture with Lebanon. Thus the creation of the "security zone" in 1978 has made Israel strategically positioned to have greater access to resources.

Against this background, three water-related sub-scenarios are presented. First, Israel would have been in a weak if not impossible position to negotiate a water sharing agreement with the central government in Lebanon --had the latter country's civil war ended as it then appeared like it might.

Second, since the Litani river is of utmost importance to the development and stability of Lebanon, the country is unlikely to share or bargain away the river's water. Having realized that, the "security belt" put Israel in a position from which it can either extort a water sharing agreement, or unilaterally, and indeed illegally divert the Litani waters southwards [Figure 5.3]. Both options, especially the latter one, would have minimal regional and international repercussions, say 20 years or so after Israel's occupation of the "security belt." At that time, this belt may take on a biblical name (the West Bank is now referred to by its Judaic names, Judaea and

Figure 5.3  
 Security Belt of South Lebanon



Samaria) or become known as the occupied "North Bank". Similar to the episode of the West Bank, a period of stable and well managed occupation/hegemony of the "security belt" is needed before Israel could begin her exploitation of south Lebanon's water resources.

Third, shortly after the creation of the "security belt", many ground water wells were shut down. They were said to have affected the water flow in the Hasbani river and in its tributaries. Furthermore, the belt is a means of preventing Lebanon from utilizing its share of these rivers, and from fully developing the waters of the Litani.

In short, Israel's innovative foreign policy approach leaves her the option of accommodation through the bargaining process (with the possibility of manipulating --ie.black mailing-- Lebanon with the "security belt"), or the coercive route to acquire south Lebanon's resources. These are long term policy options that may be activated when a water crisis eventually befalls the state of Israel.

#### Summary

Israel has never clearly declared that access to more water resources is one of its objectives in any of the Arab-Israeli Wars, in particular that of 1967, and the more recent invasions of Lebanon in 1978 and in 1982. In spite of this, the outcome of these wars has always translated into greater water resources for Israel (Naff and Matson, 1984). Therefore, it appears that in these three wars there had been a "hidden agenda" that reflects Israel's expanding water needs and interests. This becomes a complicating or a blurring factor to a real and comprehensive understanding of the Arab-Israeli conflict, hence making its resolution exceedingly difficult. The foreign policy



objective of Israel toward Lebanon is always defined in the context of security and "Peace For Galilee", Israel's northern region. Despite the scale, carnage, and destruction caused in pursuit of this objective, it has largely failed. That notwithstanding, the "security belt" of 1978 has been bolstered. Why? What stage of the conflict process is the Lebanese-Israeli water conflict at now?

The "security belt" could be viewed as a staging platform toward a long-standing hydraulic objective. The water conflict is now at a position of status quo testing, reflection, and planning, after which it will choose a coercive, non-coercive, or an accommodating policy approach. The water conflict is currently stagnating and diverging from the process of conflict model (Fig. 2.1). This will be the motif of the discussion in the following pages.

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### 5.5 A Revised Model of Conflict Process

There appears to be a number of inconsistencies between the theoretical model of conflict process as derived and defined in Chapter Two (Figures 2.1 and 2.2), and the case study as discussed and developed in Chapters Three and Four. In particular, four aspects of the water conflict between Lebanon and Israel are introduced. The proposed changes, which largely affect the model starting at the balancing of power phase (ie. third phase), are (1) the broadening influence of the structure of expectations, (2) the by-proxy intervention of states in a certain country to secure access to strategic resources, (3) the introduction of the time factor, and (4) the deletion of "triggers/disrupters" from the model of "natural"

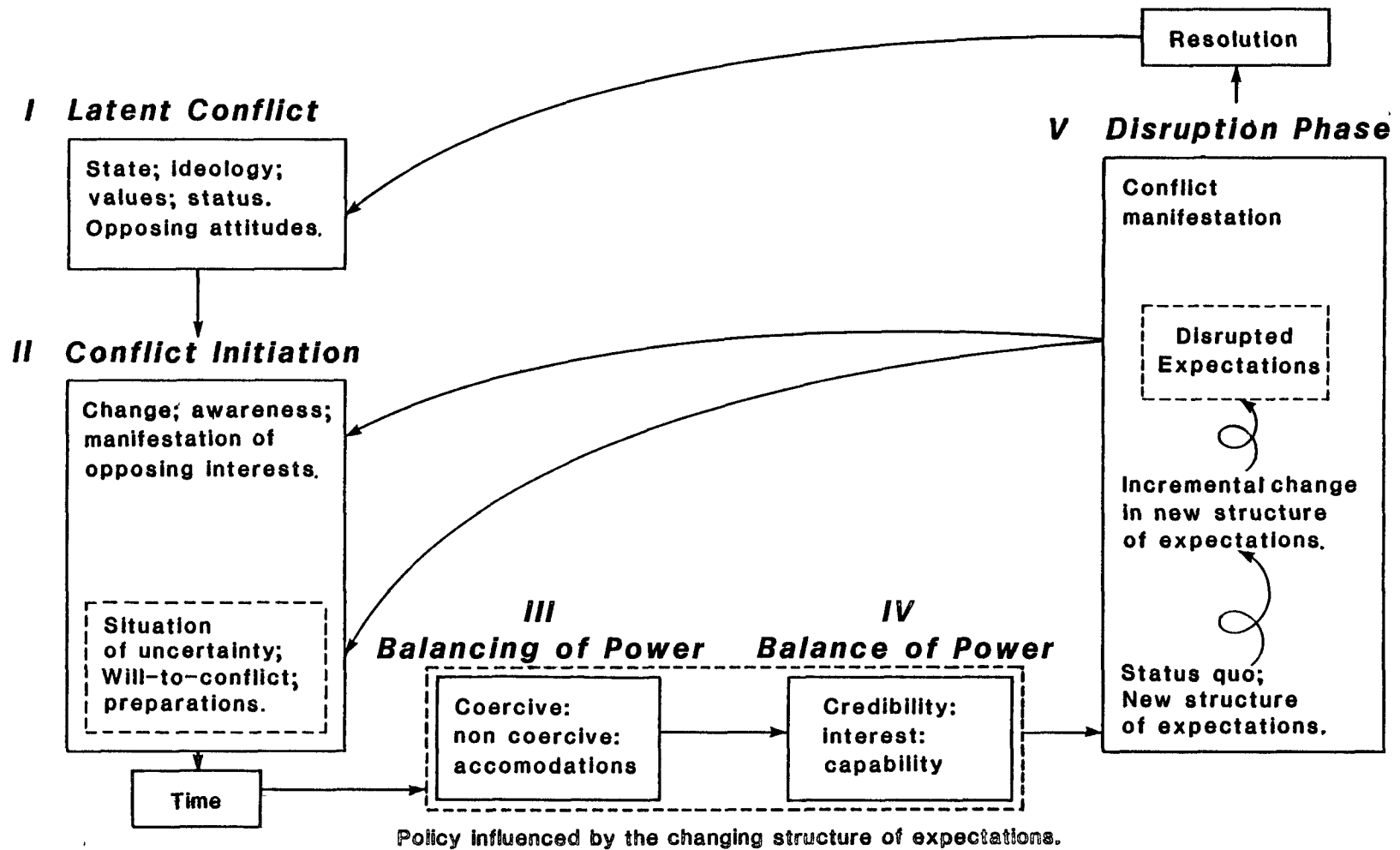
scarcity-induced conflict over resources. Therefore, the earlier model of conflict process, as depicted in Figures 2.1 and 2.2, is revised to reflect more accurately the conflict process during a naturally-occurring resource scarcity. So this section sets to discuss these changes and introduces these revisions in Figures 5.1 and 5.2.

#### 5.5.1 The Factor of Time in The Conflict Process

Resource scarcity does not befall a nation instantly nor does it always lead to violent conflict. Both of these propositions have one common denominator, time. The real or perceived duration of a scarcity affects the structure of expectations in a state thus affecting its behavior. Even in some extreme cases of resource scarcity, such as the 1973 oil crisis, the boycotted states responded to the same (and would to a similar) event in relatively predictable ways. So if the 1973 oil crisis was perceived to be long-lasting, the affected countries, led by the most advantaged and perhaps oil dependent, would have coercively secured access to the oil fields of the Middle East. In this case study, some regional instability and a limited degree of international disorder would have been, for the industrialized world, a price worth paying to maintain their advantaged status. In cases of sudden scarcity of strategic resources, which is usually a result of a boycott or a blockade, coercion is often used to allow for the free flow of resources. Similarly, perceiving and fearing water shortages, Israel responded militarily to her neighbour's plan in 1964 to divert the head waters of the Jordan river.

Figure 5.1

### REVISED PROCESS OF CONFLICT MODEL



Fortunately, oil shortages were perceived as temporary. Hence the relatively brief socio-economic inconveniences and sacrifices outweighed the coercive (military) option with all the uncertainties associated with it. Therefore, the onset of a scarcity affects the timing and the type of response to be taken.

After her substantial resource gains in 1967 from the West Bank and the Golan Heights, Israel had no hydrological reasons nor a political excuse to then covet south Lebanon's water resources. Therefore, the factor of time may completely defuse a potential conflict (ie. if Israel's earlier resource gains had met her long term needs) or delay it as was the case with the Lebanese-Israeli water conflict.

Thus the relative time in which a scarcity descends on a country or a region is an important factor in the conflict process; a factor neglected by Rummel (1976: 265-288), and not specifically accounted for in Figure 2.1.

#### 5.5.2 A Triggered Conflict or An Onsetting One?

Using the word "trigger" in the conflict model (Figure 2.1) refers to a sudden occurrence that disrupts the structure of expectations, the status quo, and the natural trends in international relations. However, the word "trigger" is somewhat misleading to use in the context of a naturally occurring scarcity such as that with water in the Middle East.

The oil boycott of 1973 created an artificial and a perceived scarcity. On the other hand, while largely human-induced, water depletion in the Middle East takes place within the natural process. This causes a "real", gradually onsetting, and in some regions an

irreversible water scarcity. Thus "triggers/disrupters" are inapplicable to the revised model (Figure 5.1).

In the context of this case study, the reason (or "trigger") for Israel's creation of the "security belt" could be explained as one step in Israel's long term planning to gradually acquire greater water resources. Israel's early and close monitoring of the changing structure of expectations in, and water needs of the country are reflected in her resource-induced policies. They are "pre-emptive" albeit disguised policies to secure access to new water sources for the "drier" years ahead.

### 5.5.3 Status-quo Testing and The Structure of Expectations.

The resource demands of a given population and the structure of expectations in it are constantly changing, both in terms of quality and quantity. Severe resource shortages have the potential of adversely affecting the overall capability of a state. Hence such scarcities are less likely to be tolerated by an advantaged state than by a disadvantaged one. So a state (especially a rapidly developing one) that has a relatively small territorial base and/or scarce resources often relies on resource imports to satisfy its needs. In the case of water in the Middle East, it is by and large regarded as a scarce and a non-tradable commodity.

Since naturally occurring resource scarcities gradually befall states, they have ample time to carefully plan and develop a long term coping or impact-mitigation strategy. This has been Israel's approach to its onsetting water shortages.

The establishment of a "security belt" and the SLA [Figure 5.3] are

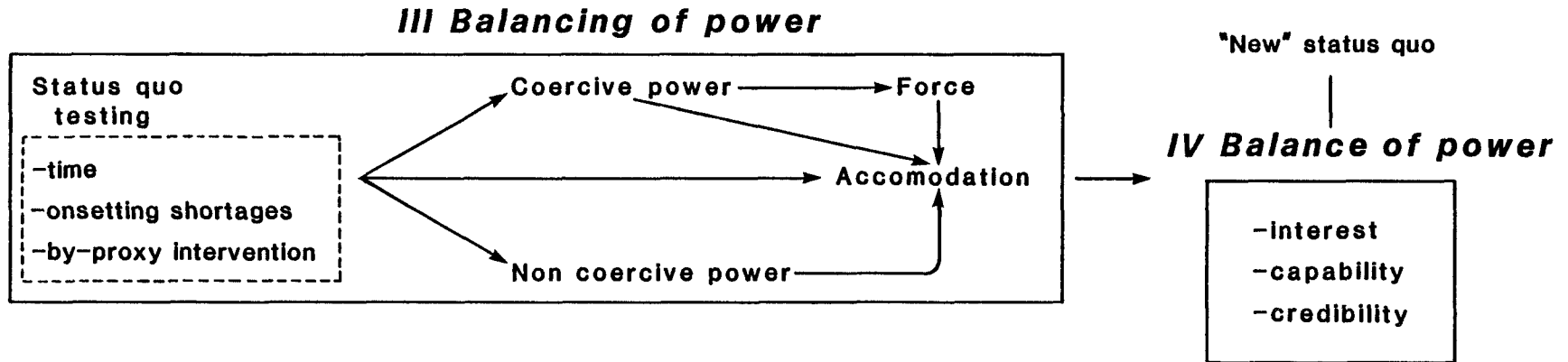
but implementations of proposals that were first spelled out by Israeli officials in the 1950s. The territory that was proposed to come under Israeli control is the whole area south of the Litani river. The mere choice of the Litani as a demarcation line reflects the implicit hydraulic dimension of Israel's interest in Lebanon. The recent execution of Israel's early plan supports the view of Israel's long term planning strategies.

Israel's decision to enter the balancing of power phase in 1978, and its continuous construction of a self-serving status-quo in the "security belt", represent another early but warranted concern about the dwindling water potential of that country. It is, therefore, clear that the stage for Israel's hydro-strategy is being carefully laid out so it is most responsive to the changing structure of expectations in the country. With the current arrangement, Israel's water interests could be easily achieved.

Being in control of the water-rich area of south Lebanon, Israel is currently at the stage of planning how best to ameliorate her onsetting water crisis. One strategy that is apparently underway involves the transformation of the current, largely hostile, status-quo environment in southern Lebanon into one that is more self-serving. This Israeli approach can be explained in two ways. First, due to the slow change in the structure of expectations, the onset of the water crisis has been gradual. Israel, then, is not in immediate need of south Lebanon's water. So what is noticeable here is that the dynamic structure of expectations is affecting Israel's policy-making posture as it plans its path through the balancing of power or interest phase (

Figure 5.2

***A Detailed Section of the Model of Conflict Process: The Enhanced Model***



State Resource Needs and Structure of Expectations: Their Change Influences Policy at This Stage of the Conflict.

see Figure 2.2). This is an alteration to the previously discussed model of conflict process in Chapter Two, Figures 2.1 and 2.2). Second, currently, the costs of taking an openly aggressive approach to the water problem (such as international condemnation, regional instability, and local armed opposition that might sabotage water diversion schemes) outweigh the benefits, namely water.

Israel's new approach to the balancing of power phase was initiated in 1978 when it created the "security zone". In essence, this amounts to an "occupation by proxy"; an approach deemed more acceptable and tolerable by both the occupied, the occupier, and by the international body. On the other hand, the "security belt" and the SLA are the ideal means for the creation of a self-serving social and political environment; one that fulfills Israel's water needs through accommodation.

There is a huge capability gap between Lebanon and Israel. Thus when Israel, an advantaged country in the region, enters the balancing of power phase, it will have the option of the coercive, non-coercive, or the accommodation route. The last option seems to be the current Israeli approach in the "security belt". The choice of this route is part of the new colonizing or occupation approach which is both flexible and self-serving.

If the occupation by proxy of southern Lebanon fails, then Israel would have to directly re-occupy most of southern Lebanon so it can secure its water needs. This view happens to be the dominant one (Stauffer, 1982 and 1985; Naff and Matson, 1985). However, current realities in southern Lebanon and in Israel do not support this view.



Needless to say, the military option is, and will remain, open to Israel. Whichever route is to be taken by Israel, it would be a reaction to the rate of change in its structure of expectations.

There is a mechanism of socio-political control and normalization that is under way in the "security belt". This strategy injects greater certainty into future policy decisions which in turn influence the equilibrium in the balance of power phase (see Figure 5.2). This Israeli approach to water scarcity is one that provides Israel with new and reliable sources of water. On the other hand, it allows Israel greater control over the shape of the balance of power and the emerging expectations both domestically and regionally.

As a result of the above, when the structure of expectations of water demand reaches a critical stage, Israel could then easily "test" the self-created status quo in the "security belt", and peacefully (with relatively minor opposition) acquire greater and reliable water resources from this area. In a prolonged case of severe drought, for example, the benefits of the "security belt" will become apparent. This suggests that the water conflict has not yet been through the full cycle of the conflict process, but is "stalled" in the balancing of power phase, at the stage of status-quo testing.

## 5.6 Summary

The first section of this chapter showed that both the latent and the initiation of conflict phases of the conflict process model (as depicted in Fig. 2.1) accurately confirm the conflict over water in the Middle East, most recently manifested between Israel and Lebanon. These two phases explain the historical evolution of the water

conflict, and how it developed over the years up until 1978.

Israel's creation of the "security zone" in 1978 propelled it into the balancing of power phase where it is now stagnating. In this third phase, the water conflict starts to diverge from the process of conflict model.

The second section of this chapter is devoted to the revised model as shown in Figures 5.1 and 5.2. The modifications discussed in this section are the following. First, states' by-proxy intervention abroad for the purpose of achieving resource-related objectives constitute an implicitly condoned and flexible approach to foreign policy. Israel's occupation-by-proxy of southern Lebanon and her making of a self-serving status quo environment, is a long-term strategy which is meant to be activated when a "real" water crisis befalls the country. The impact-mitigation approach to resource scarcity followed currently by Israel is conceptually supported by Gurr (1985: 73). He notes that

Future scarcities of domestic sources of supply and uncertainty of foreign sources will tempt some rich states to use their political and military power to ensure safe and cheap sources of supply in the Third and Fourth Worlds. Conquest may not be necessary; intervention to install and provide military backing for client elites may achieve the same effect.

This "by-proxy" approach, illustrated in Figure 5.2, plays a significant role in this case study. However, this point is neglected in the process of conflict model, Figure 2.1. Second, the use of the word "trigger" is deemed inappropriate to be used in the context of a naturally occurring resource scarcity. Third, the factor of "time", completely neglected by Rummel (1976) and by the discussion in Chapter Two, appears to have an important role in the conflict process.

Fourth, the structure of expectations plays a significant role in shaping the hydro-strategists' policies of Israel within the balancing of power phase. These deviations from the earlier model (Figs. 2.1 and 2.2) reflect the distinguishing nature of a slowly onsetting resource scarcity and the policy (conflict) response to it. On the other hand, the deviations are in part due to the uniqueness of the case study: the general aridity of the region; the geopolitical setting which makes for a lack of cooperation between the affected states; and the long term policy planning on the part of Israel.

The model of conflict process sheds light on, and partly confirms, the once forgotten contributor to hostilities between Israel and Lebanon, namely conflict over water.

## C H A P T E R   S I X

### Summary and Conclusions

In the Middle East, water is a scarce and an over-exploited resource for which demand is rising. This problem is amplified to dangerous proportions in the state of Israel as water scarcity seems to have induced conflicts between that country and her neighbours, most recently with Lebanon. Against this background and knowing Israel's long-standing interest in the Litani river of Lebanon, conflict theory was discussed and tested to ascertain if water scarcity in Israel was an inducing factor to its occupation by proxy of the water-rich area of south Lebanon, the "security zone."

Many Israeli officials, including "water hawks" like Ariel Sharon, continue to speak of ceasing the Litani river. Others believe that the Litani is the only available water source which will permit the current level of water consumption to continue.

A de-emphasis of agriculture, a realistic pricing of water and the reduction of its subsidies are examples of domestic responses that could ease the water problem, and lead to a more efficient use of the

resource. But these are responses that are rarely considered. In the 1970s, a gradual increase of water prices was introduced only to be defeated by the powerful agricultural lobby. This reflects (1) the lack of political will to implement austere water policies, and (2) the country's ideological commitment to agriculture; a fact established in Chapter Four.

Although Israel has been in control of the "security zone" since 1978, it has yet to openly divert the Litani river. Lebanon, however, charges that Israel has a "hidden water agenda", and is, at long last, seeking to achieve the cherished Zionist goal of expanding the boundaries of the Jewish state up to the Litani river. Due to the byzantine nature of politics in the Middle East, it is very difficult to refute "conspiracy" theories.

Pronouncements by Israeli officials, and the country's declared water policy appear to support the existence of a "hidden water agenda". A few months after Israel's invasion of Lebanon in 1982, the former's Minister of Science and Technology, Yuval Neeman, asserted that his country (Israel) is not seeking to divert the Litani because utilization of the river's water inside Lebanon has reduced its flow to a "trickle", thus not worth diverting (Naff and Matson, 1984: 76-81). But the Minister added that if Lebanon wants to sell some of its water, Israel would be interested in purchasing it. Neeman also acknowledged that Israeli scientists' seismic soundings and their extensive surveys in Lebanon proved that it is technically feasible to divert the Litani into the Jordan river system.

In 1984, large tracts of land near the Litani river's flow area in

south Lebanon were cordoned off by the Israeli army; an act that heightened Lebanon's concerns over its water resources. The Lebanese government complained to the United Nations Security Council about alleged "water-diverting activities" by Israel. Lebanon's representative to the U.N. stated (UN Chronicle, Vol.21, 1984: 12-13) that "Israel had been digging a tunnel that could absorb all the water of the Litani"; an allegation that was denied by the Israeli representative.

According to Naff and Matson (1984), Israel is planning to increase the storage capacity of lake Tiberias and to add a fourth pumping station to the country's National Water Carrier. The implementation of such plans will make Israel technically ready to receive the additional waters of the Litani river; such plans will also confirm Lebanon's worst fear.

The end of the civil war in Lebanon will signal the beginning of the reconstruction and development period, which will likely lead to higher standard of living. Thus, demand for water will skyrocket. In this thesis, a number of conclusions were reached. First, Israel is exploiting nearly all of its replenishable sources of water, thus adversely affecting the quality of coastal aquifers. Second, Israel's only realistic and immediate response to severe water shortages is a foreign one, namely by diverting Lebanon's Litani river. Third, this river is of primary importance to the development of south Lebanon, and to the unity of the ailing and battered state of Lebanon. Fourth, after testing the process of conflict model against the case study, a refined model is derived. It reflects more accurately the process of

international conflict over naturally (slowly) onsetting resource scarcities.

This thesis established that the "security zone" arrangement, under the circumstances, is a flexible one allowing Israel a number of policy options all of which lead to its access to Lebanon's water resources. Knowing this, future research should investigate other luring resources or benefits (such as human and economic/trade resources) to this arrangement. If such research uses the same conceptual approach, it could either strengthen or weaken the conclusions of this thesis. Future research should also study the political and economic viability of Lebanon if it was to lose the Litani river.

In a broader study on this subject, A broader study of this subject should consider Israel's dependence on, or "need" of the water resources, cheap labour force, and the captive market of the occupied territories (the West Bank, Gaza Strip, and the Golan Heights), and how this affects the prospects of a comprehensive peace settlement to the larger Arab-Israeli conflict.

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