THE ANALYSIS OF COMPLEX DECISION-MAKING: NEGOTIATION OF THE SAINT JOHN RIVER BASIN AGREEMENT (CANADA-U.S.A.)

by

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ABSTRACT

Three conceptually distinct analytical paradigms have been identified, developed and applied to the explanation of the decision-making processes which led to the 1972 Canada-United States Agreement on the Saint John River Basin (SJRB). These three analytical paradigms are labelled respectively AP1 (motivation analysis), AP2 (information-processing analysis) and AP3 (strategy analysis). They are applicable not only to international rivers situations but to any type of public decision-making, at any level of analysis. They are conceptually distinct because motivation, information, and strategy are indeed the essence of collective decision-making.

The choice of analytical paradigms is dependent much more on the objectives of the analysis than on the amount of information which can potentially be made available. In turn, the information required by each analytical paradigm is more a function of the level and unit of analysis chosen (from the sociological to the psychological), than related to their conceptual differences. AP1, AP2 and AP3 analysis should be done sequentially, rather than simultaneously, and should proceed from higher to lower levels of analysis.

The application of AP1, AP2 and AP3 to three issues identified in the case study have provided some important insights into the nature of public decision-making. The analysis carried out under AP1 has shown that in the decision-making process concerning the SJRB Agreement, non-economic domestic political factors were relatively more important than certain international relations factors, such as international law and a
country's image. The AP2 analysis has shown that, in the issues examined, technical-economic information had very limited influence on the most important decisions made. There was a tendency for comprehensive water quality plans to follow rather than precede important decisions. In contrast, great use was made of non-hierarchical information processing approaches, such as group meetings and workshops. There was a tendency among players to "satisfice" and to favour incremental decisions, although they did not give up easily on their synoptic ideal. Individual players relied more often on intuition and creativity than on synoptic analysis, and did not seem to make use of any clear form of marginal analysis. They also showed a tendency to rationalize their decisions and actions after they had taken them.

AP3 analysis highlighted the important role that individual and group manipulative strategies played in many collective decisions taken. The choice of strategies by players was primarily a function of the rules of the game and certain characteristics of the players.

The Agreement does not provide a solution to the basin's pollution problem. Rather, it institutionalizes a bilateral mechanism for the exchange of information, coordination of water quality plans, and, most importantly, for continuous negotiation regarding water quality objectives between relevant government departments in both countries.

Whether the Agreement represents a policy shift in Canada-United States environmental relations, and if so, what the origins of such a shift are remain questions which could not
be answered satisfactorily by the application of AP1, AP2 and AP3 to the case study. Therefore, a fourth analytical paradigm (AP4) has been tentatively suggested to deal with this aspect of public decision-making. While the paradigm has not been as fully developed as the other three, a preliminary analysis has indicated its great potential to provide some interesting insights in this direction.
ACKNOWLEDGEMENTS

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ABSTRACT

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PART I
CHAPTER 1

INTRODUCTION

"The truth is the whole."

Hegel

This thesis has a dual objective. First, it aims at a conceptual understanding of the decision-making processes which led to the 1972 Canada-United States Agreement on the Saint John River Basin. Second, it explores alternative conceptual frameworks for the study of public decision-making processes in general.

From the above mentioned objectives it should be clear that this research approaches the decision-making question from a descriptive rather than a normative perspective. This implies that I neither try to evaluate the quality of the decisions taken, nor do I try to evaluate or pass judgement on the behaviour of the decision-makers. The underlying premise, however, is that a deeper understanding of decision-making processes will in itself contribute to more responsible and responsive public decision-making. But, what does this thesis have to do with planning? The answer is clear. Insofar as public planning can be considered an attempt to make collective decisions more rational, a study such as this describing how government agencies actually planned and made decisions, should be useful for those who seek to introduce or improve public planning in similar contexts.
This thesis could perhaps be called a study in the sociology of decision-making. But, some could also refer to it as a historical analysis of a particular incident in the evolution of United States and Canada's environmental relations. Equally well, it could be considered a political sciences (and especially an international relations) kind of study of policy formulation regarding domestic and international pollution control. Evidently, then, the objective of inquiry cannot serve as a basis to distinguish among most of the social sciences today. Perhaps a better way to distinguish them would be to look at the conceptual frameworks which they use to define and analyze research problems.

In my view, the explanation of decision-making should not be the privileged domain of any of the social sciences disciplines, for decision-making concepts pervade all the social sciences. Nonetheless, each discipline has tried to claim for itself the honour of having found the key to description, prediction and prescription for decision-making.
When a new researcher starts an investigation in this area, he or she is appalled by the increasingly voluminous literature on the subject.\textsuperscript{1} Literally hundreds of descriptive and normative decision models have been proposed by authors having a variety of backgrounds.\textsuperscript{2} Yet, there has been very little effort at integration of these many models. The result is that the newcomer to the field goes into a state of shock and helplessness when he tries to decide which analytical framework to use in his investigation, whether he wants to be descriptive or normative in his approach.

Thus, in addition to the above stated objectives, I have entertained another one for this research: to make some headway toward classification and synthesisization of descriptive decision-making models. However, this is not done by producing a long list of models and telling in which category they fit. Rather, I claim that all existing models of analytical frameworks developed for decision-making analysis fit into one of three analytical paradigms (and possibly a fourth) identified in the course of this research.

In the section below, I first explain briefly the origins

\textsuperscript{1} A bibliographic search carried out in July 1979, using the Social Sciences Citation Index (data file is called Social Scisearch) - which covers over 2,200 journals starting in 1972, showed over 1,600 citations containing the term decision-making in their titles.

and meaning of these analytical paradigms. Then, I proceed to explain how the case study material is organized, and finally I shall give some indication of the major research findings of this thesis and their implications for further work.

**Development of the Analytical Paradigms**

My interest in international rivers problems grew out of my initial association with Prof. Irving K. Fox, my PhD thesis advisor, back in 1970-71 while I was his student at the University of Wisconsin. Prof. Fox also impressed upon me the importance of studying public decision-making through his lectures and assigned readings. One of the books he suggested I read was Albert Hirschman's *Journeys Toward Progress*, in which he studies policy-making in Latin America.\(^3\) As a native of Brazil's Northeast (one of Hirschman's case studies), I was much impressed with the remarkably perceptive and pertinent insights that he, as an outsider, was able to provide about decision-making processes and styles in the region. His analytical success puzzled me: were his insights the product of a brilliant mind, or were they the result of the application of powerful analytical tools? The puzzle remained in my mind until much later (January, 1974), when again I came across another magnificent piece of analytical work, namely Graham Allison's

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The Essence of Decision.¹

In the meantime, I had tried several analytical frameworks, interest group theory and game theory among others, and also had tinkered with the idea of building a simulation or gaming model of the negotiation of the 1972 Canada-U.S.A. Saint John River Basin Agreement, which by then had been selected as the case study for this thesis.² The reason for the lack of success of this first research strategy is described in Chapter 3. In this connection, the important point is that the reason why I gave up on following a gaming or simulation approach was not so much the realization that it was a very difficult task to pursue (in view of the complexity of the situation and the time available), but more so because I doubted the relevance of its end product, in view of the many assumptions and simplifications which would have to be made.

Thus, I decided not to follow the common tendency nowadays of only studying those subjects for which models are easily available or can be made available, which, in my view, is responsible for so much of the sameness and duplication of research efforts which we find in the academic community at present. In this connection, a somewhat imperfect, but nonetheless valid analogy, can be made. If scientific research is approached in the same way as the process of assembling a jig-saw puzzle, that is, if the researcher has the final figure


² The idea of using game theory as a starting point for the analysis was suggested to my by Dr. Istvan Bogarti of the Research Institute for Water Resource Development, Budapest, while Prof. Paul Smoker, formerly with UBC, encouraged me to follow a gaming-simulation approach.
of the puzzle as a model to guide him, it is unlikely that he will consider any other possible arrangements of the pieces of the puzzle, and the outcome is, predictably, the figure on the cover of the puzzle box.

As will be explained in detail in Chapter 3, the search for a new analytical paradigm to be used in this research turned out to be time-consuming and expensive, but I believe it was rewarding. In essence, the research strategy developed for this research consisted, first, of a deliberate and simultaneous search for new sources of theoretical and empirical knowledge in areas only distantly connected to the problem at hand. The appendices to this thesis (I – IV) give a fairly good idea of the breadth and depth of this phase of the investigation, as well as of the many wrong paths followed. Second, an effort was made to use the combined deductive-inductive\(^6\) approach to scientific inquiry, which consists essentially of giving equal emphasis to both deductions from the theoretical surveys and to empirical inferences from the case study. The analytical paradigms identified and used in this research are the product of this research strategy.

In Chapter 2 I discuss in some depth the importance of conceptual frameworks for analysis of public decision-making and

also tackle the difficult question of levels and units of analysis. As well as the relationship between these concepts and analytical frameworks. In addition, I review briefly some analytical works important to the subject of this thesis. Finally, I identify and describe three basic analytical paradigms which will be used for the analysis of the case study in Part III.

One point should be stressed about the analytical framework developed in this study: it was neither designed specifically for the case study of the Saint John River Basin, nor for international river basin negotiations in general. The analytical framework is applicable to the study of any public policy or collective decision-making situation. It does not represent, however, an attempt at a grand synthesis of analytical paradigms for explanation of decision-making.

It is my belief that it is most likely impossible to arrive at a single analytical paradigm which will explain every conceivable type of decision-making, because the task is akin to finding a path to the truth, the whole truth. But, as Hegel remarked, "the truth is the whole" to which I would like to add: "the whole is complex and elusive." Thus, while I have aimed at a synoptic ideal, I have at the same time kept in mind the enormous requirements of the task, and my own human limitations.
Three Analytical Paradigms for Analysis

In Chapter 2, three analytical paradigms are identified and described. In essence they show that three concepts are necessary and probably sufficient for the explanation of any collective decision-making situation: motivation, information and strategy. Of course, there is nothing new about these concepts, and their importance to decision-making studies has been acknowledged. As a matter of fact, when most people want to explain a collective or public decision-making situation, they normally try to answer three types of questions: (1) what were the motivations and objectives of the individuals, or organizations, or governments involved? (2) what information did they have when they made decisions, and how did they obtain it? (3) what strategies or tactics did they follow in order to carry out their decisions in the collective decision arena? What I believe is new is the realization that all decision-making models use these three basic concepts, either in isolation or, most commonly, together. All analytical frameworks are derived from assumptions about these three concepts.

When examining any analytical framework it is always possible to determine whether they are derived from one or from a combination of these concepts. These three concepts: motive, information and strategy indeed represent the essence of decision.

Analytical Paradigm 1 (AP1) explains the motivations and objectives of the players in a particular decision-making situation. It leads the analyst using it to ask questions such as: Why did the United States insist to Canada upon an agreement
on the SJRB in 1972? Why was the New Brunswick government reluctant to use a legal approach in dealing with transboundary pollution coming from Maine, or why did EPA seek an agreement confined to water quality management?

Analytical Paradigm 2 (AP2) explains the importance of information and of different information processing approaches and techniques in collective decision-making. It leads the AP2 analyst to ask questions of the type, was technical planning carried out on both sides of the SJRB important to the decisions made and the policies formulated? To what extent did collective decisions emerg from the information generated during various group meetings among decision-makers, and during brain-storming sessions among planners? To what extent was important information made available for a collective decision actually used?

Analytical paradigm 3 (AP3) accepts that motivation and information may be sufficient to reach decisions as an intellectual process, but it insists that collective decisions are the result of a social process as well. Thus, it points out that in order to carry out their decisions, decision-makers need tactics, programmes of action, or, in a general sense, strategies, which may involve not only the transmission of verbal information, but influence and power as well. Therefore, AP3 analysts are bound to ask questions such as: Which strategies did United States officials use to persuade their Canadian counterparts of the merits of agreement on the Saint John River in 1972? Which strategies did the major industrial polluters in the basin use to avoid compliance with pollution
regulations? Did the agreement result from an increase in understanding, a successful strategy, or from the strong motivation and/or creativity of some decision-maker(s)?

However, none of the previous analytical paradigms give explicit attention to questions of the following type: In what circumstances are policy problems such as the Saint John River international pollution problem tackled? What compelled players to adopt sharp policy changes such as, the 1972 Saint John River Basin Agreement appears to be?

It may be that a fourth analytical paradigm is necessary to properly answer these questions. While such a fourth paradigm is not developed in this thesis, some ideas about its content and structure are suggested in Chapter 2.

The Case Study

Part II consists, essentially, of the case study on the Saint John River Basin Agreement. The case study is divided into three issues which could be considered case studies in their own right.

Chapter 4 consists of an overview of the three issues described in detail in the subsequent six chapters. In addition to providing the researcher with some background information, it summarizes the issues, approximately in the way that many analysts would describe them before providing their own interpretation. Thus, the reader can use Chapter 4 as a general background for the interpretation of the case study, which is carried out in Part III, applying analytical paradigms 1, 2, and 3. If so desired, the reader can then skip Chapters 5 to 10.

However, should the reader feel the need for more factual
information about any of the issues, he can read Chapters 5 and 6 on the boundary pollution issue; Chapters 7 and 8 on the transboundary pollution issue, and Chapters 9 and 10 on the negotiation of the Saint John River Basin Agreement proper.

Although the case study was originally selected in the light of a particular conceptual framework (derived from interest group and transnational relations theories), the bulk of the information was neither gathered nor assembled into consistent "stories" on the basis of any particular conceptual framework. Data assemblage was largely analogous to the work of a detective after he has done his investigation. But, obviously one is always influenced by previous knowledge and, in fact, the stories could not be told without some general framework.

This way of presenting the case study is, to my knowledge, only seldom used in studies of decision-making. As discussed in Chapter 3, most analysts present their case studies through the perspective of one or more analytical frameworks. However, in Chapters 5 to 10, interpretations and inferences are made only when necessary, i.e., when detailed factual information is lacking, and abstaining from inferences would make the stories unreadable. These instances, however, are relatively few, and are easily identifiable.

The approach used in this research demands an exhaustive effort on the part of the investigator to gather practically all available information on a given issue. On the other hand, it is the only one which allows both the original investigator and other investigators to apply other analytical frameworks to the case study and compare the results. Since one of the objectives
of the present research is to evaluate the applicability of different conceptual frameworks to the explanation of collective decision-making, this procedure seems particularly appropriate.

The stories told about the three issues by themselves provide some very suggestive points regarding collective decision-making. However, these observations may be no more than curiosa, and consequently do not warrant generalizations of the type provided by the systematic application of the analytical paradigms in Part III. In this regard, it is important to call attention to another point. The more factual information one provides, as I have attempted to do in the case study, the more one is constrained in the kinds of inferences or interpretations one can make through the use of particular analytical frameworks.

**Application of the Analytical Paradigms to the Case Study**

In Part III, Chapters 11 and 12, an attempt is made to interpret the case study using the three analytical paradigms outlined earlier. Anticipating some of the conclusions reached in the final chapter, it can be said that the use of analytical paradigms 1, 2, and 3 yielded some very interesting and perhaps important insights. Some of these follow.

An analytical framework such as the one used by David
LeMarquand to explain international rivers negotiations, and which was derived mostly from empirical observations has only applicability to similar situations, which, evidently, is the case of the Saint John River Basin. Since his sole aim was the study of international river basins, this is quite acceptable. However, as can be easily deduced from the analysis undertaken in Chapter 11, the tendency for a particular analytical framework to yield similar conclusions is reinforced. Therefore, it is not surprising that the interpretation provided in Chapter 11 confirm LeMarquand's own conclusions.

The application of AP2 and AP3 to the case study shows that, by themselves, bargaining and hierarchical coordination are not very useful analytical concepts, as suggested by N. Swainson in his study of the Columbia River Treaty. for, if only those two components are used, one is forced to reach a somewhat tautological conclusion, as Swainson appears to have done, that bargaining was used primarily between provincial and federal authorities, while recourse to hierarchic coordination was made in the interactions within each level of government in Canada. Similarly, it would not require much analysis to show that in the case of the Saint John River Basin, hierarchical coordination was strongest within each organization, less strong

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within each level of government, very weak within each country, and non-existent between the two countries.

Although a very large variety of information processing approaches are used by players participating in the issues analysed, none of the players appears to make use of either synoptic analysis or incrementalism as described by Lindblom in his famous 1959 article. The point is important because, while, as far as I know, no one has ever claimed that synoptic analysis is used (or should be used in the pure form described by Lindblom), he insisted (up to 1979) that his "disjointed incrementalism" is in fact the information processing approach most commonly used, not only by policy analysts, but by administrators and policy-makers as well. The use of AP2 in the case study, on the other hand, indicates that at least some steps of Lindblom's "strategy," e.g. marginal analysis, are seldom, if ever, used by players. If anything, marginalism is a feature found only in some of the most sophisticated forms of synoptic analysis (e.g. systems analysis) and for special classes of problems only. In addition, there seems to exist substantial evidence that policy analysts (including incremental analysts) are often guided by some kind of synoptic ideal or goal in their incremental or quasi-synoptic analysis, a point which Lindblom stubbornly denies.

Application of AP2 to the case study, together with some insights derived from the application of AP3, leads to an

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interesting observation. While partisan mutual adjustment, as described by Lindblom, is capable of explaining quite satisfactorily incremental politics, there are some aspects of politics, and especially bureaucratic politics, that are not entirely explained by the mechanisms proposed by Lindblom. The process of bureaucratic politics seems to have some analogies with the game of "word scrabble" (some of the most striking analogies can be provided by examining, in Chapter 10, the process by which the texts of the 1972 Saint John River Basin Agreement and the reference to the IJC reached their final forms).

Certain information processing approaches are often more important in the process of rationalizing or justifying both individual and collective decisions than in the process of preparing for them. In this regard, it appears that comprehensive planning often follows, rather than precedes, important public decisions.

The higher the level of decision-making, the less "synoptic analysis," strategic analysis and incrementalism (in this order) are used. Instead, policy-makers often rely on some form of creative or intuitive thinking.

Non-hierarchical information processing (e.g. group meetings and brain-storming sessions) is often used for both incremental and "synoptic" analysis and played an important role in the outcome of the Saint John River Basin Agreement.

There seems to exist a greater concern with comprehensive analysis in Canada than in the United States; the reasons are yet unclear to me, but they could be linked to a higher degree
of hierarchical coordination within each level of government in Canada.

Finally, the 1972 Saint John River Basin Agreement could be interpreted as a deliberate information processing strategy, particularly on the part of Canada, in which comprehensive planning is linked to experimental management to cope with a problem characterized by great complexity and uncertainty.

The above observations seem to indicate that the best explanations of collective decision-making are obtained when the analyst uses a combination of distinct analytical paradigms. However, it should be pointed out that, judging from the quality of analytical efforts preceding Allison's famous study of the Cuban Missile Crisis, and the exceptionally revealing explanations obtained by him, the combination is most useful if the analysis according using either Allison's three models or AP1, AP2 and AP3 is done sequentially, rather than simultaneously.

In addition, it is by making explicit the conceptual differences in the analytical paradigms used that the analyst gives the reader the opportunity to evaluate by himself the sources of the strengths or weaknesses in the analytical effort. One should also make explicit whether the analytical frameworks used are, in fact, conceptually distinct or whether they are empirical adaptions to different levels of analysis. For otherwise, it will be difficult to determine whether different interpretations obtained by using more than one analytical framework are due to the frameworks' intrinsic differences, or whether the variance in explanations are due to the same
conceptual framework being applied to different levels of analysis.

Nonetheless, as the interpretation of the case study in Part III shows, it is indeed difficult to keep one's analysis of an issue within the bounds of a single paradigm.

Finally it should be pointed out that although information availability can be a serious constraint on the level of analysis the researcher wishes to pursue using a particular paradigm, it is not by itself a limitation on the choice of analytical paradigms. Thus, as opposed to Allison's Models I, II and III, conceptually distinct paradigms such as AP1, AP2 and AP3 can be used at any level of information availability.
CHAPTER 2

CONCEPTUAL FRAMEWORK FOR ANALYSIS

"Eine Theorie ist desto eindrucksvoller, je grosser die Einfachheit ihrer Prämisse ist, je verscheidenartigere Dinge sie verknüpft, und je weiter ihr Anwendungsbereich ist."

Einstein¹

As has been already stated in Chapter 1, the main objective of this research is to arrive at a conceptual understanding of a complex decision-making process, namely the negotiation of the international Saint John River Basin Agreement. Thus, the first thing that should become clear about the nature of this investigation is that it approaches the research problem from a descriptive rather than from a normative perspective.

In decision-making studies, the normative perspective deals with the ethical evaluation of decisions as human acts, that is, with the relationship between values and choices. The descriptive perspective, on the other hand, is content with explaining the factors which determine or influence the act of making a decision. In practice, the distinction is important because very often social researchers switch from one mode to

¹ In rough translation:
"A theory is all the more impressive, the greater the simplicity of its premises, the more different kinds of things it ties together, and the greater the scope of things to which it can be applied."

the other without either being themselves aware or letting the reader become aware of it.

In this chapter we shall first discuss the importance of conceptual frameworks for the analysis of public decision-making; second, we shall tackle the difficult question of levels and units of analysis and their implications for conceptual frameworks. Third, the three basic analytical paradigms which will be used to carry out the analysis in Part III of this study will be described; and, finally, a brief review and evaluation of the most important analytical works in the field will be made.

**Conceptual Frameworks**

In 1958, Richard Snyder asked this fundamental question: "if we wish to describe and explain decision-making behaviour scientifically, what kinds of intellectual operations are required?" He then complained that despite the fact that there was already a very voluminous literature on decision-making, it was somewhat barren as far as "how to analyze decisions and decision-making" is concerned. In other words, a conceptual scheme for analysing public decision-making was still lacking.

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Snyder and his associates in later works made a number of specific suggestions toward the formulation of a general conceptual framework for the analysis of foreign policy decision-making. However, their proposals were more in the category of typology of decision variables which should be taken into consideration, rather than in terms of a concise and systematic statement of basic assumptions, concepts and propositions, i.e., in terms of an "analytic paradigm" in Robert K. Merton's sense.

It was only in 1971 when Graham T. Allison published his major integrative work - *Essence of Decision* that the importance of analytical paradigms, or, broadly speaking, conceptual frameworks for analysis, really came to the fore in the policy-making literature in general and international relations literature in particular. Allison demonstrated very convincingly that different answers to the same questions could be given, depending on the conceptual/analytical framework used. In one very revealing paragraph, he explained the crucial importance of his findings:

> Conceptual models not only fix the mesh of the nets that the analyst drags through the material in order to explain a particular action; they also direct him to cast his nets in select ponds, at certain depths, in

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order to catch the fish he is after."

Actually, Allison's contribution can be seen as an analytical adaptation and application to international relations of the paradigm concept popularized by Thomas Kuhn's book, "The Structure of Scientific Revolutions." The paradigm concept and its application to the social sciences are discussed in some depth in Appendix III. Here it is only necessary to point out that there is a tendency for policy and decision-making analysts to formulate the problem for investigation, to suggest hypotheses to be tested or disproved, to ask questions to be answered and to synthesize the product of their work according to "schools of analysis," which gives support not only to Kuhn's cognitive, but to his sociological interpretation of the term paradigm as well. In this regard, Allison demonstrates very clearly in his book that, while arguing that most analysts tend to rely on a single conceptual model would be crudely reductionist, many analysts do, in fact, employ one basic conceptual framework for analysis, and then proceed to make conceptual adaptations to that basic framework as the need arises. There are, however, perhaps an even larger number of analysts who do not make their analytical framework explicit, but instead borrow conveniently from different conceptual frameworks in accordance with the nature of the specific issues.

Ibid; In Allison's own words, the term "model" without qualifiers is used in his book to signify "conceptual scheme or framework."

being examined.

Levels and Units of Analysis

In Appendix I, I discuss at some length the level and unit of analysis problem as far as decision-making studies are concerned. Here we shall explore briefly the meaning of the two terms and their importance relative to analytical paradigms.

For the purposes of this study level and unit of analysis are concepts related to the degree of disaggregation used to describe or explain an issue. Each level of analysis determines the largest unit which can be used at that level. For example, at the international level of decision-making studies the largest unit possible is normally the nation-state, although in some exceptional cases regional alliances could be taken as units. International relations studies may indeed take other entities, such as subnational government, government agencies or even individual decision-makers as concrete units for analysis, but the level remains the same - "inter-state or international."

In certain situations where the degree of interaction between non-governmental units is very significant, one can label that special kind of international interaction as "trans-

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8 Examples of these approaches will be given later when we describe the analytical paradigms used in this study.

9 Whenever we refer to unit of analysis in this study, it will mean concrete units, such as an individual, an organization, a government, etc. More frequently, however, the term "player" will be used, meaning any concrete entity having or to which a unitary goal is attributed at that level of analysis.
national," and when the players are sub-national government units, the process can be labelled "trans-governmental interactions." 10

However, if one lowers the focus of analysis to the intranational level, then the nation-state can no longer be considered a possible unit of analysis. Instead, one must choose among smaller units: regional governments, government agencies, interest groups and individuals. Of course, if one chooses the inter-individual level of analysis, the only concrete unit of analysis possible is the individual, because if one includes a group as a unit, then the level of analysis is the inter-group, although it may involve both groups and individuals as units.

In the above discussion, we chose concrete units or structures to show the relationship between level and unit of analysis. But, if we take as an example the analysis of the decision-making behaviour of a single individual, then it is no longer possible to use concrete units. In this case one must make recourse to conceptual/analytical structures. For example, in his earlier studies of human decision-making behaviour, Herbert Simon regarded choice as a process of drawing conclusions from premises, and consequently he chose the premise, rather than the whole decision as the smallest unit of analysis.

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analysis. At the other extreme, Graham Allison, in his international relations case study, chose for analysis three basic analytical units which, according to him, are useful to explain government decisions and policies: (1) the rational choice of unitary actors (government agencies, individuals, etc.); (2) the decision output of organizations; and (3) the "resultant" of political bargaining (non-hierarchical bodies). Notice that in this case Allison combines concrete units and analytical structures into single units for analysis. That is, he associates each type of decision output with each type of decision-making entity.

Levels of analysis can be defined in conceptual-analytical terms as well. For example, it is common in the literature to refer to policy-making and decision-making levels. In general, policy-making studies deal with an entire political system and the pattern of complex interactions which take place among various types of concrete units to produce policies. In this case, a policy is then the output of such an interaction process, and may result from a number of interdependent decisions by the units. It is widely accepted that the decision-making level of study is concerned with the analysis of decisions by a specified concrete unit. Thus, policy-making is the higher level of these terms and includes decision-making as

Among the various classifications of levels-of-analysis which have been used in decision-making studies the most appropriate for the kind of research pursued in this thesis seems to be the two broad levels suggested by Richard Snyder, namely the "psychological and the sociological." The psychological level, the micro-level of decision-making studies, is concerned with the inner determinants of individual decision-making behaviour, such as psychological structures, perceptions, attitudes and personality in general. The sociological level, the macro-level of decision-making studies, is concerned with the behaviour of individuals, groups and other concrete units in social interacting situations. At this level it is assumed that all individuals are essentially psychologically equal. What distinguishes one individual from another is the role each performs in the decision-making network. It does not necessarily imply that only official positions are considered. Roles may also be defined in terms of specific decision-making situations.

When the unit of analysis is the individual, the major difference between those two levels of analysis is that, at the

sociological level, interpretation of an individual's decision-making behaviour (e.g., his motivations) is based upon the external objective conditions, i.e., an analysis of the individual's problem environment. On the other hand, at the psychological level, the analyst attempts to determine and describe the decision-making behaviour of individuals from direct or indirect observation of their background, perceptions, attitudes, and so forth. Processes which take place within the minds of individuals can be inferred from clinical analysis, controlled laboratory experiments and through the administration of structured interviews and questionnaires, which are then interpreted according to various statistical techniques (see Appendix I).

Analysts, of course, often attribute psychological traits to groups and even nations (e.g., they might attribute an "aggressive" character to Germany). Motivation is also commonly imparted to groups of all sizes. But motives, in this case, are inferred from behaviour in actual decision-policy-making situations, and are roughly equivalent to identifying the objectives units pursue in their interaction with other units in the external environment. If an analyst pursues this kind of

13 This formulation follows the meanings given to these terms by David Braybrooke and Charles E. Lindblom in A Strategy of Decision: Policy Evaluation as a Social Process, Free Press, New York (1963). Although they attribute to the term "decision-making" the meaning of "information-processing" or "problem-solving," which is the meaning which is increasingly gaining acceptance in the literature, the implication of these terms is that decisions are always the product of cognitive/analytical activities, while policies emerge from both cognitive processes and social interaction.

14 1958, op. cit. Although the scope of each level suggested here is substantially different.
analysis, one cannot legitimately say that the study is at the psychological level.

On the other hand, social psychological studies which aim at ascertaining which facets of the individuals' personalities lead them towards certain decision-making behaviour, as well as similar studies regarding small group behaviour can also, according to the above formulation, be considered studies at the psychological level, because they essentially try to explain decisions by obtaining information on the psychological characteristics of the decision-makers.

Conceptual Lenses and Levels of Analysis

As discussed in greater depth in Appendix I, according to general systems theory, a system cannot be described entirely by its components and their behaviours, i.e., the higher level system determines the meaning of the lower level system or subsystems. When studying any system, understanding increases as one moves upwards from the basic unit of analysis to the overall system's boundary.

Thus, according to this view, when one is investigating a political system the approach should be from the whole system

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15 We are using the term "system" in its broadest meaning, i.e., "any entity containing information." For a discussion of the implications of this definition, see Appendix I.

to its component parts or subsystems. For example, one cannot hope to fully understand decision-making at local government levels without first understanding how it is related to the larger state-provincial and national systems. The reverse is not necessarily true; one can, to a large extent, explain the behaviour of a nation-state in the international arena without having to examine how local governments in that country make decisions, although such an examination might clarify some particular aspects of that nation's foreign policy-making.

In order to clarify this important point even further, let us consider the question of determining whether or not the 1972 Canada-United States Agreement on the Saint John River represented a shift or fundamental change in the bilateral environmental relations between the two countries. Obviously, this question can only be answered by an examination of the whole history of Canada-United States relations in the field; and an analysis of the negotiations of that particular agreement per se cannot provide a satisfactory answer.

However, the central question we wish to address here is how does one determine whether a certain analytical paradigm is appropriate for the analysis of a specific situation?

In the physical sciences the answer to this question is easier. An example from the application of electromagnetic remote sensing to natural resources investigation might help illuminate the problem. Of the total electromagnetic (E-M) energy spectrum, a number of wavelength bands can be used for detecting features of the earth's surface. For example, infrared sensors are useful in forestry studies, thermal sensors in
liquid and solid waste disposal studies, radar in geology, microwaves in ground water exploration, etc. Each band of the E-M spectrum can be thought of as a different lens (not conceptual, but physical) to investigate the world. Some bands, such as visible light, are applicable to a variety of fields, others are more restricted in their applications.

However, the application of an E-M sensor to a particular physical problem is dependent not only upon the wavelength band used, but on the resolution power of the sensor. Thus, if, say, the spatial resolution of a radar scanner is one metre, one cannot expect to detect a surface feature less than one square metre; or, if the thermal resolution of an infrared scanner is 1°C, one should not expect to distinguish smaller temperature differences on the surface of an object.‘’

Despite the inherent limitations of all analogies, I think that there are some similarities between the above example and the application of analytical paradigms to decision-making issues.‘’


‘’In this thesis, we shall assume that a paradigm is the highest level in a hierarchical chain of concepts which includes theory, model, typology, and possibly other terms. The exact order of the terms in the hierarchy is not important for the discussion. The subject is explored more extensively in Appendix III, where I also discuss the sociological implications of the application of paradigms to the social sciences in general.
Consider two well known paradigms: the economic market, and the cybernetic. The market or exchange paradigm is in principle applicable to all allocation of resources among individuals, firms and households at all levels, from the community to the international level (as we shall see, it can also be adapted to deal with political markets, as in public choice theory). However, as Cyert and March\(^1\) have so well demonstrated, the market model and, more specifically, its theory of the firm, is not suitable for the analysis of the internal behaviour of firms. In order to analyse decision-making processes internal to a firm (i.e., a hierarchical organization), one needs to make recourse to another paradigm, the cybernetic or information processing paradigm, from which organization theory is derived. This is so primarily because the two paradigms are based upon quite different assumptions about (1) individual and group capacities to process information at various levels of complexity and uncertainty; (2) the nature and scope of human motivations; and (3) the degree to which central or hierarchical control is possible. Thus, in order to fully explain the internal and external behaviour of a firm, one would need to make use of both paradigms. However, the determination of the appropriate level of disaggregation or specialization of the paradigm presents yet another problem which has some analogy with the question of "resolution" in the E-M sensors discussed

above.

For example, organization theory and human problem solving theory are in my view two degrees of analytical resolution of the same paradigm, namely information-processing. Thus, one obviously should not expect to get a deeper understanding of how individuals make decisions, using the organization theory, for its analytical resolution is too poor to detect internal human problem solving processes. On the other hand, equally invalid are attempts to extrapolate the human problem solving paradigms to group situations characterized by goal conflicts and cognitive, as well as non-cognitive (social), interactions.

But, how, then, does one determine what analytical paradigms (and at what degree of resolution) one should use them to analyse a complex decision-making situation which clearly goes beyond the boundaries of a single paradigm?

There are a number of possible answers. The analyst would try first one paradigm at one level of resolution, then other levels, to see whether he obtains the kinds of answers he is after. If this approach fails, he might then try another paradigm and see the results, and so forth. But, what about the possibility of combining some or all paradigms into a single, general analytical framework? Would that not lead, perhaps, to

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even better results? In my view (and that of some other authors, e.g. Allison), it would not. For, in a manner similar to investigations using the E-M spectrum, it is much easier to apply one analytical paradigm at a time and then evaluate what each has to contribute to an understanding of the problem issue. In this regard, Allison has rightly remarked that by isolating different conceptual lenses, analysts are bound to arrive at different judgements about what is relevant and important.

There are four additional reasons for identifying and applying different conceptual frameworks separately. First, it may represent an economy of resources, for one may arrive at a satisfactory explanation without having to try all applicable paradigms. Second, it is easier to draw normative inferences from the analysis of an issue when the number of variables and assumptions is small. Third, it will make it easier for the analyst to evaluate his/her own approach against the hundreds of analyses which use eclectic conceptual frameworks. Fourth, it will make it easier to determine whether the analytical paradigms used provide different explanations of the same issue because they are conceptually different, or because they are applied to different levels of analysis.

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21 This subject will be explored further in Chapter 3.

22 In E-M remote sensing, if one uses many bands at once, the interpretation becomes a lot more difficult (and sometimes a practical impossibility), than if one utilizes one band at a time, and at sequentially different degrees of resolution, although modern image processing and enhancement by electronic computers can greatly facilitate the task.

Three Basic Analytical Paradigms
for the Study of Complex Decision-making

A comprehensive survey and a review of the literature on decision-making models that have potential application for the analysis of the case study led me to conclude that practically all of them can be combined into three basic analytical paradigms.¹⁴

The three analytical paradigms are considered basic or fundamental paradigms, because they are the most conceptually distinct paradigms one can arrive at by dissecting all the models surveyed to the bare essentials. Admittedly, this is a rather ambitious claim, but as I shall demonstrate at the end of this chapter, all decision-making models are derivations or integral parts of these three basic paradigms.

Analytical paradigms, frameworks, and models are distinguishable among themselves by (1) the major focus of the analysis, and (2) the major assumptions underlying them.

The literature review showed that analytical frameworks address one or more of three essential aspects of collective decision-making: (1) the motives or objectives of the players when they interact with each other; (2) the information processing mechanisms and the information actually used by

¹⁴The methodology and strategy used in this phase of the research are described in Chapter 3. One of the most complete surveys of the literature was undertaken by Roy Burke III and James P. Heaney, 1975, Collective Decision-Making in Water Resource Planning. Lexington Book, D. C. Heath and Co., Toronto. The authors, however, do not attempt to integrate the models into general analytical paradigms.
players in public decision-making situations; and finally, (3) the strategies that players use to carry out or implement their own decisions.

As far as the major assumptions behind each analytical framework are concerned, the survey revealed that they can be classified into two major categories: (1) assumptions about the essence of decision and the nature of the decision unit (player); (2) assumptions about the external or problem environment.

Below I describe the characteristics and assumptions of the three analytical paradigms (AP's) which I have identified as the most basic and most powerful analytical tools which can be, and have been, used for explanatory purposes in collective decision-making studies. Since they do not correspond exactly to any of the paradigms, analytical frameworks, or models proposed by other authors, they will be labelled as follows: Analytical Paradigm 1 (AP1) refers to motivation analysis; Analytical Paradigm 2 (AP2) refers to information processing analysis; and Analytical Paradigm 3 (AP3) refers to strategy analysis.
Analytical Paradigm 1 (Motivation Analysis)

AP1 considers decision-making as a process of rational choice with regard to objectives. Decisions are explained by inferring and describing what goals and objectives players were pursuing when they made those decisions. The main task of the analyst is to isolate the critical environmental factors and conditions which affected the player's motivation for a given decision issue. It involves the identification of motives which led players to pursue or not pursue known courses of action.

Analysts using this paradigm assume the following:

(a) The nature of the problem environment (i.e. the environment outside the "skin" of the player) determines the objectives that players seek. Psychological elements are not relevant to the analysis. It is assumed that players perceive the problem environment in the same way as the analyst.

(b) Rational, consistent, value-maximizing, self-interest behaviour is dominant. (Subject discussed in Appendix II).

2 Throughout this thesis, by a player is meant an individual human being or any group of individuals having, for analytical purposes, non-conflicting objectives. Thus, a player may correspond to any of the following concrete units: nation-state; level of government; public or private organization; interest group; and the individual decision-maker.
(c) Players may have multiple objectives. However, in the case of a group, these objectives are those of the group as a whole, not of its individual members. (This problem is discussed in Appendix I).

(d) In light of their objectives, players make decisions based upon some estimation of the consequences of alternative courses of action. This estimation is non-problematic. Players' decisions can be regarded as rational solutions to problems.

(e) Collective decisions are the product of a rational process of interaction among players. Events are explained by recounting the aims and calculations of the players.

(f) Cognition and learning are not considered useful analytical concepts, because how the players actually processed information and reached individual and collective decisions and whether they adapted to other players' decisions is not the concern of the analyst. He is only concerned with finding a plausible rational explanation for the decisions.

(g) Time is not explicitly introduced as a variable. Consequently, questions related to historical changes, policy discontinuity, evolution, etc., cannot be approached from the perspective of this paradigm.
The term "structural" approach could be applied to this paradigm because it is not concerned at all with the processes of interaction, only with their outcomes. The free market paradigm of economics and all its main by-products, public choice theory, as well as interest group theory, are derivations of AP1. As will be discussed further below, Allison's Model I and LeMarquand's analytical framework are to a large extent also variants of this paradigm.

Analytical Paradigm 2 (Information Analysis)

AP2 considers decision-making as essentially an information-processing activity. Players are information-processors. Decisions are explained by describing steps in the information gathering and processing that decision-makers follow before making final decisions. The main task of the analyst is to identify those critical stages of information processing with regard to decisions on a given issue. Thus the paradigm addresses the question of how in a given issue, objectives were set, and alternative courses of action were generated, evaluated and chosen.

The main assumptions analysts make when using this paradigm are:

(a) How players behave in decision-making situations depends not only on their motives and the external objective conditions, but also on how they process and actually use information.
(b) The information made available and used by each player is the key to explaining their decisions.

(c) Players determine the information processing approach they will use in light of their objectives, and depending upon the level of complexity and uncertainty of the problem environment, as well as their capability and resources. (Questions raised by this assumption are discussed at some depth in Appendix IV).

(d) In the case of the individual human being information-processing and decision-making are one and the same activity. However, in the case of a group of individuals involved in either unitary (i.e. they all have a common goal), or collective (a common goal does not exist a priori) decision-making, some individuals play the role essentially of information processors while others play the role of decision-makers, although it is understood that the latter must carry out some information-processing activity before making their decision.

(e) AP2 analysts further assume that whether carried out by individuals or groups, decision-making involves the following steps, not necessarily all of them and not always in the same sequence: (1) goal setting; (2) alternatives generation; (3) prediction; (4)
valuation; (5) selection of a course of action; (6) justification; (7) implementation; and (8) monitoring and feedback. How players deliberately carry out these various steps varies from situation to situation and depends on the nature of the player (e.g. an individual, a hierarchical organization or a non-hierarchical body). It is up to the analyst to identify and describe situations and the information processing approaches used by each player or category of player.

(f) As far as the problem environment is concerned, information processing approaches used by players can be grouped into two major categories:

(1) Those normally used for dealing with well-defined problems (e.g. operations research and most systems analysis tools), and

(2) Those normally applied to ill-defined problems (e.g. comprehensive planning, incrementalism, mixed-scanning, etc.)

(g) Finally, AP2 analysts assume various concepts of rationality, from "pure rationality," through "bounded

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In Appendix IV I discuss the concepts of well-, ill-defined and "wicked" problems. As well, I explain the concepts of hierarchical and non-hierarchical information processing approaches (conventional planning is an example of the former approach, while techniques such as Delphi and unstructured group meetings are examples of the latter).
rationality" up to "non-rationality" (which includes intuition and creativity). The meaning of these terms is discussed at some length in Appendix II.

Some authors could classify AP2 broadly within the "behavioural" approaches to decision-making studies, although some variants would fit the "functional" classification better. The paradigm has been used primarily to explain organizational decision-making, the works of Herbert Simon and Cyert and March (mentioned earlier) being outstanding examples. The most well known formulation of AP2 in the analysis of public decision-making remains Charles E. Lindblom's "Science of Muddling Through," although his approach is more normative than descriptive and involves some elements of Analytical Paradigm 3.

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28 Public Administration Review, No. 19, pp. 79-88. (1959)
Analytical Paradigm 3 (Strategy Analysis)

We have seen that analysts using AP1 view public decision-making as a mechanical game in which the players in the light of their objectives choose alternative courses of action. Collective decisions are then the summations of players' rational choices with regard to objectives. AP2 analysts, on the other hand, view public decision-making as largely dependent upon how information is gathered, processed and used by the players. AP3 analysts, in turn, view public decision-making as an interactive process in which players pursue and implement their own objectives through the use of adaptive and manipulative techniques, tactics, or, in general, strategies. The choice of strategies by players is either fostered or constrained by the rules of the game, i.e., the institutional structure, and by their position and authority, other resources, and time constraints.

Thus, according to AP3, public decision-making is a process of horizontally and vertically overlapping games, in which a diversity of goals and values held by players must be reconciled, not simply by a cold, intellectual analysis of the impact of collective decisions on each player, but, in addition, by the play of power and influence among the players in a constrained environment. Consequently, in addition to calling attention to decision-making strategies the paradigm guides the analyst to an examination of
various forms of conflict controlling, consensus building and players' mutual adjustment, in general.

As was the case of API, this paradigm assumes that players are essentially rational self-interested decision-makers, (although allowance can be made for non-rational behaviour). In addition, how each player perceives the other players' decisions and actions is considered critical. Misperception is often considered the "grease" which allows cooperation. In this regard, information gathering and processing mechanisms are important only to the extent that they are used by players for strategic purposes, for example when a player withholds or delays communicating information to other players.

Analysts who use AP3 usually make the following assumptions:

(a) Power is always shared; both in hierarchical and non-hierarchical social systems the outcome of a collective decision process is always the resultant of a negotiation or bargaining process. A collective decision, therefore, does not represent the unilateral victory of any of the participants in the game, but it is rather a resultant which does not coincide with the positions held by any of the individual players, although it may be roughly consistent with the position finally held by a coalition of players. Thus, government policy often does presuppose the policy-
makers' intentions. One important consequence of the above is that analysts using AP3 do not expect to find rationality in the outcome of collective decisions, although they argue that the process is nonetheless rational for the adaptation of individual players' decisions to each other, and to the "real world is to practice at least an elementary form of rationality."

(b) The choice of a decision-making strategy by a player is assumed to be dependent upon both the nature of the player and the nature of the problem environment. Some analysts assume that players know and can order their preferences and are fully informed about the consequences of alternative courses of action (game theoretic approach). Others assume that the strategies chosen by the player will depend upon their perception of their preferences and of potential outcomes, as well as on their analytical capabilities, creativity and learning skills. The nature of the problem environment, i.e. its inherent complexity and uncertainty, nature of the resource, time available, and the "rules of the game", further constrain the players' choice. The rules of the game include formal coordinating mechanisms such as laws, hierarchical

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authority, voting procedures, as well as informal procedures, for example, organizational clearance and direct partisan mutual adjustment. In both cases the analyst focusses on the process (time dependent) of reaching agreement. There are indeed an endless number of variations of decision-making strategies used by players. The most widely used classification is that adopted by Lindblom, 30 namely, adaptive and manipulative mutual adjustments. Within these two broad classes of strategies one can distinguish many approaches to accommodation, cooperation, persuasion and coercive influence.

(c) Since interaction among players in the public arena usually follows regular channels and are constrained by deadlines, it is important for AP3 analysts to identify those features. Players who count the most are those who have access to the action channels and have the resources to meet deadlines.

(d) AP3 analysts accept that players' strategies are often deliberately accompanied by some specific hierarchical and non-hierarchical approaches to information processing. However, they differentiate between information processing approaches and decision-making

strategies. The former refers to information processing techniques used by players to reach decisions with regard to alternative courses of action. The latter are tactics or strategies chosen by individual players to deal with other players. Information processing approaches (including non-hierarchical ones) are then considered to be internal to the player (which, again, may include groups having unitary interests), while decision-making strategies are considered to be actions (physical or symbolic) on the external environment. Standard operating procedures which are simply conventions which make possible regular or coordinated activity in an organization could perhaps be considered a special form of strategic behaviour (AP3), but, to the extent that they are more concerned with information processing than with decision and action, they should not, and are thus part of AP2.

\[\text{As is commonly used in game theory, the term physical action implies that player "A" actually alters the costs and benefits to player "B", e.g. by offering a compensation, subsidy, or raising the cost of compliance, conditionally or unconditionally. "Symbolic action" means the case in which "A" provides information to "B" in such a way that it alters "B"'s perception or understanding of the costs and benefits of a certain course of action "A" is contemplating. On the subject see, for example, Martin Shubick, 1967, "The Uses of Game Theory" in Charlesworth, James C. (ed.), Contemporary Political Analysis. The Free Press, New York. pp. 239-272.}\]
A Comparative Evaluation of the Proposed Analytical Paradigms

The above description of the three analytical paradigms which will be used to interpret the case study, should have been sufficient to indicate that they are indeed conceptually distinct from each other. They address different aspects of the collective decision-making problem, are based on some important different assumptions, they lead the analyst to ask different questions about the same decision situation, and consequently they should yield different answers. A question remains, however. To what extent do the three paradigms represent an improvement over existing ones?

In order to answer this question, we shall compare the main features of the three paradigms with those of three of the most outstanding works in the field, namely, Allison's classic "Essence of Decision," Neil A. Swainson's study of the Columbia River Treaty, and David LeMarquand's comprehensive study of the factors which influence international rivers cooperation.

First, the three analytical paradigms identified in this

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33 Neil A. Swainson, 1979, Conflict over the Columbia - The Canadian Background to an Historic Treaty. The Institute of Public Administration, McGill - Queen's University Press, Montreal

study (AP1, AP2 and AP3) are clearly more basic than Graham Allison's Models I, II, and III. Allison's Model I is an application of AP1 to a high level international conflict, in which the basic unit of analysis is the nation-state (the unitary rational actor or player). As presented by him, the paradigm cannot be used to analyse lower level issues, nor can it be used to explain decision-making at the subnational and lower levels. In contrast, and as we shall demonstrate in Part III, AP1 can be applied to any public decision-making issue at any level, even at the community level.

As far as Allison's Model II is concerned, it is an application primarily of AP2 to the organization and inter-organizational levels. At the interorganizational level it makes generous use of paradigms AP1 and AP3 as well. But, again, as opposed to AP2 its usefulness is limited to analysis of decision-making in large organizations, while AP2, as developed and applied in this study, is useful for explaining the information for decision-making questions at any level of decision-making and using any type of unit analysis (hierarchical and non-hierarchical players).

Finally, Allison's Model III is essentially an application of AP3 to the international and intra-national government levels, using as a unit of analysis central or political individual players. However, AP3 can be used equally well to explain decision-making at any level, including the community council level. Therefore, one can say that Allison's models are actually conceptual adaptations of the three paradigms proposed here, but not in a one-to-one relationship. His are eclectic
models. The importance of the above points becomes apparent when one, for example, tries to determine whether Allison's three models each gave different explanations of the Cuban missile crisis because of their conceptual differences or because they were each applied to different levels of analysis.

At this point it is important to point out that while analytical paradigms AP1, AP2 and AP3 are indeed conceptually distinct, they are not mutually exclusive. As will be shown in Part III, the different interpretations which they provide reinforce each other. The best explanations will be obtained when the analyst can afford to apply the three AP's successively to extract the most important aspects of a particular decision issue. This should become clearer in Part III.

Professor Swainson's analysis of the Columbia River Treaty appears to have been one of the most successful applications of the analytical concepts developed by Charles Lindblom. Lindblom's formulation of the cognitive (information-processing) and coordinating (social interaction) processes are essentially and respectively elaborations on AP2 and AP3. However, in his application to the Columbia River case study, Professor Swainson does not follow the analytical features of AP2 and AP3 as have been systematically formulated here. Actually, as we shall see in Part III, a systematic application of AP2 and AP3 is indeed not only a time consuming enterprise, but the two paradigms are

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incredibly information thirsty. Nonetheless, the application of AP2 and AP3 to the Saint John River case study will, hopefully, show some of the advantages of using a more formal and rigorous analytical framework.

The analytical framework developed by David LeMarquand to describe and explain international cooperation in four international river basins on two continents is a conceptual, empirical adaptation of Analytical Paradigm 1. Because of its empirical foundation, without substantial changes it is only useful to analyse international rivers issues. On the other hand, API can be applied to any type of collective decision-making situation.

LeMarquand's framework departs from API (which forms some six sevenths of his analytical framework) when he incorporates variables and assumptions regarding the nature of the political process. When he does so, he incorporates features of AP2 and especially AP3. As a consequence, for example in the analysis of the Skagit River controversy, the most important insights are not derived from the bulk of his analytical framework, but from the use of AP2/AP3, that is, one seventh of the framework.

An earlier attempt (see Chapter 3) to apply LeMarquand's analytical framework in its entirety revealed an important insight. Analytical frameworks derived mostly from empirical observations seem to lead to interpretations which can only reenforce previous conclusions. This observation is based upon

the fact that my own analysis of the Saint John River Basin situation using LeMarquand's framework led to conclusions very similar to his own. Although one might argue that the reason for this is that two of his case studies involve Canadian-U.S.A. environmental relations and are therefore very similar to mine, it will be interesting, however, to compare his conclusions with those arrived at using each of the three paradigms independently. This is done in the concluding chapter.

Finally, it is important to call attention to the fact that none of the previous analytical paradigms give explicit attention to questions such as: when, why, and how are social or public policy problems tackled? Where in the public decision-making network do initiatives to tackle problems appear? When, how, and why do sharp policy changes occur?

AP1 analysts' answer to the first question is usually that problems are tackled because of demands by some players (e.g. interest groups) or the public in general. AP3 analysts look for the answer to the same question in the mechanisms of mutual adaptation, but usually come back empty handed. Finally, AP2 analysts contend that problems are tackled due to advances in understanding, which come about as a result of rational analysis.

AP1 and AP3 analysts are in general not concerned with the question of policy shifts and fundamental collective decisions. They argue that, at least in democracies, policy "shifts" simply do not occur. Policies, they explain, change almost entirely through incremental mutual adjustments. Finally, AP2 analysts might look at policy shifts as the result of comprehensive
analytical efforts which indicate the need for fundamental changes. Social change could then be explained through a process of shifts from one comprehensive or fundamental solution to another, although solution implementation may turn out to be a gradual process.

There have been, however, suggestions that different kinds of mechanisms may be responsible for innovations in policy and goal formulation and consequent shifts. A number of authors have paid attention to these questions and their insights appear to provide conceptual and empirical evidence that a fourth analytical paradigm - AP4, should be formulated.

In Appendix III, I discuss in some depth the concepts which should form the basis for such a new analytical paradigm. Most of the suggestions for it have been made by Albert Hirschman, Thomas Kuhn and Edgar Dunn. In my view, these authors' ideas on the subject are derived, at the social level, from dialectics, and at the individual level from Gestalt psychology. Since the concepts are discussed in detail in Appendix III, I will limit myself here to pointing out the general thrust of this potential paradigm.

First, AP4 would place great emphasis on the process of

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individual and collective creativity. For example, problems tackled are often "chosen problems", that is, they are not tackled as a result of demand or pressures from interest groups and other types of players. Actually, motivation and creative thinking may lead decision-makers to tackle problems which were not considered problems at all before, or which were considered to be insoluble and therefore not worth approaching.

Second, the paradigm would direct the analyst to search for two kinds of decision-making: normal problem-solving and extraordinary problem-solving or paradigm shift. The first is essentially a process of incremental adjustments and adaptation to the existing problem situation. On occasion these incremental adjustments are not adequate to cope with problems which lead to crisis situations. It is during those periods of crisis that extraordinary problem solving takes place and novel solutions emerge, usually in the minds of creative individuals, uncommitted to the normal, or established problem-solving approaches. If the creative "solution" finds its way through the appropriate decision channels and reaches open minded decision-makers it will eventually be adapted as a new policy. However, this shift to a new policy is not due to its "obvious" wisdom, for those attached to conventional ways of thinking and doing things cannot be persuaded to see the wisdom of major changes.'

Therefore, analysts using this paradigm contend that the shift is rather the result of a "conversion", usually by a small

\[\text{\textsuperscript{3}}\text{ Kuhn, op. cit.}\]
number of individuals strategically located in the decision-making framework, ("conversion" is surely reinforced by the prospect of personal advantages). The policy is then adopted relatively suddenly, although its actual implementation may take a much longer time.

Unfortunately, an evaluation of the usefulness of this potential analytical paradigm must wait for further theoretical and particularly empirical research. Its application to the Saint John River Basin case study would clearly require an extension of the empirical investigations into the questions of the extent to which the Saint John River Basin Agreement was an innovation in its scope and structure, by comparing it with other Canada-U.S.A. Agreements up to that time. Further, it would be necessary to determine the degree to which it has influenced subsequent agreements. Finally, it would be important to examine the implementation of the Saint John River Basin Agreement itself to determine to what extent a presumably innovative policy was in fact carried out. I believe this task will be greatly aided by the results of the present research and by further investigation into the existence and usefulness of such a fourth analytical paradigm.
CHAPTER 3
RESEARCH STRATEGY AND METHODOLOGY

This chapter describes the origin and evolution of this thesis research strategy and the data gathering and data assembling methodology used. In addition, it provides a concise explanation of how the three case study issues were identified, as well as how the three analytical paradigms (AP1, AP2 and AP3) came about.

Original Definition of the Research Problem

When I started this research early in September, 1972, the decision-making processes which led to international river basin agreements were only vaguely understood and had not been systematically studied, for the most part. However, I had already then the benefit of familiarity with the work of Prof. Irving K. Fox and his associates.¹ Prof. Fox was of the opinion that the traditional approach to foreign policy analysis which assumes that decision making in international situations

¹ Two of his works had a particular influence on me at that time:


takes place between the national governments of nation-states as self-contained units, was inadequate for a case study of an international river basin in the world's most developed areas, which is the case of water resources shared by Canada and the United States. Instead, Prof. Fox suggested that in many cases, but particularly in the case of international basins in North America and Western Europe, politicians, government officials, interest groups and individuals interact with one another as technical investigations are undertaken, plans are conceived, decisions are made and policies are formulated. Furthermore, he pointed out that these interactions, despite a number of important pioneering works, were still quite imperfectly understood, and consequently were well worth investigating. This perspective matched very well my interest and concern, both with international rivers problems and public decision making in general.

By defining the nature of these trans-national interactions through a specially designed research strategy which I would apply to a specific case study, it was hoped that I would arrive at a decision-making model of international river basin agreements. Such a model would describe in a synthesized manner those variables or factors which foster or hinder cooperation,

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2 A bibliographic review which I prepared for the Westwater Research Centre in 1972 showed clearly that most students of international rivers did follow up to that time the traditional international relations approach. The bibliography which I prepared was later revised and published by the United Nations Secretariat for the U.N. Water Conference; Mar Del Plata, Argentina, 14-25 March, 1977.
which would then serve as a basis for future normative work, particularly in terms of institutional design for international river basin management.

The selection of the Saint John River Basin (SJRB) shared by the United States and Canada as the case study was based on a number of factors, among which the most important were: (a) negotiations were, at the time (1972), underway to create some sort of a management institution for that river basin which would provide the opportunity to gather fresh first hand data on the decision-making process; (b) a wealth of technical and socio-economic information was presumably readily available, which would allow the investigator to concentrate on the interpretation of the decision-making process itself; (c) funds would be more easily available. The only factor against the selection of this case study was the alleged uniqueness of Canadian-American environmental relations, which meant, basically, that the experience acquired through this study could not be justifiably extrapolated to other international river basins in the less developed regions of the world.

Once the case study was selected, the next step was to develop a research methodology which would allow me to reach the above described research objectives. Thus, the original research strategy was planned along the following basic stages:

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3 I was fortunate to have had the opportunity to have accompanied Prof. I.K. Fox to a NATO-CCMS Symposium in Fish River Lake, Maine, for it was at this gathering that the Canada-United States SJRB Agreement was officially announced on September 21, 1972.
(1) **Data gathering** - use of a combination of several data gathering techniques, such as: textual analysis of official technical reports, proceedings of meetings, magazines, newspapers and so forth; examination of voting and attendance lists of meetings and hearings; personal interviews and observations; and possibly questionnaires.

(2) **Data interpretation** - the purpose was to identify the major actors or players, their main goals and objectives, and their role in the negotiation of the agreement.

(3) **Modeling** - based upon the findings of the previous stage, I would try to establish communication flows between the main players in order to arrive at a basic conception of the decision-making system; then, I would try to describe (or measure) the relationships among the players in order to understand the "rules of the game."

(4) **Gaming or simulation** - depending on the success achieved in the previous stage, I would decide either on a gaming approach (in this case, the objectives of the players and the relationships among them could not be described accurately) or a simulation approach (in this case it was possible).

(5) Finally, I would analyse and compare the results of various gaming or simulation runs with the outcome of the actual negotiations regarding the SJRB Agreement, and then proceed to formulate some general propositions about international river negotiations.

However, after four months of field work in the basin, which also included data gathering trips to Ottawa, Halifax, Washington D.C., and Boston, and after a preliminary
interpretation of the results, I reached the following conclusions:

(1) It was necessary not only to investigate the negotiation of the Agreement per se, but to place under great scrutiny two other related issues, namely: national policy formulation by the United States regarding transboundary pollution originating in the State of Maine, and the New Brunswick and Canadian governments' approach toward pollution of boundary waters.

(2) The number of private players was relatively small, but the number of government players, whose objectives were far from clear, was very large indeed. The reason why the objectives of the players were difficult to define was that the negotiations of the Canada-United States SJRB Agreement itself was clearly a transgovernmental bureaucratic process, which did not involve any substantial allocation of private and public economic resources. This implied, in turn, that analytical tools derived from interest group theory and game theory, which were then being considered, were of very limited use indeed.

(3) In view of the above, it became clear that establishing the "rules of the game", which was essential for later building and operationalizing a gaming or simulation model, was in itself a major research endeavour, which could only be carried out if some heroic simplifications were made.

(4) Therefore, I considered that it was better to sacrifice the potential elegance of a gaming or simulation model in favour of greater relevance.
Redefinition of the Problem
and New Research Strategy

Redefining the Problem

For the reasons described above, it became evident to me that one of the main original objectives of the research endeavour, namely the building and operationalization of a decision-making model of the negotiation of the 1972 SJRB Agreement was not only unattainable, but probably not very worthwhile either.

It was at that time (January, 1974) that I came across Graham Allison's analytical masterpiece - *Essence of Decision*. As we have seen in Chapter 2, Allison opened new horizons for those interested in explaining complex decision-making. His conceptualization of the decision-making explanatory task was so radically different that I felt that if I were to make any contribution in this field, I had to start where he left off, which was, admittedly, an ambitious goal.

Thus, I had to move the starting point for analysis back to somewhere near zero, with most of the work still to be done. Different questions were now being asked, whose answers required

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a new research strategy.  

The research problem became then one of applying Allison's three analytical frameworks (he called them Models I, II, and III, see Chapter 2) to the SJRB case study and then evaluating the results, both in terms of the alternative explanations they could produce, and in terms of the models' analytical powers.

**Developing a New Research Strategy**

Attempts to apply Allison's three analytical frameworks to the case study were not very successful. The problem appeared to be that his frameworks were designed first of all for a specific level (without consideration of transnational relations), and second for a particular type of issue, namely high level international conflict. Thus, it became apparent that to apply them to the SJRB case study required more than a simple adaptation. Actually, I found that what was needed was more than an adaptation. It was necessary to search for the roots of Allison's and other successful analytical frameworks. In other words, it occurred to me that for real progress to be made in this area, it was paramount to determine which variables and assumptions underlying each analytical paradigm would account

5 It turned out that this redefinition of the research problem appeared to be a phenomenon more common than I had first thought it to be. Edgar Dunn, for instance, reports a similar event in his introduction to *Economic and Social Development* (The Johns Hopkins Press, 1971); while John Friedman, in his *Retracking America - A Theory of Transactive Planning* (Anchor Press, Doubleday, 1973) describes the phenomenon in words very similar to mine (p 131).

4 As we have seen in Chapter 1, Hirschman's framework had greatly impressed me several years earlier. Hirschman, Albert O., 1963, *Journeys Toward Progress - Studies of Economic Policy-Making in Latin America*. The Twentieth Century Fund, New York.
for their conceptual similarities and differences.

The reward of pursuing such an approach would be that, once a researcher had found the basic or elemental "paradigm's," then it would be much easier to adapt them both to particular situations and to specific levels of analysis.

However, it soon became clear that the identification of basic paradigms involved more than adding, subtracting and reordering variables and assumptions. Discovering the foundations of the existing analytical frameworks was indeed the same as determining whether they are different representations of the same problem environment.

Finding a conceptual representation of a problem situation is the first step in the process of finding a solution to a problem, but it is not the same as finding a solution to a problem. This difference can best be explained through the use of Allen Newell's and Herbert Simon's "Human Problem Solving" paradigm, which is discussed at some length in Appendix IV.

According to those authors, there are two essential steps in individual problem solving. One is to find a representation of the problem environment, the other is to find a method, normative theory or programme which, when applied to the problem representation selected by the problem-solver, yields a "solution." There is still much controversy on the nature of those processes. Two of them deserve consideration here.

The first controversy is whether or not there is a logical

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procedure to make such discoveries. Simon⁸ argues that since, at least for simple problems, one can construct a normative theory of discovering processes, i.e., an efficient means of making certain "discoveries," then discoveries "need not be attributed to chance, irrationality, or creative intuition." Karl Popper,⁹ on the other hand, argues that there is no such thing as a logical procedure for having new ideas, which translated to our case would mean, for discovering either new representations or methods.

The other important controversy is related to the question of what makes the demands placed by the problem environment difficult for a problem solver or researcher in general. If we put aside psychological differences among individuals, the question assumes the following format: does the difficulty lie mostly in the discovery of an internal representation of the problem environment, or does it reside in the discovery of a method to solve the problem?

Again, there are scholars such as Michael Polanyi,¹⁰ and to a large extent Edgar Dunn,¹¹ who argue that the whole difficulty in problem solving resides in representing the external

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objective environment internally in the individual's "problem space," and that once that representation has been completed, finding a method to solve the problem is actually a trivial matter. Thus, according to this school, the solution to a problem is dependent more upon a correct representation of the external environment (say, through a conceptual model) than upon the availability of methods (say, algorithms) to solve it.

On the other hand, there are others who insist that finding a method to solve a problem poses at least as much difficulty to the problem-solver as finding the right representation and, consequently, as the repertoire of methods grow, larger problems become increasingly easier. The most distinguished proponents of this school are probably Herbert Simon and Allen Newell.12

It seems clear to me that representation and method are two sides of the same coin and in certain situations one will be the important factor determining problem difficulty while in other situations it will be the other one.

Since this thesis was never intended to be normative, that is its main goal has never been to find a solution to negotiations of international river basin agreements, it is clear that the central research question to be addressed is one of finding an adequate representation, or, perhaps, new, alternative representations of the chosen problem in the form of

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12 See, for example, Simon, op. cit., and Newell and Simon, op. cit.
conceptual frameworks for analysis. If, as Simon claims the structure of the problem environment determines the way in which the problem is represented in the researchers' internal "problem space," then it is evident that the more complex the environment is, the more difficult it will be to find alternative basic representations (see Appendix IV for an extended discussion of this topic).

It was necessary, then, to work out a strategy which would guide me in the process of identifying new, or restructuring old conceptual frameworks. In this regard, it is important to point out that a conceptual framework is a fundamental entity which cannot be fully reduced to logical components having meaning in isolation.

The research strategy which led to the identification of Analytical Paradigms 1, 2, 3, and a possible 4 (Chapter 2) consisted basically of the following:

(1) A review of the literature on problem-solving and creativity (see Appendicies I - IV). This review confirmed Karl Popper's argument cited above, that one cannot arrive at a set of procedures to make discoveries, but one can facilitate them by creating conditions which favour creativity, thus the second stage of the strategy.

(2) A deliberate and simultaneous search for new sources of theoretical and empirical knowledge, and particularly hidden

This point becomes even clearer if one recalls that the central issue examined in the case study is how the Canada-U.S.A. SJRB Agreement was first conceptualized, formulated, and adopted as a bilateral policy by the two countries. Thus, the issue being examined is not about how a specific international river problem was solved.

analogies, sometimes in areas only distantly connected to the problem at hand. The material covered in the Appendices (I–IV), as well as the references cited in them, give a good indication of the breadth and depth of this phase of the research. In addition, the appendices give a fairly good idea of the many wrong paths followed, which are, however, to be expected in any original research.

(3) A close adherence to the combined deductive–inductive, or Kantian, approach to scientific inquiry, thus giving equal emphasis to both theoretical deduction (survey of conceptual frameworks) and empirical induction (continuously analyzing and re-analyzing the case study). The advantage of this approach is that, in the process of analyzing and comparing bits of conceptual and empirical knowledge, patterns quite unexpectedly emerge. These patterns are often more than the sum of bits of knowledge, i.e., they are more than the knowledge acquired through the process of sequential, cumulative analysis. The latter process often leads to discovery of conceptual "anomalies" and empirical adaptations (e.g. regarding level and unit of analysis), but it cannot lead to "new" representations in the sense that I believe the analytical paradigms proposed in

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15 In philosophy, deduction is analytical reasoning from general to particular or less general, while induction is the process of reasoning from particular instances to general principles.

16 This process of pattern recognition has been labeled "distal knowledge" by John R. Raser, in his Simulation and Society: An Exploration of Scientific Gaming. Claremont Graduate School and Western Behavioural Sciences Institute. Allyn and Bacon, Inc., Boston (1969).
this research are.\textsuperscript{17} By this I mean that AP1, AP2, AP3, and possibly AP4 represent, as a whole, a new method of dissecting decision-making issues for explanatory purposes. Their conceptual differences are so obvious that they might lead the reader unfamiliar with the literature to think, "How is it possible that previous investigators did not realize this before?"

Actually, it is likely that many investigators indeed realized that motivation, information-processing and strategy analysis (plus "historical analysis" AP4), are the foundation of all conceptual frameworks for analysis, but to my knowledge, up to mid 1979, no researcher had identified these basic paradigms as has been done here. Many of them have indeed made empirical adaptations of Allison's three models,\textsuperscript{18} but essentially his three models have remained conceptually unaltered.

In this type of research, verification and validation of hypotheses is not an issue. However, one could think of the sequential application of analytical paradigms AP1, AP2, and AP3 as some kind of attempt at falsification in Karl Popper's sense. For each of them tries to give better explanations of the same

\textsuperscript{17} The importance of this point can be exemplified by my attempt to apply David LeMarquand's analytical framework to the case study (Chapters 11 and 13). The results of the analysis indicate some small variances with LeMarquand's conclusions about the nature of international rivers negotiations, but, for the most part, they coincide. Such an approach would obviously not lead me to the identification of the three paradigms.

event, i.e., they try to make each version of the stories more plausible.

Another possibility, not attempted in this thesis, would be to develop and apply paradigm AP4 to the case study and see if it provides an even better explanation than the other three. Nonetheless, one should keep in mind that falsifications in the social sciences are evidently inconclusive, for a new paradigm apparently never displaces or disproves the application of existing paradigms.1"

Yet, as Simon20 has remarked, one cannot reliably test the intrinsic plausibility of this kind of postulate. The plausibility of the analytical paradigms is in the last instance time-dependent. Their plausibility will be judged by the test of time itself. If successful in providing increasingly better explanations, they will be considered more and more plausible, and, after a number of years, may even be regarded as self-evident.

Finally, it should have already become evident from the above discussion of the research strategy that, although theory and data were compared, there were no attempts to plot and compare observed human decision-making behaviour with existing theories. Consequently, there is no room for the use of standard statistical techniques for validation of the findings. On the other hand, I have submitted all the chapters of the case study

1" On this subject see Appendix III.

(4 to 10) to review by some of the most important participants in the three issues described. The reviewers have, without exception, confirmed most of the factual data presented to them, and, in addition, have commended on the comprehensiveness and accuracy of the statements made.\footnote{Among those who kindly reviewed the case study I would like to mention: Mr. Albert J. Erickson, John M. Henderson, William H. Mansfield, Richard C. Hodges, Leo V. Brandon, and Peter Wilson. See Appendix VII.}

There is an important point to which I would like to call attention about the above described research strategy. The strategy is time-consuming and expensive, and it does not guarantee sure results. Yet, I know of no other strategy which is more efficient, and generates new or improved representations, and subsequent explanations of a complex decision-making issue.

**Data Gathering and Assembling Methodology**

**Data Gathering**

Except for the case of questionnaires, all other data gathering techniques mentioned when we described the original research strategy were used. However, the most important techniques used were undoubtedly unstructured personal interviews and consultation of agencies' files.

The method used to select persons to be interviewed was to start with a few key decision-makers on both sides of the SJRB,
and then in the course of these initial interviews to ask the interviewees to name other people whom they thought were important or instrumental in the negotiation of the 1972 SJRB Agreement. Unfortunately, it was not possible to interview all the people considered important by some decision-makers; I believe, however, that the omissions are few. A list of the persons interviewed is provided in Appendix VII.23

Those open-ended interviews also led me to the location of the most important agencies' files. In general, at the time of the initial field work (1973-74), access to government information was easier in the United States than in Canada. Fortunately, however, during a second field trip in the autumn of 1977, I had the opportunity to consult the New Brunswick Provincial Archives, where the files of the Saint John River Basin Board had been deposited. These files furnished me with invaluable material, some of which, of a confidential nature, I had been denied access to during my earlier investigations, no doubt because they were still active, and were potentially disturbing to the ongoing decision-making process. This points to one of the limitations of conducting investigations simultaneously, or very close to the time at which the events are actually happening.

One the other hand, discussions with decision-makers and

22 That is, Maine and New Brunswick, but not in the province of Quebec, for reasons already mentioned in Chapter 1 and which will become clearer in Chapter 4.

23 Some sources insisted on anonymity, and therefore are neither quoted nor cited in the list of interviewees.
close observers of the events related to the three main issues examined, at a time when their memories of those events was still fresh, was a great asset to this research. Nonetheless, it became clear that many of those interviewed expressed views which were highly coloured by personal values and perceptions, with the result that sometimes the information thus obtained obscured more than enlightened the decision-making features sought.

This is a rather common phenomenon, though. In most cases, the interviewees are not trying to deceive or misinform the researcher. They are simply following a common human tendency to rationalize, or to give meaning to situations which, at least at the time, they did not fully understand or of which they did not have full knowledge. In order to check and preserve the validity of the material obtained through interviews, whenever possible I asked the same questions to different people and further cross-examined the information thus obtained with the material found in the agency's files.

Although many investigators tend not to rely on the content analysis of documents found in agencies files because, they argue, many important aspects of decision-making never go into the records, I found that by examining various drafts of the same document (and this was often feasible), it was possible to trace the evolution of the thought and decision processes of the most important government officials involved in the three
issues. 

It should be pointed out that during the period covered by this investigation (approximately 1960-1972), the four governments involved in the SJRB went through sweeping administrative reorganizations. As a result, it was often difficult to determine, say, the exact name of a certain agency or the exact title of a public official at a given time. However, to a large extent, the names and titles given in the text of the case study correspond to those held by the players during the period described.

I have also made generous use of all the published information related to the issues, including newspapers, official proceedings of meetings, scientific and technical reports, and books. These sources are referenced throughout the text.

Data Assembling

Graham Allison has remarked that to piece together the bits of data that one gathers about an issue is both a science and an art, and consequently requires the skills of an artist-scientist.

In this connection, it is important to point out that, although the case study was originally selected and approached in the light of a particular research strategy and methodology

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24 This kind of textual analysis was especially important in the interpretation of the last phases of the negotiation of the Canada-U.S.A. SJRB Agreement.

(as described earlier), the bulk of the data was neither gathered nor assembled into consistent "stories" on the basis of any particular conceptual framework. The data assemblage (and to some extent, gathering) approach was largely analogous to that of detective work, which is guided only by a few clues or hints as to what might have been the antecedents of a certain event. Of course, one is always influenced by previous knowledge and in fact the stories could not be told without some general framework. The point is, however, that the three issues of the case study were not written in the light of any of the analytical paradigms described earlier. The identification of AP1, AP2, and AP3 as separate conceptual frameworks came only much later in the investigation, although, as we have seen, the paradigms are indeed the result of a combined deductive-inductive approach.

This approach to assembling and presenting information is, to my knowledge, only seldom used in studies of decision-making. Most analysts, for example LeMarquand and Allison, present their case studies through the perspective of one or more analytical frameworks. The works of A. Hirschman and N. Swainson and M. Myerson and E. Banfield are the ones which come closest to the approach used in this research. However, I have gone to the

extra effort of keeping interpretations and inferences to the absolute minimum, i.e., I only make inferences when detailed factual information is lacking, and abstain from inferences that would make the stories unreadable. These instances, however, are relatively few and are easily identifiable by signal words such as "perhaps", "it appears", "it seems", and so forth. In some cases these conjectures are my own, in other cases they have been suggested by people interviewed, but who asked not to be quoted.

The methodology used in this research is certainly expensive and time-consuming for it demands an exhaustive effort on the part of the investigator to gather practically all available information on a given issue. On the other hand, it is the only one which allows both the original investigator and other investigators to apply other analytical frameworks to the case study and compare the results. Since, as has been stated, one of the objectives of the present research is to evaluate the applicability of different conceptual frameworks to the explanation of collective decision-making, this procedure seems particularly appropriate.

Some may be tempted to suggest that the stories told reveal more about the nature of the decision-making processes operative in the case study, than the interpretations yielded by the analytical paradigms (Part III). I indeed agree that the stories by themselves provide some very suggestive points about collective decision-making. However, these observations may be no more than curiosa which do not warrant generalizations of the type provided by the systematic application of the analytical
paradigms. In this regard, it is important to call attention to another point. The more factual information a researcher provides, as I have attempted to do in the case study, the more he is constrained in the kinds of inferences or interpretations he can make through the use of particular analytical frameworks. This point can be appreciated from yet another perspective.

A few of the central characters in the three issues narrated have been asked to provide comments on the accuracy of the statements made. One pattern seems to emerge: they have almost without exception confirmed the statements made in the chapters which were sent to them, but often they volunteered rationalizations of decisions and actions about which they were not given factual information (for the sake of economy not all chapters of the case study were sent to the same reviewer).

There is yet another reason for describing and chronicling the three issues with accuracy and detail before interpreting them in the light of the three analytical paradigms. This reason is that although many of the decision-making clues found in the flow of the stories do not lend themselves to specific interpretations and to generalizations, they may perhaps be more than isolated instances and thus are documented for future analysis and comparison using perhaps other analytical frameworks.
CHAPTER 4
SAINT JOHN RIVER BASIN POLLUTION: AN OVERVIEW

The Saint John River Basin

Physiography

The Saint John River Basin (SJRB) is one of the largest basins in Eastern North America. Of a total drainage basin area of about 55,200 square kilometres (km$^2$), 19,700 km$^2$ are in the U.S.A. (State of Maine) and approximately 35,500 km$^2$ lie in Canada (Provinces of New Brunswick: 28,600 km$^2$ and Quebec: 6,900 km$^2$).

The mainstem of the River first forms the Maine-Quebec boundary, then passes through Maine, next flows along the Maine-New Brunswick boundary and finally flows for some 362 km (out of a total length of 676 km) entirely through New Brunswick before discharging into the Bay of Fundy of the Atlantic Ocean.

Some of the tributary streams are themselves international water courses. The Saint Francis River forms the border between Maine and Quebec; a few others flow from Quebec into Maine and several others flow from Maine into New Brunswick (Figure 1).

Surface run-off fluctuates widely in the SJRB, although it is being increasingly regulated by a combination of natural lakes and reservoir storage. The long-term mean annual flow in the international reach of the River at Fort Kent, Maine, is 270 cubic metres per second (m$^3$/s), compared with 785 m$^3$/s downstream at Pokiok, New Brunswick.
Population and Economy

The population of the basin is predominantly rural. The largest city, Saint John, at the mouth of the River, has only 90,000 inhabitants. Some 450,000 people live in the basin; of these approximately 300,000 are in New Brunswick, 50,000 are in Quebec and 100,000 are in Maine. Above Grand Falls most of the population in the basin is French speaking, descendents of the first European settlers. They live mostly in Quebec and New Brunswick, but can also be found in the U.S.A. portion of the basin. The majority of the population, however, is English speaking. Language, religion, and cultural values are still important factors keeping the English and French speaking people apart.

The upper SJRB, lying partly in Maine and partly in Quebec, is sparsely populated, Fort Kent being the only centre with a population of over 1,000. Although there is also some agriculture, forest management is the major economic activity here.

The portion of the basin where the Saint John River forms the boundary between Maine and New Brunswick is also sparsely populated except for the Edmunston-Madawaska urban area which has a total population of some 15,000. This area is to a very large extent dependent for revenues and employment upon the Fraser Companies, a Canadian firm having a pulp mill in Edmunston and a paper mill in Madawaska. The two mills are connected by a pipeline crossing the river. Agriculture is of secondary importance in this portion of the basin, although there are a food processing industry in Grand Falls, New
Brunswick, and several starch factories on both sides of the border.

The major population centres and the most industrialized and farmed areas of the Maine part of the SJRB are located in the Aroostook River, Presque Isle\textsuperscript{1} Stream and Meduxnekeag River sub-basins. The total population of these sub-basins amount to some 70,000 people. The economy of this region is essentially dependent upon production and processing of one single cash crop - potatoes. Ten food processing industries were in operation in the region in 1971. There is also a large food processing plant at Florenceville, New Brunswick, on the banks of the main stem of the Saint John River.

The lower part of the SJRB, located entirely within New Brunswick, is the major population and economic area of that province. Fredericton, the provincial capital, has a population of close to 24,000, while the city of Saint John, with a population of about 89,000, is the largest in the basin. This region has a diversified agricultural, industrial and service economy. Agriculture is intensively developed in the area just downstream of Fredericton. There is a large mining operation in the Grand Lake region. Large pulp and paper mills are located respectively at Nackawic and Saint John. Oil refining and shipping are also important sources of revenue and employment in Saint John.

\textsuperscript{1} In the U.S.A. the stream is known as the "Prestile," while in Canada it is called the "Presquile." We shall adopt the name used by the IJC, "Presque Isle," which is the original French spelling of the name.
Tourism is becoming an important industry in the Maine part of the upper basin, while fresh water fisheries used to be an important economic activity as well as recreational in the lower basin, but in 1971 was in clear decline due to pollution.

In general, one can say that by Canada and U.S.A. standards income levels are low in the basin. As well, there is a relatively high rate of unemployment and emigration, particularly on the Canadian side.

Water Uses

Major water uses in the SJRB are for industry, agriculture and forestry, livestock, fisheries support, domestic water supply, waste assimilation, power generation, mining, wildlife, and recreation. Power generation and waste disposal far outweigh in magnitude all other uses of the basin's water resources, both in terms of volume of water required and the degree of water quality degradation resulting from those uses; in combination, these uses have contributed to the most serious water management problem in the basin - pollution.

Hydro-electric Power

The first sizeable hydroelectric plant in the SJRB was put into operation in 1928 at Grand Falls, about five kilometres below the point where the river leaves the international boundary, which is the most obvious power site on the main stem of the Saint John River. An application to the International
Joint Commission (IJC)² filed in 1925 by the New Brunswick Electric Power Commission for approval of this power development resulted in the first serious contention between the U.S.A. and Canada regarding water use of the SJRB. It was also the first time either country claimed a right to share the benefits of development of a site in the downstream country.³

The United States claim was based upon the argument that "the flow of water along the international section times the fall along that section... is a potential power which is possessed jointly, half each by the two governments" and, considering that construction of a dam at Grand Falls would benefit from this potential power, it was reasonable that New Brunswick should make available to Maine a portion of the power developed at Grand Falls.⁴

The United States also demanded that all interests on its side of the boundary which might be adversely affected by the project should be compensated and, if proved necessary, provisions made for the construction of protective works. This request referred to the raising of water levels in the

² Appendix V contains an overview of the role of the Canada-United States Boundary Waters Treaty of 1909 and the IJC in the relations between the two countries. The difference between an application and a reference to the IJC is explained there.


⁴ A detailed explanation of the U.S.A. claim including the formula suggested for compensation is given by Bloomfield and Fitzgerald, op. cit.
international section of the main stem and possible flood damages to the Maine side of the river.

Canada and New Brunswick denied the U.S. claim, but a settlement was finally worked out outside the IJC, by which Maine obtained the option to purchase and use a fixed amount of power. 5

After the Grand Falls development, which produced 63 megawatts, due to a combination of economic factors there was no further power development until the 1950's. Then in 1953 the Tobique Dam was completed with a 20 megawatt rating, followed in 1958 by the Beechwood dam on the main stem of the river, with a projected total capacity of 112.5 megawatts. These projects were partly the result of studies and recommendations by the IJC, following a reference to the Commission by the U.S. and Canada governments "to determine and recommend, in its judgement, what projects for the conservation and regulation of the waters in the Saint John system...would be practical in the public interest." 6

As well, following a recommendation of the Commission, action was taken by both countries to authorize the interconnection and the export and import of electric energy. With the completion in 1968 of the first three units of the Mactaquac dam in the main stem of the Saint John a few

5 Ibid.
kilometres upstream of Fredericton the total installed capacity of the SJRB has been raised to close to 650 megawatts.

However, development of the Dickey-Lincoln School site in the Upper Saint John in Maine, also recommended by the IJC, despite strong support by the U.S. Army Corps of Engineers (the agency primarily responsible for the study), could not go ahead because of the opposition by private electric power utilities in New England to what would be a government enterprise. This site alone, if developed, would have a total installed capacity of 830 megawatts.

Waste Disposal

Pollution in the Saint John River Basin is an old problem. Already in 1912 when the governments of the United States and Canada asked the newly created International Joint Commission to investigate water pollution problems along the common frontier, the Commission found the international reach of the river between Edmundston and Grand Falls to be polluted. It attributed the water quality problem in large measure to the potato-starch factories along the river and, to a lesser degree, to sewage effluents from towns on the banks of the river. In 1918 the Commission recommended some institutional arrangements to remedy the situation, which were largely ignored by the two governments.\footnote{International Joint Commission, 1918, \textit{Pollution of Boundary Waters - Report of the Consulting Sanitary Engineer upon Remedial Measures}; March 8, 1916. Washington, D.C.}

Since then the pollution situation has steadily
deteriorated throughout the basin. Heavy waste loads are discharged into the river by pulp and paper mills and food processing industries; unsuitable farming practices in the potato-growing areas have produced serious soil erosion problems and added to the worsening of water quality; finally, improperly treated domestic wastes are discharged into the main stem of the river and its tributaries.

The effect of these various sources of effluents can best be visualized by looking at Figure 2 and referring back to Figure 1. It can be seen that upstream of Edmundston the water of the main stem of the Saint John River is almost of pristine quality. Its quality drops only slightly at Fort Kent, due to discharge of municipal and starch factories' wastes.

The sudden drop in water quality begins at Edmundston-Madawaska, and more precisely where the Madawaska River meets the Saint John. From here down to Grand Falls dissolved oxygen (DO) levels frequently approach zero. The major source of pollution in this section and indeed in the entire basin is the Fraser Companies, which as we have seen, are a Canadian firm having a pulp mill in Edmundston (N.B.) and a paper mill in Madawaska (Maine); pulp is pumped across the river to the Madawaska mill. In 1970 the pulp mill was discharging over 300,000 pounds of BOD per day (estimated to be equivalent to that of a population of about two and a half million people), while the paper mill (U.S.A. side) was discharging 130,000
FIGURE 2  EFFECT OF POLLUTION ON OXYGEN LEVELS IN THE SAINT JOHN RIVER
pounds of BOD/day. In comparison with the wastes being discharged by the Frasers' complex the other waste point-sources discharging into the international section of the Saint John were relatively insignificant. However, because this section of the river consists essentially of the long headpond of the Grand Falls dam where wastes have been deposited at the bottom of the reservoir since Frasers began operation, and because of the discharge of wastes from McCain Foods Limited (on the Canadian side) into the headpond just above the dam, DO levels in this reach of the river are even lower.

From Grand Falls down to the mouth of the river in Saint John the main stem of the river flows entirely in Canadian territory. In this lower basin a sizeable number of large industrial and municipal waste sources discharge thousands of pounds of BOD per day directly into the river or into Canadian tributaries. These include McCain Food Processing (20,000) at Florenceville, St. Anne Pulp and Paper Mill (8,000) at Nackawic and Irving Pulp and Paper (150,000) at Saint John, among the industrial sources. Fredericton (5,000) and Saint John (11,800) are the larger municipal sources. The effects of the Beechwood and Mactaquac headponds on DO levels in the river, while not as dramatic as in the case of the Grand Falls dam, is nonetheless significant, due again to the presence of decaying organic matter in the reservoirs.

* These figures refer to pounds of BOD per day discharged into the river, not to the raw BOD of effluents before treatment. Figures are taken from the Acres (1971) and Montreal Engineering (1970) reports mentioned in note 8.
From the above description it becomes clear that pollution of the main stem of the Saint John and especially of the international section originates primarily from Canadian sources. With respect to transboundary pollution the situation is reversed. Except for a relatively minor siltation problem in the Big Black River flowing from Quebec into Maine (Figure 1), water quality problems in the Saint John River tributaries crossing the boundary originate almost entirely in Maine. Among these tributaries the Aroostook, the Presque Isle and Meduxnekeag are severely polluted.

The Aroostook River drains a large area in Maine and is used for waste disposal by several municipalities and food and starch processing plants which together contribute some 70,000 lbs of BOD to the river. At its junction with the Saint John at Tinker it is estimated that the average BOD of the Aroostook is 16,000 lbs/day, but this figure may change considerably due to the varying discharge of the Tinker Dam on the Aroostook and the seasonal nature of the industries. The detrimental effect of the Aroostook on the Saint John cannot be clearly seen on Figure 2, because it is largely compensated for by the relatively clean waters of the Tobique River, a Canadian tributary which joins the main stem a short distance downstream.

The Presque Isle Stream is also used in Maine to carry domestic wastes (from Easton and Mars Hill) and industrial effluents (Vahlsing Inc., and Maine Sugar Industries). The total BOD discharged to the stream is of the order of 56,000 lbs of BOD per day, but again depending on the seasonal operation of the industries this figure may vary widely. In the summer of
1968, for example, this tributary added an estimated 200,000 lbs of BOD per day to the Saint John. Fish kills have occurred several times along the entire length of the stream.

The Meduxnekeag is used in Maine to carry wastes totalling 12,000 lbs of BOD per day from the town of Houlton and the A.E. Staley Starch Manufacturing Company. Because these sources are located about 16 river kilometres above the international border, in periods of low flow the section of the Meduxnekeag between the border and Woodstock where it joins the Saint John is often seriously adversely affected, although perhaps not as much as in the case of the Presque Isle Stream. Again, relatively high treatment of the wastes would be required to keep the N.B. section of the river from being polluted in periods of low flow.

Several partial and basin-wide studies have pointed out that the most urgent water management problem in the Saint John River basin as a whole, and in the international section and Presque Isle Stream-Aroostook River sub-basins in particular, is the disposal of wastes by industries and municipalities, which is preventing or limiting many other desirable uses of these waters.\(^{10}\) This is not surprising considering that between 750,000 and 1,000,000 lbs of BOD per day are being generated by

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\(^{10}\) In addition to the Acres and Montreal Engineering consultant reports prepared for Canadian agencies, two of which have already been mentioned, other reports have been prepared by the Edward C. Jordan Company for the Northern Maine Regional Planning Commission as, for example, *The Northern Maine Regional Treatment System River Basin Planning Phase*. Project IGA 00021 for the Water Quality Office of the Environmental Protection Agency. April 1972.
raw wastes produced by all industries and municipalities throughout the basin. Most of this waste is being discharged untreated into the Saint John River basin, including the estuary in the Bay of Fundy. Of this total amount more than half is being discharged within the international part of the basin.\footnote{In a broad sense, the whole basin is international. However, from the perspective of the 1909 Boundary Waters Treaty (Appendix V), only the rivers and lakes forming the international boundary plus the tributaries which cross the boundary, plus the tributaries discharging to, and upstream of, the boundary waters are international.}

The Quebec contribution to water pollution in the SJRB is relatively insignificant at this time. New Brunswick is by far the worst polluter of the main stem of the river and especially of its international section, while Maine is responsible for practically all the pollution of tributaries crossing the boundary. However, while severe pollution of the tributaries is a relatively recent phenomenon, starting approximately in the 1950's, pollution of the international section by the Fraser Companies is an old story dating to 1917.

The H.G. Acres study, despite being fairly theoretical, was able to show quite clearly that as far as the main stem of the river between Edmundston and Mactaquac is concerned, the Frasers' waste discharge is such that even if advanced waste treatment is provided for all other sources (municipalities and industries) there will be no significant improvement in the quality of the river, as long as that company continues to discharge raw wastes into the river.

As far as the transboundary tributaries are concerned, the
most difficult pollution problem to cope with is that of the Presque Isle. This stream has such a small assimilative capacity that the two industries discharging wastes into it would have to provide extremely high levels of conventional treatment in order to keep the stream at acceptable DO levels. The alternatives are either to go into a land disposal system (which Vahlsing Inc. has already attempted, but apparently unsuccessfully) or to transfer the wastes to the Aroostook sub-basin, which has a much higher assimilative capacity. This last alternative was being studied in 1971 by the Northern Maine Regional Planning Commission.  

SJRB Pollution: Intranational and International Negotiations

From the point of view of economics the Saint John River basin is a common property resource. This means that the negative and positive effects (externalities) of certain water uses, such as power generation and waste assimilation, are passed on via the river system from one economic unit to another. In the case of the Saint John the relevant economic units are Quebec and New Brunswick in Canada, and Maine in the United States. Of course, we could break down these economic units even further by taking into consideration counties and individual firms and municipalities as well as consumers.

See, for example, the E.C. Jordan Company report cited in note 9 supra.
The way each of the economic units reacted with regard to the two most serious pollution problems in the basin, namely the Presque Isle Stream transboundary pollution and pollution of the international section of the Saint John by the Fraser mills is illustrative of their intranational and international problem-solving approaches and styles, and particularly of the way they choose to tackle difficult pollution problems.

The Presque Isle Stream Affair

Pollution of the Presque Isle Stream became a widely publicized affair in North America when in the summer of 1968 residents of Centreville, New Brunswick, built a dam on the stream a few metres downstream of the international border, forcing the polluted water to back up into Maine. The cause of the pollution problem was easily traced to two industries located on the banks of the Presque Isle in Maine - Vahlsing, Inc. and to a lesser extent Maine Sugar Industries.

The controversy actually started some years earlier when the two industries applied for and were given permission to discharge wastes into the Presque Isle, a stream having both a naturally small assimilative capacity and, according to Maine's law, the second highest water classification.

Maine's Approach to Water Pollution Control: Applications to discharge wastes into the stream were necessary because since 1951 the State of Maine has had a programme of pollution control that consists essentially of a permit system for new waste discharges and stream classification. The classification of a stream is based on the water quality necessary for desired uses.
There are four standards for the classification of fresh surface waters:

- Class A, the highest classification, indicates that the water body is suitable for bathing and domestic water supply with only chlorination. No sewage or other wastes may be discharged or dumped into the water body.

- Class B, the second highest classification, has two sub-classes: B-1, suitable for recreational uses and domestic water supply after adequate treatment. Treated municipal and industrial wastes can be introduced into such waters if they will not lower its classification; B-2, suitable for uses as under B-1, but minimum DO and coliform requirements are less stringent than those for B-1.

- Class C, the third highest classification, waters suitable for boating, fishing and other uses except potable water supplies and swimming.

- Class D, the lowest classification, water primarily devoted to the transportation and assimilation of municipal and industrial wastes without creation of a public nuisance.

The Presque Isle Stream was classified "B-1" and "B-2" in 1955. Under the statutes, prospective waste dischargers to this and any other water body in the state are required to obtain a license to discharge wastes into the stream from the Water Improvement Commission, (WIC)¹⁴ which, after a hearing, determines whether the discharge, either of itself or in combination with other existing discharges to the stream will not lower its classification.

Thus, in 1960, Vahlsing, Inc. required and was granted a license to discharge potato processing wastes under the

¹³ This summary of Maine's surface water classification is taken from Maine Revised Statutes of 1964, Title 38, as amended.

¹⁴ In 1969 the Water Improvement Commission became the Water and Air Environmental Improvement Commission (WAEIC), and in 1971 the latter was succeeded by Maine's Department of Environment Protection (DEP).
condition that the industry would provide adequate waste treatment. Although Vahlsing did eventually build a treatment system consisting essentially of an oxidation lagoon, the system never worked properly, because it was constantly being exceeded in its holding and treatment capacity, due to a progressive increase in potato processing production which reached tenfold the initial production.

Thus, the plant began to affect the Presque Isle soon after it started operation. Fish kills and nuisance conditions occurred in the town of Easton, downstream from the plant as early as 1962. As a result, the WIC issued an "Order to Abate" in September of 1963, with a date of compliance of August 31, 1964. However, despite the fact that another lagoon to handle the additional wastes was built by Vahlsing, the company was reported by the WIC to have violated the stream classification (B-1) 31 times between 1962 and 1966. In fact, as far as DO is concerned the stream often did not even meet "D" standards.

WIC action during this four-year period was limited to written requests to Vahlsing, Inc. to comply with the classification and to ask, in the summer of 1965, the State's Attorney General, who in fact holds the regulatory power in Maine, to take action against the firm to correct the pollution

15 Robert C. Zimmerman, 1969, Pollution of the Prestile (Presquile) Stream, Maine-New Brunswick: domestic politics and international repercussions. McGill University, Montreal. (mimeo). This is probably one of the most complete accounts of the Presque Isle controversy.

16 Ibid.
and nuisance conditions. An outside engineering consultant was called upon by the Attorney General to render an opinion on Vahlsing's treatment system and rendered an opinion favourable to Vahlsing.  

In any case, in February 1965 the WIC efforts were thwarted as a result of a bill introduced into the Maine legislature (the classification of waters in Maine is the responsibility of the Legislative Assembly) to downgrade the Presque Isle Stream to Class D. The alleged purpose of the Bill was to allow a sugar-beet refinery to be constructed in the Presque Isle basin and discharge its wastes into the stream. The Bill did become law, thus conferring legality on the existing water quality condition of the Presque Isle. A license was then issued to Maine Sugar Industries, Inc. to discharge wastes into the stream after adequate treatment.

Some additional facts about the downgrading of the Presque Isle should help in understanding Maine's legal and legislative approach to water quality management at the time. First, the legislative action, said to be a temporary measure needed to bring in industry, which would create much-needed jobs and revenues for the economy of Aroostook county, was inconsistent because the same Legislative Assembly had refused to downgrade the Presque Isle in 1959, which would make it unnecessary for the Town of Mars Hill to build an expensive sewage treatment

\[1\] Ibid. According to Mr. Zimmermann, there was general consensus that the consultant's report "was not up to professional standards."
plant, presumably because the legislators felt that such a downgrading would undermine the State's stream classification programme.18

Second, Vahlsing, Inc., which at least theoretically, was still under the "Order to Abate" issued by the WIC, was owned by the same man who had majority shares and management control of the new industry, and who as we have seen had not been complying with the requirements of his firm discharge license. On the other hand, the State of Maine had a major responsibility for and interest in the success of Maine Sugar Industries, because of its financial backing and large loans to the enterprise.

Perhaps because of new federal water quality legislation (to be discussed below) the Maine legislature in early 1967 upgraded the Presque Isle to Class C. A comprehensive water act was also passed by the legislature which, among other things, provided that Class D waters should be assigned only where a higher water classification cannot be attained after utilizing the best practicable treatment technology. However, under the same act, provided that the waste discharger adopts a schedule of compliance with the receiving water body classification, it cannot be deemed in "violation of a classification or

18 However, when the legislature referred the question to the Supreme Court of Maine for opinion, the Court decided that there was no conflict between a lower classification for the Presque Isle and Meduxnekeag rivers and the Boundary Waters Treaty of 1909 (see Appendix V) because the downgrading of the classification "in no way create or authorize pollution" to the injury of health or property in Canada. David Olmstead, 1970, The Prestile Affair: Legal Problems of Pollution in an International Drainage Basin - Colloquium on Law and the Environment - Professor Frank Grace. (mimeo).
reclassification adopted on or after January 1, 1967, at any time prior to October 1, 1976.

Furthermore, non-compliance with the schedules laid down by the 1967 act may only bring action by the Attorney General in the Superior Court of the county where the violation occurs, in this case Aroostook county. The WIC can only request the Attorney General to prosecute a waste discharge if it can prove that its discharge constitutes a substantial and immediate threat to health and safety.

Of course, the official upgrading of the Presque Isle to Class C had no effect on the actual condition of the stream. Vahlsing, Inc. did build a dam immediately upstream of the waste lagoons to improve the discharge regime of the stream. However, this measure turned out to be totally inadequate when a prolonged drought in the summer of 1968 affected most of the Saint John River basin. Thus, the coincidence of this natural event with an exceptionally large volume of wastes discharged by Vahlsing, Inc. (and to a lesser degree by Maine Sugar Industries, which was then processing sugar beets), led to the worst fish kills in the history of the Saint John River basin and perhaps to one of the most publicized incidents of pollution between the U.S.A. and Canada. The reason for all the public attention was actually, as we had already mentioned earlier, the damming of the Presque Isle by residents of Centreville, New Brunswick.

Apparently under pressure from the WIC and various environmental groups from both sides of the border, the Attorney General finally decided to initiate a nuisance suit against the
two plants before the Aroostook County Superior Court.

It is somewhat surprising that none of the Maine or New Brunswick residents of the Presque Isle basin affected by the pollution attempted to sue the polluting industries in Maine Courts. According to the Common law and Maine Statutes, Presque Isle riparians had the right to initiate such a suit, while by virtue of Article II of the Boundary Waters Treaty, this right appears to be extended to New Brunswick residents as well.†

According to existing statutes, as long as the two firms held to a timetable for implementation of waste treatment facilities, they could not be prosecuted for violating the stream classification. Furthermore, even the nuisance suit was problematic, because the firms could argue that the discharges had been inadvertent and that the suit was discriminatory, since there were other serious pollution problems in Maine (including fish kills) on which the Attorney General had taken no action.‡

The only court action so far (1972) has been to grant the State the right to inspect Vahlsing's treatment facilities. The suit against Maine Sugar Industries was dropped in 1969 and the suit against the potato processing plant is still pending. This

† See Appendix V for comments on this Article. Actually, when the Supreme Court of Maine issued its opinion on the legality of Maine's water classification, it added that the injured parties in New Brunswick were granted the right to sue and make claims in Maine in proper proceedings under Article II of the Treaty. Zimmermann, op. cit.

‡ Zimmermann, op. cit. It appears that other serious pollution problems occurred simultaneously in the Meduxnekeag, and in other parts of the SJRB, although whether there were also fish kills could not be determined from the available records.
lack of action on the part of the county court is not surprising for many observers of Maine politics, because county courts are known to be reluctant to take a tough stand against local industries. In addition, since Vahlsing was already obliged by the 1967 state water act to comply with an abatement schedule, the county superior court might have decided to wait until a suit could be brought against the firms for non-compliance with the abatement schedule. It is possible, however, that the Court's inaction may have been prompted by a related development. This consisted of a proposal by the Northern Maine Regional Planning Commission (NMRPC) to plan and implement a regional waste treatment system for the Aroostook River and Presque Isle Stream sub-basins.

The Northern Maine Regional Treatment System: Perhaps because the Aroostook and Presque Isle basins had at the same time, on the one hand the worst pollution problems and the most promising economic development potential in Aroostook County, the NMRPC\(^2\) decided to concentrate its initial efforts in developing a regional waste treatment system for these two sub-basins, which would hopefully at the same time solve the Presque Isle pollution problem and create the opportunity for new industries to come to the region. The regional system finally

\(\text{\textsuperscript{2}}\) The Commission, which was created in 1967, had as its main responsibility the preparation of regional, economic and land use plans for the county. In addition, it was involved in assisting local communities in obtaining government grants and carrying out water supply and waste disposal planning and development.
proposed by the Commission consisted essentially of a combined treatment-transport system linking the Presque Isle and Aroostook basins. The system was said to present considerable advantages over alternative systems and particularly over individual community treatment facilities (including the joint treatment of municipal and industrial wastes in a single plant, primarily because of the economies of scale involved).

In addition, the regional system concept was considered particularly advantageous to industries because they would benefit from large federal grants made available by the Clean Water Restoration Act of 1966 (Public Law 89-753) for cases where two or more communities join in a regional treatment system.

However, the success of the regional system was to a large extent dependent upon whether or not the industries, or at least the most important ones, would participate in it. In 1972 it became clear that at least two industries might not join the system. One, 4potato Services, Inc., was reluctant to participate in it because it appeared that new federal legislation, if enacted into law, would virtually eliminate the subsidies made available to industries joining such systems. The other, Vahlsing, Inc., had already invested a considerable sum of money in its own oxidation lagoons and spray irrigation system and, although the system was obviously not working properly, the company had until 1976 to comply with existing regulations. It is possible, however, that the reason they did not want to join the regional system was due more to perceived economic advantages for them over their smaller competitors, who
could not afford to go it alone. In addition, they certainly did not view favourably new food processing industries coming into Aroostook County either.

There were also some legal questions associated with the regional system concept. The proposed interbasin transfer of clean and dirty water between the Presque Isle and Aroostook basins was possibly in violation of both riparian laws in the State of Maine and the 1909 Boundary Waters Treaty. Furthermore, there was also the possibility that the regional system, whose functioning was essentially based upon management of a water body's waste assimilative capacity, would be illegal under forthcoming federal legislation, which was based on different principles, those of effluent standards and waste treatment technology, leading ultimately to the complete elimination of pollutant discharges.

Thanks to a large extent to a grant from the Federal Water Quality Administration (FWQA) the NMRPC was able to complete in April 1972 a detailed plan for the regional treatment system. What remained to be done was to gain the financial support of the industries and the necessary legislative approval for an administrative authority to manage the regional system.

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22 This treaty is reviewed in Appendix V. See also the last section of this chapter.

23 This legislation was actually approved in October 1972 as The Water Pollution Control Act Amendments - PL 92-500.

24 The FWQA became the Environmental Protection Agency (EPA) in July 1970.
United States Intervention and International Negotiations:

The guidelines issued by the Federal Water Quality Administration in 1966 (under the Water Quality Act of 1965) recommended that states adopt, by June 1967, water quality standards for their inter-state (and "international" waters), as well as plans to implement and enforce these standards, which would then be approved as federal standards. If a state would fail to adopt adequate criteria and plans the federal government was authorized to take action to establish such standards.

Thus, it was probably in compliance with these guidelines that Maine's WAEIC conducted a water quality survey of those waters (including the Presque Isle Stream) and recommended that they be upgraded to Class C.\(^25\) Other than that, there is no public record to show that the U.S. federal government intervened in any significant way in the Presque Isle controversy until 1970.\(^26\)

It appears that the first direct intervention by the federal government occurred only after the State Department received an aide-memoire and a formal brief on the incident in late January 1970 from the Canadian Department of External Affairs. The aide-memoire requested the U.S. Government to

\(^{25}\) WAEIC, 1967, Report on reclassification of interstate streams (draft).

\(^{26}\) Zimmermann, 1969, op. cit., who investigated the incident from soon after it happened until June 1969, could not find even minimal evidence "to show that the U.S. State Department exerted pressure on Maine to avert a possible international dispute. A similar point is made by Olmstead, op. cit., regarding both U.S. intervention and IJC involvement."
proceed as soon as possible to take all necessary action..."to have the State of Maine return the water quality classification of the Prestile Stream to the standards existing prior to 1965, thus causing an abatement of the pollution level in the Presquile in New Brunswick."

In response to the above mentioned aide-memoire, the State Department forwarded another aide-memoire, in which it reported that discussions on the Presque Isle between the U.S. Federal government and the State of Maine were in progress, and that they would keep Canadian authorities fully informed as to the actions that the United States would take in this regard.

However, it was only late in 1970 that the Canadians were informed, via an aide-memoire from the Department of State, of negotiations between the Environmental Protection Agency (EPA) and Maine's Water and Air Environmental Improvement Commission on concrete measures to raise the classification of the Presque Isle, and about the large grant to the NMRPC for carrying out the regional treatment system study. Evidently, at this point EPA became the federal agency directly responsible for the Presque Isle affair, although according to U.S. laws the Corps of Engineers also had jurisdiction in the matter.

The first meeting between Canadian (federal and provincial) and American (state and federal) officials concerning the Presque Isle problem took place in Boston on December 1, 1971, more than three years after the famous 1968 summer fish kills and damming incident.

At the Boston meeting the Canadian position was that

the stream classification and water quality standards on the Prestile Stream in Maine
are not high enough to meet the terms of the 1909 Boundary Waters Treaty, Article IV, between the U.S. and Canada and the scheduled compliance date of 1976 is much too far in the future.

In view of these demands, the representatives of Maine's Environmental Improvement Commission (EIC) requested Canada to specify what in-stream quality was desired so as to determine what controls could be effectively applied. EPA officials in turn promised to support the efforts of the EIC with respect to upgrading the Presque Isle classification and imposing appropriate regulatory controls on the polluting industries. It was finally agreed that Canadian officials would provide to their U.S. counterparts a set of desired water use designations and criteria for the Presque Isle Stream early in 1972.\(^2\)

In February 1972 Canadian officials transmitted to the U.S. EPA and Maine DEP a set of specific water criteria and desirable uses which they wished implemented for the Presque Isle. The Canadian note also emphasized the importance of Maine adopting a detailed schedule for upgrading the quality of the water of the stream.\(^2\)

By September 1972 United States' reaction to the Canadian

\(^2\) Paper prepared by Mr. Albert J. Erickson, "Prestile Stream (U.S.) - Presquile River (Canada) - Pollution Problems of Transboundary Waters - Meeting of December 1, 1971."

\(^2\) Letter dated February 1, 1972 from Mr. R.C. Hodges, Environment Canada, to Mr. Albert J. Erickson, EPA. A copy of the same letter was sent from Mr. Leonce Chenard, Deputy Minister of Fisheries and Environment, N.B. to Mr. William Adams, Commissioner, Department of Environmental Protection, Maine.
demands consisted of an in-depth review of the whole Presque Isle issue by Maine's DEP, which resulted in that department reaching the following conclusions: (a) although there were several alternative approaches to the Presque Isle pollution problem, none of these approaches indicated a plan which did not have some physical, technical or legal implementation problem, and consequently an in-stream water quality standard higher than the existing Class C was probably not feasible to achieve, at least in the short term; (b) nonetheless, the department would do everything within its power to see that this classification is not violated while a solution more definitive, and acceptable to Canadian authorities was being sought.

Fraser Mills Pollution: A Stubborn Problem

As we have seen, water pollution in the international section of the Saint John River is an old problem caused almost entirely by the Fraser Companies mills located in Edmundston, New Brunswick, and Madawaska, Maine.

In contrast to the Presque Isle problem, this boundary pollution, despite the fact that it is the worst pollution problem in the basin, was never the object of strong public protests and pressures for cleaning up on either side of the

2 We have already referred to some of these problems in the previous pages.

30 This account of the activities of the DEP following the Canadian requests regarding the Presque Isle is taken primarily from a report dated August 15, 1972, signed by Mr. W. Adams, DEP Commissioner, and sent to Mr. Walter M. Newman, Chief of the Water Branch of EPA, Region I, Boston.
boundary. One likely reason may have been that most of the people presently living in this portion of the basin have not known this section of the river to be in any other state. Other possible reasons will become evident as this section unfolds.

New Brunswick's Approach to Pollution Control: The New Brunswick Water Authority was established in 1958 to administer the provincial Water Act. This Act gives the Authority wide responsibilities including that for control and abatement of water pollution within the province. Since 1959 it has required all new industries to comply with certain waste discharge regulations which are essentially decided on a case-by-case basis. Again, as opposed to the case of Maine where classification of waters and discharge license approval are considered not only statutory matters but important enough to be the prerogative of the Legislative Assembly, in New Brunswick these matters are left to the discretion of the administration, and more precisely, the Water Authority. There are, as is also the case in Maine, the recourses to the Common law, which as is well known is a remedial system which can be used only if persons whose rights have been breached actually bring lawsuits. In the case of New Brunswick, common law "regulation" has been even less effective with regard to water pollution, for it has happened several times that laws have been passed granting industries immunity from suits for nuisance caused by their
It appears that when in 1966 the reservoir above the new Mactaquac dam began to be filled, there was concern that it would become nearly as polluted as the Grand Falls headpond upstream. One of the measures taken by the provincial government to cope with the problem was to pass an amendment to the Water Act extending some of the subsidies for construction of waste treatment facilities to industries.

Thus, in 1967 the Water Authority started negotiations with industries upstream from the new Mactaquac dam to arrive at mutually satisfactory waste abatement levels and timetables for construction of treatment facilities, as well as agreements on the amount of government subsidies to the industries' pollution abatement programmes.

As a result of these developments, in late 1968 the Water Authority was able to reach agreements with Fraser Companies, Ltd. at Edmundston and McCain Foods, Ltd. at Florenceville on effluent limitation requirements and timetables for construction of treatment facilities. In the case of Fraser's, the agreement, in addition to providing for considerable financial assistance to the company towards construction of treatment plants, also stipulated that the company should take measures to convert to a new production process, because this was the only way it could eventually meet the effluent requirements specified in the

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31 For example, the Irving Pulp and Paper Ltd. Act, S.N.B. 1959, c. 89, which granted these companies such immunities; as well, the Judicature Act, R.S.N.B. 1952, section 35, restricted the right to seek an injunction against a polluting industry.
document. If one considers that Frasers’ was going through a difficult financial crisis at that time, this agreement should be considered an indication of the determination of the provincial authorities to curb pollution in the Saint John River. One possible factor influencing the provincial government’s strong stance towards Frasers’ at this time might have been the fish kills which occurred in the summer of 1968 and again early in the winter of 1969, and especially the fish kills which occurred at the salmon culture station below the Mactaquac dam.

In November 1970 a new government came to power in New Brunswick. In the Spring 1971 session of the provincial Legislative Assembly a Bill (Clean Environment Act) was introduced which asked for wider powers and responsibilities in environmental management for the newly created Department of Fisheries and Environment. Although the original intent of the legislation was to "allow for court action and the application of fines and penalties where it is obvious that there is no

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32 The most important requirements were: (1) reduction of the waste load from approximately 302,000 to 60,000 lbs of BOD per day by December 31, 1971; (2) elimination of all river storage of wood; (3) reduction of suspended solids, toxicity and foam.

33 On March 31, 1969, an addendum to the agreement was signed between the two parties specifying that the company should strictly comply with toxicity parameters (thought to be the main cause of fish mortality) recommended by the federal Department of Fisheries. Federal involvement in the Frasers' affair is discussed in the next section.

34 Proceedings of the Legislative Assembly of New Brunswick, session of 1970. These objectives of the new legislation had actually been formulated by the previous government.
intent to conform with the Act,"34 the Bill actually passed did not make court action any easier by introducing, for example, provincial effluent or in-stream water quality standards. Instead, the Act provided for even broader ministerial discretion in administering its provisions. In fact, some members of the opposition party criticized the new Act, pointing out that it was equivalent to giving the provincial government a "blank cheque" in the area of environmental control enforcement.35 This meant that although the new Act permitted most of the measures necessary for developing and enforcing a comprehensive waste disposal management programme, it was only as efficacious as the agency administering it.

By this time it had become clear that the Fraser Companies would not be able to meet the December 31, 1971 deadline set in the 1968 agreement for reduction of the most important effluent parameters. The reason for not meeting the terms of the agreement was not so much because the treatment facilities would not be operational by that time, but rather because the required effluent reduction could only be achieved with the conversion of the pulp mill to a new process, which would require investments of the order of $40 million, and to this the Company was not ready to commit itself.36

Actually, the Fraser Companies were not the only industry in the Saint John River Basin behind in their commitment to

35 Ibid.
pollution abatement. Irving Pulp and Paper and MacMillan-Rothsay were even further behind. However, as opposed to Frasers', these companies were not receiving the large government subsidies that Frasers' were, nor were they nearly as heavy waste dischargers.

In any case, on May 4, 1972, an agreement between the Company and the provincial government was signed, replacing the 1968 agreement and its 1969 amendment. This new agreement provided for new government financial aid to the Company, which in turn committed itself to have in operation the treatment facilities by the end of 1972. However, the Company was only willing to commit itself to "have a new [production] process in operation at the earliest practicable date, which shall be dictated by the Company's ability to raise the required capital...". Thus, neither were deadlines set for conversion to a new (most likely Kraft) process, nor were penalties stipulated for non-compliance with the agreement's provisions.

**Federal Involvement:** Primary responsibility for water management in Canada lies with the provincial governments. However, the federal government has, under the BNA Act, responsibilities for navigation, fisheries, international and interprovincial waters.

By means of the Fisheries Act\(^3\) the federal government has had an active role in the Saint John River Basin. It has acted to protect fish stocks, particularly salmon, through many programmes such as the construction of works to allow the

continuous passage of fish in dam sites and of fish hatcheries, as well as through direct intervention in the regulation of effluent discharges which might affect the fisheries.

Thus, the federal Department of Fisheries was especially concerned with pollution problems in the Saint John because among other things it had spent close to $3.7 million on a salmon culture station and associated facilities at the Mactaquac dam to keep the Atlantic salmon runs in the river. Consequently, the Department made efforts to protect the fisheries and its investment by making available to the industries upstream of the dam a special financial aid scheme known as the "Fish Hatchery Fund." Although the N.B. Water Authority was given responsibility to administer this fund together with its own funds, the Fisheries Department monitored its application, and thus when it learned that Frasers' were not complying with their commitments under the 1968 agreement it decided to intervene. The Minister of Fisheries and Forestry sent letters to Frasers' and other companies upstream of the Mactaquac dam, expressing his concern over the slow progress of these companies in reducing their effluents discharges, and threatening to use the statutory powers of the Fisheries Act to the fullest extent possible to see that pollution from these
industries was reduced to acceptable levels.³⁴

The Minister of Fisheries also wrote to the Minister of Fisheries and Environment of New Brunswick stating that since Frasers' did not meet the terms and conditions of the 1968 agreement, federal grants for the construction of treatment facilities were being halted. However, he did propose that a new agreement be worked out in such a way that the Company would commit itself to adequate pollution abatement actions. Finally the Minister suggested that, if necessary, he would consider closure of the mill for non-compliance to adequate pollution control.³⁵

The Fraser mill was never closed but the federal government did stop payment of the grants for the construction of treatment facilities, to which the Company responded by halting construction of the facilities. As already indicated, the stalemate was broken when the provincial authorities intervened, promising the Company additional funds, which resulted in the new agreement between the province and the Company, and the eventual reinstatement of the federal grants.

Joint Federal-Provincial Initiatives: On June 30, 1970 the

³⁴ Letter from Minister Jack Davis to Mr. J.H. Heur, President of Fraser Companies, dated May 13, 1971. The Minister might be referring to new legislation being considered in Parliament to establish effluent regulations for the pulp and paper industry. These effluent regulations were actually passed by Parliament in November 1971. Frasers' would be particularly affected by these regulations if it changed its production process. For old mills the regulations are not very stringent.

federal Minister of Energy, Mines and Resources and the New
Brunswick Minister of Natural Resources signed an agreement for
cooperation in comprehensive planning in the Saint John River
Basin.

This Canada-New Brunswick agreement was conceived within
the managerial framework set forth by the Canada Water Act.40
This Act represented to a large extent an attempt by the
Department of Energy, Mines and Resources to substitute a
managerial strategy for a regulatory strategy in Canadian
efforts to curb water pollution.41 It put great emphasis on
federal-provincial cooperation in water quality planning and
management. It allowed the federal government the use of certain
water quality management tools, such as effluent discharge fees
and effluent treatment charges. It also gave the federal
government the option of acting unilaterally, if all reasonable
attempts to achieve cooperation with the provinces failed on
certain pressing problems, such as serious pollution of
inter-provincial and boundary-transboundary waters.

The Canada-New Brunswick agreement, however, was for joint

40 Canada Water Act, S.C. 1969-70, c. 52. The agreement actually
preceded the Act by a few weeks, however, it was negotiated and
formulated under the spirit of the Act. Report of the Saint John
River Basin Board, 1975, A Plan for Water Management in the

41 For an in-depth study of the evolution of those two
strategies in Canadian federal policy, and especially the
political and bureaucratic struggle behind the Canada Water Act,
see R. Brian Woodrow, 1977, The Development and Implementation
of Federal Pollution Control Policy and Programmes in Canada,
1966-1974. Department of Political Studies, University of Guelph
(draft).
planning only. Implementation of plans and water quality management proper was left for future agreements. Nonetheless, the agreement called for an interim water quality plan to be prepared within four months of the date of signing of the agreement. The main purpose of this interim plan was to recommend a specific set of measures which would significantly improve the pollution problem in the Saint John River basin before completion of the four-year comprehensive planning agreement.

The interim plan was completed on schedule by the Saint John River Basin Board, the joint federal-provincial agency created to carry out the agreement, and in January 1971 was approved by the responsible federal and provincial ministers. Among the recommendations made by the Board there was one dealing specifically with the Fraser Companies at Edmunston. On the one hand this recommendation asked for a more stringent BOD discharge limit (at least 90% reduction) for the mill than that stipulated in the existing agreement between the province and company; on the other hand, it extended the deadline for compliance to the same date in which the SJRB agreement would terminate.

Since the SJRB Board had no enforcement powers, it had to rely on provincial and federal regulatory agencies for implementation of its recommendations. Nonetheless, because the most important federal and provincial regulatory and resources management agencies were represented on the Board by high ranking civil servants, its recommendations should carry not only the weight of the technical calibre of its studies but the
weight of the independent authority of each of its members as well.

However, when the Board issued its Second Annual Report, covering the period June 30, 1971 - June 30, 1972, it stated progress on pollution abatement was not proceeding according to the schedule proposed in the interim plan, and blamed the lack of progress on financial difficulties being experienced by both industries and small communities. In an obvious reference to the Frasers' problem, it added that older industrial plants, which depend upon export markets, could not bear the additional burden of waste treatment costs and remain competitive.

As of September 1972, only McCain Foods at Grand Falls had actually met the requirements of the Saint John River Interim Plan. Fraser Companies did set into operation its primary treatment plant and was expected to have its secondary treatment facilities operating by December, 1972, thus meeting the deadlines set in the last agreement with the provincial government. However, even with the two facilities in full operation only 25-30 percent of the mill's 302,000 BOD load would be reduced, because those facilities were designed to handle the mill's effluents after conversion to a new production process.

United States and Maine's Involvement: In May 1969, the international section of the Saint John River from Madawaska to Hamlin was upgraded by the Maine legislature from Class D to
'Class C in the Maine stream classification system.' In view of the total lack of public protest the reasons for this upgrading must be related to the 1966 federal guidelines mentioned earlier and the subsequent water quality survey carried out by the WAEIC, which recommended that this and other "international" water bodies be upgraded to Class C.

No other developments appear to have taken place on the U.S. side of the border until early 1970 when Fraser Paper Ltd. of Madawaska applied to the Environmental Improvement Commission (formerly WAEIC) for a permit to discharge additional wastes into the international section of the Saint John. Following state laws, which require that a public hearing be held before a permit can be granted, a hearing on the Company's application took place in Madawaska on September 21, 1970.

At the hearing it became clear that Fraser Paper not only had no waste treatment facilities but also had no immediate plans to construct them. Nonetheless, the Company maintained that it was going to comply with Maine's effluent regulations according to the schedule set by the legislature, i.e., October 1, 1976.

Opposition to the permit came only from a handful of Maine citizens and from a Canadian civil servant who, however, spoke against the license in an unofficial capacity. The EIC, in turn,

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43 Apparently it was also acting on these recommendations that the Legislative Assembly of Maine reclassified the waters of the St. Croix River from "D" to "C" in 1967.
stated that it was not expected to enforce the stream classification until the 1976 deadline, and that in any case they had "plenty of other work in the State of Maine to engage in without further work here." The outcome of the hearing, expectedly, was that several months later the Company was granted a discharge permit with the condition that it comply with the legal schedule for construction and operation of treatment facilities.

Fraser Paper, Ltd. entertained for a while plans to join the city of Madawaska in a combined treatment system. It gave up on the idea, however, when it learned that new federal legislation would make it pay for its portion of the cost of construction and operation of the combined system. In view of this, in 1972 the Company was exploring the possibility of transporting its effluents to the Canadian side for treatment at the Edmunston mill treatment facilities.

It appears that although EPA officials did not have any opposition to this idea, both NMRPC and Canadian officials were opposed to it. The NMRPC apparently was opposed to the idea because it saw it as a maneuver of the Company to avoid committing itself to construction of its own facilities on the

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45 As a result of a move in December 1970 by the U.S. Corps of Engineers to use the 1899 Refuse Act as a tool for effluent control, Fraser Paper had to apply for a discharge permit from that federal agency as well. It appears, however, that subsequent changes in U.S. Federal attitude and new legislation made such an application unnecessary.
U.S. side, while Canadian authorities argued that the Edmundston treatment facilities would be overloaded until the pulp mill conversion took place."

As of September 1972, the Fraser mill at Madawaska was discharging close to 50,000 lbs of BOD per day, which represented an increase of almost 10,000 lbs over the BOD daily load before its production expansion.

International Implications: The fact that the Fraser complex, although Canadian owned, has operations and discharges wastes into the Saint John River from both sides of the international border, must have an important bearing on the explanation of why not only this boundary pollution problem has not been solved, but has not even been tackled as an international issue either. This is in marked contrast with both the case of the St. Croix River, also a boundary or contiguous river (see Figure 1) and the case of the Presque Isle Stream, a transboundary or successive water course, where although the problems have not been solved either, negotiations between the two countries have been going on for a number of years now.

As we have just seen, each country has attempted to deal with the pollution situation in the international section as if it were a domestic problem. They have concentrated their efforts, whatever they have been, in dealing with the mill situated on their own side of the border, thus in practice

"" Memorandum dated September 6, 1972, from Mr. John Henderson, Planning Director, to members of the SJRB Board.
ignoring that the two mills, although separated by the river and international boundary, are in fact integrated, both in an economic and physical sense.

Under Article IV of the Boundary Waters Treaty of 1909, each side has the right to demand the other to take action against the offending company operating on its territory, yet neither has done so.

As well as in the case of the Presque Isle pollution problem, the United States and Canada have chosen not to ask the IJC to investigate the Fraser Companies problem under Article IX of the Treaty. That is, not until September 21, 1972, when Canada proposed and the United States agreed to establish at the same time a Canada-United States Committee on Water Quality in the St. John River and to forward a reference to the IJC.

The 1972 Canada-U.S.A. Saint John River Basin Agreement

On September 21, 1972 the governments of Canada and the United States through a diplomatic exchange of notes created a joint committee on water quality in the Saint John River and its tributaries which cross the international boundary. The main purposes of the Committee were said to be (1) to assist appropriate authorities in both countries to co-operate in water

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47 The relevant paragraph of that article reads: "It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." See Appendix IV for a review of this Treaty.

48 The official texts of the exchange of notes and the annex describing the purposes and organization of the Committee are included in Appendix VI.
quality planning in order to enhance the quality of water in the Saint John River and (2) to make recommendations to those authorities and to the International Joint Commission regarding the improvement of water quality in the basin.

The documents stress that the Committee should serve to enhance and not to replace existing formal and informal institutions and communication channels. They also specify that the Committee shall consist of an equal number of members from each country and will include officials from the two federal governments, the governments of New Brunswick, Quebec and Maine and also representatives of the Saint John River Basin Board and the Northern Maine Regional Planning Commission, who will represent their respective authorities.

Upon completion of its work the Committee was requested to provide a report on its activities for the International Joint Commission, and the governments of Canada and the United States as pilot and co-pilot countries of a NATO-CCMS demonstration project.

On the same day the diplomatic notes were exchanged, the governments of Canada and of the United States also forwarded a joint reference to the IJC requesting the Commission to recommend, based upon the Committee's and its own investigations, what actions and institutional arrangements would be appropriate to enhance the quality of the water in the Saint John River basin.

" North Atlantic Treaty Organization's Committee on The Challenges of Modern Society."
This chapter provides only a summary of the issues which form the case study. In chapters 5 through 10 those issues are described in much greater detail. Their interpretation is left to chapters 11 and 12.
CHAPTER 5

BOUNDARY POLLUTION: THE CASE OF THE FRASER COMPANIES

The international section of the main stem of the Saint John River between Edmundston-Madawaska and Grand Falls-Hamlin is the most polluted reach of the entire river basin (see Figure 2, Chapter 4). It is perhaps also the oldest water pollution problem in the region.

This pollution problem is caused to a very large extent by the Fraser Companies, Limited, a Canadian pulp mill located in Edmundston, New Brunswick, and its wholly-owned subsidiary, Fraser Paper, Limited, situated in Madawaska, Maine. The two facilities are connected by a pipeline which transports pulp to the paper mill across the river. The Edmundston mill was built back in 1917, while the mill at Madawaska is a modern plant built to supply the demand for fine paper of a larger U.S.A. market. Fraser Paper, Limited pays duties to the United States government on pulp imported through the pipeline.

In this chapter I shall attempt to provide in detail an account of the developments on both sides of the border relative to boundary pollution in the Saint John River basin. It will be seen, however, that this was to a large extent a non-controversial New Brunswick domestic issue, with only minor international implications.

On the other hand, the case of the Presque Isle Stream described at length in Chapter 7 was not only a very controversial issue within the United States, but caused a substantial amount of friction with New Brunswick.
Early Developments: The Role of the IJC

Already in 1912 the governments of the United States and Canada had instructed the newly created International Joint Commission (IJC) to investigate water pollution problems along the common frontier and to recommend corrective measures. The IJC found the international reach of the SJR between Edmundston and Grand Falls to be polluted and attributed the water quality problem in large measure to the potato-starch factories along the river and, to a lesser degree, to sewage effluents from towns on the banks of the river. In 1918, the Commission recommended some institutional arrangements to remedy the situation which were largely ignored by the two Governments.¹

Thus, when the Fraser Companies initiated operation in 1917 there was already a water quality problem in that stretch of the Saint John River, causing worries to government authorities. Although with the phasing out of most of the potato-starch factories the pollution situation should have improved, the waste discharges from the Fraser Companies more than offset this effluent reduction and the situation of the international section of the Saint John River steadily deteriorated.

However, attention of the governments and people of the basin was now turned towards developments of the power potential of the river, a water use which at the time, was not perceived to conflict with the use of the river for waste assimilation.

Thus, in 1950 and again in 1952, the governments of Canada and the United States asked the IJC to "determine and recommend what projects for the conservation and regulation of the waters of the St. John River System above tide water would be practical and in the public interest." 2

After undertaking the required surveys the engineering board formed by the Commission presented a report to the two Governments recommending a number of power projects and further engineering studies. Although the terms of reference seem quite broad, the board did not feel that it should investigate and report on the implications of reservoir development in the main stem of the river on its water quality. However, it had already become known at the time that after construction in the 1930's of the Grand Falls dam about three miles below the point where the international boundary leaves the river, the water quality of the boundary waters rapidly deteriorated. 3

Describing the situation in 1961, Mr. J.S. Bates, chairman of the recently-created New Brunswick Water Authority said: "The great St. John River as it enters New Brunswick from Maine is sparkling in its natural purity. The big pulpmill at Edmundston and the papermill at Madawaska turn it into a huge open sewer throughout the long headpond above Grand Falls and the serious

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3 The effects of headponds on stream quality are discussed in Chapter 4. See especially Figure 2.
effects can be traced for over two hundred miles."  

On March 16, 1960, the United States Government referred to Canada a proposal made by the Governor of Maine that a multi-purpose study of the Saint John River Basin be made by the IJC. This study would include also water quality investigations. However, in February, 1961, the Government of Canada replied by referring to the 1951-52 reference and to Canada's greater interest at that point in time in pursuing the hydropower development of the basin, and by evasively asking for more details on the proposed reference. It appears that the Department of External Affairs and other federal departments in Canada were agreeable to such a reference, but there was opposition from Mr. Hugh J. Flemming, then Premier of New Brunswick, and consequently this reference was never sent to the IJC.  

New Brunswick Politics And Pollution Control  

"Until very recently, New Brunswick would all but sell its soul for a new industry. Pollution we accepted as a necessary evil" stated Mr. Ralph Costello, publisher of the Telegraph Journal of Saint John, who was defending himself against criticism that his paper had not campaigned against industrial pollution.  


\(^\) Mr. John Hendrickson, personal communication, November 16, 1973.
There seems to exist wide agreement that political decision-making in New Brunswick has been unusually influenced by industrial groups and especially by one of them. A statement by Russel Hunt and Robert Campbell is illustrative: "If there ever was a company town covering 28,000 square miles, with a population of 600,000, New Brunswick is it; and the company is K.C. Irving Limited." To give an idea of Mr. K.C. Irving's influence on New Brunswick decision-making, it is probably sufficient to mention that, in addition to ownership of a large part of some basic sectors of the New Brunswick economy, he also owned all five English-language daily newspapers, and the most listened-to and watched radio and television stations in the province.

An account by Hunt and Campbell of how K.C. Irving tried to manipulate provincial politics to his favour is even more revealing. When in 1951 Mr. Irving went to both the Saint John Municipal Council and the provincial legislature, for approval of a bill incorporating Irving Pulp and Paper Limited, located at the mouth of the Saint John River, he asked for, among other

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9 Ibid; these facts only became widely known after the special Senate Mass Media Committee hearings starting in 1969.

10 Ibid.
things, the authority to discharge wastes into the river and immunity from any court actions founded on nuisance. Although Mr. Irving did not get exactly what he wanted written into law, he did get assurances from the provincial government that he should not worry about being prosecuted.

As should be expected, other industries in New Brunswick requested and usually got the same treatment from the provincial government, despite Mr. Irving's attempt to keep such privileges for his industries alone.\(^{11}\)

The New Brunswick government did make some mild moves towards domestic and industrial pollution abatement in the mid-fifties (the legislature passed a "Water Resources and Pollution Control Act" in 1956), but not until the Liberals came to power in 1960, with Mr. Louis Robichaud as Premier did some significant changes start taking place.

First, in 1960 the Department of National Health and Welfare carried out the most complete water quality survey of the Saint John River basin up to that time, which showed the nature of the extremely severe pollution situation in the international section of the river and how widespread pollution problems were throughout the basin. This study apparently provided a convincing background for the provincial government to pass a new bill through the legislature asking for increased

\(^{11}\) Ibid; Macmillan-Rothesay, Ltd. was apparently the first new pulp and paper mill to benefit from the same government concession; Fraser Companies had evidently been enjoying this privilege since 1917, for as far as it can be determined, it was never sued for causing nuisance.
powers to curb water pollution.

Thus, in 1961 the Water Act was approved by the legislature. By this Act, a New Brunswick Water Authority was created having overall water management responsibilities in the province, except for hydropower, which in fact remained with the N.B. Electric Power Commission. The Act also provided for financial aid to municipalities (considered at the time the highest in Canada) which, added to the existing aid available through the Central Mortgage and Housing Corporation, probably constituted a great incentive for the construction of municipal sewage treatment facilities in the province.\(^\text{12}\)

However, the 1961 Water Act did not include any special provisions to help industries to cope with pollution abatement costs. Hence, when in 1966 the reservoir above the new Mactaquac dam began to be filled, there was concern that it would become nearly as polluted as the Grand Falls headpond upstream. Consequently, the government proposed an amendment to the Water Act which would give the Water Authority the necessary authority to assist industries in meeting the capital expenditures required to build waste treatment facilities. Thus, when the amendment was approved on October 20, 1966, the Water Authority considerably strengthened its capability to aid industries meet their obligations under the Water Act.\(^\text{13}\) In addition, there were by then at least two federal-provincial arrangements to finance

\(^{12}\) Bates, op. cit.

industrial pollution abatement. One involved the Atlantic Development Board (ADB) and the other the federal Department of Fisheries.

The federal Department of Fisheries was especially concerned with pollution problems in the Saint John River, because it had spent close to $3.7 million on a salmon culture station and associated facilities to keep the Atlantic salmon runs in the river. Officials of that Department had considered other rivers but the provincial government assured them that they were going to clean up pollution in the Saint John by 1968. Consequently, the Department made available a special financial aid scheme to New Brunswick industries which became known as the "Fish Hatchery Fund."

On the part of the ADB, in addition to providing additional funds for industrial waste treatment, it commissioned in early 1967 a comprehensive study of the water resources of the Maritime provinces, with special emphasis on the water quality aspects.

Furthermore, the Council of Resource Ministers of Canada was at the time considering regional agreements between provinces setting common effluent standards (especially for the pulp and paper industry) to avoid industries locating in

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"pollution havens."

From the above we see that the climate was appropriate for a major crackdown on both municipal and industrial pollution in New Brunswick. However, there were still some major roadblocks to be overcome by the Robichaud government. First, Robichaud had been elected twice (in 1960 and again in 1963) with Mr. K.C. Irving's moral and financial support, and, as we have seen, his enterprises were among the worst polluters in the whole province.

According to Hunt and Campbell, by 1966 a certain antipathy had grown up between Robichaud and Irving because of two main reasons. One was that Robichaud's interest in bringing in new industries and capital to New Brunswick, sometimes in direct competition to K.C. Irving's interests, was disturbing the latter. The other reason was the "Equal Opportunity" bill introduced by Robichaud in the Legislature in November, 1965, which was strongly opposed by Mr. Irving because, among other things, if approved, it would eliminate municipal tax concessions to industries, of which K.C. Irving's enterprises were the greatest beneficiaries.

Thus, when in 1967 Louis Robichaud was re-elected for the last time, without the support of K.C. Irving, people said it was the first time that the industrialist had lost an election in the province. It appears that the results of the 1967


17 Ibid.
election provided an additional encouragement for the Robichaud government to take a stronger stance against industrial polluters in New Brunswick. However, there might have been other important intervening factors.

One possible important change was the nomination of the Hon. William Duffie as Minister of Natural Resources and the transfer of the Water Authority from the Ministry of Municipal Affairs to his Department. With the help of Mr. John Smith, Assistant Deputy Minister and especially Mr. Leo V. Brandon, Consulting Hydrologist, Mr. Duffie launched a programme to enforce pollution control regulations in the province.

First, the Water Authority issued directives that absolutely no new industry would be allowed to start operations in the province without first installing waste treatment facilities acceptable to the Authority. Second, it started negotiations with municipal and industrial polluters, particularly the Fraser Companies and all those upstream from the new Mactaquac dam, to arrive at a satisfactory timetable for construction of waste treatment facilities.18

Meanwhile, at the federal level, discussions were already in an advanced stage concerning a Canada Water Act, which would provide improved administrative and financial arrangements for water resources studies and projects across Canada. In fact, in early 1967, Mr. A.T. Davidson, Assistant Deputy Minister

18 In a speech made at the Legislative Assembly on October 20, 1966, Mr. Theriault, Minister of Municipal Affairs, admitted that he was having difficulties in getting the existing industries to comply with Water Act regulations.
(Water), Canada Department of Energy, Mines, and Resources, had gone to Fredericton to hold discussions with his provincial counterparts. These discussions included, among other things, the question of "socio-economic studies of pollution in order to make legislators aware of the problem" and the possible federal financing of such studies. The major pollution problems of New Brunswick, namely those caused by pulp and paper mills in the St. Croix and Saint John river basins and mining wastes in several northern basins, as well as additional financial arrangements for a clean-up programme were also discussed."

The First Fraser Companies Agreement

It seems that as a result of these developments, the N.B. Department of Natural Resources intensified its negotiations with the two major industrial polluters upstream of the Mactaquac dam, namely, McCain Foods Ltd. at Florenceville and Fraser Companies, Ltd. at Edmundston, with the aim of reaching an agreement on effluent limitation requirements and a timetable for construction of treatment facilities.

On December 6, 1968, Mr. Duffie made a statement at the Legislative Assembly confirming that McCain Foods had been constructing a waste treatment plant for some months and that Fraser Companies had "actually commenced, but there [would] be no official release on it until the final agreement [was]

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1 This account is taken from a letter dated February 27, 1967, from Mr. Leo Brandon to Mr. Davidson, SJRBB Files, Provincial Archives, Fredericton.
approved by all parties concerned." 

Apparently there were two related problems. One was that Fraser's was going through a difficult financial crisis at the end of 1967. The other was that, because of these difficulties, a new management group had assumed responsibility. As a consequence, the agreement which had been agreed upon in principle with the old management had to be ratified by the new board of directors. Another intervening factor was that after a preliminary feasibility study had been completed it became known that in order for Fraser's to meet the effluent requirements stipulated by both the federal and provincial governments (and in fact to be able to compete in the paper market) they would have to convert their existing sulphite mill at Edmundston to a new process, probably a Kraft operation.

Nonetheless, this reassessment took place at a rapid pace, for already on March 13, 1969, Mr. Duffie told his peers at the Legislative Assembly that following conversations with Mr. J.H. Heur, president of Fraser Companies, he was pleased to announce that an agreement had been reached providing for construction of waste treatment facilities and conversion to a new process. 

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21 Ibid, Session of 1969. It is noteworthy that in all subsequent agreements and addenda to the original agreement, the date of the agreement is given as October 10, 1968, which is in contradiction to Mr. Duffie's statement that the agreement was reached "today" i.e. the 13th of March 1969. Perhaps he was referring to the addendum to the October agreement which was signed on March 31, 1969.
He added

The new agreement has the same base, but is a great improvement over what I outlined in the Legislature a year ago. The chairman and staff of the New Brunswick Water Authority and company officials are to be commended for their very considerable efforts over a long period of time in achieving an agreement that is mutually acceptable to the government and the company.²²

Mr. Duffie then proceeded, praising the Fraser Companies for already having commenced a series of measures to remove all pulpwood stored in the river and the clean-up of the river bottom. He explained further that the agreement also provided for financial assistance toward construction of the waste treatment facilities and that the government agencies providing financial aid included: the ADB, the federal Department of Fisheries through the N.B. Water Authority, and the N.B. Electric Power Commission.²³

Finally, Mr. Duffie pointed out to the legislature that the agreement also provided for increasing and continuing fines and penalties "to guarantee completion of the project and performance in reducing the discharge of industrial waste to the

²² Ibid, p. 123; this statement is actually inaccurate because Mr. Duffie's only other statement to the House in its previous session was the one on December 6, 1968 quoted above, in which he excused himself for not being in a position to comment on the agreement.

²³ Ibid. The justification for providing financial assistance to industries located upstream of the Mactaquac dam and not to other industries in the basin was that the governments needed to protect their investment at Mactaquac.
river" and to "safeguard government funds."  

One last factor undeniably must have played an important role in the conclusion of this agreement at a point in time when Fraser Companies had not yet begun to recover from a difficult situation. This factor was the spectacular fish kills which occurred in the summer of 1968 and again early in the winter, early in 1969.

Although according to the N.B. Department of Natural Resources fish kills were almost annual events in the international section of the Saint John river and in the St. Croix river below Woodland, these later fish kills were unusually severe. In addition, the worst fish kill which ever occurred in the province took place on July 8, 1968, in the Presque Isle, a stream flowing from Maine into New Brunswick.

Furthermore, while in the case of pollution of the international section of the Saint John and the St. Croix rivers the fish kills were directly attributed to wastes from the pulp and paper mills respectively at Edmundston and Woodland, the cause of the fish kills which occurred at the salmon culture station below the Mactaquac dam was difficult to determine.

Ibid. More specifically, the agreement required of the Company: (1) to reduce its waste load of approximately 302,000 pounds of BOD-5 per day (meant here BOD per day over a period of seven consecutive days of operation) to a maximum of 60,000 lbs of BOD per day by December 31, 1971; (2) elimination of all river storage of wood; (3) reduction of suspended solids, toxicity and foam, and to keep pH levels within specified limits. Additional monies would be provided to the Company if the existing sulphite mill was discontinued by December 31, 1971. Drafts of the agreement were examined in the SJRBB Files, at the Provincial Archives, Fredericton.

N.B. Dept. of Natural Resources, 1968, Departmental Highlights. The Presque Isle fish kills will be discussed in detail in the next chapter.
Federal and provincial biologists were sure that the death of some four thousand adult salmon at the hatchery was caused by high toxicity levels, but could determine neither the specific toxic agent nor the specific source. In any case, apparently at the request of federal Fisheries officials, a special provision was included in the March 31, 1969 addendum to the agreement, to the effect that Fraser Companies must strictly comply with toxicity parameters specified by that federal Department.

New Directions in Environment Politics in New Brunswick

On May 4, 1972, a new agreement was signed between the Fraser Companies at Edmundston and the New Brunswick Water Authority regarding pollution of the international section of the Saint John River. In order to understand the rationale for this new agreement it appears necessary to review several sequential and parallel events which preceded the agreement. One was the conclusion of a federal-provincial agreement on comprehensive planning for the SJR basin; another was the election of a new government in New Brunswick; and still another one was the preparation and enactment of new environment legislation for the province.

26 Folster, op. cit.

27 Fisheries officials were concerned about a process proposed by Fraser to remove toxicity from their wastes. In the addendum it was stipulated that if this process was not successful, Fraser's would install a "proven system" by June 30, 1973.
Canada-New Brunswick SJRB Agreement

On June 30, 1970 the governments of Canada and New Brunswick signed an agreement for studies of the Saint John River Basin. This agreement will be discussed in detail in Chapter 6. However, while in Chapter 6 the emphasis is on the events which led to the agreement and the planning process it set in motion, there are some aspects of the agreement which have important bearing on developments related to abatement of pollution at the international section of the SJR.

The Canada-N.B. Agreement was for cooperation in all aspects of river basin planning, although pollution was recognized as the most serious planning problem in the basin. Federal involvement in actual water quality management and implementation was not included in the agreement, but the door was left open for new agreements.

Nonetheless, the agreement also required that an interim water quality plan be prepared within four months of the date of signing of the agreement. The main purpose of this interim plan was to recommend a specific set of measures which would significantly improve the pollution problem in the basin before completion of the comprehensive plan called for by the agreement.

As we shall explain further in Chapter 6, despite some political and administrative difficulties, the Saint John River Interim Plan (SJRIP) was completed on schedule, and forwarded to the competent federal and provincial ministers for endorsement on October 31, 1970, by the Saint John River Basin Board (SJRBB), the institution created to carry out the agreement.
For the purposes of the present discussion, the most important recommendation contained in the SJRIP was the one dealing specifically with the Fraser Companies at Edmundston. It requested of the company that it "should begin full primary treatment of all its effluent by December 31, 1971 and reduce its present [1970] pollution load of BOD by at least 90% by June 30, 1973." Hence, the only significant changes from the 1968 agreement between the company and the Water Authority were a more stringent BOD discharge limit (from 80%) and an extended deadline for compliance (which corresponded to the same date the SJRB agreement would terminate).

Aware of Fraser's argument of financial difficulties, the SJRBB recognized in the SJRIP that "some economic readjustments could be required by these actions" (treatment programmes and process changes) in which case the two governments should "utilize remedial programs to minimize such effects rather than delay or retract firm requirements on pollution abatement."

Nonetheless, the SJRIP urged the New Brunswick government to continue its initiatives on pollution control on the River, particularly with respect to the deadlines set for primary treatment of effluents from the pulp and paper industry and secondary treatment by municipalities, and its stated policy of requiring all new or expanded industrial plants to provide full treatment of their effluent.28

Finally, the SJRBB used the Interim Plan to convey to polluters that the comprehensive plan which it had started

28 Ibid.
preparing would certainly "recommend a series of anti-pollution measures which in all likelihood will be more stringent than those in the interim plan" and therefore, they should "view these interim recommendations as minimum immediate requirements."**

** A New Government Comes to Power in New Brunswick

The Liberal government of Mr. Louis Robichaud was defeated at the elections and a new Progressive Conservative government, under the leadership of Mr. Richard Hatfield, took office in November 1970. Mr. Duffie lost both his cabinet post and his seat in the Legislative Assembly. Mr. John C. Smith, his Assistant Deputy Minister and chief environmental management advisor, soon resigned from his post. As a consequence, endorsement of the SJRIP had to be postponed until January 1971, when the new Minister of Fisheries and Environment, Mr. G.W. Cockburn, now responsible for the SJRB agreement was firmly in charge.

However, Mr. E.S. Fellows, Chairman of the N.B. Water Authority, and a key figure in the developments related to the

"Ibid, emphasis added. But again, the SJRIP was just echoing what Minister W.R. Duffie had already stated as a policy of the N.B. government, even before the Canada-NB Agreement was signed. Speaking about the forthcoming Agreement, he said, "I should say here that this should not influence any industry or municipality to delay their plans for implementing pollution control works in anticipation of more favorable subsidies to assist in construction. Rather, it should cause them to act more swiftly, because the Board may recommend more severe penalties for failure to install waste treatment facilities." Proceedings of the Legislative Assembly of New Brunswick. March 4, 1970 (Vol. I).
formulation of the SJRIP recommendations and pollution control in New Brunswick in general, remained in office. Mr. Fellows had earlier been accused by environmental groups of having strong links with the pulp and paper industry and was becoming known for his soft stance towards major polluting industries (however, not specifically in relation to the Fraser industries). However, Mr. Duffie himself defended Mr. Fellows, saying that he was doing an "outstanding work" and commended him for his "untiring efforts [which] have resulted in impressive new steps forward in the protection and utilization of water resources in our province," . . . efforts which are "not always completely understood by all members of the general public."  

Although the new Conservative government of Premier Hatfield did endorse the Saint John River Interim Plan, prepared by the SJRB Board, which was formed by officials of the previous provincial administration as well as officials of the (still Liberal) federal government, a number of factors suggest that his government had its own ideas about pollution control in New Brunswick. This shift in environmental policy in the province can be deduced from the way the new government handled two issues: (a) new environmental legislation which had been

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30 Mr. Fellows justified his position at a Forestry and Natural Resources Committee meeting by pointing out the high costs of industrial and community waste disposal treatment, which "were paid for through higher taxes, higher prices and lower wages" and adding that the "faster it was done the higher the cost would be." Proceedings of the Legislative Assembly of New Brunswick, Annex-Report of Proceedings of Committees, Session of 1970.

31 Ibid.
proposed by the previous government; and (b) the lack of progress in carrying through the 1968 agreement worked out between Mr. Robichaud's government and the Fraser Companies.

**New Environmental Legislation in New Brunswick**

While Minister of Natural Resources, Mr. W.R. Duffie created a provincial committee headed by Prof. Douglas G. Rouse, Deputy Minister, N.B. Department of Justice, to investigate and recommend upon new water legislation for presentation at the 1971 spring session of the N.B. Legislative Assembly. Speaking to the House on March 4, 1970, Mr. Duffie said that he would "seek legislative amendments that [would] allow for court action and the application of fines and penalties where it is obvious that there is no intent to conform with the Act."

However, when in the spring of 1971 the new government introduced to the legislature a bill (Clean Environment Act), which it claimed would consolidate existing legislation and give the government new powers and responsibilities in environmental management, the opposition attacked the Bill, saying that the

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32 Letter from Mr. Duffie to Mr. Rouse dated May 8, 1970. SJRBB Files. Mr. Duffie also indicated in his letter that Mr. Brandon had been appointed to act as an executive secretary to Mr. Rouse on a more or less full-time basis. Thus, (Brandon had this additional responsibility), when later in July, 1970, he was chosen as executive chairman of the SJRB Planning Committee, and in September of the same year, was nominated acting director of the SJR study under the agreement. He resigned from these positions and left the province in early May, 1971, claiming he no longer had confidence in the way the new government was handling the federal-provincial agreement.

33 Proceedings of the Legislative Assembly of New Brunswick, Session of 1970. He was referring to the provincial Water Act.
proposed Act provided "for such broad ministerial discretion that the Act will only be as effective as the minister administering it" and they thought the idea of legislating a "blank cheque" for the creation of regulation was "abhorrent." Later, when asked if the reports and recommendations submitted by Prof. Douglas Rouse in connection with environment legislation would be tabled, Mr. Cockburn, who as Minister of Fisheries and Environment would be the minister responsible for administration of the new Act, answered that he was not aware of such a study, but would check and inform the House. At the session of the Committee-of-Supply of the Legislative Assembly on May 7, 1971, Mr. Cockburn, answering criticisms of his government's pollution control approach, stated that the most realistic approach is to "attack the cause rather than the result" and added that his government would stress "research and education which are the key to solving the causes within a total waste management policy."

Moreover, reporting on progress regarding pollution abatement in the province, Mr. Cockburn said at the same Committee-of-Supply meeting that the deadlines set for the pulp and paper industry for pollution abatement by the previous

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34 Proceedings of the Legislative Assembly of New Brunswick, April 15, 1971.

35 Ibid, April 26, 1971. A statement which leads to the obvious conclusion that the new government was not about to follow the previous government's policies and initiatives.

Liberal administration were being met. However, he added, Fraser Companies, which had been required by the 1968 agreement to provide primary and secondary treatment and reduce its pollution by eighty percent by December 31, 1971, would not be able to meet the deadline. The reason for this, according to Mr. Cockburn, was that although the treatment facilities would be fully operative within the target date, the required BOD reduction could only be achieved with the construction of a new mill, and while this was in the planning stage, it would not (obviously) be completed by December 31 of that year. However, he did say that the company stood "to lose the subsidies originally agreed to by not meeting the deadline." Finally, Mr. Cockburn told the Committee that, having regard to all the circumstances, the most realistic possibility was for Fraser's to reduce its BOD load by ninety percent by June 30, 1973.\[^1\]

A few days after Mr. Cockburn made these statements a reporter, interviewing Mr. E.S. Fellows, chairman of the Water Authority, raised questions about the province's pollution abatement enforcement efforts (probably an indirect reference to Fraser's problem). Mr. Fellows, in answering, said, "We're going to prosecute anybody who flouts the law but we are not going to prosecute anybody who's making an effort within a cost that can

\[^1\] Ibid. This possibility was actually one of the recommendations of the SJRIP. It is interesting to note that when reported by the New Brunswick press the next day, Mr. Cockburn's statements were given a very positive tone. The May 8, 1971 headline of Fredericton's Daily Gleaner was "Pollution Deadlines Being Met, Cockburn Says in Legislature."
be borne."

The Second (1972) Fraser Companies Agreement

Mr. J.P. Parkinson, of the Environmental Protection Service, federal Department of the Environment, reporting to the SJRB Board on progress on specific recommendations contained in the SJRIP, confirmed Mr. Cockburn's statement regarding Fraser's progress in the construction of primary and secondary treatment facilities, but added that the company had abandoned its plans for converting to a Kraft process in favour of magnesium bisulphite, and such a conversion would not start until 1973. Therefore, a ninety percent reduction of BOD by June 1973 as stipulated in the SJRIP would not be achieved until 1975 at the earliest.

Moreover, the Board was informed that Fraser's were claiming that without substantial government aid, due to their unfavourable financial situation, they could not commit themselves to conversion to a new process. At the same time, Irving Pulp and Paper Company was trying to obtain from both the federal and provincial governments financial incentives similar to those given to Fraser's and McCain Foods Limited at Florenciville. As may be recalled, Fraser's and McCain's were given special financial aid to abate their pollution load because they were located upstream of the Mactaquac dam and the


Minutes of the Eighth Meeting of the Saint John River Basin Board, June 1971. Thus, it appears that when Mr. Cockburn said that Fraser's would most likely meet the June 30, 1973 deadline established in the SJRIP, he very likely knew that as far as the Company was concerned, that was not feasible.

Ibid.
governments wanted to protect their multi-million dollar investment in the salmon hatchery.

It appears that at this point federal fisheries officials became quite concerned about the way the new New Brunswick government was handling pollution control in the Saint John River Basin, especially as far as Frasers' compliance with their agreement with the province.

This can be deduced by the fact that, on advice of officials in his department, Mr. Jack Davis, Minister of Fisheries and Forestry, sent letters to Fraser Companies and McCain Foods expressing concern over the slow progress of these companies in reducing their effluent discharges. Since these two companies were receiving large federal grants for this purpose, the Minister had a special concern and leverage in dealing with them.

In his letter to J.H. Heur, President of Fraser Companies Ltd., Mr. Davis expressed his "personal concern that the pollution deadlines laid down in the Interim Plan should be met by your firm [Fraser's] and the others named in the Plan." He added that the federal government intended "to use its statutory powers to the fullest extent possible to see that Canadian contributions to the pollution of the Saint John, an international river, are reduced to a level that will permit the maintenance of an appropriate ecological balance in its waters." 41 Mr. Davis added that he agreed with Mr. Cockburn's

May 7 statement at the N.B. Legislative Assembly and intended to work closely with the provincial government.  

However, what Mr. Davis probably could not say was that he was also going to apply pressure on the provincial government to get Fraser's and the other polluting industries to comply with the existing agreements. In effect, on the same date, May 13, 1971, he also wrote a letter to Mr. Cockburn (i) noting his personal (Jack Davis') discontent with the progress being made by Fraser Companies in pollution abatement; (ii) outlining the fact that the company did not meet the terms and conditions of the original agreement between them and the province; (iii) stating that because of (ii), federal grants for pollution abatement were being halted; (iv) proposing a new agreement be made whereby the company would be committed to certain pollution abatement actions and (v) pointing out that the federal government, if necessary, would consider closure of the mill for non-compliance to adequate pollution control.

It appears that as a result of this pressure on the part of federal officials, at the request of Fraser's management a meeting was finally arranged between high level officials of both the federal and provincial governments and the Company, to discuss a new plan of action for effluent control by Fraser's

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42 Ibid; Mr. Davis was certainly referring to Mr. Cockburn's remark that the Company should meet the SJRIP deadline and if not, stood to lose the governments' subsidies.

43 A copy of this letter, found in the SJRBB Files, had Mr. Cockburn's May 7 statement as it appeared in the Fredericton's Daily Gleaner attached to it.
Edmundston operations. The outcome of the meeting, held on May 13, 1971, was that the Company agreed, in principle, to continue construction of its primary and secondary treatment facilities and have them in operation by the end of the year, and to convert to a magnesium bisulphite paper process. However, the Company questioned the government's requirements for BOD, pH and toxicity because in its judgement they were unrealistic."

As a follow-up of the meeting Mr. Jack Davis sent a letter to Mr. J.H. Heur, president of Fraser Companies, advising him that once the Company had confirmed its concurrence with the requirements discussed, they would "be made into a special regulation under the Fisheries Act.""45

The requirements which remained to be negotiated were BOD, suspended solids, pH and toxicity--so-called "end requirements." Thus, after several meetings the governments and the Company finally agreed, on October 13, 1971, on specific limits to the effluent end requirements. However, agreement still could not be reached on a timetable for conversion of the Edmundston mill to

"44 The source here is a "Chronological summary of certain correspondence pertaining to pollution abatement as specified in the Saint John River Interim Plan," compiled by B. Barnes of the N.B. Water Authority and H.D. Johnston of EPS, Department of the Environment, dated February 11, 1972. This report will hereafter be referred to as Barnes and Johnston's summary.

a new process."

Nonetheless, it seems that at this point federal officials were sufficiently satisfied with the progress made in the negotiations, for on September 3, 1971, Mr. Davis wrote to Mr. Cockburn proposing a schedule of federal payments to New Brunswick related to the phasing of effluent treatment facilities at Fraser's Edmundston mill."

However, when a meeting between provincial and Fraser's officials was held in late October, 1971, the Company would not agree to commit themselves to conversion of their process within eighteen months, and to have the new mill in operation by December 31, 1975, as stipulated in a draft agreement prepared by officials of the N.B. Department of Fisheries and Environment."

Moreover, early in November, Fraser Companies informed the Water Authority that they had stopped construction of the effluent treatment facilities due to the Company's financial situation and because the expected government grants for the construction of those facilities had not been received. The

"Barnes and Johnston's summary. The specified limits to the effluent end requirements were: BOD - Loading not to exceed 16,000 lbs/day average, with an absolute maximum of 20,000 lbs/day. These performance requirements would apply from June 1 to October 1 of each year, with winter performance based on good and efficient operation during the cold weather period; suspended solids - 24,000 lbs/day, including pulp fibre and biological solids; pH - 6.7 to 8.5 at outfall; toxicity - 100 percent survival of juvenile salmon for 96 hours in an effluent concentration diluted to 65 percent with river water. Note that the BOD limits are stiffer than those set both in the 1968 agreement and in the SJRIP. However, the deadline for compliance was once more extended--i.e. from December 1971 to June 1973, and then to December 1975.

"Ibid.

"Ibid.
Company, however, did promise to resume construction of facilities when its economic situation improved, and to proceed with mill conversion when the Company was in a good profit position. In addition, the Company suggested that its financial progress be reviewed with the N.B. Water Authority periodically, in order that a reschedule of pollution abatement activities be worked out, should circumstances permit. The Company was also considering the alternative of taking low-cost loans from the federal government for the proposed conversion to magnesium bisulphite process."

The 1972 Fraser Companies Agreement: It appears that at the end of 1971 negotiations between the Fraser Companies and the federal and provincial governments had reached a stalemate, with the Company refusing to commit itself to a date for conversion to a new process, and the federal government decision to remove any federal financial subsidy to the Company unless it agreed on a deadline. It is perhaps important to point out that Fraser Companies were not the only pulp and paper company which was not complying with the specific recommendations contained in the Saint John River Basin Interim Plan. Irving Pulp and Paper Limited and MacMillan-Rothesay Limited were even further behind in their construction of their treatment facilities, and the new St. Anne-Nackawic pulp and paper mill, although having full treatment facilities at start-up, was operating well below the

"Ibid. Letters from Fraser Co. Ltd. to Mr. E.S. Fellows, Chairman of the N.B. Water Authority, dated November 5 and 10, 1971. Emphasis added."
levels agreed to with the Province. However, as opposed to Fraser's, these companies were not receiving the large government financial subsidies that Fraser's was, nor were they nearly as heavy waste dischargers.\(^5\)

However, in the early months of 1972 the New Brunswick government was able to appropriate sufficient funds (some $2 million) to offer Fraser Companies as an aid to their pollution control programme. As a consequence, on May 4, 1972, an agreement between the two parties was signed, replacing the 1968 agreement and its 1969 amendment. This agreement provided for $1.3 million to be given by the N.B. Water Authority to the Company upon signing of the agreement; $200,000 to be given after secondary treatment facilities were completed and the remaining $500,000 to be given when the Company started conversion to a new process. Fraser Companies, in turn, committed themselves to have in operation primary treatment facilities by September 15, 1972 and secondary treatment by December 15 of the same year (hence the December 31, 1971 deadline established for both levels of treatment in the 1968 agreement and the SJRIP were not met). The Company further agreed to comply with the effluent "end requirements" (which had already been agreed upon at the October 31, 1971 meeting), and to convert to a magnesium bisulphite process. However, no deadlines were set for conversion, nor was a timetable stipulated for meeting the "end requirements." Instead, the

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\(^5\) Ibid. Also Minutes of the Eleventh Meeting of the SJRBB.
Company committed itself only to

have a new process in operation at the earliest practicable date, which shall be dictated by the Company's ability to raise the required capital and the parties hereto will jointly review whether or not the Company has the ability to raise such capital.\(^1\)

Thus, this agreement was open-ended and essentially no penalties were stipulated in it for non-compliance with its provisions, as was the case in the 1968 agreement. As to federal aid moneys to the Company, it was reported later, in June 1972, that they had been reinstated, but details on the arrangements could not be found.\(^2\)

American Reaction to Fraser's Boundary Pollution Problem

There are a number of factors which might help in understanding Maine's and United States' reaction to the boundary pollution problem caused by Fraser Companies Limited at Edmundston and its wholly-owned subsidiary, Fraser Paper Limited, at Madawaska, Maine.

First, it is important to call attention to the fact that, while in the case of the St. Croix River and the Presque Isle Stream (Chapter 7) pollution problems were relatively recent (started late in 1950's), and were viewed by both Canadian and American riparians and authorities as a nuisance, the situation

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\(^1\) Although the agreement was confidential, a copy of it (from which the quotation is taken) was seen at the SJRBB Files. Provincial Archives, Fredericton.

\(^2\) Twelfth Meeting of the Saint John River Basin Board, June 13, 1972. SJRBB Files.
in the international section of the Saint John River was not viewed locally as a deprivation of recreation opportunities and other beneficial uses of the river. Pollution in that reach of the Saint John had existed even before 1917, when the Fraser's mill was built, and, as already mentioned, fish kills were almost an annual event. Hence, the fact that most people in that part of the Saint John River Basin have never known that section of the river to be in any other state, has resulted in much less concern for cleaning it up than would be the case if that reach of the river had become severely polluted within recent times.

Second, from an international perspective, the pollution problem was complicated because, besides the fact that it occurred in a contiguous stretch of the river (as was the case in the St. Croix), the source of the pollution was a Canadian company which had mills located on both sides of the river. Hence, on the one hand, the Company could suffer the pressure of two federal governments and the governments of one state and one province, plus the International Joint Commission, all having jurisdiction over the question. On the other hand, as we shall see later, the Company could develop strategies based upon the assumption that it had a divided enemy, particularly if communications among all four governments were not entirely adequate.

Third, from a political and economic perspective, the international section of the Saint John River area in Maine was

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53 IJC, 1918, op. cit.
relatively less important to that state than were the Presque Isle Stream and St. Croix River areas (Chapter 4). While from the perspective of the U.S.A. federal government this may not have been the case, the fact that Maine never raised the matter with it, nor, as we have seen, seriously considered referring the matter to the IJC, probably discouraged federal American officials from taking any initiative.

As has been seen in Chapter 4 (Figure 2) the international section of the Saint John River is classified as "C" in the Maine stream classification system. This classification is based upon a law passed by the Maine legislature in May 1969, upgrading the classification of that section of the Saint John River from class "D".\(^5\)

The reasons for this upgrading of the international section of the Saint John are difficult to determine, especially the relative importance of the possible motives. One possible reason might have been mounting criticism by the people of Maine of the State legislature actions, downgrading in 1965 and then, in 1967, reversing itself, upgrading the Presque Isle Stream in response to the political demands of the circumstances (this issue will be discussed in Chapter 7). Perhaps a more likely reason was the fact that the St. Croix River had already been upgraded by the legislature from class "D" to class "C" in 1967 (as we have seen, possibly due to New Brunswick pressures) and since in that reach the Saint John was also a boundary river, it

seems plausible that the legislature saw fit to give both rivers the same water quality classification.

Another very likely reason may have been U.S. federal legislation passed in 1965 and 1966⁵⁵ which inevitably must have influenced the executive government and the legislature of Maine. Of special relevance were certainly the guidelines concerning inter-state and boundary waters issued by the newly-created FWQA (Federal Water Quality Administration—now Environmental Protection Agency) in May, 1966. In essence these guidelines recommend that waste dischargers to these waters should provide the best practicable treatment to their effluents. Thus, it is not surprising that Maine's Water and Air Environmental Improvement Commission (WAEIC), in compliance with these guidelines, conducted a water quality survey of boundary and interstate streams and recommended that these waters be upgraded at least to class "C".⁵⁶ In any case, possibly as a direct consequence of those federal guidelines and of the WAEIC reports, the Maine legislature in 1967 and again in 1969 passed comprehensive amendments to the 1964 Water Act,⁵⁷ providing, among other things, the following: "Class 'D' waters shall be assigned only where a higher water classification cannot be attained after utilizing the best practicable treatment or

⁵⁵ Respectively Water Quality Act (Public Law 89-234) and the Clean Water Restoration Act (Public Law 89-753). See Chapter 4.


⁵⁷ Maine Revised Statutes of 1964, Title 38, Chapter 3.
control of sewage or other wastes."^^

Moreover, under the same act the legislature provided that waste dischargers "shall not be deemed in violation of any classification or reclassification adopted on or after January 1, 1967, at any time or times prior to October 1, 1976" as long as the waste dischargers adhere to schedules for compliance with the relevant classifications. The law also set other deadlines for construction of treatment facilities (secondary treatment by October 1, 1973) and beginning of full operation (also October 1, 1976). Hence, provided that a waste discharger took certain steps to abate his pollution load, he could not be prosecuted for violating the provisions of the Act until October 1976; only failure to commit to a timetable and to investments on waste treatment facilities would make pollution control enforcement possible.^^

Thus, it was in compliance with the above laws and regulations that in early 1970, Fraser Paper, Ltd. of Madawaska requested from the WAEIC, now called Environmental Improvement Commission (EIC) a permit to discharge additional wastes into the main stem of the Saint John River. The plant had no waste treatment system when the request for the permit was made. Since

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^^ These State laws were endorsed by the FWQA in 1968 and 1971. On October 30, 1970, Maine EIC also adopted an antidegradation regulation as part of the water quality standards of the State. However, an opinion rendered by Maine Attorney-General's office in 1971 clarified that "it is a policy statement by the Maine Environmental Improvement Commission only and has no force of law." Letter from Governor Kenneth Curtiss to Mr. W.D. Ruckelshaus--Administrator EPA, dated April 14, 1971.
State laws also required that a public hearing be held before a permit could be granted, a hearing was scheduled for the fall of that year by the EIC's Board of Environmental Protection.

**Public Hearing On Frasers' Discharge Permit**

On September 21, 1970, a public hearing was held in Madawaska to consider Fraser Paper, Ltd.'s application for a permit to discharge additional wastes. At the hearing it soon became clear that Frasers' had no immediate plans to construct treatment facilities. The Company maintained, nonetheless, that it was going to comply with Maine's effluent regulations according to the schedule set by the legislature.

Following the law, the EIC stated that it was not expected to enforce the class "C" stream classification for this reach of the Saint John until the 1976 deadline, although the Company had to show that it was taking the necessary steps to meet the future requirement. In reply, the Company emphasized that it was "doing everything ... that adequate financial planning will permit to reduce the pollution load on the St. John River" but reminded those present that it had been "essentially bankrupt a little over two and a half years ago." *

Opposition to the waste license came only from three residents of Madawaska and from Mr. Leo Brandon, the Executive Chairman of the SJRB Planning Committee, on the Canadian side.

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* State of Maine, Environmental Improvement Commission, 1970, "White Water Discharge License Request--Fraser Paper, Limited, Madawaska, Maine," Public Hearing held September 21, 1970, Madawaska, Maine. All quotes and references to this hearing are from this source.
Mr. Brandon stated that he felt it was "illogical to allow a company to increase the pollution load on one side of the river when it [was] receiving economic incentives to abate the pollution on the other side of the river and these incentives [were] being paid by grants from public money." He then suggested that "the four governments who have jurisdiction over this reach of the water, namely the Governments of the State of Maine and the United States, and of Canada and New Brunswick discuss this matter before any application to increase the load into the river be granted."¹

Expectedly, Fraser officials vehemently opposed Mr. Brandon's statement, and told those present about the 1968 agreement between the Company and the New Brunswick Water Authority and of the efforts the Company was making to comply with the agreement's provisions. They then outlined the measures they had undertaken to remove solid wastes from their effluents and to eliminate all wood storage. Responding to these arguments Mr. Brandon pointed out that those measures did not involve non-productive expenditures—i.e. treatment facilities specifically oriented towards BOD reduction, which was actually the major

¹ Ibid. In addition, Mr. Brandon stated that the "International Joint Commission has a number of water quality objectives (sic) which obviously must be met." He did not, however, call for any involvement of IJC whatsoever.

² The outcome of this incident was that after Fraser's management complained directly to Premier Robichaud, Mr. Brandon was reprimanded for his behaviour by his provincial superiors. (John Mercer, personal communication). It was shortly after this hearing that Brandon wrote his "Note on Fraser Companies"—see footnote 39 supra.
As far as participation of the general public and environmental groups goes, this hearing was characterized by a lower-than-average involvement. This was in contrast to the IJC hearing on the St. Croix River, mentioned before, and the various hearings regarding the Presque Isle Stream and Meduxnekeag River (Chapter 7), in which there was large public participation and lively debates.

It appears that, for the residents of that area of the SJR basin, the issue was not the additional wastes that Fraser's wanted to dump into the river, for pollution in that reach of the river could hardly become worse. The issue was the fact that Fraser's, as all other industries and municipalities in Maine, had six years to comply with the pollution regulations.

The general frustration of the few private citizens present who bothered to state their opinion can be exemplified by a lady who, reacting to the lack of enforcement powers of the EIC, commented, "Then, that means someone can dump as much junk as they want to. There will be no check made except in 1976?" To which an EIC official answered that it was not exactly like that, but that in fact they had "plenty of other work in the State of Maine to engage [themselves] without further work here" (i.e. in the international section of the SJR).

The result of this hearing was that several months later (March 1971), the EIC granted Fraser Paper, Ltd. a discharge

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"Ibid."
permit with the condition that the Company comply with the above mentioned legal schedule for construction and operation of treatment facilities.⁴⁴

As it became known at the hearing, the Company was in the process of negotiating a joint treatment plant with the town of Madawaska. There would be some technical advantages in such a combined treatment, and, from the perspective of the Company, some administrative and financial advantages and disadvantages as well.⁴⁵

It is important to point out that this was a period of great activity at both the state and, especially, the federal levels in the U.S.A. regarding environmental legislation. For example, on December 31, 1970, the U.S. Corps of Engineers, based upon a nineteenth-century Refuse Act, issued guidelines to all industries and municipalities in the U.S. for obtaining permits to discharge wastes into navigable water bodies and tributaries. This meant that early in 1971 Fraser Paper, Limited had also to apply for such a permit to discharge wastes into the international section of the Saint John River.⁴⁶

⁴⁴ A copy of the license was distributed among SJRB Planning Committee members at their Eighth Meeting--late March 1971.

⁴⁵ Among the financial advantages, besides some federal grants to help the town's contribution, the Company would benefit from lower interest rates on capital borrowed for construction of the treatment facilities. The disadvantages included more stringent pollution abatement requirements and, most importantly, the Company would lose administrative flexibility.

Despite the various attempts at pollution control enforcement action on both sides of the border, in September 1972 the Fraser Companies mills at Edmundston and Madawaska were still the largest polluters in the whole Saint John River Basin.

As we have seen, it had been stipulated in the latest agreement between the New Brunswick Water Authority and the Fraser Companies that the Edmundston mill should have primary treatment in operation by September 15, 1972, and secondary treatment by December 15, 1972. The Company did meet both deadlines one week ahead of schedule. However, as it had been anticipated, only 25-30 percent of the mill's 302,000 total BOD load was being reduced, because the secondary facility had been designed to handle the pulp mill effluent after conversion to a Kraft or Magnifite process (which would also drastically reduce the volume of effluent). Moreover, while the Company was said to be definitely committed to converting the plant to a new process, it claimed it did not have the $40 million investment necessary for the change and would not agree to a deadline for converting.

Nonetheless, when the Saint John River Basin Board issued

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'Saint John River Basin Board, Briefing Notes, Spring, 1973.'

'Letter dated September 6, 1972, from Mr. Herbert R. Pahren, Director, Enforcement Division of EPA, Region I, to Mr. Mark Possidento, Basin Planning Section, Air and Water Programs Division, also of EPA, in response to a request for comments on the situation of both the Fraser mills and the Vahlsing, Inc. potato plant on the Presque Isle.'
its Second Annual Report, covering the period from 30 June, 1971 to 30 June, 1972, it stated that "Progress on pollution abatement, while not according to the schedule proposed in our Interim Water Quality Plan, has been significant an in line with our recommendations." It then blamed the lack of progress on "small communities [which] have particular difficulty financing sewers and sewage treatment works, and older industrial plants (an obvious reference to the Fraser's problem) which depend upon export markets" and therefore could not bear "the additional cost of waste treatment [which] will make them non-competitive." However, to say that progress on pollution abatement had been significant was a clear overstatement, for as far as the international section of the Saint John River is concerned, and where the problem was gravest, as of September 15, 1972 only McCain Foods at Grand Falls had successfully put into operation a waste treatment plant and actually met the requirements of the SJRIP. Several starch plants on the Canadian

"In fact, with reference to the Fraser Companies at Edmundston, the report was actually misleading. Reporting on actions taken regarding the SJRIP, the report stated (p. 16, emphasis added) that the "clarifier is expected to start up in September 1972 and the [aerated] lagoons in December 1972. The discharge of suspended solids is expected to be reduced by 90 percent and BOD by about 27 percent." However, the specific recommendation of the Board in its Interim Plan was "Fraser Companies Limited at Edmundston should begin full primary treatment of all its effluent by December 31, 1971 and reduce its present pollution load of BOD by at least 90 percent by June 30, 1973. (First Annual Report of the SJRBB, emphasis added). Thus, by placing this recommendation next to the account of actions taken, an untrained reader is led to believe that the 90 percent BOD reduction was about to be obtained. Most important, the words "of BOD" were apparently deliberately omitted from that recommendation as reproduced in the Second Annual Report."
side claimed they could not afford treatment costs and the city of Edmundston was reluctant to commit itself to build an expensive sewage trunk collector system which was required and hence was still dumping raw sewage into the river.⁷⁰

With regard to Fraser Paper, Ltd., at Madawaska, as had been anticipated at the September 21, 1970, public hearing its BOD load discharge had increased to an estimated 49,000 lbs/day (from approximately 40,000 lbs/day in 1969) due to the installation of a new paper machine. Thus an estimated total of 351,000 lbs of BOD per day were being discharged by the Fraser mills complex alone into the international section of the Saint John River. In addition the company had decided not to join the city of Madawaska in a combined treatment plant, when it learned that new legislation (Federal Water Pollution Control Act Amendments of 1972) would make it pay for that portion of the cost of construction and operation of the combined treatment plant which would be allocable to the treatment of its industrial waste by the plant. As an alternative, the Company was exploring, with EPA, the possibility of it transporting its effluent from the Madawaska paper plant to the Edmundston side for treatment in the aerated lagoon under construction, and apparently EPA officials did not consider important whether the effluents from the Madawaska mill were treated on the U.S. or Canadian territory.

⁷⁰ Letter dated September 6, 1972 from Mr. Pahren to Mr. Possidento; also letter from Mr. John W. McGrail, Assistant Engineer, Bureau of Water Quality Control, Maine DEP, to Mr. James Barresi, Executive Director, NMRPC, dated August 23, 1972.
However, when that idea of "exporting" wastes was discussed at a meeting on August 29, 1972 between Mr. Herbert Pahren of the Enforcement Division of EPA and Canadian officials, the latter would not agree to such a possibility, since the aerated lagoon would be already overloaded until the Edmundston plant conversion took place.\(^1\) In addition, Fraser's proposal encountered serious opposition from Mr. James Barresi of the NMRPC, who was involved in the planning and financing of the sewage treatment plant of the town of Madawaska. Mr. Barresi claimed that the proposal was probably a maneuver of the Company to avoid committing itself to construction of its own facilities.

\(^{1}\) Ibid.

\(^{2}\) Memorandum dated September 6, 1972, from Mr. John Henderson, Planning Director, to members of the Saint John River Basin Board. Mr. Barresi apparently had telephoned Mr. Henderson, inquiring whether Canada and New Brunswick would accept the proposal, and proposing "to get together to agree on a strategy for dealing with Frasers'."
CHAPTER 6

BOUNDARY POLLUTION AND COMPREHENSIVE PLANNING IN CANADA

The most important developments related to pollution control efforts in the international section of the Saint John River were discussed in Chapter 5. Emphasis was put on the negotiations between the Fraser Companies, the major polluter in the SJR basin, and government authorities on both sides of the border.

In this chapter I shall describe Canadian analytical, coordinative and planning efforts to cope with that pollution problem, which they considered primarily a domestic problem. These efforts should be compared and contrasted with similar effort undertaken by U.S. officials to cope with their pollution of transboundary waters problem, which will be described in Chapter 8.

Origins of the Canada-New Brunswick Saint John River Basin Agreement

It appears that already during the visit of Mr. A.T. Davidson, Assistant Deputy Minister (Water), of the then Department of Energy, Mines and Resources to Fredericton (see Chapter 5), he explored the possibility with his provincial counterparts of a pilot study to develop and test comprehensive analytical and planning techniques and to stimulate interest in
river basin and regional planning in New Brunswick.¹

However, it was not until July 1968, after the widely publicized fish kills in the Presque Isle Stream (Chapter 7), and after Mr. John Greene became federal Minister of Energy, Mines and Resources, that serious discussions really got underway. Messrs. Leo V. Brandon and John Smith, respectively Consulting Hydrologist and Assistant Deputy Minister, N.B. Department of the Environment, seem to have played an important role in these negotiations. They were both enthusiasts for the concept of multi-purpose river basin development and saw in the Presque Isle incident an opportunity to push for a federal-provincial river basin agreement.² Apparently, Mr. Brandon, who had become responsible for coordinating the preparation of the provincial brief to the Canadian Department of External Affairs on the fish kills on the Presque Isle (Chapter 7), took the initiative to prepare a proposal for a comprehensive planning and management agreement on the Saint John and St. Croix River basins.

Brandon's original idea was to form an "International Saint

¹ Letter dated February 27, 1967 from Mr. Leo Brandon, Consulting Hydrologist, N.B. Department of Natural Resources, to Mr. Davidson. It appears that Mr. Davidson played an instrumental role in the formulation of the Canada Water Act (Chapter 4), which was being negotiated at the time. The pilot project would be one among several such projects in different regions of Canada; they also aimed at fostering federal-provincial cooperation in the field, which was to be an important feature of the new federal act.

² John Mercer, personal communication, January 11, 1974. Mr. Brandon himself, in his letter to Mr. Davidson supra, claimed to have arranged this meeting.
John and St. Croix River Board" in order "to initiate and coordinate further developments in these two rivers." He justified his proposal on the grounds that there was "a need for more local involvement in the development of projects in the region" and proposed that this could be obtained "if the river basins are managed by a River Board comprising a majority of representatives who live in the region."

Mr. Brandon was apparently especially concerned with the administration structure which such a management agreement should take and with the international aspects of the problem, for he devoted an entire section of his memorandum to the composition and representation of the proposed river basin board. He stated:

this memorandum suggests that there should be one major Board and three smaller Boards which report to the major Board. The arrangement should be as follows with representation in the following numbers:

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ST. JOHN AND ST. CROIX BOARD
14 Members

-----------------------------------------------
St. Croix Board  Upper St. John Board  Lower St. John Board
8 Members        10 Members           9 Members
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Representation could be as follows:

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St. John and St. Croix Board - 14 members:
2 U.S.A. (Washington)
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³ Draft memorandum prepared by Mr. L. V. Brandon, Hydrologist, N.B. Dept. of Natural Resources. Undated. A carbon copy of the memo was found with the first draft of the 1969 Brief at the SJRBB Files.
2 Canada (Ottawa)
4 Maine
5 New Brunswick
1 Quebec

**St. Croix Board** - 8 members:
5 Maine
3 New Brunswick

**Upper St. John Board** - 10 members:
4 Maine
3 Quebec
3 New Brunswick

**Lower St. John Board** - 9 members:
7 New Brunswick
2 Maine

Each Province, State, or Capital would nominate its own Board members, and it is assumed that the Chairman of a smaller board would be an ex-officio member of the larger board while he is in the Chair. The Chair would change every two years, and membership of each board would be on a 2, 3, 4-year basis.

Moreover, Mr. Brandon seized the opportunity to link a solution to the Presque Isle Stream and St. Croix River international pollution problems to a need for comprehensive river basin planning and management on the Canadian side.

Thus, in the first draft of the provincial brief to the Department of External Affairs it was stressed that a permanent solution for the Presque Isle and St. Croix pollution problems, and boundary water problems in general could be worked out with the U.S.A., only after "having established a good Canadian position on these international waters". The manuscript

mentioned that discussions on that agreement with the federal government had begun and they hoped that the Province of Quebec would join in this agreement with the federal government.⁵

However, the brief excluded any reference to what kind of administrative structure an international river basin institution, if created, should have. Instead, emphasis was placed on the need for a Canada-New Brunswick agreement on comprehensive river basin planning for both the Saint John and St. Croix Rivers. Once this agreement is worked out, they proposed, "we will then be in a position to create a river basin compact or joint management agreement with the United States and Maine. It may well be that the International Joint Commission will be asked to assist in these discussions and to make recommendations."⁶

In the final version of the brief the linkage between the Presque Isle pollution problem and comprehensive planning was de-emphasized, probably because it was then decided that a copy of the brief should be sent to the U.S. State Department, and the argument had not much bearing in the negotiations with the Americans. Nonetheless, the aide-memoire from the Department of External Affairs, which accompanied the brief, did mention that

⁵ Province of New Brunswick - Pollution of the Presque Isle; a Transboundary River, Brief to the Secretary of State for External Affairs, Canada, 1969. There were three versions of this brief; unless otherwise indicated, references are to the final draft, hereafter referred to as N.B. 1969, Brief.

⁶ N.B. 1969, Brief (First draft). As we shall see in Chapter 7, the reference to the IJC was eliminated in the second version of the brief.
the Government of Canada was contemplating a more permanent solution to transboundary water resources problems between New Brunswick and Maine. It stated that negotiations between New Brunswick and the government of Canada concerning the management of the whole Saint John River basin were underway and that "when these consultations are completed, it is hoped that early discussions between the governments of Canada and the United States can be initiated with a view to solve other pollution problems of the Saint John and St. Croix River basins."

As to the possibility of including both the Saint John and St. Croix river basins in the Canada-New Brunswick agreement, considering that they were the two most polluted rivers in the province, and despite the fact that they were both international rivers, the idea must have been appealing. In fact, as late as March 13, 1969, a decision still had not been made regarding the exclusion of one of those two rivers from the agreement. On that date, Mr. Duffie, speaking to the N.B. legislature, mentioned "the establishment of a comprehensive river basin plan for the Saint John and St. Croix River systems, with the cooperation of the federal government," which he added would be based upon "data and recommendations contained in a recently-completed survey of water resources of the province sponsored by the Atlantic Development Board."


Nonetheless, before we discuss the role of the above-mentioned Atlantic Development Board (ADB) study in the Canada-New Brunswick agreement as a whole, it appears worthwhile from the perspective of international river negotiations to provide additional information which might help explain why the St. Croix River was excluded from the final agreement.

As can be seen in Figure 1, Chapter 4, the St. Croix River is an entirely contiguous river, which forms the easternmost boundary between the U.S.A. and Canada, south and west of the Saint John River basin proper. In the St. Croix, the major polluter was a pulp and paper mill complex owned by the Georgia-Pacific Corporation, a United States company, located at Woodland, on the Maine side of the river. As was the case with the Fraser Companies, this American Company was both the basis of the local economy and largest employer in the region, as well as the major polluter. But in opposition to Fraser's situation, it did not have any operation on the Canadian side.

Furthermore, in the case of the St. Croix, in contrast to that of the Saint John, the governments of Canada and the U.S.A. forwarded, in 1958, a reference to the IJC requesting this body to carry out investigations and make recommendations. As a result, the IJC formed an "Advisory Board of Control of Water Pollution--St. Croix River," which after some investigations recommended that the industries and municipalities discharging wastes into the river should install
pollution control equipment. * 

From the point of view of the New Brunswick government, practically no action had been taken on this recommendation up to 1969, except perhaps for the upgrading of the classification of the St. Croix from class "D" to class "C" by the Maine legislature in 1967, which may have been due more to New Brunswick protests than to the IJC recommendations. However, the IJC did conduct a public hearing on the problem on September 17, 1968, at St. Stephen, New Brunswick. At this hearing, which was attended by a large number of officials and private citizens from both sides of the border, it became clear that although the pollution problem in the St. Croix persisted, authorities on the U.S. side were being more active as far as pollution regulation enforcement was concerned than on the New Brunswick side. * 

Finally, the 1969 ADB Maritime Provinces Water Resources Study did show that the Saint John River Basin had one of the worst pollution problems in the region and identified it as the one among those in the provinces requiring further comprehensive planning studies on a priority basis. 10

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* Interview, November 16, 1973, with Mr. John Hendrickson, of the U.S.A. section of the IJC. At the time, Mr. Hendrickson was on the staff of the Federal Water Pollution Administration of the U.S. and was a member of that IJC advisory board.

* Transcripts of the IJC (United States and Canada) Public International Meeting on Water Pollution--St. Croix River, 134 pp.

10 The report in twelve volumes prepared by the Montreal Engineering Company between 1967-69 with close cooperation of provincial and federal agencies, was undoubtedly the most comprehensive water resources study carried out in the Atlantic provinces up to 1969.
Therefore, it is not surprising that the "Canada-New Brunswick Consultative Committee on Water", which had been established in 1969 to identify priority water management problems in the province,\textsuperscript{11} advised the two governments to exclude the St. Croix River from the agreement. As a result, on May 8, 1970, Mr. W.R. Duffie (who was to lose his cabinet post several months later) wrote a formal letter to Mr. John Greene, federal Minister of Energy, Mines and Resources, requesting that their governments enter into a water planning agreement on the Saint John River Basin only, and finally on June 30, 1970, the Canada-New Brunswick Saint John River Basin Agreement was officially signed by the two ministers.

Planning under the Canada-New Brunswick SJRB Agreement

As defined in the text of the agreement signed by the two ministers, its principal objective was:

to provide for optimum management of water resources of the River Basin for the social betterment and economic improvement of the region with due consideration to the maintenance of a proper ecological balance. The formulation of an effective water quality plan and its implementation within the framework of comprehensive water resource management will receive first priority, to be followed by a comprehensive plan for the river system for the optimum development and utilization of the entire basin.\textsuperscript{12}

Thus, the agreement envisioned a dual programme consisting of (i) a short-term or interim water quality plan leading to immediate pollution control action, within the framework of (b) a comprehensive long-term plan which would "allow for examination of possible alternatives in the management and provision of an adequate quantity and quality of water to satisfy the future requirements of the region."

Although the agreement stipulated that the two governments should participate in a process of joint planning on an equal basis, Canada assumed 90 percent and New Brunswick 10 percent of the costs of the cooperative study. The agreement also stipulated that, in order to carry out its provisions, the following should be nominated: (i) a federal-provincial Saint John River Basin Board (SJRBB); (ii) a Saint John River Basin Committee, appointed and under direction of the SJRBB; and (iii) a Study Director, appointed by the Committee with approval of the Board.

Moreover, the agreement, recognizing that the SJR basin extended beyond the boundary of New Brunswick, postulated that the planning and management programmes should "be coordinated with those in adjoining regions, within other jurisdictions


Ibid.

SJRBB First Annual Report. In the SJRBB Files there are documents which refer to either the "Planning Committee" or the "Executive Committee." According to John Mercer (Personal Communication January 11, 1974), the latter was formed by six members of the Planning Committee. Both Committees were replaced in July 1971 by an Advisory and Liaison Committee reporting to the Planning Director.
[Maine and Quebec], at the appropriate stage in the program through the usual diplomatic channels.¹⁵

Finally, the agreement was for planning and coordination only. It stipulated that "Implementation of plans shall be undertaken through Memoranda of Implementation agreed to from time to time between Canada and New Brunswick."¹⁶

In the next two sections I shall describe how the Interim Plan and the Comprehensive Plan, two main tasks called for by the Canada-New Brunswick agreement, were carried out by the Saint John River Basin Board, the Planning Committee and the Planning Office.

The Interim Water Quality Plan

The Canada-New Brunswick agreement required that as part of a long-term comprehensive water management plan, an interim water quality plan be prepared within four months of the date of signing of the agreement. This plan was to be "compatible with plans arising out of the Maritime Provinces Water Resources Study and existing undertakings." Finally, the main purpose of the Saint John River Interim Plan (SJRIP) was

to recommend a specific set of measures which would significantly improve the quality of the Saint John River before the completion of the Comprehensive Plan called for by the Agreement.¹⁷

In Chapter 5 we saw how the SJRIP was being implemented at

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¹⁵ Ibid.
¹⁶ Ibid.
¹⁷ SJRBB First Annual Report.
the end of 1972. Here we shall explore the administrative and political environment in which the plan was formulated. In doing so we may understand its rationale and the decision-making process which led to it. However, before we discuss in some detail the developments which preceded the issuance of the SJRIP, it is important to call attention to a number of facts that tended to limit the activities of the agreement's institutional structure and the range of pollution control alternatives that it could propose.

First, during the initial year of the life of the agreement (that is, June 1970-June 1971), the Saint John River Basin Planning Committee, under the general direction of the Board, was the administrative body which actually exercised an executive function, and therefore was chiefly responsible for the preparation of the SJRIP.

Second, according to the agreement, the Board and the Committee were in fact limited to an advisory role, for they did not have powers to implement their recommendations. They did not have authority to request vital information from the polluting industries either. Thus, whatever authority they had was vested on each of their individual members independently. Effective enforcement powers remained with the New Brunswick Water Authority (and to some extent the Power Commission) and the federal Department of Fisheries by virtue of various acts.

Third, the Board and the Committee were also limited in the range of immediate pollution control alternatives they could advocate realistically by many past decisions, but particularly the 1968 agreement between the Water Authority and Fraser
Companies, Limited.

Nonetheless, these bodies did feel that it was within their terms of reference to make an independent assessment of the Saint John River basin pollution problem and to make recommendations regarding short-term corrective measures within the scope of the SJRIP.

Thus, before initiating the preparation of the Interim Plan the Committee received from the Board the following terms of reference for the SJRIP:

(1.) To describe and characterize the existing pollution problem.
(2.) To describe interim works and measures required to reduce pollution.
(3.) To describe a method of financing the abatement program.
(4.) To suggest appropriate institutional arrangements between governments for carrying out the necessary work.
(5.) To suggest methods for inspection and enforcement of the terms of the plan.18

At its first meeting, on July 31, 1970, the SJRB Planning Committee deliberated on how to carry out its planning task according to the Board's directives. With regard to the first two items the Committee was informed that the federal departments of Fisheries, National Health and Welfare, and Energy, Mines and Resources, as well as the N.B. Water Authority, had either already available or were obtaining a large volume of water quality data. Discussions then arose as to how these data should be compiled in order to be included in the SJRIP, and, expectedly, the conclusion was that the Montreal

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18 SJRBB, First Annual Report.
Engineering Company "were the logical firm to retain for such work."¹

As we have seen, that consulting firm had been commissioned by the Atlantic Development Board to prepare the most comprehensive water resources study ever carried out in the Maritimes region up to that time. The consultant's report was completed several months before the Canada-N.B. agreement was signed and, according to the agreement, served as the basis for its recommendation of a short-term or interim water quality plan. Thus, it is not surprising that the first decision of the Committee was that the

Montreal Engineering Company should be retained to work on the Interim Report and to bring up to date all the existing pollution data obtained by agencies, and to describe the present plans and works and priority measures necessary for the immediate reduction of pollution within the River Basin.²

With regard to item (3) of the Board's directives—methods of financing the abatement programme—the Committee was informed that the Water Authority and the Department of Municipal Affairs of New Brunswick, as well as the federal Department of Industry, Trade and Commerce should have substantial information on the economics and financing affairs of the industries and municipalities in the basin. The Committee then decided to entrust its Executive Chairman, Mr. Leo Brandon, with the task of looking into the financing and economic aspects

¹ Minutes of the First Meeting of the SJRB Planning Committee, July 31, 1970. SJRBB Files.

² Ibid.
of the SJRIP, and the possibility of retaining consulting advice on this matter as well.\(^1\)

Finally, with regard to items (4) and (5) of the Board's directives—suggestions for institutional arrangements between governments for carrying out the necessary works, inspection and enforcement—the Committee decided that, in view of the ongoing work on new provincial water legislation by Prof. D. Rouse's team (which included Mr. Brandon, see Chapter 5), it was more appropriate to postpone dealing with the matter until later.\(^2\)

The task of compiling the available data in order to arrive at a characterization of the pollution problem was non-problematic. With the collaboration of the relevant agencies, Montreal Engineering was able to update the ADB study and to produce a preliminary report in a few weeks. The report identified the major polluters in the basin and indicated that the total clean-up cost for industrial pollution alone would be of the order of $60 million, and the burden of this cost would fall upon "long-established companies." Further, it became known that the waste load contribution by the Fraser mills was such that, even if advanced waste treatment was provided for all other waste sources (industries and municipalities), there would not be any significant improvement on the water quality of the

\(^1\) Ibid. The position of Executive Chairman was especially created to handle the Interim Plan. It is interesting to note that neither the Okanagan nor the Qu'Appelle agreements called for an Interim Plan.

\(^2\) Ibid.
international section of the Saint John River.23

Hence, the Planning Committee already at its second meeting was in a position to consider the economics and financing problem of pollution abatement in the basin. During this meeting it took up questions such as "whether water quality requirements should be laid down throughout the River," and which criteria should be used to determine "whether a company could bear the cost of pollution control, and specifically, the question of how hard the Board should press Fraser Companies to undertake a pollution abatement programme.24

In this regard, Mr. Brandon sought to obtain from industries all the information needed to allow a thorough and speedy pollution abatement programme. Against the argument advanced by some members of the Committee that the Committee did not have sufficient time and financial resources to carry out the required investigations, and that in any case the industries themselves might not have the information, he counter argued that "the onus should be on the particular company concerned" and that "it is surprising what some industries can come up with when pressed."25

When, at the second meeting of the Planning Committee, it

23 An undated draft of the consultant's report was attached to the minutes of the Third Meeting of the SJRB Planning Committee, September 10, 1970. Appendices one, two and three to this report containing water quality data, but not the main text were published later in October. The cost estimates were later confirmed by the H.G. Acres study, which had been commissioned by the federal Department of Energy, Mines and Resources in 1969, and which was published in 1971. See section on comprehensive planning, this Chapter.

24 Minutes of the Second Meeting of the SJR Planning Committee, August 26, 1970. SJRBB Files.

25 Ibid.
was reported that "the timetable and scale of effluent reduction called for by the 1968 Agreement [would] not be met satisfactorily by Fraser Companies" and the company was claiming that it could not afford the pollution abatement costs, Mr. Brandon took upon himself the task of verifying the truth behind Fraser's argument.26

Thus, with the aid of the Montreal Engineering Company, Mr. Brandon was able to demonstrate that the financial position of Fraser's had been considerably strengthened since 1967, and consequently was then (1970) in a position to spend the required capital on pollution control, and emphasized that close to $5 million would be made available to the company in the form of grants from the federal and provincial governments.27

Mr. Brandon further pointed out that, nonetheless, for the Fraser Companies, "pollution control is very low in their priorities, for they are not willing to invest adequate amounts in treatment facilities," even considering that they could save close to "one million dollars in taxation." He further stressed that although conversion to a modern wood processing system was the only viable course of action for the company, (and which would also greatly improve the pollution problem), they "are reluctant to admit fresh capital from outside which [would] speed up modernization, as they prefer to modernize out of cash flows." Finally, Brandon called attention to the fact that the

26 Ibid.
"company is the major polluter of the river and is delaying all clean-up programmes and embarrassing our position with the United States."

However, the fact that the 1968 agreement between Fraser's and the Water Authority was still in force, was at the same time an aid and a hindrance. It was an aid because the rather strong water quality requirements and the deadlines for compliance stipulated in that agreement provided the necessary legal base for a speedy enforcement action. It was a hindrance because it was clear that as long as that agreement was in force, the company could not legally be required to attain higher pollution reduction levels and presumably could not be prosecuted for violating more stringent standards set up in the SJRIP. In addition, one may recall that the terms of the Saint John River Basin agreement specifically excluded implementation matters from the responsibilities of the SJRBB.

Given this background, the contents of the SJRIP which was forwarded on October 31, 1970--thus on schedule--to the competent federal and provincial ministers for endorsement, were rather predictable.

When finally made public by a joint news release by the two governments on February 4, 1971, the stated general goal of the

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28 Ibid.

29 At the second meeting of the Committee, representatives of both the water quality and the Power Commission were in agreement that the Fraser's pollution problem was "a matter between the company and the province" and consequently should be left to the two parties to negotiate.
SJRIP was to recommend a specific set of measures based upon the findings of the Committee and its consultants, "to reduce the gross pollution while a refined analysis for optimal water quality is being developed." As already indicated in Chapter 5, the most important recommendation contained in the SJRIP was the one dealing specifically with the Fraser Companies at Edmundston. It requested of the company that it "should begin full primary treatment of all its effluent by December 31, 1971 and reduce its present [1970] pollution load of BOD by at least 90% by June 30, 1973."

Hence, the only significant changes from the 1968 agreement between the company and the Water Authority (Chapter 5) were a more stringent BOD discharge limit (from 80%) and an extended deadline for compliance (which corresponded to the same date the SJRB agreement would terminate). This recommendation, (as some of the others), probably represented a compromise between those who favoured a status quo attitude and those, like Mr. Brandon, who would prefer a tougher stance, at least against the major basin polluter.

There were also in the SJRIP specific recommendations regarding several other major polluters in the basin, including Irving Pulp and Paper, Ltd. As far as level of pollution abatement and deadlines were concerned, the requirements for those industries were identical to those for Fraser's. This indicates that the Saint John River Basin Board and Committee,

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although aware that the pollution situation in the basin (except for the estuary where the Irving Pulp and Paper mill was situated) would not improve substantially by requiring the same level of treatment of all industries, and that the crucial waste discharger was Fraser, preferred to adopt a policy that, although not efficient from a strictly economic point of view, was certainly the most acceptable politically.

Since I have already explained in Chapter 5 how the recommendations of the SJRIP were being implemented by the end of 1972, the subject will not be discussed further here. Nevertheless, it seems important from the point of view of decision-making analysis to explore in greater detail what other information besides that generated by the consultants and the government agencies mentioned above, might have influenced the formulation of the Interim Plan. Hence, I shall attempt to provide below an evaluation of the degree of public involvement and of the extent to which politics played a role in this short-term planning process.

The SJRIP, Politics and Public Involvement: As far as it can be determined, the process of formulating recommendations for the SJRIP never reached the political forum. The last policy statement from the provincial government regarding the subject was the speech made by Mr. W. Duffie in March 1970, before the Canada-N.B. agreement was signed, in which he stated that industries and municipalities should not delay construction of waste treatment facilities in anticipation of more favourable subsidies as a result of the forthcoming agreement for, he stated, the SJRB Board could actually recommend more severe
penalties for non-compliance with existing agreements.\textsuperscript{31}

It appears that the subject was not an issue during the electoral campaign for the October 26, 1970 provincial elections, for there are no public records about it. Since the media were practically completely controlled by K.C. Irving, whose industries, as we have seen in Chapter 5, were perhaps the major industrial polluter in the region, this is rather understandable.

It is possible, however, that the forthcoming election made those provincial officials in charge of the implementation of the federal-provincial agreement and preparation of the interim plan, namely, Minister W.R. Duffie, John C. Smith and especially Leo Brandon, to act even more quickly to make sure that the SJRIP was prepared under the existing Liberal government. Thus, in addition to the good work done by the consultants, this event may explain the rather unusual fact within government administration that the IP was completed on schedule, on October 31, 1970, only five days after the election and forwarded to the responsible federal and provincial ministers.

However, as explained in Chapter 5, endorsement of the Interim Plan by the two governments came only in January 1971 because of the change in government in New Brunswick in November 1970, and a reshuffle of cabinet ministers in Ottawa at about the same time. Actually, as several members of the SJRB Board and Committee recognized at the time, existing legislation and

\textsuperscript{31} See note 28, Chapter 5.
knowledge about pollution control was "good enough with sufficient support from the ministers" but, as Mr. Brandon remarked, they might not have such support in New Brunswick.³²

Despite Mr. W. Duffie's (N.B. Minister of Natural Resources in the Robichaud government) observation that "One of the government's greatest allies in instituting effective action in pollution control is an informed public opinion,"³³ all available records indicate that during the four months it took the consultants to prepare the background material and the SJRB Planning Committee and Board to prepare the interim plan, there was practically no public awareness of what was happening, let alone involvement in the formulation of the plan. In this regard, not even the Committee with its progressive members and its "militant" Executive Director, considered seriously the possibility of public input at this stage of the planning process.

For example, when at its first meeting the Committee decided it was necessary to look into the economics and financing of industrial pollution abatement in the basin in order to assess the situation, it requested from the Water Authority copies of all the existing agreements between the

³² Minutes of the Seventh Meeting of the Saint John River Basin Board, April 1971. Later, Mr. Brandon complained to Mr. A.T. Davidson, Asst. Dep. Minister, Canada Dept. of Environment, that the new provincial government had still to show a commitment to the Interim Plan, and in his opinion everything indicated it had "a status quo attitude." Letter dated April 8, 1971. SJRBB Files.

Authority and industries, especially mentioning Fraser Companies. However, there were differences among Committee members about how open the negotiation process should be. On the one hand, Mr. Douglas Hayward, of the N.B. Electric Power Commission questioned the desirability of such documents being passed among Committee members. On the other hand, Mr. Leo Brandon, the executive chairman of the Committee, was of the opinion that "all matters pertaining to water and riparian rights are public matter and [were] more harmful if kept secretative (sic)." In this regard, it is interesting to note that participants at these Committee meetings apparently ignored the fact that the Fraser agreement had already been the subject of a detailed statement by Mr. Duffie in the Legislative Assembly on March 13, 1969, as has been mentioned before.

However, the attitude of the Committee could be justified if one considers the short time available to prepare the plan and the practical difficulties involved in trying to obtain public inputs. Actually, the federal government had at this point already decided to finance and staff a special public participation programme for the Saint John River basin, to be carried out simultaneously with the planning activities, but when the SJRIP was in the process of being formulated, discussions were still taking place between federal and

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Minutes of the First, Second and Third Meetings of the SJR Planning Committee. SJRBB Files. It appears that, in addition to the fact that Mr. Brandon and Mr. Hayward belonged to rival agencies, there was also some personality conflict between the two. John Mercer, personal communication, January 11, 1974.
provincial officials as to the scope of the public involvement tasks.

However, judging from statements made by members of the Planning Committee where the matter was discussed, it appears that by and large they all showed concern about the implications of such a programme, and examples were given "of cases where public involvement had created pressure groups which were undesirable to government or to politicians." 35 In any case, the public participation programme only got underway much later, in February 1971, when authorization was given by the Board for hiring eight people "to provide specialized consulting services" to the programme. 36

The Long-Term Comprehensive Plan

The federal-provincial SJRB Agreement, as we have seen, was conceived primarily as one of three pilot projects in different regions of Canada, designed to develop and test comprehensive river basin planning methodologies. The Interim Plan was actually an additional requirement which was included in the agreement due to the unusually serious and urgent pollution

35 Minutes of the First Meeting of the SJR Planning Committee, July 31, 1970. SJRBB Files.

36 Note the euphemism in this statement. It appears that there was still much concern among provincial officials that the staff hired for the programme would feel as if they were "missionaries" and by the fact that there was not a clear line of authority over the public participation programme by the SJRBB, and this might interfere with, rather than complement, the work of the Board. Minutes of the Seventh Meeting of the SJRBB, February 22-23, 1971.
problem in the Saint John River basin.

As was the case with the Okanagan and the Qu'Appelle agreements, the major purpose of the Saint John agreement was to prepare a long-term Comprehensive Plan for the optimum use of the water resource, given a trend for growing competition for and conflict over the use of the resource.

However, the fact that the SJRIP had to be prepared within four months of the date of signing of the agreement meant in practice that work on the Comprehensive Plan had to be postponed, and consequently the requirement that the Interim Plan should be part of the Comprehensive Plan was to a large extent unrealistic.

Furthermore, in addition to the unexpected changes which took place both within the federal and (especially) the provincial governments, the original administrative structure set up by the agreement proved cumbersome and thus had to be changed.

Therefore, a great part of the period between November 1970 and June 1971, was spent by the SJRB Board and Committee in discussions regarding a new administrative structure for carrying out the Comprehensive Planning process. As a result of these discussions, the Planning Committee and its Executive Director, who reported directly to the Board and had been with the aid of the consultants chiefly responsible for preparation of the Interim Plan, were replaced in July 1971 by an Advisory and Liaison Committee reporting to a Planning Director, who in turn reported directly to the Board. In addition, substantial time and effort was devoted to (a) drafting a job description
for a Planning Director and hiring him, and (b) restructuring the public participation programme.

Thus, it is probably fair to say that it was only after Mr. John C. Henderson was appointed to the position of Planning Director on June 15, 1971, that the comprehensive long-term planning process actually started. For one thing, the Planning Office itself was only organized in February 1971, having Mr. Leo Brandon, who until then was Executive Director of the Planning Committee, as the interim Planning Director.\(^3\)

When on March 18, 1971, members of the then SJRB Planning Committee and members of the Northern Maine Regional Planning Commission (Chapter 8), met to discuss Comprehensive Planning approaches on both sides of the border, Mr. Brandon candidly admitted that work on their Comprehensive Plan was behind schedule. Only then were tasks being assigned to government agencies and proposals being sought from consultants, and that some additional funds were required for limnological and ecological field work.\(^3\)

In his April 8, 1971, letter to Mr. A.T. Davidson, Mr. Brandon attributed lack of progress in the implementation of the

\(^3\) Actually, the new organization structure of the Committee and Planning Office was officially approved by the Board on June 25, 1971, at the Eighth Meeting of the Board. In his letter to Mr. A.T. Davidson, dated April 8, 1971, Mr. Brandon suggested that the reason he had not accepted "the position of Planning Director which was going to be offered to me" [was] "a signal to you and the Board that I have no confidence in the way the Saint John River Agreement is being handled.

\(^3\) Minutes of the Meeting, NMRPC Files. A detailed account of this meeting is given in Chapter 8.
In part to bureaucratic rivalries. He stated:

the New Brunswick Water Authority and the New Brunswick Power Commission (two local agencies which have not worked together effectively previously) have now acquired a common enemy in the Saint John River Planning Office because both find this a threat to their own powers. The extent of the lack of cooperation is apparent when one finds that the Power Commission have (sic) been approaching major consulting engineering firms asking them if they are interested in being retained by the Power Commission to protect the Commissions (sic) interest with regard to any actions of the planning and implementation programme on the Saint John.

The task of developing a Comprehensive Plan for the SJR basin was greatly facilitated by the availability of both the 1969 ADB study (which as we have seen to a large extent also served as the basis for the SJRIP) and of a study on comprehensive water quality modeling of the Saint John River Basin, commissioned in 1969 to H.G. Acres Consulting Services, Limited by the federal Department of Energy, Mines and Resources.  

The ACRES study developed water quality optimization and simulation models which were designed to estimate the dissolved oxygen (DO) profile for the main stem of the SJR under varying conditions of flow and waste discharges, and the probability of occurrence of conditions below a certain minimum acceptable DO

40 The study, entitled "Water Quality Management Methodology and its Application to the Saint John River," comprised ten volumes—one main text and nine appendices. It was published in August 1971, but officially forwarded to the Department of Environment on April 12, 1972.
level. They could also provide an estimate of the degree of treatment necessary at each effluent source in order to provide an acceptable level of water quality at any point on the river at minimum cost.

Thus, the ACRES report, despite being fairly theoretical, and despite the fact that the data it used were not entirely up to date, gave new insights into the dimensions of the pollution problem caused by the Fraser mills at Edmundston and Madawaska. It showed, for example, that even if advanced waste treatment was provided for all other sources (municipalities and industries) discharging into the international section of the Saint John River, there would not be any significant improvement in the quality of the river unless Fraser cleaned up too. The study further indicated that to maintain the international reach of the SJR between Edmundston and Grand Falls in an aerobic condition, 87 percent of the total clean-up cost would be borne by Fraser's two plants at Edmundston and Madawaska, and that Fraser's investment would represent about 70 percent of the total basin-wide investment required to maintain a general standard of 5 ppm DO in the river's water above Oromocto.\(^1\)

In addition, the ACRES study developed eight potential water quality management systems which gave an order of magnitude of the costs associated with each corresponding policy alternative. The report further suggested that from a strictly economic efficiency point of view the effluent charges system

\(^1\) Ibid.
presented greatest advantages, although it did recognize that it might not be entirely compatible with a truly equitable enforcement policy. In a clear reference to the Saint John River Basin Interim Plan, the report stated:

In comparing the answers obtained on the basis of an economic efficiency objective with the plan of action conducted to date, it is our belief that earlier use of this model could have produced substantial economies in water quality management within the basin by clearly highlighting the most efficient pattern of public and private investment in effluent abatement facilities.

Thus, the Acres study clearly did not influence the formulation of the SJRIP, although it would have been particularly suited for such purpose, if it had been prepared in time. Nonetheless, at least up to the end of 1972, the SJRB Planning Office intended to use the study as the basis for assessing alternative water quality management policies, prior to the completion of the Comprehensive Plan.

However, since the agreement stipulated that the Comprehensive Plan should include all aspects of water use and development and not only those directly related to water quality, there was still a major task ahead for the Planning Office.

Moreover, the Board interpreted the agreement as requiring not only that a comprehensive plan be produced at the end of the agreement, but that efforts "should be directed towards establishment of a continuous process of planning for the

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Ibid. Letter forwarding the report to Environment Canada.
future." In addition to establishing an on-going planning process the Board was concerned with the problem of implementation of the recommendations which should emerge out of the Comprehensive Plan under the agreement. In its Second Annual Report, it stated that it had come to realize (perhaps as a result of its experience with implementation of the interim plan) that

a prerequisite to the successful implementation of a water management plan is a commitment to it by the government agencies who are responsible for guidance and control of each group of water users. This meant that the responsible government organizations should be involved in the planning studies from the start. This has been achieved, partially through membership on the Committee and even more by getting each department or agency to carry out the study of water use in its own area of responsibility.

In practice this meant that the fisheries study was allotted to federal Fisheries Service, the agricultural water use study to the N.B. Department of Agriculture and Rural Development, and so on. Moreover, as opposed to the case of Maine (Chapter 8) and against a suggestion made earlier by Mr. Brandon, no consulting firm was retained to compile the individual agencies' data and reports and produce a printed Comprehensive Plan. Consultants were employed, however, generally by the resource agency concerned, to carry out specific studies.


4 In his April 8, 1971, letter to Mr. Davidson, Mr. Brandon suggested that a consulting firm be retained to carry out and coordinate most of the study tasks.
The result of this decentralization of the research and study programme was that the Planning Office had to face an enormous task of coordination and projects control. In the view of Mr. John Henderson, the Planning Director, the approach should still be considered the most effective one from the point of view of implementation. At one point he argued that

our method of involving the responsible departments of both levels of government in all the studies from the beginning was not as efficient in the data collecting and planning phases as employing a consultant would be, but that we obtained a big advantage when it came to implementation, because all the departments responsible for implementation were already sold on the plan."

Another difficult task that the SJRB Board and Planning Office had was to coordinate the public participation programme, which by the end of 1971 was fully staffed and in operation, with the planning process. The programme, the Board claimed, was "designed to ensure that planners and elected representatives get a true assessment of public preference, the will of the people, and likewise that the public appreciates the real magnitude of the problems to be solved"."

The major problem they had was, evidently, that it was very difficult to get people involved in long-term, comprehensive planning. Most people are issue-oriented and respond best to

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45 Memorandum dated April 18, 1973, from Mr. Henderson to Messrs. Leonce Chenard and Brian Barnes. His comments were related to the Comprehensive Plan approach being pursued by the Northern Maine Planning Commission (Chapter 8) regarding the Maine part of the SJR basin. SJRBB Files.

problems which affect them or in which they can clearly see cause-and-effect relationships directly, while the comprehensive planning approach being pursued by those bodies was directed towards broader, longer-term issues which required lengthy studies to be understood and translated into practical courses of action.

Public participation was certainly more viable and perhaps also more crucial in the preparation of the Interim Plan, and yet considering the way it was formulated there was no opportunity for public inputs. The public participation programme did not get into full operation until after the Interim Plan had been issued by the Board.
The Presque Isle Stream\textsuperscript{1} rises north of the town of Easton in Maine. It flows southwards through the community of Mars Hill, then towards the southeast where it crosses the United States - Canada boundary about three miles from the town of Tracey Mills in New Brunswick. It continues its southeasterly course through Centreville and after thirteen kilometres joins the Saint John River. The total drainage area of the stream is only 474 square kilometres (see Figure 1, Chapter 4).

This chapter describes in detail the developments in the United States and Canada, and the interactions between private citizens and government officials of these two countries around several issues related to pollution of the Presque Isle Stream. The most important issues discussed will be: (1) the change of the water quality classification of the stream on several occasions by the Legislative Assembly of Maine; (2) several fish kills in the stream, and especially the one which occurred in July 1968, and (3) the struggle up to 1972 of the Northern Maine Regional Planning Commission to have the concept of a regional waste treatment system for the Presque Isle and Aroostook sub-basins accepted and implemented.

\textsuperscript{1} In the U.S.A. the stream is known as the "Prestile," while in Canada it is called the "Presquile." We shall adopt the name used by the IJC, "Presque Isle," which is the original French spelling of the name.
It will be seen that most of the problem was the result of the obviously unwise decision (at least from hindsight) of the government of Maine to allow two large waste-generating industries--Vahlsing Inc. (a potato processing plant) and Maine Sugar Industries, Inc. (a sugar-beet refinery) to locate at the banks of the Presque Isle, a stream having a very small waste assimilative capacity relative to the Saint John River and its other tributaries.

The Downgrading of the Water Quality Classification of the Presque Isle Stream

1959: The First Attempt: As we have seen in Chapter 4, since 1951 the State of Maine has had a programme of pollution control that consists essentially of a permit system for new waste discharges and stream classification. The latter classification is based on the water quality necessary for desired uses. The Presque Isle Stream was classified "B-1" in 1955, a classification that aimed at protecting the most important existing uses: fishing and swimming and domestic water supply. (Figure 2, Chapter 4).

However, in 1959 a Bill was introduced into the Maine Legislature for the purpose of downgrading the stream, apparently as a means of sparing the town of Mars Hill from having to construct a sewage treatment plant. But, opponents to the Bill saw it as a first step towards undermining the stream-classification system; and pointed out that it was a potential violation of the 1909 Treaty. However, asked to render an opinion on this possible conflict between the Bill and the
Treaty, the Maine Supreme Court held that there was no conflict because the Bill did not authorize "pollution to the injury of health or property" in Canada. This liberal interpretation of Article IV of the Treaty, apparently had no influence on the Legislature, for at about the same time it was rendered by the Courts, the Legislature did not approve the Bill. As a consequence, the town of Mars Hill was forced to build an expensive sewage treatment plant.

The issue had already been somewhat forgotten when in 1961 Fred H. Vahlsing, Jr., a well known industrialist, put into operation a new potato-processing factory - Vahlsing Inc. - on the banks of the Presque Isle at Easton, Maine. This event marks the beginning of what is normally considered the Presque Isle "controversy". Let us examine in detail the sequence of events which took place on each side of the border from that date on.

1965: Victory of Political Expediency: in his application for a water discharge license Mr. Vahlsing stated that he would provide adequate treatment before discharging effluents from the plant into the river or "cease operation". That meant the stream's B-1 Classification was to be maintained. Later he assured Commission officials: "We feel the same as you do, that these rivers and streams should be protected". They took him at his word and approved his application.  

Vahlsing Inc. started with no waste treatment facility and

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raw effluents were being discharged into the stream. When pollution of the Presque Isle became evident, the WAEIC threatened Vahlsing several times with court action, and between June 1962 and March 1966, the Commission found thirty-one violations of the stream's B-1 classification. Vahlsing, in response, started building a primitive waste treatment system consisting of interconnected oxidation lagoons. The treatment system never worked properly, although Vahlsing insisted that it was totally adequate.3

The town of Mars Hill, which is located just downstream of the Vahlsing plant on the Presque Isle, as we have seen, had been obliged some years earlier by the state to build an expensive sewage treatment plant in order to keep the Presque Isle B-1 classification. Thus, in view of the increasing pollution problem a petition was circulated among townspeople asking the Governor of Maine for help. Despite the fact that many of the 2,100 residents were employed by Vahlsing Inc., 420 of the local people signed the petition. Even in view of such public pressure and the WAEIC request, Maine's Attorney General, Richard J. Dubord would not take legal action against the Vahlsing industry.4

Then in late 1963, another element entered the scene. The State of Maine became involved in the fight for a sugar-beet allotment much disputed by several other states. The fight for


the sugar allotments started soon after the Sugar Act was amended as a consequence of the U.S. break with Cuba. The grant was obtained mainly through the efforts of a group of five Maine politicians who testified before a Department of Agriculture hearing in support of a sugar-beet allotment for their State. Governor John H. Reed and U.S. Senator M. Chase Smith led the Republicans, while U.S. Senator Edmund S. Muskie was the most enthusiastic and the only Democrat in the group. Aroostook County, which is one of the U.S.A's largest producers of potatoes, bid for a second cash crop and obtained the 33,000 acre sugar-beet allotment.

The county's farmers and businessmen immediately began to search for an entrepreneur willing to invest in a sugar-beet refinery. At least one major sugar company became interested in the enterprise but after first-year test planting produced very low yields, they rejected the proposal. At that point, Fred Vahlsing Jr. stepped in and thanks to his aggressive entrepreneurship and despite his lack of experience with the sugar industry, Maine was able to keep the sugar allotment.

According to Senator Muskie, Freddie Vahlsing "did a remarkable job in terms of getting the plant built on time and in overcoming a lot of other roadblocks." But Vahlsing had overcome some roadblocks for his potato-processing industry as well. The major one was the State's second highest water

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5 Lippman, Jr. and Hansen, op. cit., p. 157.

classification for the Presque Isle which Vahlsing Inc. had been violating since 1962. In order to build the $15 million sugar refinery, Vahlsing invested about $1 million of his own capital and tried to secure the remaining fourteen from federal and state government sources. The State of Maine, which had already contributed generously for his potato-processing enterprise, "agreed to put its credit behind another $8 million in private loans." The federal government, through its Area Redevelopment Administration (ARA, presently the Economic Development Administration) promised a loan for the remaining six million dollars.

However, both the ARA and Maine's Industrial Building Authority, (which had been established by Muskie when he was Governor of Maine), were concerned that their loans could be jeopardized if the Water and Air Improvement Commission succeeded in its order to stop Vahlsing from polluting the Presque Isle.

In view of this, on March 15, 1965, Senator Muskie sent a letter to the editors of Maine newspapers urging them to support a temporary downgrading of the classification of the Presque Isle Stream. This required a legislative act, and Governor Reed claiming the matter to be urgent (because there was a deadline to appropriate the funds) asked for a joint session of the Maine legislature to downgrade the stream from Class B-1 to D, which would allow almost any amount of industrial pollution. And when

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the Republican-controlled legislature* met in late March, Governor Reed, a potato farmer from Aroostook County himself, made an unusual appearance to support a new water quality standard for the Presque Isle.

Legislators from Aroostook County also rallied to Vahlsing's support. And Vahlsing himself brought several hundred supporters from that county to a hearing on the bill at Augusta.' Environmental writer Graham, Jr., provides further details on the events that took place then: "Conservationists who spoke against the Bill at the hearing found themselves subjected to Vahlsing's relentless charm. In a typically dashing gesture he offered to take all seventy-five members of the League of Women Voters' delegation to lunch in order to explain his position. The ladies politely declined". He adds that Vahlsing actually called James Ezra Briggs, a former legislator and an opponent to the Bill, and asked him if he would accept a position on the board of directors of his new sugar-beet company. Expectedly, Mr. Briggs declined the offer.10

The measure called "An Act to Promote the Production of Sugar-Beets in the State and Reclassifying Certain Waters in Aroostook County" was approved by both houses in a close vote. Some legislators - either because they were pro clean

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* The legislature, which had been under Republican majority for almost three-quarters of a century, was, according to Mr. Floyd Harding (a Presque Isle, Me, lawyer) greatly influenced by industrial groups. (Personal comm., January 30, 1974).

' Graham, Jr., op. cit., p. 109.

10 Ibid.
environment or because of personal political reasons - protested the new classification which in practise meant designating the Presque Isle officially an open sewer. They believed that perhaps the legislation was aimed at benefitting not the sugar refinery but Vahlsing's potato-processing plant on the banks of the Presque Isle. Others reminded their peers that it was because of the existing higher water quality standards of the Presque Isle that the town of Mars Hill had been forced to assume an indebtedness of $260,000 in bonds to build a sewage treatment plant.  

In response to these criticisms some legislators justified their support of the downgrading on the grounds that the measure was temporary and with the view of allowing for some unforeseen problems in the initial stages of operation of the refinery.

It is interesting to note that Mr. Vahlsing had himself admitted to the president of Maine's League of Women Voters that "he expected to have his hands full with technical problems in the first few years of operation of the beet plant; and that "he didn't want to have to think about the problems of sewage (sic) treatment".  

Governor Reed stated that a German engineer from Krupp (with large experience in pollution abatement equipment) was in charge of the refinery treatment system and had assured him that

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11 Ibid.  
12 Ibid.
the treated wastes would be completely harmless to the stream.Senator Muskie took a similar position in a newsletter to Maine newspapers a couple of weeks later.

Some people claimed the sugar-beet refinery was completely pollution-free when it went into operation in January 1967 and that it was "the potato-processing plant which continued to befoul the Presque Isle, killing fish and producing a water odour that literally drove nearby residents out of their homes". However, it is difficult to ascertain from the information available, whether or not most of the pollution load originated with the potato processing plant. Nonetheless, for Maine's conservation-minded people and the people living along the Presque Isle Stream in particular, (and as we shall see soon for Canadian authorities as well), the important question was: if those government officials responsible for the construction of the refinery were so sure of the high quality of the effluents of the future refinery, why were they not able to convince the federal and state funding agencies that there was no reason to worry about the refinery being closed down for not complying with the State's surface water classification? Need the sugar-beet refinery be so tied up with Vahlsing Inc. that the future of the former would depend upon what happened to the latter?

In any event, Freddie Vahlsing did not benefit very much

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13 Letter from Governor John H. Reed to Premier Louis J. Robichaud dated March 5, 1965. Saint John River Basin Board Files, Provincial Archives, Fredericton, N.B., hereafter referred to simply as SJRBB Files.

14 Lippman and Hansen, op. cit., p. 159.

15 Ibid.
from the legislative act which downgraded the Presque Isle for it contained the proviso that the reclassification would only become effective after the sugar-beet refinery was operational. Moreover, in 1967, nearly three years after the downgrading act was enacted and about one year after the refinery went into operation, the Presque Isle Stream was upgraded by the legislature to class C. The reclassification of the Presque Isle to "C" did not force Vahlsing to take immediate action. With its 1960 license Vahlsing could not be prosecuted for "C" violations until 1976 as long as the company adhered to a timetable for installing facilities to upgrade its discharge. 

Canadian Reaction

In January 1965 news reached government officials in New Brunswick that the Maine Government had won the bid for a sugar-beet allotment from the U.S. federal government and plans were being made to construct a large sugar-beet refinery at Easton, near the Maine-New Brunswick border. Being informed of these developments, Premier Louis J. Robichaud of New Brunswick sent a letter to Governor Reed expressing his concern that "the effluent from this plant is to be discharged without treatment


17 As we shall see later in this chapter, an attempt to bring the classification of the Presque Isle back to its original (1955) B-1 and B-2 classes, and to move up the date of compliance from 1976 to 1972, was defeated by the legislature through an indefinite postponement of the proposal.
into the Prestile Stream which is a tributary to the Presquile (sic) and Saint John River in New Brunswick." In addition, the Premier recognized the importance of that industrial development for Aroostook County but pointed out that any unrestricted discharge of industrial waste could largely nullify the beneficial effect of various industrial and municipal waste treatment facilities that had been built recently, and would be a severe setback to the pollution control plans of both Maine and New Brunswick. Robichaud finished his letter expressing his hope that when the Maine legislature finally authorizes the construction of the sugar-beet refinery it "will take all possible steps to ensure that proper treatment facilities are installed."

Despite a reassuring answer from Governor Reed that proper waste treatment equipment would be installed in the refinery, Premier Robichaud soon learned that the Maine legislature had, at the same time, approved the construction of the refinery and reclassified the Presque Isle Stream from B-1 to D, i.e. from the second highest water quality standard to the lowest. Apparently alarmed by the news, the Premier wrote on April 20, 1965 to the Canadian Secretary of State for External Affairs, Paul Martin, stressing that if the State of Maine felt it "necessary to downgrade the classification of the Prestile in

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19 Ibid.
20 Letter to Premier Robichaud dated March 5, 1965. SJRBB Files.
order that the effluent from the refinery could be accepted," then it was by no means clear that the refinery wastes would be properly treated. He then asked the Department of External Affairs to convey his concern to the U.S. federal government and suggested that Secretary Martin bring out the point that the Presque Isle Stream as an international water body was under federal jurisdiction, and in addition there was the fact that the sugar-beet refinery was largely federally financed.

On May 24, 1965, the Canadian Department of External Affairs conveyed New Brunswick's concerns through an aide-memoire from its Embassy in Washington, D.C. to the U.S. State Department which in turn relayed the message to the Governor of Maine. In mid-July, the Canadian Embassy in Washington received an aide-memoire from State Department, stating that the Governor of Maine had been contacted and he had wished to "assure our Canadian neighbours that their interest in this waterway will be protected."21 The Secretary of State for External Affairs, in transmitting the above information to Premier Robichaud, pointed out that he was not taking any further action on the subject until he received a report from the Department of National Health, which, as requested by New Brunswick had undertaken a water quality survey of the Presque Isle during that summer.22 Secretary Paul Martin seemed to emphasize that pollution of the Presque Isle was still a "possibility" at the time and the

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21 Aide-memoire dated July 13, 1965, SJRBB Files.

22 Letter from Secretary Paul Martin to Premier Robichaud, dated August 18, 1965, SJRBB Files.
sugar-beet refinery was still "being planned." In fact, bio-assays conducted in the stream by both provincial and federal agencies, in 1965, downstream from the international border indicated "that the Presque Isle afforded a suitable habitat for juvenile salmon" which gives an idea of the relatively good water quality that the stream still had in its New Brunswick portion. Canadian water quality surveys of the Presque Isle throughout the year 1966 presented similar values for the water quality parameters observed in 1965.\(^3\)

It is important to point out that the Presque Isle Stream has a very small waste assimilative capacity. The quality of the stream water fluctuated pretty much according to whether or not Vahlsing Inc. was in operation. Investigations did show that there was a steady deterioration since that plant began operation in 1961.\(^4\) Both federal and provincial agencies had planned to monitor the Presque Isle Stream during the initial beet-sugar production of the new refinery but they were unable to monitor this important initial short run production of sugar (from January 4 to January 24, 1967) because they were not warned in advance by the authorities in Maine. However, analyses of water samples of the river sometime later in the winter revealed a water quality deterioration "attributable to the

\(^3\) Province of New Brunswick - Pollution of the Presque Isle: a Transboundary River, Brief to the Secretary of State for External Affairs, Canada, 1969. There were three versions of this brief; unless otherwise indicated, references are to the final draft, hereafter referred to as N.B. 1969, Brief.

\(^4\) Ibid.
initial production of beet-sugar in Maine." After 1967, pollution of the stream continued to increase owing to the inadequate treatment facilities, presumably at both the potato-processing plant and the sugar-beet refinery which were subjected to continuous breakdowns from overloading.25

The July 1968 Fish Kill in the Presque Isle Stream

Canadians Build a Dam on the Presque Isle

On the morning of July 2, 1968, some people living at Centreville, New Brunswick, near the banks of the Presque Isle Stream complained to the local Forest Ranger that fish were dying in the river. The Ranger checked the situation and called Mr. J.S. Hannah, field officer of the Federal Department of Fisheries in Woodstock, New Brunswick. Two days later, after conducting a survey of fish mortality, Mr. Hannah sent a report to Mr. L.C. Ripley, District Protection Officer of the same department in Fredericton, who, without delay, transmitted the information to his immediate superior Mr. C.P. Ruggles of the Maritimes regional office in Halifax.26

On July 4, after receiving communications that there was a massive fish kill in the Presque Isle Stream (see Photograph 1,) the New Brunswick Water Authority dispatched two water pollution

25 Ibid.
26 N.B. 1969, Brief. This account is also based on very sparse information gathered from Maine and New Brunswick newspapers.
experts to the area to determine the cause. These provincial officials followed the stream from the point where it discharges into the Saint John River up to its source north of Easton in Maine. They collected water samples which were later analyzed for dissolved oxygen (DO) and biochemical oxygen demand (BOD). At approximately the same time Mr. Brian Barnes, Chief Engineer with the New Brunswick Water Authority flew up the entire Presque Isle Stream to investigate the situation. Results of the
surveys were sent to the high echelons of the Authority, which attributed the fish kill to waste discharges from Maine Sugar Industries, Inc. refinery and Vahlsing Inc. potato processing plant. The massive pollution was said to be the consequence of a combination of excessive load in the potato-processing plant, technical problems with the refinery which was then processing sugar-cane and low summer flows and high water temperatures of the river.  

On July 7, 1968 five hot summer days had elapsed since the first severe fish kill in the Presque Isle. "I remember [Robert M. Caines said later to a reporter] there was a knock on the door, and when I opened it a couple of small boys from the town were standing there with a bucket of dead fish. They wanted to sell me the lot of them for a dollar. The fish didn't smell any good so I asked the boys where they'd caught them. 'We didn't catch them', they told me, 'we picked them up beside the water'".  

Mr. Caines decided then to drive to the Presque Isle, half a mile away, and check the situation. He and his family were mindful of the bad odour that reached them from the stream, but he had expected that conditions would improve after the rotting fish had been partially removed from the area by Canadian officials. What he found instead was an even greater number of dead fish floating in the stream and an equally large amount

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27 Letter from Mr. C.P. Ruggles to the Deputy Minister of Fisheries, dated July 8, 1968 - SJRBB Files.

rotting along the banks. The situation was intolerable. He drove back to his house and decided to call health, fisheries and water officials in Fredericton to persuade them to protest to authorities in Maine. He was informed of some of the measures that had been taken and that they were in touch with Maine officials but that there was not much else they could do at that point.

Unsatisfied with the response of New Brunswick officials, Mr. Caines proceeded to call the editor of the Woodstock Beagle and several of his acquaintances in Centreville and came out with the idea of building a dam across the Presque Isle, or rather to bluff. What they agreed upon was to drive two bulldozers to the Presque Isle banks as if they intended to dam the stream, thus staging a show of force for the benefit of American and Canadian authorities. They were not sure how the Americans would react. "I was afraid they might shoot us" Mr. Caines said sometime later. They reasoned that at this point, the Royal Canadian Mounted Police would step in and order that the demonstrators disperse, but by then the mass media reporters, whom they also agreed to invite to the scene would make sure through their pictures and reports that a larger portion of the public would be aware of the point they were trying to make.²"

²' Ibid, p. 110-11. A similar story was told by Mr. R. Caines in an interview with the author on September 11, 1977. On that occasion Mr. Caines reviewed an earlier draft of this account of the developments related to the Presque Isle Stream 1968 fish kill.
"We showed up that morning (July 8) to find crowds of people from both sides of the border cheering us on," Mr. Caines told later. "There were three more bulldozers than we had expected and also more cameramen and reporters than we had anticipated." \(^3\) "The Mounties were there, too. I was waiting for them to stop us, but they just went on directing traffic. What could we do but go ahead?" \(^3\)

"A customs officer came and showed us exactly where the U.S.-Canada border was and we started with the bulldozers to push earth and stone across the Presque Isle Stream, 200 yards from the international border, and built a dam about ten feet high and stretched over 60 feet from bank to bank (see photograph 2)." \(^3\) "We were afraid that the stream was going to back up on the potato field that belonged to a nice fellow named Wallace Pryor, just the other side of the line," Mr. Caines recalled. "but he said he didn't mind, he lived along that stream, too, and he didn't like the smell any more than we did." With Mr. Pryor's consent they went ahead with the work and finished it at three o'clock, going home afterwards.\(^3\)

The public reaction to the incident went well beyond what Mr. Caines and his friends had anticipated. Mr. Brian Barnes of the New Brunswick Water Authority, arrived in time to watch the

\(^{3}\) Interview with Mr. Caines, September 11, 1977.

\(^{31}\) Graham, Jr., *op. cit.*, p. 111.

\(^{32}\) Interview with Mr. Caines, September 11, 1977.

\(^{33}\) Graham, Jr., *op. cit.*, p. 111.
Canadians finish the dam and, as the Mounties, did not make any special effort to interfere with their action. Mr. Caines later asked a Mountie why they had not interfered and the Mountie replied that they had orders from Fredericton not to interfere unless there was violence.\(^4\)

\(^4\) Ibid.
Next day, that is only one day after construction, the dam was breached by its builders. Nonetheless, some leading political figures in New Brunswick had still a chance to have a look at it. Premier Robichaud came by plane from Fredericton, and so did Canadian Member of Parliament and N.B. former Conservative Premier John Fleming. Mr. Caines commented later that although the builders of the dam were all Liberals (the party in power), the Conservatives, including MLA Edson Stairs of Woodstock, were eager to seize the political opportunity and "get a piece of the action." The goal of Mr. Caines and his associates to draw public attention to their problem was reached beyond their expectations, judging from the press coverage all over North America.\(^3\)\(^5\) Canadian Government officials later on tried to justify the action of their compatriots by rationalizing that Caines and his friends' aim was "to impound a sufficient volume of water so that by suddenly breaching the dam, an increased flow of water would help to flush the river and its banks so as to wash the masses of dead fish downstream."\(^3\)\(^6\)

The incident stayed in the headlines of the New Brunswick and Maine press for more than three weeks and references to it continued to appear frequently for almost one year. On July 28, 1968, a ten foot tall concrete monument commemorating the dam

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\(^3\)\(^5\) The incident was reported by many newspapers across Canada and the United States. The Los Angeles Times, for instance, devoted a number of columns to the incident.

\(^3\)\(^6\) N.B. 1969, Brief.
building was unveiled in a ceremony attended by a large public from both sides of the border and some important political figures." A plaque carried the following inscription on its face:

This International Monument symbolizes the beginning of the Citizens' War On Pollution in Western New Brunswick and Eastern Maine, and marks the site where aroused citizens built an earthen dam to stem the flow of pollution from the Vahlssing Inc. complex in Eastern Maine
9 July 1968.

This date marked the beginning of our War on Pollution.

THE WAR CONTINUES

The leadership of the protests stayed with Mr. Robert Caines, at the time working as an electrician there, who not only arranged for the construction of the monument, but also organized a "Citizen's International Pollution Committee", which soon reached a membership of nearly 600 people from both New Brunswick and Maine. Mr. Caines was nominated President of the Committee and Dr. Stephen Brown of Mars Hill, Maine, was nominated Vice President.

Mr. Caines became an outspoken environmentalist, giving interviews to reporters from across the continent and sending letters and making telephone calls to many public officials in both Canada and the U.S.A. He wrote to the Prime Minister of Canada, the Minister of Natural Resources of the Province of New Brunswick, and to the Canadian Minister of Energy, Mines and

"Bangor Daily News, August 29, 1968."
Resources complaining about the inaction of the American authorities and urging the provincial and federal governments to take action on the Presque Isle situation. He suggested that an agreement between Ottawa and Washington should be sought as soon as possible.

Irritated with the passivity of the New Brunswick Water Authority, he sent a telegram to Premier Louis Robichaud asking him to remove Mr. E.S. Fellows from the chairmanship of the Authority.38 He also wrote as President of the Committee to Senator Muskie and the Attorney General of Maine, whom he invited to participate in the ceremony of the unveiling of the monument. The Attorney General, Mr. James Erwin, could not attend the ceremony but his assistant sent a cable to Caines wishing him and the citizens' committee "success in efforts to restore the Prestile" and thanking him for his "moral support of our enforcement actions."39

Mr. Robert Caines in an interview to a New York Times reporter declared that he was "never a conservationist until that 8th of July, 1968, when it (the smell) became so uncomfortable" that he decided to act. However, Mr. Fred Vahlsing, who by then was quite annoyed by Caines' activities, declared to the same New York Times reporter that "Mr. Caines works for a competitor full-time and had worked for him for

years". Although Mr. Caines presently works for McCain Foods Limited in Florenceville, New Brunswick, in charge of its waste treatment facility, he claims that when he led the dam construction group in 1968 he had his own business, and that he actually went out of business primarily because he spent too much time defending the environment.  

Canadian Authorities Protest

Soon after being informed of the fish kills in the Presque Isle, both Mr. Brian Barnes of the N.B. Water Authority and Mr. C.P. Ruggles of the federal Department of Fisheries tried to contact officials in the Maine WAEIC but because of the holidays in the U.S.A., they were unable to do so until July 8.

Mr. Raeburn W. MacDonald, Chief Engineer of the Commission, informed the two Canadian officials that he was quite "aware of the situation but was unable to offer much encouragement for corrective measures." Mr. MacDonald added that the Presque Isle Stream had been upgraded from Class "D" to Class "C" but both polluting industries had until 1970 to meet this requirement. Questioned by Mr. Barnes if there was any constructive action that the New Brunswick government could undertake, Mr. MacDonald seemed skeptical but suggested that a letter from the New Brunswick Premier to Governor Kenneth M.

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41 Interview with Mr. Caines, September 11, 1977. Mr. Caines stated that Mr. Vahlsing had threatened to sue him, and was actually approached by his lawyers, but gave up when he heard that a number of important law firms had offered their services, free of charge, to defend him.

42 Ibid.
Curtis of Maine could be of some help.43

Premier Robichaud, however, instead of contacting the Governor of Maine directly, as he had done in 1965, decided to send a telegram to the federal Minister of Fisheries, Jack Davis. The telegram, dated July 9, 1968, described the fish kill and asked Minister Davis "to draw this matter to the attention of the International Joint Commission for appropriate action - under Article IV of the United States-Canada Boundary Waters Treaty." Meanwhile, Department of Fisheries officials in the Maritimes were conferring with their superiors in Ottawa concerning the pollution problem on the Presque Isle.44

On July 10, 1968, Mr. C.P. Ruggles, then Acting Chief of the Resource Development Branch of the Maritimes Region, wrote to the Deputy Minister of Fisheries asking for information about the IJC and "how the Department's interests are looked after by this Commission." Apparently, he had learned of IJC activities on the St. Croix River and evidently was confused over who had jurisdiction on boundary and transboundary salmon rivers - his department or IJC.45

Mr. Ruggles' letter was followed by telephone consultations between Mr. J.P. Parkinson of the Department of Fisheries in Ottawa and Mr. John Dalziel, Regional Director, Maritimes

43 Memorandum from Mr. B.B. Barnes to the New Brunswick Water Authority dated July 8, 1968 - SJRBB Files.

44 Letter from Mr. Ruggles to Deputy Minister of Fisheries dated July 10, 1968, SJRBB Files.

45 Ibid.
Region, of which there are no records. However, it can be deduced from the correspondence mentioned above, between the regional office and Ottawa, that the Deputy Minister (1) urged the Maritimes personnel to keep in touch with the provincial officials, and (2) asked them to abstain from getting involved in the international negotiations taking place. In the meantime, a Centreville group had built and demolished an earthen dam across the Presque Isle Stream and officials in Maine were convincing Mr. Barnes of the New Brunswick Water Authority that emergency measures were being taken by the polluters. Mr. Barnes conveyed this message to Mr. Ruggles, who in turn probably transmitted it to his superiors in Ottawa.

On the 12th of July, Jack Davis sent a cable to Robichaud stating that he, too, was concerned about the situation and that the federal government, because of its jurisdiction over fisheries, had definite responsibilities on the matter. But, he added, the offending companies were taking emergency measures to control the pollution and would wait until more fully informed before accepting his suggestion to refer the problem of the Presque Isle and the Saint John River Basin in general, to the International Joint Commission.

A continuous surveillance of the Presque Isle by both the New Brunswick Authority and the Federal Department of Fisheries was maintained after the fish kill which revealed that the

"N.B. 1969, Brief.

"Ibid, a copy of the telegram was appended to the Brief draft. SJRBB Files."
stream was slowly recovering from the massive waste discharges in early July. This fact probably contributed somewhat to a release of the public pressure on provincial and federal officials in Canada to act on the Presque Isle. But the issue was kept alive both by the activities of a group of residents of the Presque Isle Stream basin and by developments in the St. Croix River, as already mentioned in Chapter 6. The performance of the IJC's Advisory Board on Pollution of the St. Croix was being evaluated by both the New Brunswick and federal governments. A public meeting held by the Advisory Board in September 1968 at St. Stephen, New Brunswick was attended by a large number of public officials and representatives from several interest groups.**

** Exclusion of the IJC from Negotiations

It has already been mentioned (Chapter 6) that late in 1968, Mr. William Duffie, N.B. Minister of Natural Resources, had asked the same provincial group in charge of the negotiations with the federal government of the Canada-New Brunswick SJRB agreement, to prepare a brief on the Presque Isle Stream problem to the Department of External Affairs.** In the

** Mr. Robert Caines, President of the newly formed "Citizens International Pollution Committee" presented a statement in the name of his organization condemning the inactivity of both governments and the IJC on the pollution problems of the St. Croix and Presque Isle Rivers.

** See note 23 supra. It appears that in addition to Leo Brandon, who was the coordinator of the group preparing the Brief, Mr. John C. Smith, Assistant Deputy Minister, N.B. Dept. of Natural Resources and Mr. Brian Barnes, Senior Engineer, N.B. Water Authority, had an important role.
context of the negotiations of that agreement we saw that provincial officials tried to create a linkage between a solution to the Presque Isle pollution problem and the need for comprehensive planning in the Canadian part of the SJRB. We also discussed the possible reasons why a proposal made chiefly by Mr. Leo V. Brandon to create an international river board for both the Saint John and St. Croix river basins was not accepted.

Another very important issue related to the preparation of this Brief is why was the IJC excluded from the negotiations regarding the Presque Isle?

Before explaining this issue it appears necessary to discuss a little further possible previous involvement of the IJC in pollution problems of the Saint John River basin. It was stated in Chapter 5 that the only time the IJC intervened in the matter was in 1912, and since then it had become involved only in the case of the St. Croix River. Nevertheless, we have seen that there was an initial attempt by Premier Robichaud to bring the Presque Isle issue to the attention of the IJC, but Mr. Jack Davis, federal Minister of Fisheries, had declined to accept the suggestion on the grounds that he needed further information on the subject.

Subsequent events indicate that Mr. Robichaud's initiative was rather precipitate, for there was already a widespread feeling among higher level N.B. government officials that to refer the matter to the IJC would be against the province's interest. In any case, it is possible that the question of IJC involvement in the SJR was pursued somewhat further, but it was soon abandoned altogether. A statement made by Mr. Duffie at the
N.B. Legislative Assembly on November 28, 1968 indicates that there might have been further contacts with the federal government on an IJC reference between the July fish kills and that date.

Asked if his government had "at any time made any representations to the International Joint Water (sic) Commission regarding pollution in the St. John and its tributaries," Mr. Duffie answered, "In reference to the St. John River specifically, no, but jointly, the St. Croix and the St. John rivers, yes, discussions have taken place. There has been correspondence with reference to the problem." However, no public records could be found of any correspondence between the N.B. Government and the IJC, with or without the interference of the Department of External Affairs, dealing with the Saint John River pollution problems.

Moreover, Mr. Duffie added that he had discussed the subject with the federal Minister of Energy, Mines and Resources (responsible for interprovincial waterways) and with the Secretary for External Affairs (responsible for matters related to the IJC), "with the idea of looking at a whole new approach to these rivers on a complete basin approach."

Mr. Duffie also stated that although Premier Robichaud had been in touch with the government of Maine on the subject, "we are working through the avenue of Ottawa because there is no

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51 Ibid.
machinery set up today whereby we can deal effectively between province and state and we must find a new instrument, a new approach in order to carry out effective measures which we realize are necessary." As to the IJC he added, "they have no machinery, nor do they have the jurisdiction in which to carry out any program. They are simply a coordinating body and an administrative group as a liaison between the two nations; they have no effective instruments to carry forth any program."^52

Besides, there was an apparent disillusionment with the IJC over its performance in the case of the St. Croix. Water Authority officials interviewed by Mr. Robert C. Zimmerman in May 1969, complained about the slow progress achieved through the IJC in the St. Croix river and stated that they were reluctant to resort to the IJC because its procedures were "cumbersome" and "time-consuming."^53

In the opinion of Mr. Zimmerman, other possible explanations for the reluctance of provincial officials in referring the matter to the IJC were the "fear that Maine may retaliate with a reference on problems in the upper St. John River where most of the pollution comes from Canada" (a clear reference to the Fraser's pollution problem) and the fact that N.B. was probably "anxious to secure Maine agreement on the

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^52 Ibid, emphasis added.

'corridor' highway project through northern Maine and connecting southern New Brunswick with Eastern Townships of Quebec by a direct route.\textsuperscript{54}

Thus, in the first draft of the Brief, it was stressed that a permanent solution for the Presque Isle and St. Croix pollution problems, and boundary water problems in general could be worked out with the U.S.A., only after "having established a good Canadian position on these international waters." The manuscript mentioned that discussions on that agreement with the federal government had begun and they hoped that the Province of Quebec would join in this agreement with the federal government. Once this agreement is worked out, they proposed, "we will then be in a position to create a river basin compact or joint management agreement with the United States and Maine. It may well be that the International Joint Commission will be asked to assist in these discussions and to make recommendations."\textsuperscript{55}

However, this last statement about the IJC, which appeared in the first draft of the Brief, probably as a gesture of consideration for existing legal procedures, was completely eliminated in the second draft. Actually, the Brief suggested to the Department of External Affairs that there was "no reason to refer the Presque Isle pollution to the International Joint Commission under Article IX. Such a process [they argued] would be a delaying one which Vahlsing and others in Maine would

\textsuperscript{54} Ibid.

\textsuperscript{55} N.B. 1969, Brief (first draft), emphasis added.
prefer." Instead, they suggested, the government of Canada should make "firm diplomatic protests", "should seek constructive remedial action in Maine rather than an award for damages", all under Article IV of the 1909 Boundary Waters Treaty.

At the end of October 1969, the Premier of New Brunswick finally sent a formal brief on the pollution of the Presque Isle to Mr. Mitchell Sharp, Secretary of State for External Affairs. This was a refined version of the drafts discussed above. There were omissions and additions. More hydrologic water quality data were added, including some recent surveys. A chapter on the public response to the fish kill, too, was added. However, the most important change was an altogether deliberate omission of the name "IJC".

It appears that Canadian federal officials understood and agreed with New Brunswick officials' point of view regarding the IJC. For example, after meeting with Mr. Duffie in Ottawa to discuss the Canada-New Brunswick agreement, Mr. Otto E. Lang, then federal Minister, without Portfolio, made a statement to the press in which he urged direct negotiations between the U.S. and Canada over the Presque Isle Stream problem, without mentioning the IJC. A few days later, he himself met with Mr. Walter H. Hickel, U.S. Secretary of the Interior to discuss the

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54 N.B. 1969, Brief (second draft).

57 N.B. 1969, Brief (final version). The complete omission of the name of the IJC probably reflects the decision to append the Brief to the aide-memoire sent by External Affairs to the U.S. State Department, as will be discussed below.
Upon receipt of the Brief on the Presque Isle Stream from the New Brunswick government, the United States Bureau of the Department of External Affairs proceeded to prepare a supporting aide-memoire on the subject to be sent to the U.S. government. Finally, on January 28, 1970, the Canadian Embassy in Washington transmitted to the U.S. State Department an aide-memoire together with the final brief from the New Brunswick Government. The fact that the brief remained unaltered is probably an indication that External Affairs, too, had been consulted by the provincial group preparing it. The aide-memoire, in short, requested the U.S. Government to take note of the appended brief and to proceed as soon as possible to take all necessary action "...to have the State of Maine return the water quality classification of the Prestile to the standards existing prior to 1965, thus causing an abatement of the pollution level in the Presquile in New Brunswick."

It is important to point out the careful wording of the aide-memoire, probably the work of lawyers of the External Affairs Department and the concern of the Department not to damage negotiations on environmental problems along the common frontier. The sensitivity of the Department of External Affairs can be deduced from the following quotation from the aide-memoire: "Of course, this request is made without prejudice to the review of the other transboundary pollution problems

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On March 4, 1970, Minister Duffie spoke to the New Brunswick Legislative Assembly about the most recent developments regarding pollution of transboundary rivers in the Province and in particular about the situation of the Presque Isle Stream. Mr. Duffie mentioned that a brief on the Presque Isle pollution prepared by his government with a supporting aide-memoire prepared by the Department of External Affairs had been delivered by the Canadian Embassy in Washington to the State Department. He added that Washington had already sent an aide-memoire reporting that discussions on the Presque Isle between the U.S. Government and the State of Maine were in progress. The Minister stressed that "[t]he matter of all these transboundary rivers is one between the governments of Canada and the United States and [he continued] we are assured by the federal government that they will keep us fully informed as to the actions which the United States will take in this regard."

However, it was only much later that year (1970) that the U.S. State Department was able to communicate to Canadian authorities that some specific actions were being taken to correct the Presque Isle pollution problem. The actions taken by the Americans consisted essentially of negotiations underway between the Environmental Protection Agency (EPA) and the State of Maine to raise the stream classification and, more

' Synoptic Report of the Proceedings of the Legislative Assembly of New Brunswick, Session of 1970 - Vol. I. Copies of the documents mentioned by Mr. Duffie were tabled for the information of the House.
importantly, of a large grant from that agency to the Northern Maine Regional Planning Commission to carry out a feasibility study of a regional treatment system for the Presque Isle Stream and Aroostook River. Further negotiations on the Presque Isle issue will be discussed in the last two sections of this chapter."

American Reaction to the Presque Isle Affair

"It was a beautiful sight to see," said one of the customs officers in the United States side when interviewed by a newsman."1 "The dam really worked," he continued. "The water backed off as far as you could see, rising along the banks." Another U.S. customs officer stated that in any case they could not have interfered with the dam construction since it took place on the other side of the border. He added that several thousand Americans had crossed the border that day to watch and applaud the Canadians building the dam. He could not recall any opposition on the part of the residents of the U.S. side of the border, which is not surprising considering that, as was stated before, Mr. Wallace Pryor whose land was flooded by the dam did not object to it.

The residents of Mars Hill further upstream certainly were pleased with the protest. They had been complaining of the nuisance conditions created by the Vahlsing complex for a number

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60 Aide-memoire dated December 8, 1970, NMRPC Files. See also Chapter 8.

61 Graham, Jr., op. cit., p. 111
of years. In addition to the intolerable smell they had to endure, the walls of their houses were getting darker because of the blistering of the paint caused by the gases emanating from the stream, and the kids' summer swimming programme had to be cancelled.

The State of Maine had upgraded the Presque Isle Stream to Class "C" in the last legislature of 1967, but the polluters were given up to 1976 to meet the new stream classification. Consequently neither Vahlsing Inc. nor Maine Sugar Industries Inc. could be held on violation of the "C" classification until that time. However, Title 38, Section 363 and Title 17, Section 2802 of Maine Statutes and Revised Statutes respectively prohibit the discharge of treated wastes to any surface water body which creates a "public nuisance." Therefore, considering that the July 2 massive pollution and consequent fish kill had created such a horrible odour that people living nearby were literally leaving their homes, the State of Maine had a legal base to initiate a nuisance action against the Vahlsing complex. However, this action had to start with the Attorney General's office, which immediately after the fish kill became under pressure from both those favouring such an action and those who at least wanted it delayed. Among those pressuring for action was the head of the Water and Air Improvement Commission, Dr. Donaldson Koons, who was strongly in favour of strict compliance with water pollution control legislation. Also, the

Lippman and Hansen, op. cit., p. 165
environmental movement which was then emerging in a strongly pro-industrialization state, made its voice heard. Among these the most strident was the Maine Biologists Association, which later organized a national boycott of Vahlsing's products.\(^3\)

Against any precipitate action by the Attorney General were a few state legislators, Senator Muskie and other governmental officials at all levels, particularly in those agencies which had helped Fred Vahlsing financially in his enterprises. Of course, many industrial enterprises in the State were concerned that the same thing might happen to them and therefore were among those pressuring the Attorney General to delay action on the nuisance suit.

Vahlsing supporters were able at first to convince the Attorney General, Mr. James S. Erwin, not to take any initiative toward a nuisance suit, as Mr. MacDonald of the WAEIC confided to Mr. Barnes of the New Brunswick Water Authority in a telephone conversation of July 8, 1968.\(^4\) A few weeks later, however, the Attorney General decided to file a nuisance action against the Vahlsing industries in the State Courts. Fred Vahlsing evidently had good lawyers and powerful supporters, for the suit against Maine Sugar Industries was dropped in 1969, and

\(^3\) According to Graham, Jr., *op. cit.*, people from all over the United States wrote to the Association promising support for the boycott.

\(^4\) N.B. 1969, Brief. Vahlsing also tried to get legislative and public support by distributing a flier giving figures on how many people his firms employed in Maine, how much he paid in taxes to Easton, and how much he paid annually farmers, the railroad company and local fuel distributors. Graham, Jr., *op. cit.*
the suit against the potato-processing plant was still pending in 1973. The Courts never ordered Vahlsing Inc. to close down until normal stream conditions were restored as required by law. The potato-processing has been closed periodically but for other reasons which will become clearer later on.

Among the political controversies generated by the pollution of the Presque Isle by the Vahlsing complex, two of them deserve attention. One of them involved Governor Curtis (Democrat) and Attorney General Erwin (Republican); the other which reached the four corners of the United States, had Senator Muskie as the main protagonist.

A New York Times reporter suggested that the Attorney General's suit against Vahlsing may have had political tinges. At that time Mr. Erwin was planning to run for governor against Kenneth Curtis who was seeking re-election. Governor Curtis did not favour a speedy nuisance action against Vahlsing, it was conjectured, because of his personal relationship with Freddie Vahlsing which included frequent trips in Freddie's private plane and generous donations by Vahlsing for Curtis' electoral campaign. Also, Mr. Curtis (together with Senator Muskie) had been among the most influential public figures which had brought the sugar-beet refinery to Maine, which by this time, was

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"Graham, Jr., op. cit., p. 112, also reports that Donaldson Koons, head of the W.A.I.C., privately protested a friendly visit by Governor Curtis to Vahlsing's plant on the occasion of its latest expansion, arguing that the Governor had "showed poor taste in lending the prestige of his office to a venture that (was) still technically under suit by Maine."
already having financial difficulties primarily because of the low production of sugar-beets in Aroostook County. Thus, Mr. Curtis was understandably concerned that even a temporary closing down of the refinery could mean the final blow to the whole enterprise.

Governor Curtis' reactions to the Attorney General's action was quoted by the same New York Times reporter as saying that Mr. Erwin "has more serious cases [than Vahlsing] on which he has taken no action." Mr. Curtis was apparently referring to a number of pulp and paper plants which were then heavily polluting many rivers in Maine.

Senator Muskie and Maine Environmental Politics: Because of Senator Edmund Muskie's involvement in the Presque Isle issue and in the Vahlsing affair in particular, what would otherwise perhaps have remained as just another typical case of Maine politics, twice became a national issue in the United States."

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" Senator Muskie himself has denied having had any personal role in the international negotiations concerning the Presque Isle Stream and the Saint John River Basin in general. Answering a query from Prof. Irving K. Fox concerning his willingness to help me in this research by providing some insights into the nature of the negotiations from his personal perspective, he stated: 'While I am generally familiar with these efforts, I personally have taken no personal role in them, nor has any present member of my staff. Therefore, I doubt that I or my immediate staff could be of much assistance to Mr. Souto-Maior.' Letter dated October 17, 1973. However, this section—as well as many other references throughout this thesis, should substantiate the point of view expressed here that Senator Muskie had indeed a substantial role in several SJRB issues and thus influenced the way policies in this area took shape and were finally formulated.
The first time was when shortly after the July 1968 fish kills in the Presque Isle, Senator Muskie was nominated candidate for vice-president in the Democratic Convention in Chicago. At that time, Mr. Muskie, besides being chairman of the increasingly important U.S. Senate Special Air and Water Pollution Sub-Committee, he was known as a supporter both of stronger environmental control legislation and of government intervention in the New England private power industry, especially in the case of the Dickey-Lincoln project in the upper St. John River Basin. Thus, it was natural that both his Republican and Democratic competitors at the federal and state levels should be searching for a reason to attack Muskie's reputation in this area. His vulnerability turned out to be his association with Freddie Vahlsing. It appears, however, that his opponents did not have enough time to explore the issue at this time, because except for accusing Muskie and other Maine Democrats of travelling in Freddie's plane to Easton for the ceremonies which marked the establishment of new industrial facilities which would contribute even further to pollute Maine's clean rivers, nothing much came out of the issue.  

However, the Presque Isle issue burst to the surface again in 1970 when Muskie was a potential presidential candidate to run against Nixon in 1972. This time the Presque Isle-Vahlsing affair became both a national issue and a major cause of embarrassment for the Democratic Senator from Maine. The

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70 Lippman and Hansen, op. cit.
reported fact that President Nixon assigned Clark Mollenhoff, a former investigative reporter, and then White House Counsel, to follow the activities of Mr. Vahlsing closely, gives an idea of the importance they attributed to the issue. Soon Republicans were profiting from the incident, "saying that Senator Muskie widely known as Mr. Clean for his fight for clean air and water 'is Mr. Clean except when it comes to Freddie.'"

Senator Muskie defended himself saying "if I felt for one moment that the sugar-beet refinery meant that the Presque Isle is condemned to the status of an open sewer, I would not have supported the proposal to reclassify the stream. The reclassification was intended to be temporary. It was designed to meet an immediate problem in connection with the financing of the plant." However, this kind of explanation did not help him much, particularly when he had to defend himself against an attack from the already famous consumer-advocate and clean environment crusader Ralph Nader, who with others, publicized that he had "allowed a friend to spoil a wild Maine stream, and that in order to win for his state the economic advantages of a refinery he was willing to run the risk of massive oil spills along Maine's...coast."

In early 1969, and again in 1970, Muskie tried even harder

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72 Lippman and Hansen, op. cit., p. 162.
73 Ibid, p. 163.
74 Ibid, p. 143.
to defend his credibility as "Mr. Clean" by supposedly supporting and encouraging Maine's legislature to pass "some of the strongest...environmental protection bills ever enacted by a state." 75

However, there was not much that he could do for his friend Mr. Vahlsing, for, instigated by Republican partisans, the same Legislature met in special session and authorized a $75,000 study of Maine Sugar Industries which was apparently intended to embarrass Muskie even further. Muskie became a victim of his own clean environment campaign which had contributed to changing Maine's attitudes toward industrialization. "Only a few years before," wrote Lippman and Hansen, "Maine would have welcomed almost any industry that promised to employ Maine workers," 76 and they pointed out the frustrations of Muskie and his staff at that time by quoting one of his aides. "If it weren't for that damned potato plant, this whole affair would have been a classic case of permitting flexibility to allow a new industry to get off the ground. But the potato plant spoiled everything." 77

How much the Presque Isle incident contributed to Muskie's loss in his bid for Democratic nomination in 1972 is not known, but it is certainly a good example of how an apparently small, remote, isolated incident can have such wide repercussions.

However, Senator Muskie's role in the Presque Isle issue

75 Ibid, p. 169. We have already had occasion to discuss some of these bills in the context of boundary pollution (Chapter 5).
76 Ibid.
77 Ibid, p. 163.
was not confined to defending his friend Freddie Vahlsing and his own political career. It was also important from the perspective of Maine and U.S. stands vis-a-vis the Canadian protests and the inclusion or exclusion of the IJC in the negotiations.

We know, for example, that in March 1969, a few days before the Legislative Assembly of Maine met again to consider upgrading the classification of the Presque Isle (from Class C to the original classification before 1965, B-1), Muskie made a public statement urging Maine's WAEIC to file a formal request for the IJC to investigate the pollution problem in the Presque Isle Stream.

Senator Muskie was evidently seriously interested in a reference on the Presque Isle, for he reportedly called the Secretary of the U.S. Section of the IJC in Washington, Mr. W.A. Bullard, to inquire if IJC could take the initiative on the reference. However, the consensus within the American section of the IJC was that if there was to be a reference on the Presque Isle Stream, it should be a part of a larger one, including in addition to the Presque Isle, all the tributaries and the main

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78 Bangor Daily News, April 11, 1969. There is also indication that Mr. Muskie lined up with those State legislators who accused the reclassification Bill as discrimination against Vahlsing and who also argued that if the deadline for compliance with the same "C" classification was to be moved up from 1976 to 1972, an amendment proposed by some legislators, it should be made applicable to all other industrial waste dischargers in Maine. As we have already mentioned, both proposals were rejected by the legislature, through indefinite postponement (Bangor Daily News, April 25, 1969).
Moreover, perhaps after consultations with both Maine and State Department officials, the Senator went to Fredericton on May 16, 1969 to discuss with provincial officials environmental problems common to Maine and New Brunswick. While the nature of these conversations are unknown to me, Mr. Muskie's interview to a Fredericton newspaper gives an idea of his intentions and of what transpired from the discussions.

First, he stated that the Presque Isle pollution was "primarily a state and local problem rather than a federal one" and that IJC had no plenary powers, it "may study pollution problems and make recommendations, but it has no authority over them," he said."

If one compares Senator Muskie's above statement with the statement made by Mr. W. Duffie, N.B. Minister of Natural Resources, on November 28, 1968, one finds it shows they both had similar points of view. The similarity of their views is even more striking, when one considers Senator Muskie's opinion about the possibility of another international organization replacing the IJC. On this subject he agreed with Mr. Duffie's suggestion that a "new instrument" or "new approach" was necessary but he stated that it would be premature to suggest what sort of agency might be given power in international pollution problems. He added that "it will involve talks at the diplomatic level" and he found it difficult to believe that

"Mr. J. Hendrickson, personal communication, November 16, 1973. Mr. Hendrickson was at the time member of the IJC Advisory Board on Control of Water Pollution in the St. Croix River.

either the U.S.A. or Canada "would agree to creation of an agency that had greater power than either government separately."  

Senator Muskie also urged both the governments of the U.S.A. and of Canada "to concern themselves with creating effective enforcement action, and (he added) it's got to be reciprocal. It cannot be one way." He was careful to remind the Canadians that "the Presque Isle situation happens to be a pollution problem arising in the United States that affects Canada, but there are undoubtedly pollution problems in Canada that affect the United States." 

Although there are no public documents to substantiate the hypothesis, it is possible that Senator Muskie's visit to Fredericton had some impact on N.B. officials. When interviewed by Mr Zimmermann soon after the visit, they indicated their reluctance to resort to the IJC for fear that the U.S. might retaliate with a reference on pollution of the international section of the Saint John River, which originated mostly from the Canadian side. The above quoted statement by Mr. Muskie indicates that such an insinuation on his part is not inconceivable.

The Boston Meeting: Further Negotiations on the Presque Isle

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\(^{81}\) Ibid.

\(^{82}\) Ibid.

\(^{83}\) R.C. Zimmermann, op. cit.
As can be recalled, the last American official response to the Presque Isle problem was the December 8, 1970 aide-memoire from the U.S. State Department announcing a large grant to the Northern Maine Regional Planning Commission to carry out a regional treatment system study (see Chapter 8 for details). That aide-memoire was actually preceded by a telephone call from Mr. Albert Erickson, then Acting Director of the Division of Planning and Interagency Programs of FWQA (predecessor of EPA) to Mr. R.C. Hodges, Canada Department of the Environment, in which Mr. Erickson requested a meeting to discuss pollution control programmes on both sides of the border.84

It appears that discussions between Mr. Erickson and Mr. Hodges regarding such a meeting continued throughout early 1971. At a meeting in April 1971 of the SJRB Board Mr. Hodges reported that

"diplomatic communications concerning the 1968 Presquile incident still continue . . . and a . . . meeting with U.S. officials is planned for Boston in the near future, to discuss the classification of the Presquile" and he added that "a favourable solution of this problem will set a precedent for further negotiations."85

Finally, on December 1, 1971, a meeting was held in Boston between high level officials of the Canadian departments of External Affairs, and of the Environment, plus New Brunswick Department of Fisheries and Environment; and officials of the

84 Minutes of a Meeting of the SJRB Executive Committee held on December 4, 1970.
85 Minutes of the Tenth Meeting of the SJRB Board.
U.S. Environmental Protection Agency (successor of the FWQA) and Maine's Environmental Improvement Commission and Governor's Office, to discuss the pollution problem of the Presque Isle Stream. The meeting was said to have been called in direct response to the Canadian government aide-memoire of May 1971."

In the view of Mr. Hodges the "noteworthy outcome of the meeting was the acceptance of the principle by the Americans that water crossing the border must be clean and its quality unimpaired." The Canadian position, as reported by Mr. Erickson, was

"the stream classification and water quality standards on the Prestile Stream in Maine [were] not high enough to meet the terms of the 1909 Boundary Waters Treaty, Article IV, between the U.S. and Canada and that the scheduled compliance date of 1976 [was] much too far in the future." The existing 'C' classification established in 1968 was "considered inadequate for anadromous fish--trout and salmon--which the Canadians would like to restore to this river."

Mr. Erickson also reported that in view of these demands, the representatives of Maine's Environmental Improvement Commission had requested Canada to specify what in-stream quality was desired so as to determine what controls could be effectively applied, and that Canadian officials had agreed to provide a set of desired water use designations and criteria for

"There are two main sources of information for what transpired during this meeting. One is a paper prepared by Mr. Albert J. Erickson, "Prestile Stream (U.S.) - Presquile River (Canada) - Pollution Problems of Transboundary Waters - Meeting of December 1, 1971." The other is the minutes of the Tenth Meeting of the SJRB Board, held later in December 1971. All quotes and references to this meeting are from these two sources."
the Presque Isle Stream early in 1972. He further stated that the State of Maine would explore the Presque Isle situation with respect to upgrading standards and short-term regulatory measures. The U.S.-EPA Regional Office [would] support and work with the State of Maine in imposing appropriate regulatory controls. The State of Maine and Province of New Brunswick [would] arrange for informal talks."

Furthermore, each side gave emphasis to different aspects of the meeting. While Mr. Brian B. Barnes, vice-chairman of the N.B. Water Authority, reported that the "Saint John River Basin Comprehensive Plan was discussed and a request was made by the Canadian officials for cooperation by the U.S. in helping the Plan meet its objectives," Mr. Erickson's interpretation was that "The Government of New Brunswick would like to explore the establishment of a joint committee or compact commission with the State of Maine to coordinate water quality objectives, planning and quality controls on transboundary waters."

Soon after the Boston meeting Canadian federal and provincial officials organized a committee of four to prepare the in-stream water quality criteria and water use description for the Presque Isle Stream. This Committee met late in December and unanimously agreed that they should approach "the American authorities in terms they understand, in other words, their own stream classification system." Thus, after a fairly

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"Minutes of the Presquile River Water Quality Committee Meeting, held in the SJRB Board Planning Office, December 30, 1971. SJRBB Files. All quotes and references are from these minutes."
comprehensive historical and technical analysis of the Presque Isle Stream situation, the Committee further agreed that it should ask for a "B-2" classification for the stream.

At the meeting Mr. V.C. Dohaney, Head of the East Region Water Quality Sub-Division of the Inland Waters Directorate, Environment Canada, pointed out that:

Whereas we are developing a basis for agreement on the quality of the Presquile, the negotiation is bound to set a precedent and the way we approach the problem should be applicable as a general case for the other trans-boundary streams. This does not imply that the class agreed upon will be the same, but that the approach will set a precedent.

In addition, Mr. Brian B. Barnes, then Acting Director of the Environment Branch of the N.B. Department of Fisheries and Environment called attention to the fact that "it would take some time to achieve Class B-2 standards and that meanwhile it [was] important that the Americans should adopt a contingency plan in order to ensure that no repetition of 1968 catastrophe" would occur. To which Messrs. John Henderson, Planning Director of the SJRB Board, and Mr. L. Dominy, of the Research Development Branch, Fisheries Service of Environment Canada, added that "it was important also for Canada to be advised of the detailed schedule proposed for upgrading the stream quality, step by step to Class B-2."

Finally, the Committee recommended that:

(1) "The Province of New Brunswick should open negotiations with the State of Maine with the aim of obtaining" the above-described objectives;
(2) "The Government of Canada should negotiate with the United States Government for an agreement for support of the Maine/New Brunswick program;"
(3) "The Governments of Canada and New Brunswick should provide the U.S. Environmental Protection Agency and the State of Maine with copies of water quality reports, prepared regularly for the Saint John River Basin Board."

However, when the recommendations of the Committee were presented for consideration by the SJRB Board, the vice-chairman of the Board, Mr. Hodges, pointed out that from the perspective of the Canadian federal government Maine's stream classification was "unacceptable for international negotiations because each State does not have an identical system" and therefore, "to avoid misunderstanding, Canada [should] define her requirements explicitly in numbers." Despite some contention that Canada should not "play a numbers game," the Board decided to ask Mr. Dohaney to change the Committee's recommendations into specific water quality criteria and desirable uses."

Therefore, after having reworded the initial recommendations of the Committee, Mr. Dohaney transmitted them to Mr. R.C. Hodges" who in turn sent a letter to Mr. Albert J. Erickson of EPA, describing in detail the water usages and water quality criteria desired by Canada, for the Presque Isle

" Minutes of the Tenth Meeting of the SJRB Board, January 15, 1972.

" Telex dated January 18, 1972. SJRBB Files."
Maine's Response to the Latest Canadian Requests

In view of the outcome of the Boston meeting and subsequent developments described above, Mr. William Adams, Commissioner of the newly created Department of Environmental Protection of the State of Maine (DEP, successor to the EIC), instructed his staff to embark upon "a study to see what could be done as far as upgrading of water quality in the Prestile stream."

Therefore, following Mr. Adams' instructions, the staff of the DEP, which had been enlarged and given greater responsibilities, proceeded to carry out an in-depth review of the whole Presque Isle Stream issue, including the latest developments regarding the NMRTS. The results of this investigation can be summarized as follows:

(1) There were at least five alternative approaches to the pollution problem, but none of these approaches indicated a plan which did not have some physical, technical or legal implementation problem.

(2) There were a number of historical, legal and technical

Letter dated February 1, 1972, EPA-Boston Files. A copy of the same letter was sent from Mr. Leonce Chenard, Deputy Minister of Fisheries and Environment, N.B., to Mr. William R. Adams, Commissioner, Maine Environmental Improvement Commission, on February 17, 1972. In the covering letter Mr. Chenard pointed out that "Mr. Erickson will no doubt be in touch with you in this regard since formal relationship between our country and yours is primarily a federal matter." But he added that he hoped to establish a "closer working relationship with your organization" and also hoped "to reciprocate with you concerning your recent visit to Fredericton."

This account of the activities of the DEP following the Canadian requests regarding the Presque Isle is taken primarily from a report dated August 15, 1972, signed by Mr. W. Adams and sent to Mr. Walter M. Newman, Chief of the Water Branch of EPA, Region I, Boston.
problems which could prevent an in-stream water quality standard higher than the existing Class C from being achieved."

(3) In view of all these uncertainties the staff of the DEP recommended to its Board of Environmental Protection that: (a) the existing "C" classification of the Presque Isle Stream be maintained for at least an additional year; (b) within this year the Department should do everything within its power to see that this classification is not violated; (c) simultaneously, the Department should carry out an in-depth study of the Presque Isle assimilative capacity.

The above DEP staff recommendations were approved in August 1972 by Maine's Board of Environment Protection and forwarded by Mr. Adams to the U.S. Environment Protection Agency, with the DEP's "wish that both the American and Canadian Federal Governments accept the logic of the proposed approach to seeking an answer to this very serious problem."

"The "historical" reasons included the fact that the Presque Isle had, after many years of pollution, accumulated a large amount of oxygen-consuming sludge deposits, and there had been construction and removal of dams which had altered the flow and hence assimilative capacity of the stream. Among the legal questions there were the question of inter-basin transfer of clean and dirty water, and the question of consumptive use of water by spray irrigation, which would deprive downstream users of the stream's natural flow (riparian law). Finally, technical problems included the questions of whether it was technically feasible to remove 98-99 percent of BOD and achieve objectives for other parameters through on-site treatment of effluents, which would be required of Vahlsing's industries to meet even the existing "C" classification."
CHAPTER 8
TRANSBOUNDARY POLLUTION AND COMPREHENSIVE PLANNING IN THE USA

The Northern Maine Regional Treatment System

Origins and Early Developments
By 1967, its first year of activities, the Northern Maine Regional Planning Commission (NMRPC) got involved in water quality management planning in the Saint John River basin. Mr. Alban Cyr, founder and first chairman of the Commission, claims that having become aware of the problems that most communities and industries were having in complying with increasingly stringent pollution abatement regulations, and also having in mind that this was an obstacle to new industries desiring to come to the region, he went to the Edward C. Jordan Company, consulting engineers and planners, to explore ideas and possible solutions to the problem. Thus, for a fee of $1,000 the Jordan Company prepared the initial technical plans for what came to be known as the Northern Maine Regional Treatment System (NMRTS).  

Following what Mr. Cyr claimed to be his original idea, and consistent with the NMRPC's broad objectives, the Jordan Company's preliminary plan was directed primarily at developing a scheme which would assure at the same time the continuous expansion of waste generating industries (mostly food processing

\[1\] Interview with Mr. Alban Cyr, President, Cyr Foods, Inc. on January 17, 1974. Mr. Cyr was chairman of the NMRPC until 1972.
plants) and the potential for population growth in the region. It also aimed at a long-term, permanent solution to the gravest pollution problems in region, which were located in the lower Aroostook and upper Presque Isle basins (see Figures 1 and 2, Chapter 4).

Because of the location of existing industries, the range in flow volume, and the related assimilative capacities of the two water bodies, as well as the topography of the terrain between the two basins, it became clear that from a hydrologic- and sanitary-engineering point of view the best approach was to consider the two basins as a hydrologic unit, and to plan for a combined treatment-transport system which would achieve substantial regional system economies.

Based upon this very preliminary report, early in 1968 the NMRPC started an information and education campaign with the objective of seeking local support for the regional plan. As a first step in this campaign, Mr. James Barresi, Executive Director of the Commission, invited representatives from all levels of government, industrial, business and environmental groups, and the population of the region in general to attend an official presentation of the regional treatment concept. This meeting, according to Mr. Barresi, marked the beginning of a successful campaign to obtain political support and financial contributions for the project.²

Although the concept was in principle technically and

² Personal communication, January 21, 1974.
economically sound, its implementation required overcoming several financial, administrative and legal obstacles. First, it required from the industries involved financial cooperation and willingness to participate in a joint venture, of which they were not sure of the outcome; second, the concept involved interbasin transfer of water and wastes and consequently raised some important legal questions; finally, it was already clear then that the system had to be owned and operated by some kind of administrative structure, which was novel not only in Maine but in the U.S.A. in general, and which required special approval by the Maine legislature. Moreover, the success of the NMRTS proposal rested, not so much on the ability of the system to meet the water quality classifications of the Aroostook River and Presque Isle, with its international implications under the Boundary Waters Treaty, but above all, on whether or not the industrial contributors would join the system.

Therefore, the NMRPC concentrated its initial efforts in securing the support of local industries and municipalities. Cooperation was pledged by all industries in the basins except Vahlsing, Inc. and Maine Sugar Industries, which, in addition to being already committed to their own treatment systems, were by this time so involved with the political and legal battles described in Chapter 7 regarding the fish kills in the Presque Isle, that they probably did not have any time left even to consider the proposal.

Next, the Commission tried to obtain funding for the study from state and especially federal sources. With this purpose a delegation formed by NMRPC personnel and representatives of
industries and municipalities went to Augusta, Maine and
Washington, D.C. for presentations of the NMRTS concept. They
were successful in this endeavour as well, for they obtained the
support, among others, of such important political figures as
Governor Curtis and U.S. Representative Hathaway and Senator
Muskie, who promised to lobby for the Commission with state and
federal funding agencies.³

Finally, in late 1970 the NMRPC received a large grant
(close to $140,000) from the FWQA (successor of the FWPCA) plus
some additional moneys from other federal and state agencies as
well as local sources, which brought the total funds available
for the regional treatment study close to $250,000.

It appears that the New Brunswick Brief to the Department
of External Affairs, which as we have mentioned before was
transmitted by that department with an accompanying aide-memoire
on January 28, 1970 to the U.S. State Department, played an
important role in the award of this grant to the NMRPC. For, as
soon as the award of the grant was announced by the FWQA, Mr.
Albert Erickson, then Acting Director, Division of Planning and
Interagency Programs, of that U.S. agency telephoned Mr. R.C.
Hodges, Chief, Planning Division, federal Department of the
Environment, and member of the SJRB Planning Committee,
informing him of the grant.⁴ In addition, on December 8, 1970,

³ Messrs. James Barresi and Jeffrey Gammon, personal

⁴ Minutes of a Meeting of the SJRB Executive Committee held on
December 4, 1970.
the U.S. State Department sent an aide-memoire to the Canadian Department of External Affairs, in which it asked that that Department inform the government of New Brunswick of the negotiations being undertaken with the government of Maine to reduce pollution of the Presque Isle, and of the federal grants to the NMRPC. It is interesting that the aide-memoire did not mention other funds being made available to the NMRPC from such agencies as The New England Regional Commission and Maine's Environmental Improvement Commission, which probably indicates that the aide-memoire was prepared without sufficient consultations with the State of Maine or the NMRPC.  

The FWQA grant, which at the time was considered large and obtained relatively rapidly, provided for funding of two separate but interrelated studies: (i) research and development, directed towards the preliminary design and cost analysis of a large number of alternatives for treatment of industrial and domestic waste loads of the Aroostook-Presque Isle basins; and (ii) river basin planning, which involved investigations of water quality management on an interbasin-wide basis, including the evaluation of economic, financial and administrative systems required for implementation of the project.  

The information available indicates that as soon as the

References to this aide-memoire are made in various subsequent documents, the first being a memorandum from Mr. D. Bellinger, Secretary of the SJRBB, to Messrs. R.C. Hodges and D. Brack, of Environment Canada.

December 8, 1970 aide-memoire reached the Canadian Department of the Environment, officials of that department contacted U.S. federal and NMRPC officials to obtain further information on the above-mentioned grants, to decide what should be their response to the U.S. initiative. Thus, Mr. Dennis Bellinger, Secretary of the SJRB Board, was asked to prepare a memorandum outlining the most important points which should be included in a reply to the aide-memoire. Mr. Bellinger raised then the following points: 

(i) It would take some time before the proposed regional treatment system would actually be implemented, therefore Canada should proceed with continuous monitoring of water quality of the Presque Isle as it enters N.B. territory; 

(ii) Canada should explore the possibility of using the ACRES mathematical models to test the effects of the proposed changes in the Presque Isle-Aroostook basin flow and waste input changes in the Saint John under various conditions; 

(iii) The project might also have economic implications for the Canadian portion of the basin, since the two regions have a similar economic base (food processing industries) and thus, possible project effects in this area should be examined; 

(iv) Maine had formulated its proposal "without any real consultation, as far as we are aware, with Canadian officials"; 

Memorandum dated January 12, 1971, from Mr. D. Bellinger (Secretary of the SJRBB) to Messrs. R.C. Hodges and D. Brack, Environment Canada. In addition, the memo indicates that Mr. L.V. Brandon had not seen the Maine project material and was interested in doing so.
(v) It seemed "appropriate that an official contact be made [by the Saint John River Basin Board] with the NMRPC describing the federal-provincial planning program and organization for the Saint John";

(vi) "In order to avoid public misconceptions [in Canada], it may be important that the Saint John Planning group make public its own views on the Maine projects."

Mr. Leo Brandon, who was then Acting Planning Director for the Canada-New Brunswick SJRB Board, apparently for the first time, also contacted Mr. James Barresi, Executive Director of the NMRPC, concerning the NMRTS proposal and comprehensive river basin planning for the SJRB in general, and as a result, they agreed that an informal meeting between the two groups should be convened in the near future to discuss their respective projects. Finally, these developments were discussed at a meeting of the SJRB Planning Committee and it was agreed that Canada's reply to the December 8, 1970 U.S. State Department aide-memoire should ask for (a) immediate reduction of pollution loads from the Vahlsing industries of the Presque Isle, and (b) urgent consultations between Maine and New Brunswick and the two federal governments to discuss water resource programs and

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*Minutes of the Seventh Meeting of the SJRB Planning Committee, February 22-23, 1971. The Canadian reply, also in the form of an aide-memoire was transmitted to the State Department in May 1971. Judging from various references to this aide-memoire (which itself was not found), it did not refer to pollution problems in the SJRB other than those of the Presque Isle, which implies that Canadians wanted to keep the Presque Isle issue separate from other pollution problems between Maine and New Brunswick.*
measures on both sides of the border."

On March 18, 1971 members of the SJRB Planning Committee and members of the Executive Board and staff of the NMRPC met in Presque Isle, Maine, to discuss the latter's proposal for water quality management planning in Maine's portion of the Saint John River Basin. Although, as we shall see later in this Chapter, the discussions remained at a broader level emphasizing comprehensive planning for each side of the basin as a whole, reference was made to the NMRTS project as an integral component of the NMRPC studies of the U.S. subbasins and main stem of the Saint John River."

The Northern Maine Regional Treatment System Plan

The plan developed by the Edward C. Jordan Company for the NMRTS was completed in March 1972. The plan consisted essentially of the development of Mr. Alban Cyr's original idea and the consultant's preliminary proposal for a regional municipal-industrial waste treatment system.

The consultant analyzed a large number of system alternatives and arrived at three major approaches for handling the region's municipal and industrial wastes: (i) individual community treatment facilities (including combined municipal and industrial waste treatment plants); (ii) partially integrated or interconnected regional facilities; and (iii) fully integrated

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*Minutes of the "International Meeting St. John River Basin Planning," Presque Isle, March 18, 1971. These studies were to be carried out as part of the U.S.A. contribution to a NATO pilot project. See the last section of this chapter and Chapter 6.*
regional facilities. These alternatives were then evaluated in terms of technical feasibility, relative total costs and impact on the water quality of the Aroostook-Prestile (Presque Isle) basins.\(^\text{11}\)

The consultant's research and development study was directed primarily at determining the feasibility of achieving a relatively constant degree of treatment in the transport system between the communities of Presque Isle and Caribou (Figure 3), which was a necessary condition for considering alternatives involving the interconnection of these two subsystems.\(^\text{12}\)

Although the report stated that detailed pilot plant studies would have to be undertaken to establish design criteria, it recommended a system which involved pumping the Easton area waste flows (including those of Vahlsing, Inc., and Maine Sugar Industries), normally discharging into the Presque Isle basin, to the Aroostook basin. These waste flows would then be combined with those originating in the Presque Isle community area and transported to Caribou by a gravity piped system. At this point, the flows would join the Caribou area waste flows and be transported to a central treatment facility located at Grimes Mill (Figure 3). However, individual treatment facilities would have to be provided (actually some were already in operation) for the communities of Ashland, Washburn, Mapleton, Ashland, Washburn, Mapleton,

\(^{11}\) The Northern Maine Regional Treatment System (Aroostook River - Prestile Stream) - A Plan for Clean Water. NMRPC, April 26, 1972 (Summary Report).

\(^{12}\) Ibid.
Fort Fairfield and the Loring Air Force Base, all located in the Aroostook basin. The same was true for the communities of Mars Hill and Blaine in the Presque Isle basin. Moreover, the recommended system also involved the diversion of a certain volume of water from the Aroostook River to the Presque Isle Stream, to compensate for the water withdrawn, necessary to carry the wastes in the opposite direction.¹³

The consultant's report in short claimed that it would:
- provide a solution to the problem of overuse of the assimilative capacity of the Presque Isle Stream in Maine;
- provide a substantial reduction in capital cost for construction of treatment facilities for municipalities and industries in the region. The total capital cost of the proposed system was $25.6 million (1972 prices), however, because of federal grants made available by the Clean Water Restoration Act of 1966, and to a lesser extent some state monies, only $4.1 million would have to be raised locally ($3.6 million by industries, including $400,000 by a potential new industry, and $500,000 by the five municipalities involved);
- provide a solution to the problem of water quality above the Caribou Municipal water supply intake;
- provide better public control of waste management in the region, since the system would be administered by an institution such as a public sewer district or river basin authority;

¹³ Ibid.
- provide part of the basic infrastructure needed for some growth of the wet processing industry.

On March 16, 1972, the Executive Board of the NMRPC voted to implement the Jordan Company's plan. However, the NMRPC had still a number of tasks to complete. It needed formal approval of the plan from the State of Maine and EPA, and had to obtain at least the concurrence of Canadian authorities. Most importantly, the fact that the preliminary plan had been successfully completed with the financial support (some $66,000) of all the municipalities and industries in the region (except Maine Sugar Industries and Vahlsing, Inc.), did not imply that they were irretrievably committed to the plan. In fact, it soon became apparent that the success of the plan was to a large extent dependent upon whether or not the industries, or at least the most important ones, would join in the implementation of the system. This was dependent on a number of factors.

First, the plan had been conceived under the influence of existing federal laws and regulations which provided very large subsidies for municipal sewage treatment plants, particularly when two or more communities joined in a common system. In fact, the Supreme Judicial Court of the State of Maine had already rendered a favourable decision to the effect that industries could be included with municipalities in the regional system. However, late in 1971 when the U.S. Senate passed new water pollution control legislation, it was already becoming clear that when finally enacted into law this legislation would virtually eliminate all direct and indirect subsidies to construction of industrial waste treatment facilities, and that
industries using municipal systems would be required to pay their share of construction costs plus user charges. The result was that Potato Services, Inc. of Presque Isle, which was the largest potential industrial user of the NMRTS, showed reluctance in committing itself to the system before the outcome of the federal legislation.

Actually, there were other reasons why Potato Services, Inc., and probably other large industries in the region as well, might have been reluctant to join the system. For one thing, the system, by creating the infrastructure for industrial expansion, would open the opportunity for new business competition for existing industries. By joining the system, they would also be subject to greater governmental control over their effluents.

Second, the plan for the system assumed that Vahlsing, Inc. and Maine Sugar Industries had no alternative but to join the system. However, while it was true that in order to meet the existing in-stream water quality classification of the Presque Isle, these two industries would have to remove 98-99 percent of

15 As we have seen, this legislation also affected the plans for a combined treatment system between the town of Madawaska and Fraser Paper Company (Chapter 5). These provisions were maintained by the House of Representatives and enacted into law (PL 92-500) in October, 1972.

16 Expectedly, when it was confirmed that the above-mentioned provision was indeed included in the final law, Potato Services not only bowed out of the plan, but started construction of its own treatment facilities. This fact only became public around December 1972. Mr. Moe L. Kimmel, President, Potato Services Inc., personal communication, January 14, 1974.

BOD and other constituents through on-site treatment of effluents, and this was not technically feasible through conventional treatment plants, there were land disposal methods (e.g. spray irrigation) which could, at least theoretically, eliminate all discharges to the stream. However, Vahlsing's spray irrigation waste disposal method was considered unsatisfactory by Maine's DEP because it involved holding wastes during the winter time; and the holding lagoons had developed many difficulties which resulted in direct discharge of raw wastes into the Presque Isle. In addition, in the view of the DEP, since Vahlsing consumed a large volume of water in its processing operations, and considering that this water was not being returned directly to the stream, particularly during the winter, the operation was in potential violation of riparian rights and the DEP could thus require corrective actions.

As to Maine Sugar Industries, according to Mr. Herbert R. Pahren, Director of EPA's Enforcement Division (Region I), the type of

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1 Existing laws did not take into consideration possible contamination of water table aquifers by such methods of waste treatment. As became known later, such contamination of ground water indeed occurred in the case of spray irrigation by the Stanley Manufacture Company, located in the Meduxnekeg River basin, another Maine tributary of the Saint John River. The Telegraph Journal, Saint John, N.B. September 22, 1972.

1' Record of telephone conversation between John McGrail (DEP) and Mark Possidento (EPA), August 13, 1972. Again, existing laws ignored some basic facts about the relationship between surface and ground water, namely that part of the water withdrawn would most likely return to the stream through ground water discharges. In case Vahlsing water withdrawn was indeed reducing the Presque Isle stream flows, it was also indirectly lowering the stream classification by decreasing its assimilative capacity.
waste treatment process used by the sugar plant was at the time "one of the better processes in the country and produces very little effluent."\(^{20}\) In any case, the company had been closed for several years due to problems related to the cultivation of beets in the region, and was up for sale, and consequently there was great uncertainty regarding its future.

The successful implementation of the NMRTS plan was also dependent upon several legal questions related to the proposed interbasin transfer of clean and dirty water between the Presque Isle and Aroostook basins. These interbasin transfers could be in violation of both riparian laws in the State of Maine and the 1909 Boundary Waters Treaty. Further, there was the possibility that the NMRTS, which was essentially based on the principle of management of a stream's assimilative capacity, would be to a certain extent illegal, in view of the new federal legislation in the process of being approved (The Water Pollution Control Act Amendments of 1972 - PL 92-500) which required the elimination of pollutant discharges altogether by 1985.

However, although these questions were being raised by officials on both sides of the border\(^{21}\) they turned out not to

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\(^{20}\) Letter dated September 6, 1972, from Mr. Pahren to Mr. Mark Possidento of the Water Quality Branch of EPA. Although the company was reportedly having technical problems with the system.

\(^{21}\) Among those raising these questions were, on the American side, Mr. W. Adams, Commissioner DOE (letter dated December 14, 1972 to Mr. John S. McGlennon, Regional Administrator, EPA, Region I) and on the Canadian side, Mr. John Henderson, Planning Director, SJRB Board (Memorandum dated April 27, 1972, sent to members of the Board).
represent a serious impediment to the implementation of the plan, for the NMRTS was officially approved by both EPA and Maine's DEP in December 1972\textsuperscript{22} and finally in July 1973 the Legislative Assembly of Maine authorized the formation of an "Aroostook-Prestile Treatment District" (APTD) which was to be responsible for building and operating the system. However, the successful approval of the system by U.S. federal and state officials, as well as Canadian officials, and the acceptance of the system by the majority of the population of the region, required new information, education and lobbying efforts on the part of the NMRPC.

Thus, on April 26, 1972, soon after the plan was completed by the consultant, the NMRPC held a public meeting to officially present the NMRTS plan to government officials, the business sector and the basin population in general.

Noteworthy among those attending the public presentation of the plan were officials from EPA (Boston Regional Office), and Maine DEP (Commissioner W. Adams himself). There was also a delegation from Canada which included Mr. John Henderson, Planning Director of the SJRB Board, Mr. Brian Barnes, representing the N.B. Water Authority, Mr. Douglas Hayward, representing the N.B. Power Commission and Hugh Hall, representing Environment Canada.

The strategy used by the NMRPC to present the NMRTS plan

\textsuperscript{22} Letter dated December 14, 1972 from Mr. William Adams, Commissioner, DEP to Mr. John S. McGlennon, Regional administrator, EPA.
consisted of letting the plan "stand on its own two feet and appear practical from entirely local motives" . . . and then showing . . . "the extra significance that it would achieve because of its international implications." At one point Mr. James Barresi read a long telegram from EPA congratulating the NMRPC for the work carried out and which ended up by saying that the plan, when implemented, would enable the United States to meet its obligations to Canada under the 1909 Boundary Waters Treaty.23

The NMRPC Approach to Comprehensive River Basin Planning

Up to 1971 there were no institutions in Maine which included comprehensive river basin planning within their normal duties. The Environmental Improvement Commission (succeeded in 1972 by the Department of Environment Protection) was essentially an enforcement agency, its primary duties being to carry out water quality surveys for purposes of classification and reclassification of surface water bodies in the state, the issuance of effluent discharge licenses, as well as monitoring of compliance, and to a limited extent coordination of water quality studies and construction of community waste treatment...
facilities.

The Northern Maine Regional Planning Commission, in turn, was conceived chiefly as a regional economic development planning agency. Although the Commission was required by its statutes to prepare a comprehensive regional plan containing recommendations for the development of the area within its jurisdiction, at least in its first six years of operation it did not attempt to formulate such a comprehensive plan. Instead of synoptic surveys and studies, its approach to regional planning consisted essentially of identifying opportunities for economic development in the region and of assisting member communities in obtaining grants and loans from state, regional and federal agencies in order to solve local planning and management problems.

In the area of water resources planning and management the NMRPC followed a similar approach. That is, instead of aiming from the beginning at a comprehensive water quantity and quality plan for its whole area of jurisdiction, which corresponds roughly to the Maine part of the Saint John River basin, it concentrated its initial efforts in assisting member communities in securing government grants to carry out water supply and waste disposal planning and development. In addition, as we have seen in the previous pages, after conducting a preliminary evaluation of the region's development problems, the NMRPC decided to concentrate its water resources planning efforts on the worst water problem in the region, namely that of the Aroostook-Presque Isle sub-basins.

Sometime in the Autumn of 1970 the NMRPC was approached by
Messrs. Albert Erickson and James Meek of EPA regarding the possible participation of the Commission in an Inland Water Pollution Pilot Project of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society (NATO/CCMS). As will be explained further in Chapter 9, the NMRPC contribution to the project was originally restricted to public participation in interjurisdictional river basin planning and management. However, the project was later enlarged to include comprehensive river basin planning in general.

Thus, in late 1970, at about the same time that it received the EPA grant for the Aroostook-Presque Isle study, the NMRPC decided to ask the Edward C. Jordan Company to prepare a framework proposal for a comprehensive water resources study of the Maine part of the Saint John River basin.

The Jordan Company proceeded immediately to subcontract with another consulting firm, Meta Systems, Inc., which as we have seen was involved in mathematical water quality modeling studies for the Canadian side of the SJR basin, and the two firms together prepared a study proposal for the NMRPC which had the dual purpose of backing up the Commission's application for EPA and state grants and of supporting its intention of becoming

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24 Developments in the SJRRR basin related to the NATO/CCMS project are discussed in detail in Chapter 9 and 10. This account of how the NMRPC first got involved in comprehensive river basin planning is based mostly upon interviews with the Commission's Executive Director, Mr. James Barresi, in January 1974.

Maine's counterpart of the Canada-New Brunswick Saint John River Basin Board, as far as comprehensive basin planning was concerned.

As one should expect from the nature of the consulting firms, the study proposal called for extensive application of systems analysis and computer modeling techniques, and for the gathering of technical engineering and economic data.\(^2\)

Although the ACRES study for the Canadian Department of Energy, Mines and Resources is mentioned only in passing, it seems clear that that study which was being completed with the collaboration of Meta Systems, Inc. was going to be used as an important basis for the Maine studies. As was the case in the ACRES study, the proposal for example argued for extensive mathematical modeling and the evaluation of "potential administrative and finance methods" and "modern management techniques" which included, among others the "effluent charges system."

In addition, the proposal called for coordination of a multi-faceted study of land use, including recreational, agricultural and forestry demands, fisheries, wildlife and, to a limited extent, power generation, to be carried out by

\(^2\) The original version of this proposal could not be found. This account is based upon the minutes of the March 18, 1971, Presque Isle meeting. See note 28, supra, and the final version of the proposal entitled St. John River Basin Water Resources Study--Project Description and Scope. Prepared for the Northern Maine Regional Planning Commission by Edward C. Jordan Co., Inc., Portland, Maine and Meta Systems, Inc., Cambridge, Massachusetts, January 31, 1972 (mimeo). This is a revised version of the preliminary proposal presented at the March 18, 1971 meeting discussed below.
interdisciplinary teams, which was an approach also suggested and, to a certain extent, used in the ACRES study.

It is important to point out that in the consultants' view the study of the water quality problem of the international boundary section of the Saint John River was considered a task similar to the study of the transboundary sub-basins, except for the determination of water quality standards and the allocation of the water resource, which, in the case of the international section, were to be negotiated with Canada. They, however, suggested that "firm recommendations could be made on those elements of the programs which do not significantly affect water quality on the main stem and in turn are not significantly affected by whatever water quality standard is set by international negotiation."

Finally, while recognizing that the NMRPC did not have either the authority or the financial resources to carry out the required planning process to its ultimate stage, which was supposed to be the formulation of a "viable set of alternative courses of action for water usage and development," the consultants' report did suggest that the NMRPC should be the planning agency for the Maine side of the basin. The proposal also advanced a suggestion for a tentative administrative structure for the overall planning process for the Saint John River Basin, which included FWQA representing the United States interests and the Environmental Improvement Commission those of the State of Maine. However, further examination of these aspects of the question will be postponed to Chapter 9.

It appears that soon after the consultants presented their
proposal for the comprehensive river basin study to Mr. James Barresi, Executive Director of the NMRPC, he was contacted by telephone by Mr. Leo Brandon, then Acting Planning Director of the Canada-New Brunswick SJRB Board, concerning the Commission's plan for the Aroostook-Presque Isle basins, which had been mentioned in the latest State Department aide-memoire (December 8, 1970) concerning the fish kills in the Presque Isle. Mr. Barresi then took advantage of the occasion to inform Mr. Brandon of the consultant's preliminary proposal for comprehensive planning in all Maine sub-basins of the SJR basin and to express an interest in the SJRB Board project. Finally, Mr. Barresi suggested that an informal meeting between the two groups be convened during March in Presque Isle, Maine.27

Thus, on March 18, 1971, for the first time, the Chairman and Planning Director of the Canada-New Brunswick SJRB Board Planning Committee (plus several other members of the Committee) met at Presque Isle with the Chairman of the Executive Board and the Executive Director of the NMRPC (plus other members and staff of the Commission, consultants and a representative of EPA) to discuss their activities in the Saint John River

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The purpose of the gathering as outlined by Mr. James Barresi was:

(1) to open a line of communications and understanding between the NMRPC and its counterpart for St. John River Basin Planning in Canada;

(2) to present the approach which the NMRPC [was] considering for St. John River Basin Planning and

(3) to determine whether or not this approach [was] in tune with the Canadian approach.

Mr. Barresi started by introducing the Jordan Co.-Meta System comprehensive planning proposal (described above), stressing that it was still "an idea which has not yet received Commission sanction as an established procedure" and added that assuming the NMRPC did choose to accept the approach, the next step would be to present the proposal to state and federal agencies for funding support. As to the time frame for the studies he pointed out that "assuming no delays are encountered in obtaining this support, and there is reason to believe this has a high priority," the surveys and modeling phase would be completed by September 1972, with the phase dealing with the analysis of potential administrative and finance methods for the St. John River Basin.

Minutes of the Meeting, NMRPC Files. Representatives of the Canadian group were Leo V. Brandon, Planning Director; Brian B. Barnes, Vice-Chairman, N.B. Water Authority; Vincent C. Dohaney, Chairman, Planning Committee; D.G. Hayward, N.B. Electric Power Commission; Richard C. Hodges, Chief Water Planning, Canada Department of Fisheries and Foresters; J. Arnold Roberts, Canada Department of Agriculture and Rural Development; John C. Mercer, Secretary Planning Committee. Among those representing the NMRPC were: Alban E. Cyr, Chairman; James A. Barresi, Executive Director; William E. Stephenson, Assistant Director; Jeffrey Gammon, River Basin Planning Division Coordinator. In addition, there were representatives of E.C. Jordan Co. and Meta Systems, Inc., as well as Mr. Jack F. Coulon, representing EPA (Boston).
abatement programme in the U.S. sub-basins projected for completion in March, 1973. As to the third phase dealing with the implementation of water quality standards agreed upon between the U.S. and Canada (through the IJC), Mr. Barresi said it was, of course, "not projectible at this time." He then asked for Canadian reactions and comments for input before presentation of the proposal to state and federal levels.

Although the Canadians' reaction to the proposal focused upon the proposed roles to be assumed by the IJC and the nature of the NATO/CCMS inland waters project (see Chapter 9 and 10), they pointed out that:

(a) under the Canada-N.B. Agreement the SJRB Board was not responsible for the implementation phase of the planning process, (and thus they seemed to suggest those aspects should be be left for discussions in another context);

(b) they were familiar with Meta-Systems' work in Canada, and in view of this it appeared desirable that the consulting firm should expand the variables to be considered in the proposed U.S. study;

(c) although Quebec was not then involved, "and there is little need since there are no water quality problems in the Quebec portion of the St. John. The door is open for Quebec participation at such time as they are ready to contribute financially to the programme;"

(d) the comprehensive planning part of the SJRB Board programme was just beginning, proposals being then sought from consultants, government agencies and universities for various tasks called for by the plan.
Finally, Mr. Barresi asked if the Canadian contingent could endorse the NMRPC proceeding the way outlined above. According to the minutes of the meeting, "The consensus was 'yes'." On June 11, 1971, the NMRPC officially forwarded to EPA an application for a grant to fund the comprehensive planning activities outlined in the Jordan-Metasystem proposal.

Apparently, the Canadian contingent left the meeting well impressed with the NMRPC proposal for comprehensive planning in the U.S. side of the SJR basin. For, as one may recall (Chapter 7), on April 8, 1971, Mr. Leo Brandon, who was resigning from his position as Acting Planning Director of the Canada-New Brunswick project, wrote a memorandum to Mr. A.T. Davidson, Assistant Deputy Minister (Water), Canada Department of Fisheries and Forestry, stating among other things that:

1. work on the comprehensive planning programme on the Canadian side was behind schedule (they had started in February 1971), primarily because of various administrative problems at the federal, provincial and Board levels;

2. the funds allocated for various technical studies were insufficient; and

3. it was advisable to appropriate additional funds to retain a consulting firm to do overall evaluation and management in the Planning Office." Mr. Brandon then referred to the recent contacts they had established with the NMRPC, pointing out that they "have retained their own consultants for management and surveys" and that they were "ahead of any New Brunswick-Canada counterpart" as far as planning for the U.S. sub-basins, and
that the work was expected to be completed by August, 1972.2
"Following that date, [he added], they indicate that they will
be ready to go to the IJC to ask for approval of quality
standards so that they can go on to implementation of their plan."

Mr. R.C. Hodges, in turn, wrote to Mr. Albert J. Erickson
of EPA, Washington, D.C., requesting a meeting to discuss the
principles, priorities and timing of pollution control programs
in the Saint John River Basin, on both sides of the border.3
However, it is not clear whether Mr. Hodges was referring
specifically to discussions concerning long-term comprehensive
planning activities or whether he was referring to all planning
activities including short-term planning, that is, the SJR
Interim Plan on the Canadian side, and the Aroostook-Presque
Isle study on the U.S. side. In either case he was going beyond
the recommendation of the SJRIP which stated simply that

"discussions should commence immediately
between Canadian and United States officials
on appropriate steps to reduce waste inputs
at Madawaska, Maine and at other Maine
communities on the Saint John River and
major tributaries of the River. The Saint
John River Basin Board should initiate such
discussions through the appropriate protocol
channels."3

However, as we have already described in Chapter 7, when a

2 He was evidently confusing the work on the NMRTS with the
comprehensive plan for the subbasins.

3 Letter dated July 22, 1971, as reported by Mr. Hodges at a
meeting of the SJRBB Planning Committee.

3 SJRB Board First Annual Report, Appendix C, emphasis added.
meeting between Canadian and U.S. officials was actually
covenanted at Boston on December 1, 1971, the meeting was
concerned primarily with the question of water quality criteria
for the Presque Isle Stream at point of entry in Canada.
Nonetheless, as reported by Mr. Brian Barnes (N.B. Water
Authority), at the meeting "the Saint John River Basin
comprehensive plan was discussed and a request was made by
Canadian officials for cooperation by the U.S. in helping the
Plan meet its objectives," while Mr. Albert Erickson (EPA)
reported that

The Government of New Brunswick would like
to explore the establishment of a joint
committee or compact commission with the
State of Maine to coordinate water quality
objectives, planning and quality controls on
transboundary waters.

Furthermore, despite the fact that Mr. Jack Coulon, of the
Boston regional office of EPA, had stated at the March 11, 1971
meeting that his agency was expected to give a very high
priority to funding of the NMRPC comprehensive planning study,
because of difficulties in fitting the project within the new
Federal Water Pollution Control Act of 1972, it took more than
one year for EPA to award a grant to the Commission to carry out
the proposed study. The award of the EPA grant, some $450,000,
was only made public on April 26, 1972 during the official
presentation of the NMRTS to which we have already referred in
the previous pages.32 Nonetheless, despite this late start, by

32 Memorandum from Mr. John Henderson to all SJRBB members,
dated April 27, 1972.
the end of 1972, the team of consultants was moving rapidly on their water quality studies of the five U.S. "sub-basins" of the Saint John River, namely: (1) Saint John River above Dickey; (2) Allagash River; (3) Fish River; (4) Meduxnekeag River and (5) Aroostook River-Presque Isle Stream, as well as the main stem of the SJR between Dickey and Hamlin. The water quality survey carried out confirmed to a large extent what was already known, except that the Big Black Brook, which flows from Quebec into Maine, was found seriously polluted at the border. However, there was some criticism of the study "for putting available data together at high cost," although the NMRPC justified the study as being absolutely necessary.33

Actually, the original proposal for the study had to be somewhat modified to conform with the new requirements of the U.S. Water Pollution Control Act Amendments, enacted on October 18, 1972.

The major modification of the original proposal concerned the requirements of the new law (Section 303 (e), PL 92-500), which demanded compliance with strict effluent limitations and deadlines, which meant that mathematical modeling of the assimilative capacity of water bodies was no longer an important consideration in river basin planning.

33 This account is taken from a progress report on planning in the Maine portion of the basin, by Mr. J. Barresi presented at the First Meeting of the Canada-U.S. Committee on Water Quality in the Saint John River Basin - April 6, 1973.
CHAPTER 9

THE SAINT JOHN RIVER BASIN AGREEMENT: THE NATO-CCMS CONNECTION

(I)

In the previous four chapters I have attempted to describe in detail a number of developments on both sides of the border which might have prompted the United States and Canada to enter into a cooperative agreement on the Saint John River Basin in September 1972. In this chapter I shall endeavour to demonstrate that despite all these developments which seemed to converge towards some kind of formal agreement between the two countries, the agreement might not have taken place if it were not for an intervening external factor, namely the participation of both countries in a pilot project conducted within the framework of the North Atlantic Treaty Organization Committee on the Challenges of Modern Society (NATO-CCMS).

NATO's Committee on the Challenges of Modern Society

NATO's Committee on the Challenges of Modern Society\(^1\) was established in November 1969 by the NATO Council. The idea of the CCMS originated in the United States. It was apparently the brainchild of Dr. Daniel Patrick Moynihan, then President

\(^1\) Hereafter referred to simply as CCMS.

\(^2\) This view of the origin of the CCMS was shared by several Canadian and American officials, including Mr. Peter Wilson and Dr. W. Durie of Environment Canada; and Mr. Ed Nef, U.S. State Department. Personal communications.
Nixon's Advisor on Urban Affairs

According to Patrick Kyba, "President Nixon sprang it [the CCMS] on his NATO allies without prior consultation at a gathering of foreign ministers in Washington to celebrate the twentieth anniversary of the founding of the alliance. The public nature of the proposal left the ministers little choice but to accept it in principle despite serious reservations in some quarters."

On the reasons why Mr. Nixon put forward the CCMS idea one can only speculate; for our purposes here the important point is that it was indeed a USA initiative, and an initiative on which that country had considerable expectations.

The CCMS was designed to be action-oriented. To this end it adopted an innovative procedure by which member countries interested in the investigation of a certain environmental problem were encouraged to bring their proposals to one of the two Committee's plenary sessions to be held each year. The proposal, in the form of a pilot project, would then have the opportunity to be endorsed by other countries wishing to participate in the project. If the response was favourable, the pilot country would convene a meeting(s) of the participating countries to define the project in detail, and ultimately the project would be submitted for formal approval by the NATO Council. Funding and administration of the pilot project was to be the responsibility of the pilot and (to a lesser extent) co-

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pilot countries. Upon completion of the project, its results would be brought to the Committee and if accepted there, would then be sent to the NATO Council for final approval and for decision as to whether its conclusions would be recommended for implementation by the member countries.

CCMS' Inland Waters Pollution Project

How Canada Got Involved

The first meeting of the CCMS was held in Brussels one month after its creation, i.e., December 1969. At this meeting, following a Cabinet decision, the Canadian representative indicated Canada's intention to cooperate in the works of the Committee. However, while the US was already ready to put forward three well-developed proposals for environmental studies, the other member countries were able to express their interest only in a very tentative way. According to one of its representatives at the meeting, "Canada's position was one of interest but non-commitment." Nonetheless, the Canadian delegates, apparently at the insistence of the USA delegation, "said enough to be inevitably committed to an inland water pollution project."

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4 Ibid.

5 Confidential Memorandum dated September 22, 1970, from Dr. R.W. Durie, Chief, Resources Research Centre, to Mr. J.W. MacNeill, Director, Policy Research and Coordination Branch, Canada Department of Energy, Mines and Resources. The memo was provided to me with the request that some parts marked potentially "sensitive" should not be quoted.
Thus, upon return from Brussels members of the Canadian delegation to CCMS were subject to insistent requests from Mr. Harry C. Blaney, a White House Staff member and Special Assistant to Russel Train, Chairman of the U.S. Council on Environmental Quality, for a firm commitment on the part of Canada for an inland waters pollution project. Canadians apparently felt they had to answer positively to the US initiative and Mr. A.T. Davidson, Assistant Deputy Minister, Department of Energy, Mines and Resources, agreed to commit the necessary financial and personnel resources to support a Canadian pilot project for CCMS. Dr. Durie was chosen to prepare a draft proposal. He did so, and after consultations with high-level federal officials, went to Brussels to present the Canadian proposal for an "Inland Waters Pollution Pilot Project" at the Second Meeting of CCMS held in April 1970. The preliminary proposal was for a study of "inland water quality management in an inter-jurisdictional setting." France, Belgium and the United States expressed interest in being co-pilot countries.

The Public Participation Case Study Proposal

Thus, once the project had been accepted in principle, the next step was to select a river basin in which to undertake the

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* In the view of both Dr. Durie and Mr. Ed Nef (Bureau of Canadian Affairs, U.S. State Department), Mr. Blaney was indeed the chief mentor of the U.S. proposed pilot projects (air pollution, road safety and disaster relief) and of the Canadian water pollution project as well. Personal communication.

7 Dr. Durie's memo of September 22, 1970.
project. Several alternatives were explored, including Lake Erie (which apparently was rejected because 90 percent of the pollution load originates on the U.S.A. side and Americans were not too enthusiastic about the idea, but according to Dr. Durie himself,

the obvious choice was the Saint John Basin:
- bilingual
- international - appropriate to the CCMS
- much pollution originated in the U.S. and the international forum was an opportunity to encourage reducing this source.
- a basin with long-established tradition - perhaps most similar to European situation
- the prospect of using NATO to encourage Quebec into a cooperative Federal-Provincial program
- an area with experience in public participation - a difficult but realistic case.'

However, before the Saint John River Basin could be proposed to CCMS as the case study for the project it was necessary to obtain the consent of New Brunswick officials. This prompted Dr. Durie to go to Fredericton to discuss that project.

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* Mr. John Hendrickson, then with the FWQA, personal communication. However, according to Dr. Durie, when he first contacted Mr. Hendrickson, who up to then did not know about the CCMS, a decision had already been made to choose the Saint John River Basin.

* September 22, 1970 memo. An additional reason reported to me by Dr. Durie (pers. comm. January 14, 1974) was that the basin was not only international but inter-provincial (as opposed, say, to Lake Erie) which guaranteed a role for the federal government. In view of what we have seen in Chapter 6, Dr. Durie's reference to "an area with experience in public participation" can only be interpreted as a reference to a public involvement programme carried out in N.B. by the Federal Department of Regional Economic Expansion sometime earlier, and not to the programme called for in the Canada-N.B. Agreement which was only signed in June of 1970.
He reported later that after some hesitation on the part of some provincial officials (especially in the case of Leo Brandon, Provincial Hydrologist),

it was agreed that the Resources Research Centre should carry forward the public participation element of the Saint John study as the NATO project, funding it entirely but integrating it fully into the joint federal-provincial study [i.e., the Canada-New Brunswick Agreement]."\(^{10}\)

Thus, the proposal then focused on the public participation aspects of water quality management. However, when Dr. Durie went to Belgium in June 1970, to present the proposal to the willing co-pilot countries, one of them was not very receptive to the idea of public participation in water resources planning. This country was instead more interested in the water quality modeling studies being carried out by the Acres Consulting team (Chapter 6). Hence, Canada was pressed to broaden the scope of the pilot project beyond public participation. Dr. Durie's first reaction was, expectedly, one of concern over the additional resources which would be required; he stated later,

I thought the Department would be pragmatic and would commit any of our on-going activities to support the NATO-CCMS exercise, but further resources beyond our normal mission would probably require extra financial support allocated to the Department."

Actually, the public participation proposal had its

\(^{10}\) Ibid. In this regard, Dr. Durie's idea of a public participation project in the SJRB preceded the idea of having the same project as a case study for CCMS. Pers. comm., January 14, 1974.

\(^{11}\) Ibid.
opponents in Canada as well. When the proposal was discussed at the second meeting of the Canada-New Brunswick Consultative Committee for Water Resources Matters, which took place in Fredericton on the same day as the Canada-New Brunswick Saint John River Basin Agreement was officially signed (June 30, 1970), (and thus also on the same day Dr. Durie was presenting the proposal in Brussels), several members of the Consultative Committee expressed the concern that the NATO-CCMS project might interfere with the SJRB Comprehensive Plan to be developed under the agreement.

However, some members of the Consultative Committee pointed out that the CCMS study could "in effect, be the project named in Section 3(e) of the Agreement and would provide extra funds for it." Nonetheless, there was still disagreement over both the "experimental" nature of the CCMS study and over the fact that the project dealt exclusively with water pollution while the Canada-N.B. Agreement called for a Comprehensive Plan for all water uses and consequently they demanded that this difference be reconciled. But Mr. Ron McIntyre counter-argued that the public participation programme was not really experimental "since much work of this kind [had] already been done under his Department" (Economic Growth), to which Dr. A.T. Prince, Director, Inland Waters Branch, federal Department of

12 Draft, Minutes of the Meeting dated July 7, 1970. Section 3(e) of the Canada-N.B. Agreement reads as follows: "Public Involvement - as required to enable the planners to be responsive to the needs and desires of the people for which the plan is designed thereby broadening the scope of the planning process."
Energy, Mines and Resources, added that "the extra funds that the NATO proposal would make available could be used to involve the public in the Maine portion of the Basin." 13

As to the objection that the CCMS proposal was concerned only with water pollution while the Canada-N.B. Agreement called for comprehensive river basin planning, after considerable discussion the Consultative Committee decided that those responsible for planning the CCMS study "should be asked to communicate to the members of the Committee as soon as possible their response" to the following conditions:

(a) The conduct of the NATO study should be under the direction of the Study [i.e. Planning] Director appointed under the Saint John Agreement and under the general supervision of the Saint John Basin Board and Study [i.e. Planning] Committee. The terms of reference of the NATO study should be parallel to those of the Saint John Agreement, i.e., to refer to Comprehensive Planning of water resources management rather than to "inland waters pollution." The "comprehensive basin plan" referred to [...] should be clearly specified as the plan to be developed under the Saint John Agreement.

(c) The spending of funds under the NATO study should be coordinated by the Saint John Board and Study Committee with the spending of funds under the Agreement. The timing of the NATO study should be tied in with the Saint John Study so that the former forms an integral part of the latter, probably that part described in Section 3(e) of the Agreement.

In addition, the Committee asked that they should be informed "on the objectives, funding, specific terms of reference and

13 Ibid.
terminal date of the NATO study."\footnote{14} Dr. Durie was visibly annoyed by the Consultative Committee's recommendations. In a memo to Mr. J.W. MacNeill, his immediate superior in the Department of Energy, Mines and Resources, he stated that he and others (but he insinuated mostly others) had failed badly in communicating to the Committee, for as far as he was concerned, all the three conditions stipulated by the Committee had already been met. He explained further that he had already made it clear to several Committee members that the project they were proposing for CCMS "could be effective only where there would be support for integrating it effectively in a planning program" and that they had, in effect, been the ones who had asked for "assurance that the public participation" element could be completely integrated with the planning effort." He further pointed out that his appointment for membership in the SJRB Planning Committee was an indication that there was concern in his Department that those conditions should be met.\footnote{15}

It appears that some inter-agency rivalries were involved in these developments, for Dr. Durie in his memorandum speculated that the reason behind those objections might be really that

\begin{quote}
Fisheries [federal Department of] are worried that the NATO exercise will identify
\end{quote}

\footnote{14} Ibid, see note 12 supra.

\footnote{15} Memorandum dated September 28, 1970, from Dr. Durie to Mr. J.W. MacNeill, Director, Policy Research and Coordination Branch, Canada Department of Energy, Mines and Resources.
the Canada Water Act approach as Canada's approach to pollution control. They no doubt see implications for their approach - 'what is good for fish, etc.' - if an international forum accepts pollution control as an inseparable part of good basin management."

In view of the above, Dr. Durie suggested that a letter from Mr. A.T. Davidson, Assistant Deputy Minister (Water) to the SJRB Board and Committee, as well as a full report to the federal interministerial Committee on Water explaining the CCMS project was in order."

United States Involvement in the Pilot Project

It appears that it was Dr. Durie's idea to have a meeting in Fredericton in the fall of 1970 to present Canada's pilot project to other CCMS members. However, because of slow progress in the Comprehensive Planning activities under the Canada-N.B. Agreement (Chapter 6) and because of the forthcoming New Brunswick elections, there were reservations regarding a meeting that soon with the "unavoidable public exposure" which could damage the project and the meeting was postponed to May or June 1971. Nevertheless, Dr. Durie insisted that the "delay in having a formal meeting need not delay discussions with the United States on getting a NATO comittance regarding the Maine part of

1 Ibid. As we shall see later, Dr. Durie himself participated in a joint meeting of the SJRB Board and Committee to explain the link between the two studies, and later in December wrote a memo to Dr. Roy Tinney, Chairman of the SJRB Board, giving a detailed account of the actions taken to make sure the concerns of Board and Committee were being taken care of.
Thus, Dr. Durie proceeded to arrange a meeting with officials of the Federal Water Quality Administration which since the June 30, 1970 Brussels CCMS meeting was clearly the agency responsible for U.S. participation in the Canadian pilot project. As a result, Dr. Durie and Mr. R.C. Hodges of the same department and who was also a member of the SJRB Planning Committee met on September 15, 1970 in Washington D.C. with FWQA officials, Albert Erickson, Acting Director, Division of Planning and Inter-Agency Programs, and Mr. John Hendrickson, then involved in Great Lakes negotiations with Canada. Reporting on this meeting, Dr. Durie wrote:

It soon became clear from Erickson's comments that he felt we should be pursuing this project more aggressively. He referred to some of the other pilot projects, particularly the air pollution effort. Someone noted as well the effort on the road safety pilot in which the U.S. is spending $50 million on prototype safety automobiles. But clearly Erickson and Hendrickson are interested in a joint program including the Maine portion of the Saint John. Equally, they wanted it to be comprehensive in scope, and we agreed there should be emphasis on institutional aspects. Then it appeared we had met an original aim to develop a situation that would encourage U.S. action on a source of pollution to Canada, and we could put an emphasis on institutional aspects of international management that we had been attracted to in the beginning as a focus for this study.

Letter dated August 12, 1970, from Dr. Durie to Mr. Leo V. Brandon, Consulting Hydrologist, N.B. Department of Natural Resources.
In addition, Dr. Durie attended a joint meeting of the SJRB Board and Committee to report on progress regarding the CCMS project. He stated at this meeting that Messrs. Erickson and Hendrickson were "interested in expanding the scope of the project" and had suggested "the creation of a similar organization for the Maine portion of the Basin to that in Canada" (i.e. the SJRB Board). However, Dr. E. Roy Tinney, Chairman of the SJRB Board, expressed his concern "that no substantive work proceed before it was examined by the Board" and pointed out that since the Board had become responsible for basin planning on the New Brunswick side, it was one of its prerogatives "to get involved with discussions with U.S. representatives and this would have to be carefully coordinated" with the CCMS project.¹

In this regard, Dr. Tinney's concern was also reflected in one of the recommendations of the Saint John River Interim Plan (SJRIP) which as we have seen in Chapter 6, was officially completed also on the same day he made the above statements. This recommendation read as follows:

Discussions should commence immediately between Canadian and United States officials

¹ Memorandum dated September 22, 1970 from Dr. Durie to Mr. J.W. MacNeill. NATO-CCMS Files, Environment Canada. It appears that the Washington D.C. meeting was followed by a meeting in Ottawa on October 9, 1970, in which, in addition to those four officials, participated Mr. K. Lucas of the Canada Department of Fisheries and Mr. Harry Blaney, Special Advisor to the Chairman of the U.S. Council on Environmental Quality. "Mr. Blaney's 'pipe dream' was to create an international river basin board which would demonstrate how two countries could work together effectively on environmental matters." (Mr. Ed Nef, U.S. Department of State, pers. comm. Nov. 16, 1973.

¹⁹ Minutes of the Fourth Meeting of the SJRB Committee held on September 30, 1970.
on appropriate steps to reduce waste inputs at Madawaska, Maine and at other Maine communities on the Saint John River and major tributaries of the River. The Saint John River Basin Board should initiate such discussions through the appropriate protocol channels."  

In view of the Board's concern, Dr. Durie sent a memorandum to Dr. Tinney further explaining that there should be no interference of the pilot study in the Board's planning programme, the SJRB would be just "a case study of an effective program of pollution control in a basin that should have many characteristics of interest to other countries."  

Furthermore, Dr. Durie argued that if the Canada-New Brunswick programme was going in any way to be affected by the CCMS exercise, it could be only in a positive sense, that is, it would "benefit from the exchange of information that will result." Moreover, he emphasized a point he had made earlier, which was that "the NATO commitment should also encourage response by the United States to reduce pollution from sources in Maine" (which as we have seen was one of the recommendations of the SJRIP).  

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21 Memorandum dated December 15, 1970, from Dr. Durie to Dr. Tinney.  

22 Ibid. In addition, Dr. Durie asked for the support and cooperation of Dr. Tinney and other members of the SJRB Board and Committee in carrying forward the pilot project on Inland Water Pollution. He stressed that their assistance in the international coordination of the programme was essential.
Programme development Meeting in Brussels

Dr. Durie's next step was then to circulate a revised draft proposal for the CCMS "Inland Water Pilot Project" among federal and provincial officials concerned, after which the document was sent to the co-pilot countries in the project for reviewing before a meeting called for March 1971.23

According to the document the two main goals of the project within the context of CCMS were:

- It should demonstrate ways in which countries can cooperate in reducing water pollution to their mutual benefit.
- It should also develop improved techniques and concepts for water quality management that will be of broad interest to member countries in dealing with internal and international problems of fresh water pollution.

In addition, the document stated that, if agreeable to the co-pilot countries,

- emphasis in the Canadian portion of the project [would] be given to water management for pollution control, and particularly the interjurisdictional and social dimensions of water management; co-pilot countries [could] contribute to the overall project by collaborating in the Canadian portion, or by carrying on work complementary or supplemental to that being done by Canada.24

The justification for choosing the Saint John River Basin

23 The document officially produced by the Resources Research Centre of the then federal Department of Fisheries and Forestry (soon after the Centre became part of the new Department of the Environment) was entitled NATO-CCMS, Pilot Project on Inland Water Pollution, Background Material for the Program Development Meeting, Brussels, March 1-3, 1971.

24 Ibid, p. 3.
as the case study, and for including a public participation component was provided in detail. It was said that the Canada-N.B. SJRB project represented the beginning of a new phase of water management in the country, under the concept of the Canada Water Act which had been passed by the federal parliament in June 1970 (Chapter 4). "This Act [the document stated] provides a legislative framework for establishing river basin authorities that are to prepare and, with the subsequent approval of governments, implement comprehensive development and quality control plans." Finally, the document emphasized that the reason for including a public participation component in the project was because the Act accorded "particular importance to the role of public participation in the planning process" and "efforts to improve this process are fundamental to Canada's approach to water management and consistent with the intent of the CCMS."25

The Program Development meeting was held in Brussels on March 2-4, 1971, under the chairmanship of Canada. Representatives of the co-pilot countries, namely the United States, France and Belgium attended as well as some observers. After discussion of the Canadian proposal the meeting agreed on a number of items:

(1) the general objective of the project should be:

To identify, test, demonstrate and (where appropriate) recommend to member nations through the CCMS, the elements, mechanisms and instruments for effective inland water quality management, especially in an interjurisdictional setting.

(2) Co-pilot countries would take the lead in discussion of the following special-interest areas of water management: Indirect Instruments in Water Management (France); Approaches to Water Quality Objectives and Standards in an International Basin (United States); Role of Models in Management Decision-Making (Belgium).

(3) In addition to the case study, which was the focus of its substantive contribution to the pilot project, Canada also agreed to make a general contribution in the area of "Comprehensive Basin Planning and Management."

(4) Progress regarding the four co-pilot studies mentioned above would be reported and reviewed in workshops and symposia to be held during the four-year pilot programme. These meetings were supposed to "move beyond traditional meetings of experts and develop new methods to achieve effective participation among specialists from different countries."

(5) Canada would establish a Steering Committee and a permanent Secretariat to assist the conduct of the project.26

First Meeting of U.S. and Canada Planning Agencies in the SJRB

Perhaps as a result of both the negotiations concerning the Presque Isle Stream (Chapter 7) and of the above-described

26 Draft report NATO/CCMS Inland Waters Pollution Pilot Program Developing Meeting. Brussels, March 2-4, 1971. Soon after the meeting a Steering Committee was established with the following composition: Mr. R. Hodges (Chairman); Mr. Leonce Chenard (Deputy Minister, N.B. Department of Fisheries and Environment); Dr. R. Durie; and Mr. A. Erickson (EPA, Washington).
developments, and especially preliminary negotiations between FWQA officials and officials of the Northern Maine Regional Planning Commission (NMRPC) regarding the NATO-CCMS pilot project, a meeting was arranged between the NMRPC and members of the SJRB Planning Committee and Planning Office.

As we have seen in Chapter 8, the principal objectives of the meeting which was held at Presque Isle, Maine, on March 18, 1971, were (1) to present to the Canadian delegation a Comprehensive Planning proposal for the U.S. portion of the SJR Basin which had been prepared by a team of consultants for the NMRPC; (2) to determine whether or not the proposed Comprehensive Plan would be in tune with that of the SJRB Board; and (3) to open a line of communication between the two regional planning organizations. However, we did not stress in Chapter 8 that the idea of a Comprehensive Plan proposal for the U.S. subbasins was indeed the result of negotiations between Mr. Albert Erickson and Mr. J. Barresi. In effect, Mr. Barresi stated at this meeting that the NMRPC's interest in comprehensive river basin planning in the Saint John River basin was primarily "as a local instrument of NATO and the U.S. Environmental Protection Agency (EPA)" and he added that it was to "fulfill this role, [that the] NMRPC [had] called for proposals from consultants." 27

For the purposes of the discussions in this chapter the

27 Minutes of "International Meeting - St. John River Basin Planning" NMRPC Offices, Presque Isle, Me. March 18, 1971. For a list of participants at this meeting see footnote 28, Chapter 8.
most important points raised by the consultant's proposal at this meeting were:

(1) It called for involvement of EPA at the federal level, Maine's Environmental Improvement Commission at the state level and NMRPC as the local or regional planning agency. The International Joint Commission (IJC) would be involved at the international level when it comes to Water Quality Standard Agreements on the Boundary section of the St. John River and at the points of entry into Canadian territory of the Maine tributaries.

(2) Thus, in the view of the consultants three agencies would be chiefly responsible for carrying out concurrently, water quality planning programmes: the SJRB Board, on the Canadian side; the NMRPC, on the U.S. side; and the IJC on the main trunk of the Saint John River.

(3) There was no reference whatsoever to any special programme for public participation on the Maine side of the basin.

However, Mr. R.C. Hodges, speaking for the Canadian federal government, "cautioned that one shouldn't assume too much about the role of IJC. Historically, [he added] IJC has held a judiciary role and Ottawa doesn't wish to diminish that role." As far as management was concerned, he added that it "should come from agreements between governments with IJC acting in its judiciary role concerning those agreements." To these comments, one consultant to the NMRPC reacted, saying that "this should be an early question to resolve" and asked, "shall IJC be broadened or remain narrow in purpose, with another vehicle for management?" To which Mr. Hodges replied: "this role should be
answered by Great Lakes activity and poses no cause for worry at this point."

As far as the implications of the Comprehensive Plan proposal for the CCMS pilot, Mr. Jack F. Conlon, speaking on behalf of EPA (Boston), stated that his agency was "expected to give a very high priority to funding this program" and he added that he saw "little problem on getting funds...how much is a question." Mr. Conlon further called attention of the meeting that he had just received a telephone call from Mr. Erickson in Brussels and that Erickson had told him that in addition to economic and technical aspects of comprehensive river basin planning "NATO considers public participation very important;" that Mr. Erickson "considered the active participation of Maine planning agencies in the pilot very important and that public participation should receive great attention in order to avoid making the study just for planners and engineers."

Mr. Hodges tried to impress on those attending the meeting "the international show-off value for participating countries" of the Comprehensive Planning exercise, to which Mr. Barresi

\[28\] Ibid.

\[29\] Ibid. Note that Mr. Erickson apparently was attributing to NATO, rather than to Canada, or to Dr. Durie in particular, the claim that the public participation programme was crucial to the project. Indeed, exactly the same approach was used by Mr. Hodges when reporting to the SJRB Board on the pilot, he stated: "NATO had initially only been interested in the Public Participation aspects of the Saint John River Basin program, however, they have broadened their interest and now want to look at the whole area of comprehensive river basin planning." (emphasis added). Minutes of the Eighth Meeting of the SJRB Board, June 1971.
candidly added that "this very fact should make funding easier." \(^3\)

Finally, the meeting agreed that the two planning organizations should cooperate in the preparation of a symposium to be held in Fredericton in September of the same year "to show NATO countries where we are at that time." \(^1\)

Intensive preparations for the CCMS symposium in Fredericton started full speed soon after the Presque Isle meeting. Meanwhile, discussions concerning the Presque Isle between all levels of government on both sides of the border still continued. The available record indicates that the SJRB Board was trying to keep negotiations regarding the Presque Isle issue out of the CCMS pilot discussions. For example, at the Eighth Board meeting held in June 1971, Dr. Roy Tinney, outgoing Chairman of the Board, raised the point that "the Board had not yet met with United States officials to discuss the Interim Report. [and] I felt this must be done prior to the CCMS meeting in September." And the Board asked Mr. Hodges "to make an initial contact through the Department of External Affairs." \(^2\)

Again, from an internal memorandum from Mr. John Hendrickson to Mr. Fitzhugh Green, Associate Administrator for International Affairs, EPA, it can be deduced that Canadian

\(^3\) Ibid.

\(^1\) Ibid.

\(^2\) Note that members of the SJRB Board had not participated at the March 18 Presque Isle meeting, and that at that meeting the Interim Plan was not discussed.
federal officials had officially requested through the Canadian Embassy in Washington, for a meeting to discuss the Presque Isle problem, without making any reference to other issues.\textsuperscript{33}

The CCMS Fredericton Symposium

The CCMS Symposium held at Fredericton, N.B., from September 27 to October 1, 1971, was the first of a series of meetings scheduled under the aegis of the Inland Waters Pollution Pilot Project.

The objectives and approach of the Symposium as originally outlined by the Steering Preparatory Committee were:

(a) to examine the substantive issue of Basin Planning and Management which Canada had designated as its main area of concentration. To this end, the Symposium would review the genesis and development of the Canada-New Brunswick water management agreement, and especially the public participation component.

(b) to examine in a preliminary way the other studies comprising the pilot project, namely: Approaches to Water Quality Objectives and Standards in an International Basin (United States); Direct and Indirect Instruments for Control of Pollution in Inland Waters (France); and Systems Modeling for Water Resources Decision-Making (Belgium). To this end the Symposium would discuss various background papers dealing with

\textsuperscript{33} Memorandum dated June 24, 1971. EPA (Boston) Files. As we have seen in Chapters 7 and 8, a meeting on the Presque Isle issue actually took place on December 1, 1971 in Boston.
these subjects prepared by officials of the participating countries and their advisors.

(c) to arrive at a final agreement on the structure and timetable for the pilot project, for submission to the next CCMS Plenary. This was supposed to be the start of a process leading to recommendations on inland waters quality management, especially in an interjurisdictional setting, to be later presented to the NATO Council.

However, by the time the Symposium actually started, probably as a result of American pressures, the emphasis in the Symposium agenda had shifted to a review of the actual experience and approaches of Canada and the United States in planning and management for the Saint John River Basin.34

Thus, according to a preliminary draft report of the Symposium, the first part of the programme consisted of a detailed review of the experience of Canada and the United States on the Saint John River Basin. Presentations were made by the delegations of Canada and the United States on the history, geography and resource use patterns of the Basin. Special emphasis was given to the divided jurisdictions in the Basin: national (Canada and the United States); state and provincial (New Brunswick, Quebec and Maine); local governments (country, region, township divisions, towns); and several ad hoc and semi-official regional frameworks. Approaches to planning in both the

34 This account is based upon several draft reports on the Fredericton Symposium; NATO/CCMS Files; Environment Canada, Ottawa.
Canadian and the United States portions of the Basin were fully outlined. Detailed descriptions were provided of the federal and provincial/state administrative structure including the Saint John River Basin Board in Canada and the Northern Maine Regional Planning Commission in the U.S.A., which had been established on both sides of the border to carry forward the planning and management of the Saint John Basin. The detailed examination of the physical and jurisdictional aspects of the basin was amplified by an air tour of the basin.

The Consultant's Background Papers

In addition, two background papers prepared by consultants to the NMRPC outlined what in their view was ideal planning and decision-making process not only for the United States portion of the basin but for the whole basin as well.

The papers, as we shall see, would have fit better within the context of the workshop; in any case, they described consicely but in depth the steps necessary to develop a decision-making framework for national and international river basin planning in the SJRB. Mr. Stanley Goodman, for example, recommended that river basin planning in the SJRB be focussed upon seven "action phases":

1. Develop joint procedures for data collection and processing to assure a common data base.

2. Determine supply-demand relationships with respect to varying combinations of land and water use.

3. Develop a range of feasible water allocation formulae and joint courses of action.

4. Evaluate alternative actions based upon their physical, economic, and social costs and benefits.

5. Select the optimal or preferred set of water quality criteria.

6. Establish institutional and financial mechanisms capable of conducting river basin operations on a continuing basis.

7. Provide a workable data base relevant to local-level planning and decisions.

"Planners will not make the decisions involved in objectives 4 and 5. However, the results of planners' efforts will provide the political decision-making bodies with the data needed to negotiate water quality standards, management options, and the resulting economic allocations."

Mr. Goodman discussed in his paper these seven phases. For our purposes, the main point which should be emphasized is that he basically believed in a rational, systematic approach to international basin decision-making. He stressed the need for a "joint Canadian and United States planning group" ... "funded to coordinate planning activities among Canadian and United States sub-basins." The main function of such a group would be to provide "comprehensive surveillance, modeling and simulation studies for the entire basin." He stressed that "simplified models should be developed for each sub-basin and these in turn aggregated into a comprehensive model of the interactions within the entire river basin." Further, he believed that Saint John
River main stream quality parameters should become the basis for developing alternative water management programmes for each of the sub-basins.

Finally, and most important, Mr. Goodman recommended that the USA and Canada should establish "an international institution having, at a minimum, responsibilities for water quality monitoring and a coordinative role to integrate the operations of the various sub-basin authorities" (also to be established.) He added that efforts should be made to avoid one of the most common shortcomings of institutional design, which was to attempt to fit a river basin programme into existing programmes and agencies which have "other primary functional jurisdictions which may at times be inconsistent with their river basin responsibilities."

Mr. Robert Hunter, the other private consultant to the NMRPC presenting a paper at the symposium, chose to address the crucial question of resource allocation in an international basin. The main emphasis of his paper was that while it would be easy to agree on exchange of information, and coordination of planning, the real difficulties would lie in resource allocation. In other words, for Mr. Hunter, the crucial question was how each country, province, state or community was going to decide how much they were willing to pay for maintaining given levels of water quality in the Saint John River and its tributaries.

Mr. Hunter suggested that in order to realistically negotiate such complex resource allocation, a procedure should be developed by which the consequences of any chosen set of
conditions imposed on the river could be predicted with reasonable accuracy. In short, he emphasized the need for predictive models capable of relating water quality criteria and objectives to costs of achieving them (including opportunity costs), as a factual basis for allocation negotiations between the two countries.

The second part of the Symposium programme was devoted to concurrent workshop sessions on the four water management areas comprising the pilot project listed above. The workshops' background papers were distributed at the Symposium. According to the draft report of the Symposium,

Each co-pilot country chaired the workshop for the area of interest for which it was most concerned. Canada provided papers for the three groups chaired by the representatives of co-pilot countries. The discussion paper for the workshop group on Basin Planning and Management (chaired by Canada) was prepared by the United States.

A large number of government officials from both the U.S.A. and Canada attended the Symposium. Twenty-four Canadian and twenty-eight American officials actively participated in the meeting. In addition to a small number of representatives from Belgium, France, Portugal and Germany, there was a sizeable number of observers from government and university institutions in Canada and the U.S.A.

Noteworthy among Canadians was the participation of the "Regisseur," of the "Regie des eaux du Quebec" and of very high-level officials of the Canada Department of the Environment, including the Deputy Minister, R.F. Shaw and two Assistant Deputy Ministers, A.T. Davidson and L. Edgeworth; New Brunswick was represented by many government officials including Mr.
Leonce Chenard, Deputy Minister, Department of Fisheries and Environment and Mr. E.S. Fellows, Chairman of the Water Authority. There were also representatives of other provincial and federal departments, including the Department of External Affairs. The Saint John River Basin Board, Committee, Planning Office and Public Participation Program were represented by a large contingent.

On the U.S. side, noteworthy was the presence of two officials of the Council of Environmental Quality (including Harry Blaney, who was special assistant to the Chairman, and as we have seen a serious force behind the CCMS concept), high-level officials from FWQA (Washington) and State Department; Mr. William Adams, Executive Director of Maine's Environmental Improvement Commission, as well as a large representation from the NMRPC.34

From the perspective of institutional arrangements for water quality management in international river basins and particularly regarding the specific case of the Saint John, two of the workshop sessions deserve to be examined in detail. As we shall see in the next Chapter, some of the discussions which took place during these workshops foretold the negotiations which took place later on concerning the Canada-United States Saint John River Basin Agreement. These two workshops were "Approaches to Water Quality Objectives and Standards in an

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34 Report on Fredericton Symposium, September 27 - October 1, 1971, International Organizations Division, Environment Canada (Draft).
International Basin" and "Basin Planning and Management." The discussion below is based upon transcripts of the sessions and several versions of the workshop reports obtained from the NATO/CCMS Files of the International Organizations Division of Environment Canada.

Water Quality Objectives and Standards Workshop

The background paper for this workshop was prepared by Dr. E. Roy Tinney, Director General, Policy, Planning and Research Service, Environment Canada, and outgoing Chairman of the SJRB Board. Although the paper was said to represent his own views, and not necessarily those of his government, it should certainly reveal the kind of thinking that to a large extent pervaded one important segment of the high echelons of the Canadian federal bureaucracy. The most important points made by Dr. Tinney were:

(1) In the case of international river basins an important distinction should be made between water quality standards and objectives. The former he defined as "a legally enforceable, specific level of water quality," while the latter "can be either a specific level of quality, a general statement on quality, or a statement on the desirable biotic community to be maintained." He stressed that "standards on shared water bodies are not really useful in themselves as a management tool."

(2) The approach to the negotiation of the Great Lakes Agreement, then near completion, represented to him an excellent example of how international water quality negotiations should be carried out, and "offered the best chance of success in improving the quality of shared international waters."

(3) The Great Lakes negotiation process consisted of (a) a
major scientific study carried out by the IJC "so that all the technical processes and needs would be understood; (b) recommendation by the IJC of desirable objectives for consideration by the two federal governments and provincial and state governments, plus suggestion for a pollution abatement programme "that would be necessary if the objectives were to be met within certain specified target dates;" (c) negotiations between each federal government and states and provinces of agreements on objectives and pollution abatement schedules; (d) negotiation of a formal international agreement between the two countries, with provisions for reviews of the objectives and schedules; (e) each government involved formally to commit resources to a pollution abatement programme; and finally, (f) a strengthened surveillance role to be assigned to the IJC, "reporting breaches of the agreement not only to the governments but directly to the public."

(4) The IJC was a real asset to both countries in the "constructive settlement of bilateral problems on boundary waters."... "Primarily because of the prestige and the independence of the IJC, its recommendations provide a firm basis for joint government action."

(5) On the other hand, he stressed that "there appears to be no need to delegate sovereignty to an international pollution control institute (sic) if such agreements as those for the Great Lakes can be consummated." He added:

Indeed an attempt to create some kind of complex supra-national authority would tend to divert efforts away from the real problems, and delay progress while new staffs, procedures, and information mechanisms are developed. To offer the
public a new, elaborate institution as an answer to the real and immediate problems of the Great Lakes might indeed be regarded as a delaying tactic on the part of the governments, when political will and existing institutions are the only ingredients needed" ..."Certainly the mood in Canada is not to surrender sovereignty on resource and environmental issues, but to put more emphasis on sovereignty within each country." 37

The discussion which followed the presentation of Dr. Tinney's paper is very revealing. I had access to three main sources of what transpired during this workshop discussion: the official report of the Symposium, a preliminary draft of this report and a transcript of the final oral presentation on the conclusions of the workshop. 38

The official report of the Symposium states that the discussion "focussed on three main areas: the water quality objectives, the standards required to attain these objectives and the instrumentality through which such standards can be most advantageously formulated and applied." It then elaborates on various points raised by Dr. Tinney's paper. Thus, except for

37 E. Roy Tinney, 1971, Approaches to Water Quality Objectives and Standards in an International Basin, Background Papers Fredericton Symposium, NATO/CCMS Pilot Project on Inland Waters Pollution, Department of the Environment, Canada.

brief statements on (a) the usefulness of public hearings (a common U.S. procedure) to obtain public values regarding water quality objectives, (b) the appropriateness of "in-stream standards" (favoured by Maine) versus "effluent standards" (favoured by Canada), and (c) formal and informal methods of exchanging ideas and information, this report of the workshop stuck to Dr. Tinney's paper.

On the question of what type of agency or instrument could best be used to coordinate views and make water quality decisions in an international river basin, the official report summarized the debate as follows:

Discussion covered regional mechanisms, the role of bodies such as the International Joint Commission, international review boards, and formal international bilateral agreements. Although the need to harmonize Canadian and American objectives and to avoid national unilateral actions was widely endorsed, no consensus was reached by the group as to the agency or instrument through which such objectives could be arrived at.

However, a preliminary draft of the workshop report gives a quite different perspective of what transpired during the discussion period. The draft report pointed out that although Canada and New Brunswick had different approaches to both public participation and Comprehensive Planning,

The United States and Canadian participants found a large measure of agreement that a greater effort must be made towards developing improved cooperation in interjurisdictional situations. In particular, it was agreed that the responsible authorities should explore as a matter of priority the kind of joint arrangements that might further the aim of promoting a high level of water quality in the shared waters of the Saint John Basin. Such arrangements should involve both Federal and respective Provincial and State
authorities. Progress in this direction by the two countries will be one aspect reported on the Project Symposium that will be held in the State of Maine in 1972.

Finally, the original transcript of the oral presentations made by Messrs. R. Millest and A. Erickson, respectively rapporteur and chairman of the workshop session, give yet another perspective of the nature of the discussions which took place at this workshop.

In his presentation Mr. Millest, although in a quite inarticulate manner, showed how some of the participants and presumably himself, disagreed with some of the views expressed in Dr. Tinney's paper and (as we have seen) contained in the official report. Among others he made the following points:

- water quality objectives in the case of an international basin "have to be flexible, bearing in mind our different sovereign approaches to some of the problem-solving exercises that we will have to go into (sic)." Objectives in this case were in his view the product of a "common understanding of an international water quality ethic (sic) that we will agree on." There was a "need for a forum in which we can bring these issues forward and work towards a mutually accepted ethic"..."something like an International Board that will be able to bring forward a commitment on behalf of the participating sovereign nations, to achieve this ethic or objective or goal that we set for ourselves."

- as far as the nature of such a Board he pointed out that Mr.

'' Emphasis added.
Erickson would elaborate on later, but in his view "the most important thing to us seemed to be that the mechanism we have now, such as the IJC did not provide for the commitment of anything, not even the commitment to the idea, but rather the respective recommendations back to our administrations."

In his summary presentation of the workshop Mr. Erickson went directly to the question of "what sort of forum or mechanism we might explore in terms of our future activities through this project for C.C.M.S., as well as something that will have meaning and bearing on our mutual problem with the Saint John River Basin, simultaneously."

Next, Mr. Erickson explained that they had discussed the advantages and disadvantages of formal versus informal agreements and, in his view, had reached the conclusion that in the case of formal agreements, "the necessary diplomacy and protocol which must be observed" implies long negotiations, and "the inability to meet a time constraint"... such as the particular situation of the SJRB where "a small segment of an international water" demanded urgent measures..."and to go through some kind of a formal mechanism may get us by."

However, he called attention to "the problem of existing institutional frameworks within nations"..."interfering with an international agreement" and that these institutional differences had to "be resolved before you can reach an

" What Mr. Millest probably wanted to say was that the IJC recommendations were formulated without commitment to implementation, the burden of which was left to the government agencies."
international objective."

Mr. Erickson further reported that the last thing they had explored was what kind of international mechanism could be useful in the case of the Saint John River Basin. In his view, they had agreed on the following points:

- they would like to reach an agreement through "something like a memorandum of understanding which would be at less than the head of state level, something in which two principal departments or elements of the National Government, Secretary level,"...would agree on goals to be achieved and on establishing coordination of mutual planning and management activities.

- after the necessary studies and analysis had been carried out, then, one "could go back and lead into perhaps a bilateral agreement or treaty."

- in order to achieve continuity in terms of national commitment, the agreement should be reached first "through an administrative level rather than through the political level"...because this "would allow some flexibility by the utilization of the necessary mechanical (sic) talent, which must be applied in cases like our Saint John Basin." In this regard, they had agreed further that it would be preferable "a basin-by-basin approach, rather than [dealing with] an entire international border problem."

- the kinds of recommendations which would emanate from such an international board would be dependent "upon the level at which the representatives are on this board." In his view, the appropriate level "would be somewhere just under administrative
and just at the top of the technical problems and facets involved in the water quality issues"...because this would allow for the effective communication of recommendations to the administrative level.

- Finally, Mr. Erickson concluded,

So our recommendation in terms of approaches is to try something different. We perhaps would like to use the case in point of the Saint John Basin again as a demonstration to see how well it can work and as something for which we may be able to develop some ideas that would be useful in the C.C.M.S. exercise.

Basin Planning and Management Workshop

This workshop was chaired by. Mr. R. Hodges. Mr. E.S. Fellows, Chairman of the N.B. Water Authority was the official Rapporteur. The background paper for the workshop was written by Messrs. A.J. Erickson and W.T. Sayers of the U.S. EPA.

The background paper was both technical and general, making no mention of the SJRB or giving any other specific example. It was confined to intra-national basin planning and management. However, besides pointing out the importance of establishing legal, enforceable water quality standards, it emphasized the need for specifying funding levels for each period of the all-important implementation schedule. In addition, it called attention to the relevance of public information, education and participation in all phases of the planning process. However, very little was said in the paper about institutional arrangements for planning and implementation.

In contrast the bulk of the discussions in the workshop were devoted to the topics, "Developing Institutional
Arrangements in an International Basin" and "Public Participation in the Planning Process." Again the three sources regarding this symposium (see note 37) give somewhat different accounts of what transpired in the discussions, although the differences are not as marked as in the case of the previous workshop.

The official report of the Symposium paid greater attention to the general issues discussed, such as the difficulty of reconciling different objectives for water quality and water use, epitomized by the environmental quality versus economic growth issue. Although the report did state that the Northern Maine Regional Treatment System (Chapter 8) was an example of how this kind of conflict could be solved and the need to introduce water quality standards across the continent in such a way that industries cannot locate in "pollution havens."

The account of the discussions under the topic "Institutional Arrangements for Water Quality Management in an International Basin" in the official report does not differ very much from the other sources, except for several omissions.*

Among the conclusions reached at the workshop, the following are most pertinent to our discussion in this chapter:
- It was reported that the Saint John River Basin Board and the Northern Maine Regional Planning Commission had

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* The fact that both the Chairman and the rapporteur of the workshop, as well as two-thirds of the participants in the workshop were Canadians, should help explain why there are less discrepancies among the sources, although the presence of Mr. J. Meek of EPA was sufficient to enliven the debate and provide a balance.
established informal liaison for the exchange of information, particularly regarding objectives and water quality standards. If their objectives, standards and time-frame for implementation are compatible, each agency can inform its political jurisdiction to that effect; if not compatible, more formal negotiation will be needed.

- It was agreed that informal working relations of this kind are more effective if they proceed one step at a time. The two parties should first try to achieve compatible objectives, and then turn to setting standards.¹²

- Because planning and enforcement agencies on both sides of the border have a great deal of work to do, it will be some years before they can achieve standards that are compatible. Therefore, though it is necessary to coordinate the planning, it is even more important to start the implementation and begin to move towards the objectives and standards that may ultimately be agreed upon. An attack on severe pollution should have the first priority.¹³

- Finally,

it was agreed that informal bilateral

¹² Noting the fact that Maine already had established in-stream water quality objectives (although in the case of transboundary pollution, quite unacceptable to Canada), the draft report had it added here, "It is the intention on the Canadian side, when effluent standards have been met, to evaluate the receiving water capability and thus be able to judge how much more industry and population the Basin can absorb without unacceptable loss of environmental quality. However, that will be done sometime in the future."

¹³ In the draft report it had been added, "It is vitally important to get together now to start to identify management problems, particularly objective setting, acceptance of standards and a common schedule for enforcement. Full information exchange is needed for this purpose: both sides must know what is happening across the border"... This "will result in the identification of problem areas and thus lead towards establishment of more formal linkages when required."
communication is extremely useful during the planning process, but more formal negotiations may be needed for agreement on objectives, standards, schedules, etc. It was suggested that quite possibly a single organization could serve all the needs of both nations, instead of proliferating international organizations on a river basin basis. On the other hand, some felt that a single national organization on each side of the border could negotiate objectives and standards for all basins.**

As far as public participation is concerned, the most important conclusion was the recognition that

- "In New Brunswick, the move for water quality control started at the upper [federal and provincial] levels of government, and public participation is being used to gain support at the local level. In Northern Maine, the move originated at the grass-roots level, and the planning is reaching towards the state and federal levels for financial support."

- The public participation programme in New Brunswick was "experimental and does not necessarily establish a precedent.

- "Involving the public in the planning process is far better than preparing a plan and springing it on them at the last moment" and "that the key to public participation in a democracy

** In the original transcript of the workshop, it was said, "almost certain formal arrangements will be required when we get to implementation and enforcement." In the draft report the following paragraph was also included: "It was highlighted by the workshop that the different approaches to basin planning in the Saint John Basin by the two countries concerned gave a very useful illustration of the diverse ways in which common planning objectives could be pursued. It was agreed that this should be amplified by an extensive joint report to the CCMS by Canada and the United States on "Comprehensive Planning for Water Management."
should be good information. A well-informed public can bring pressure to bear on its elected representatives."

Summary of the Fredericton Symposium

The task of synthesizing the result of this first NATO/CCMS workthrough on water quality management was given to Professor E. G. Pleva. In addition to the points already described above, Professor Pleva called attention to the following:

(a) Although developed independently of each other the river basin models and the technical plans proposed or already in use for the two sides of the SJRB were not only very sophisticated but consistent and compatible. Each zeroed in "on water quality as a primary manageable element in a program a comprehensive planning for the basin." He was convinced that the use of models in water management would result in better decisions and probably "optimal use of the resource array."

(b) From the discussions three possible types of institutional arrangements could be considered for the SJRB:

1. The possibility of a formal recognition of the physical integrity through a formal treaty and a management strategy worked out on a single basis.

2. The development of a coordinating stream paralleling but joining the separate programs to achieve a unitary management strategy and program.

3. The strengthening of cross-boundary linkages to keep the existing evolving programs in phase with each other,

recognizing the varying constraints affecting the rate at which the established goal-objectives are approached.

Professor Pleva added that:

The third possibility, that of strengthening the linkages between the two parts, is possible, even encouraged, immediately without any special legislation or treaty. It is altogether likely that a period of cooperation will show the need for a more formal coordinating blending stream. The nature of this board or committee would evolve through a better awareness of the kinds of problems that can best be dealt with on a more inclusive or holistic drainage basin framework.

(c) Out of this cooperation may evolve a kind of official basin plan that could be "signed on" by the SJRBB and the NMRPC. Although the plan would have a common goal, it would perhaps require different operational strategies and techniques for its attainment in each side of the border. The devlopment of a common timetable would be an important contribution of the two main planning agencies as they carried out their programmes in each country under separate but similar legislation.

(d) Planning and decision-making for the SJRB should take into consideration uncertainty, particularly as far as developments external to the basin but affecting it. He recommended that the planning process should have "a built-in resiliency to move with changes over which it has no primary control." He added that he was convinced from the symposium discussions that "an evolved dual system of cooperation in the drainage basin would have the flexibility to adjust to changing times and conditions. The intellectual linkages should be rubber strands rather than welded straps."

(e) Finally, as far as the purpose of the NATO/CCMS pilot
project was concerned, he stated that the "transfer value of experience from this watershed could have profound importance to the rest of the world."
We finished Chapter 9 describing in detail how an idea formulated by Mr. Harry Blaney, a White House staff and thus an outsider of the main stream of events related to the Saint John River Basin, was discussed at the NATO-CCMS Fredericton Symposium and raised to the status of a realistic proposal for establishing an international institution to deal with Saint John River boundary and transboundary pollution problems.

In this chapter I shall describe the events that followed the Fredericton Symposium up to the official signing of the Saint John River Basin agreement of September 1972. Greater attention will be given to the intricate way in which Canadians responded to a concrete U.S. proposal for the creation of a new international institution for the Saint John, how a Canadian position emerged and how a compromise was finally reached with U.S. officials.

The United States Strategy

After the September 1971 Fredericton Symposium CEQ and EPA officials intensified their CCMS offensive on three fronts. First, they vigourously tried to persuade Maine's EIC officials to take corrective actions regarding pollution of the Presque Isle Stream. This initiative culminated in the December 1971 Boston meeting, in which Canadian officials were requested to specify what water usages and water quality criteria they
desired for that stream (Chapter 7).

Second, they undertook all efforts to provide the NMRPC with the funds it needed to carry out the Comprehensive Planning exercise for CCMS on the American side of the SJRB, as they had committed themselves to do even before the Fredericton Symposium.

Third, they initiated the preparation of a concrete proposal for the creation of a joint international institution for the Saint John River Basin, officially as their main contribution to the CCMS exercise but, as we shall see, to satisfy other purposes as well.

Since the initiatives regarding the Presque Isle issue have already been discussed in Chapter 9, I shall start by describing how EPA officials gave top priority to the task of providing the NMRPC with the necessary funds to carry out Comprehensive Planning in the U.S. sub-basins of the Saint John.

This task required indeed some special efforts and concessions on the part of EPA, for existing laws required the planning agency to raise some of the funds locally and, as should be expected, industries and municipalities do not normally put their moneys into this kind of long-term planning.

The EPA Grant to the NMRPC

With the help of the consultants the NMRPC did try to raise funds from the government of Maine and other funding
institutions.¹ Maine's EIC, however, judging from Commissioner W. Adams' behaviour at the Fredericton Symposium, was not very enthusiastic about the NATO-CCMS project and could do no more than give its moral support to the endeavour.²

Thus, EPA officials had to find means to support in full the NMRPC's planning activities in the remaining Maine sub-basins of the Saint John. On January 4, 1972, Mr. E.G. Jensen, Deputy Assistant Administrator for Water Programmes, wrote to the Associate Administrator for International Activities, Mr. Fitzhugh Green, concerning the funding problem. He explained that at the Fredericton Symposium the USA had indicated its intention to initiate a Comprehensive Planning programme on the U.S. side of the SJRB to match similar efforts on the Canadian side, and to work towards the development of common water quality standards for the basin. After mentioning the work the NMRPC was already carrying out on the Aroostook-Presque Isle subbasins, he pointed out that the Commission was the local agency "capable of providing leadership necessary to produce an effective plan for the U.S. side of the basin.,” but it was not

¹ In a letter dated December 6, 1971, Mr. Robert Hunter, Vice-President of E.C. Jordan Co., advised Mr. J. Barresi on how the NMRPC could administer the planning programme and what kind of financial participation it could expect from the government of Maine.

² Letter from Mr. Adams to Mr. Barresi dated December 29, 1971. Mr. Albert Erickson claimed that Mr. Adams hardly said a word during the discussions at the Fredericton Symposium, while Mr. M. Possidento, also of EPA, conveyed to me that perhaps Mr. Adams was already anticipating a greater role for the EIC in river basin planning in the state, after the passage of the new federal water quality legislation (Chapter 4). Personal interviews. November, 1973.
capable of providing the required share of the planning costs, in accordance with the Federal Water Pollution Control Act. Therefore, he concluded, EPA should find possible ways to help in order to capacitate the Commission to "do all the planning and provide international coordination at lower levels."

Evidently, EPA did find a way to fund one-hundred percent ($441,000) of the Comprehensive Planning project to be carried out by the NMRPC as the U.S. contribution to the CCMS pilot. On April 26, 1972, at a public meeting convened to present the Northern Maine Regional Treatment System (Chapter 8), Mr. Barresi announced that the above grant had been confirmed and that, most likely, a contract would be awarded to a consortium of the E.C. Jordan Company and Meta Systems, Inc. (the firms which prepared the proposal) to undertake the required studies. 

Once Again the IJC is Left Out: Before it was approved, however, the application document underwent some very important changes. These changes, all in the institutional area, were made by the NMRPC at the special request of Mr. Erickson and other officials of EPA. They included: (a) deletion of all references to the IJC and (b) replacement of the IJC by a new institution, an "International Policy Group" which would have an expanded

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3 Memorandum dated April 27, 1972, from Mr. J. Henderson, Planning Director, to all SJRB Board members. Mr. Henderson added: "See what we have done for them by getting involved in the NATO-CCMS project!"
role in international management of the Saint John River Basin.4

The proposed role for the "International Policy Group" on the management of the international SJRB can best be visualized by the institutional chart prepared by the consultants which is reproduced as Figure 4.5 About the functions of this "International Policy Group" the consultants' document now stated that normally it would be limited to recommendations of standards, criteria and general resource allocations. However, we would suggest that expansion of this role be considered to include studies and recommendations on overall basin control management and administration, including water quality monitoring, as may be necessary for continuing management of this complex resource. Such a system would be unique from an international relations viewpoint, and would appear to fit well into the "Committee on the Challenges of Modern Society" (CCMS) program of NATO.6

One can see from the above that the role proposed for the "International Policy Group" was broader than that originally proposed for the IJC by the consultants (Chapter 9), and also

4 These important changes can be traced precisely to a telephone call on February 1, 1972, from Mr. D. Smith, EPA-Boston, to Mr. Jeffrey Gammon, NMRPC, in which Mr. Smith transmits a request from his superiors, that such changes be made in the document, including the institutional chart prepared by the consultants, "to reflect the most recent developments regarding the CCMS project." NMRPC Files.

5 The chart is dated January 31, 1972; however, we know from the above discussion that it must have been prepared after February 2, of the same year.

6 Northern Maine Regional Planning Commission, St. John River Basin Water Resources Study - Project Description and Scope. Prepared by E.C. Jordan Co., Inc., Portland, Me. and Meta Systems, Inc., Cambridge, Mass. (Revised, February, 1972). The above quote continues: "such studies of course are not included in this current proposal to the Northern Maine Regional Planning Commission, although we believe such a continuing study is vital if a truly efficient basin management program is to be developed."
U.S. GOV. E.P.A.

Funding, Review and Consultation

ST. OF MAINE E.I.C.

N.M.R.P.C. AGENCY FOR US SUBBASIN PLANNING ADMINISTRATION

CONSULTANT TEAM ASSIST N.M.R.P.C.

INTERNATIONAL POLICY GROUP

CONSULTANT TEAM

N.M.R.P.C. ACCOMPLISH PHASE "A" U.S. SUB-BASINS TECH. PLANNING STUDIES

CONSULTANT TEAM MONTREAL ENG.

INTERNATIONAL POLICY GROUP—PHASE A BASIN MODEL AND OPTIMIZATION STUDIES

N.M.R.P.C. ACCOMPLISH PHASE "B" U.S. SUB BASINS INSTITUTIONAL AND FINANCE STUDIES

INTERNATIONAL POLICY GROUP—PHASE B SET BASIN CONTROL CRITERIA

N.M.R.P.C. ACCOMPLISH PHASE "C" U.S. SUB BASINS

INTERNATIONAL POLICY GROUP—PHASE C SET BASIN CONTROL ADM & FINANCING

U.S.A. IMPLEMENTATION

CANADA ST. JOHN RIVER BASIN BOARD PLANNING UNIT

CANADIAN NATIONAL GOVERNMENT

NEW BRUNSWICK DEPT. OF NAT RESOURCES

CONSULTANT H.G. ACRES

INTERNATIONAL POLICY GROUP—PHASE A CANADIAN SUB BASINS

INTERNATIONAL POLICY GROUP—PHASE B CANADIAN SUB-BASINS

INTERNATIONAL POLICY GROUP—PHASE C CANADIAN SUB BASINS

CANADIAN IMPLEMENTATION

broader than that envisioned by Canadian participants at the Fredericton Symposium (e.g. Messrs. Hodges and Millest. Chapter 9). In effect, this new consultants' proposal called for an international institution which would be responsible for:

- carrying out investigations in the international section of the Saint John River
- overall basin modeling, based upon the above studies and the modeling studies carried out by each national planning agency (SJRBB and NMRPC).
- continuing investigations and negotiations of water quality standards on the international section of the Saint John.
- based on the above, recommending abatement programmes, and administering and financing these programmes.
- exploring "possible 'quid pro quos' concerning elements of the system which although not directly affecting one another, could be the basis for international trade-off."

Formulation of the United States Proposal

It is difficult to determine to what extent the consultants' proposal for the NMRPC represented also the views of EPA officials regarding the creation of an international institution for the Saint John. From what we have seen above, it is evident that they did provide some inputs, most important

' Ibid.
among them being the elimination of the name of the IJC from the application.

However, it seems clear that at this point EPA officials already had a good idea of what kind of institutional arrangement they would like to propose for the Saint John. In his January 4th memorandum to Mr. Fitzhugh Green, Mr. Jensen (Deputy Assistant Administrator for Water Programs)—also mentioned that a proposal for the creation of a "Joint Working Group" on the Saint John was in preparation, adding that the Chairman of the U.S. side of the Group should be from EPA, but on the Canadian side, its counterpart "perhaps would be from the Department of External Affairs, since this is a common procedure in Canada-U.S. relations."

During the first weeks of 1972 Mr. Albert Erickson, in consultation with Mr. Harry Blaney of the U.S. Council on Environmental Quality, asked Mr. William H. Mansfield of EPA's Office of International Activities to draft a preliminary proposal for an international "Joint Working Group" for the Saint John River Basin. Hence, a three-page document was quickly prepared, apparently reviewed by Mr. Erickson and sent to Messrs. Hodges and R. Millest of Environment Canada early in February.°

The document prepared by Mr. Mansfield was supposed to reflect what transpired in the informal negotiations between Mr. Erickson and Messrs. Hodges and Millest at the Fredericton CCMS

Symposium.' According to Mr. Erickson its purpose was to provide an initial basis for discussion amongst Canadian officials and then with Americans. Due to its importance for the discussion which follows, this first U.S. proposal is reproduced in its entirety below:

Canadian-U.S. Joint Working Group for Water Quality on St. John River Basin

Preambular Statement

The joint working group is established to assist the appropriate authorities to cooperate in conducting programs and other measures to enhance the water quality of the St. John River.

This memorandum of understanding regarding cooperation in the St. John River Basin on water quality is intended to be consistent with the goals and provisions of the Boundary Waters Treaty of 1909, governing cooperation between Canada and the United States with respect to water quality.

I. Terms of Reference

The purpose of the Joint Working Group shall be:

(1) To recommend Water Quality Objectives in the St. John River Basin;
(2) To provide a mechanism for exchanging of appropriate information about activities and actions which could affect water quality in the area;
(3) To provide a mechanism for coordination and consultation, joint-planning and management to maintain water quality objectives;
(4) To make appropriate recommendations to the relevant authorities on both sides of the border regarding water quality in the basin area.

Although the exact nature of these negotiations could not be determined (Chapter 9), it appears that for different reasons the two sides agreed that the proposed Group should be concerned with water quality only.
II. Organization

A. Membership: The Group will consist of an equal number of members from each country and will include Federal, State, and Provincial and local representatives. The members should represent the respective authorities and provide the special skills, experience and information required to carry out the above terms of reference. It should have the smallest number of members to effectively perform its functions. Members work for their respective governments, which pay their expenses. Advisors or observers may be paid by governments or serve without salary or expense allowance. On the U.S. side membership would consist of representatives from the Federal government, the State of Maine and the appropriate local authority. Other individuals may be asked to participate as advisors or observers. Canadian members will be selected by the Canadian government. They are expected to be from the Canadian Federal government and Province of New Brunswick.

B. Section Chairmen: The U.S. and Canadian sections of the Working Group will each designate a Chairman of its section. The Chairmen of the two sections shall be joint Chairmen of the Working Group and shall be responsible for providing proper liaison between the Group and their respective authorities. The Chairmen will keep their respective section members informed of plans and activities and progress. Each Chairman, after consulting the members of his own section of the Working Group may appoint a secretary of that section.

C. Committee and Sub-Working Groups: The Working Group may establish such committees or sub-working groups as may be required to discharge its responsibilities and may invite the cooperation of other agencies in the U.S. and Canada. Unless other arrangements are made, members will make their own arrangement for reimbursement of necessary expenditures for travel.
The reaction of Canadian officials to the first draft of the U.S. proposal for creation of an international joint working group on the Saint John River followed along the lines which had already emerged at the Fredericton CCMS Symposium. In general, lower level management officials of Environment Canada, such as Mr. R.C. Hodges and especially Mr. R. Millest were receptive to the American proposal; while the upper levels, including Dr. Roy Tinney and certainly Mr. K.C. Lucas were not enthusiastic about the idea.

As we have seen in Chapter 9, Dr. Tinney had great respect and confidence in the IJC and was in principle against the idea of creating U.S.-Canada institutions on a river basin basis, although he himself had played one of the most prominent roles concerning the inclusion of integrated management and river basin authorities, as basic concepts to the Canada Water Act (Chapter 8). However, at this point in time Dr. Tinney was, together with other high-level officials of Environment Canada, deeply involved in the last details of the negotiations of the Great Lakes Agreement, and apparently was of the opinion that they should wait for issues regarding that agreement to clear out before embarking into yet another agreement with the United

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10 EPA Region I Office Files (Boston). From the above it becomes clear that there was not much relationship between Mr. Mansfield's text and the proposal submitted by the NMRPC when it applied for the EPA grant.
States.¹¹

As well, officials of the Environmental Protection Service (EPS) of Environment Canada, including its head, Assistant Deputy Minister, K.C. Lucas, were less than enthusiastic concerning the U.S. proposal. As we have seen in Chapter 9, the majority of officials in this service which had come directly from the old Department of Fisheries and Forestry, had been very critical of the final proposal by Dr. R.W. Durie for a NATO-CCMS "Inland Waters Pollution Pilot Project" primarily because they felt the old Department of Energy, Mines and Resources (Dr. Durie's department) was intervening in their functional jurisdiction, which they believed included all aspects of water management which affects fish life. Their position was that the IJC afforded an excellent model for institutional arrangements in environmental relations between two countries and should be used as an example for CCMS rather than experiment at that time with a new formula.¹²

Officials of the Department of External Affairs also expressed reservations about the U.S. proposal. Their argument

¹¹ The Great Lakes Agreement was officially signed by Prime Minister Trudeau and President Nixon on April 15, 1972. Since 1970, middle and high level officials of both the old Departments of Energy, Mines and Resources and Fisheries and Forestry, now under the umbrella of a single Department of the Environment, had been involved in the Great Lakes Joint Working Group, and in direct negotiations with U.S. officials.

¹² A former Fisheries official further indicated to me that in his view those Environment Canada officials supporting the U.S. proposal and trying to keep the IJC out, were doing so for personal reasons and perhaps to stake a claim in the water quality field.
was similar to that of EPS officials, but in addition they thought that the objective of the CCMS exercise, (in which they had encouraged Canadian participation), should be to show NATO members how two countries could solve common boundary waters problems, not the creation of joint institutions.\textsuperscript{13}

Hence, it appears that clear support for the U.S. proposal among Canadian federal officials was coming only from Messrs. Millest and Hodges, respectively heads of the Water Quality and the Water Planning and Management divisions of the Water Management Service (WMS), Environment Canada. Even so, Mr. Hodges thought, "Americans were moving too fast" and that their proposal for the Joint Working Group (JWG) was "too inclusive." Further, he was concerned that the new institution "could be viewed in New Brunswick as superceding the Saint John River Basin Board" (he was then co-chairman of the Board). Finally, (although he was in favour of creation of the JWG) he seemed to agree with his superiors that they should stress to the Americans that they wish to reserve their freedom of action to press the United States outside the context of the proposed group, to correct any sources of transboundary pollution which affect Canada, for example, pollution of the Presque Isle.\textsuperscript{14}

Aware of these various arguments against the U.S.A. proposal, Mr. R. Millest, then head of the Water Quality

\textsuperscript{13} Mr. Keith McLellan, Director U.S.A. Division, Dept. of External Affairs. Personal communication, January 31, 1974.

\textsuperscript{14} Mr. R.C. Hodges, Acting Director, Program and Policy Development, Environmental Management Service. Personal communication, October 22, 1973.
Branch, Water Management Service, wrote to his Assistant Deputy Minister, Mr. L. Edgeworth, pointing out that there was merit in creating some kind of institution to deal with pollution problems in the Saint John River, through which both nations could agree upon water quality objectives, financial arrangements, etc., and suggested that this could be done by having each country working through its own organizations and that agreement needed not be more than an exchange of letters. Against a colleague's suggestion that the U.S. contribution to CCMS should instead be a public participation exercise similar to the one on the Canadian side, Mr. Millest reacted saying he favoured the Joint Working Group proposal and that "it should address real problems and not be considered simply an academic exercise."

Apparently because at this point in the negotiations both the Department of External Affairs and the U.S. State Department had become involved in the negotiations and because there was a clear need for coordination of ideas and actions among Environment Canada officials, Mr. W.F. Stone, Director of the Bilateral Relations Branch of this latter department, got

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16 R. Millest, personal interview, October 22, 1973. As one may recall, Dr. Durie's original idea for Canada's CCMS pilot project was a public participation exercise. It appears that with the reorientation of the Canadian pilot towards Comprehensive Planning and more specifically water quality planning (Chapter 9), the public participation component had assumed by this time a very secondary role.
involved in the preparation of a Canadian response to the U.S. proposal. Under his direction, Mr. Peter Wilson, then a junior officer in his Branch, was given the responsibility to collate the various views of Environment Canada officials on the subject into a meaningful, if not entirely consistent, Canadian position paper. A preliminary draft of such a paper was completed at the end of April, 1972, intended for circulation and revision by key Environment Canada and External Affairs officials, and perhaps also New Brunswick officials.  

In essence this document more or less summarized the views of the various federal Canadian officials involved in the negotiations as reported above, adding the following points:

- Canadian officials were prepared to meet American officials to discuss "proposed establishment of a joint Canada-U.S.A. Working Group for the St. John River in connection with their [American] contribution to the NATO-CCMS inland water project."

- However, they still had "reservations about exact responsibilities and terms of reference proposed for the Group by the U.S.A."

- "The proposed group should be primarily concerned with the international section of the St. John River, although it could take account of water quality

1 The precise date of this document seen in the Bilateral Relations Branch files could not be determined, but it must have preceded by several weeks a draft telegram dated May 10, 1972, having very similar wording, for the information of Mr. L. Chenard (New Brunswick) and to be sent to U.S. EPA and State Department officials.
problems in tributaries which affect the St. John River."

- "In this connection, [the document stated], we must not allow the public to gain the impression that the new organization will slow down or otherwise impede progress in implementing pollution abatement in Canada."

- Finally, after praising the IJC, the document stated, "We therefore envisage activities of any Working Group leading quickly to submission of a reference to the IJC seeking the Commission's assistance in developing water quality objectives in the international section of the St. John River."

Some of these points cannot be traced to any of the federal officials thus far involved in the negotiations; as for example, the suggestion that the Group should be concerned exclusively with the international section of the river or that the public could gain the impression that the Group could "slow down or otherwise impede progress in implementing pollution abatement in Canada." Therefore, it can be assumed that they reflect the views of the Bilateral Relations Branch of Environment Canada, responsible for collating the views of federal officials or, perhaps more precisely, those of the drafter of the document. In any case, Mr. W. Stone, head of the Branch, apparently decided to postpone gathering, summarizing and expressing the views of federal officials on the subject until they met with their provincial counterparts to discuss the issue. This meeting took
place on May 15, 1972 in Montreal. However, before we discuss this important meeting, it seems important to call attention to the increasing pressure which U.S. Federal officials were putting on Environment Canada and External Affairs officials to respond positively to their proposal.

This pressure by American officials can be seen as a double strategy. One strategy consisted of showing their good intention in solving the pollution problem in the Presque Isle to the satisfaction of the Canadian and especially New Brunswick officials (Chapter 9). The other strategy was to find a transboundary pollution problem in the Saint John River Basin originating in Canada and affecting the U.S. portion of the basin.

This latter strategy apparently was not difficult to pursue. As a result of the initial water quality survey carried out by the Jordan Company for the NMRPC as part of their contribution to the CCMS pilot (Chapter 8), it was discovered that two rivers originating in Quebec, the Big Black and Gobeil, were causing siltation problems in Maine, as a result of agricultural drainage projects in that province. Thus, a formal protest was forwarded by EPA officials to their Canadian counterparts via the State Department concerning this

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18 This account is based upon scribbles written by Mr. Stone on Mr. Peter Wilson's draft of the document. Files of the Coordination and Liaison Branch, DOE, Ottawa.

19 This interpretation was hinted by Mr. R.C. Hodges (personal interview, October 22, 1973), although he did not make an explicit statement on the issue.
transboundary problem.

The Canadian reaction to this American move was to convene an informal meeting on May 4, 1972, between External Affairs (Ray Robinson), Environment Canada (W.F. Stone and Peter Wilson) and Mr. Real L'Heureux, of the Quebec Water Board, to discuss this transboundary problem. It appears that this meeting brought two results: one was that Mr. L'Heureux promised to take up the matter with responsible officials in Quebec and the other was that he was invited to actively participate in the discussions concerning the USA proposal for a joint working group on the Saint John.

Montreal Meeting: U.S. and Canada Fail to Reach Agreement on the Saint John River

In view of the insistence by U.S. officials for a response to their proposal for a "Joint Working Group on the Saint John," Canadian federal officials agreed to meet them in Montreal on May 16, 1972. However, since Canadian federal and provincial (New Brunswick and Quebec) officials were yet to reach an agreement amongst themselves on what their position vis-a-vis the American proposal should be, they decided to meet and discuss the matter one day before the meeting with the Americans.

Memorandum dated May 12, 1972, from Mr. W.F. Stone to Mr. R.C. Hodges re "Canada-U.S. Water Pollution Problems in the Quebec Area." Liaison and Coordination Branch Files, DOE.
Canadian Pre-Session

Thus, on May 15 officials from the federal departments of the Environment and External Affairs met with officials from the provinces of New Brunswick and Quebec. Their initial views as described in the minutes of the meeting\(^2\) can be summarized as follows:

- Although there were initial disagreements among federal officials, they ended up agreeing that the "U.S. proposal as given in draft form [appeared] to call for the creation of an institution in the absence of a clear definition of the problems that the institution [would be created] to resolve." They "further indicated that if international problems arose the International Joint Commission would appear to provide a suitable framework to use to attempt to resolve them." In addition, they pointed to the role the Commission was playing in the recently-signed Great Lakes Agreement which they believed was more in the interest of Canada, than the new approach proposed by the Americans. Thus, from what was said before and given that a breakdown of the various opinions expressed at this meeting is not available, one can conjecture that the views of the highest echelons present at the meeting prevailed.

New Brunswick officials, on the other hand, were concerned at the prospect of IJC involvement in the Saint John river

\(^2\) "Summary Record of Meeting of Canadian Officials on Proposed Saint John River International Joint Working Group." Montreal, May 15, 1972. Files of the Liaison and Cooperation with Foreign Countries Branch, Dept. of Environment, Ottawa. All quotations re this meeting are from this source. A breakdown of the participants at this meeting is not available.
basin. They pointed out that "the Commission had not provided a sufficient solution to pollution problems on the Saint Croix to justify its involvement with the Saint John" and that "for 10 years or more the position of the New Brunswick Government had been opposed to the involvement of the Commission in international water pollution problems in New Brunswick with the exception of a reference on the Saint Croix River. The St. Croix reference in their view had been an exercise in futility."

The reaction of some federal officials to these arguments of their New Brunswick counterparts was that the IJC should not be blamed for the St. Croix failure, for the Commission did not have "the ability to solve pollution problems in the absence of governmental activity." However, they did recognize the difficulties created by the tight economic situation of the region."

According to the minutes of the meeting, recognizing that discussions along these lines would not reach a fruitful conclusion, the participants agreed to proceed by outlining the existing and potential problems in the basin, "and to attempt to relate those to the institutions U.S. officials had proposed." Two types of international pollution problems were identified on

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22 This account of the reaction of federal officials is based upon hand-written notes at the margin of the preliminary draft of the minutes of the meeting. There was also a reference to "the recalcitrancy of the N.B. Government." The fact that no reference was apparently made to a possible additional reason why the P.C. Government of New Brunswick did not want IJC involvement namely, that Mr. L. Robichaud, former Liberal Premier of the province, had been appointed Chairman of the Canadian Section of the IJC, indicates this was not an important consideration.
the Saint John River, (a) "transboundary pollution - primarily originating in several small tributaries in the U.S. and flowing across the border to the Saint John," and (b) "pollution along the international section of the main river, which comes more from Canadian than from U.S. sources."

Federal officials then tried to convince their provincial counterparts that in so far as Canada was concerned it was not useful to create an institution to deal with the tributaries per se since Canadians had the right "under the Boundary Waters Treaty and in international law to expect the U.S. not to pollute water flowing across the Boundary." For transboundary pollution they suggested a strategy which consisted of demanding the U.S. to take into consideration Article IV of the 1909 Treaty, which "has an implicit condition of absolute purity of water" and then proceed to a more realistic request, that would ask the U.S., as a minimum, to meet the water quality objectives developed on the Canadian side, according to Canadian needs, in waters flowing into Canada.

As far as the international section of the Saint John River is concerned, provincial officials could not help but be in agreement with their federal counterparts that the major source of pollution was the Fraser Companies and that by far the largest amount of pollution originated in the Canadian side. They did emphasize, however, that the company would "have financial problems if forced to undertake a thorough pollution abatement programme with possible repercussion on local employment." Consequently, federal officials suggested those facts should be borne in mind when considering "what position to
take in responding to U.S. initiatives with respect to a joint working group on the Saint John River."

In view of the above, an agreement was apparently reached at the end of this meeting that the Canadian side in meeting with U.S. officials on May 16 should:

1) ask them to define more precisely the nature of the assignment or the terms of reference of the proposed international working group, taking into consideration those two different types of pollution problem existing in the basin.

2) find out if the U.S. had "goals other than to create an institution which could serve as a model for a CCMS study."

3) point out that "work in Canada was not sufficiently advanced to enable us to discuss realistically with the U.S. at this time our proposed water uses and desirable water quality objectives."

4) stress that "further and detailed consideration needed to be given to the possible involvement of the International Joint Commission."

Finally, they agreed that while they "could not reject U.S. proposals in this regard there would be no agreement to form a group made (sic) at the May 16 meeting."

Commenting on the above minutes prepared by Mr. Peter Wilson, Mr. W.F. Stone, head of the Bilateral Relations Branch of Environment Canada, suggested that: (1) despite its shortcomings - which are actually "typical obstacles" - the SJRB could be useful as an exercise for CCMS; (2) it could also be a "useful way to obtain action in Canada, as well as a way to obtain the U.S. to clear tributary waters;" (3) as well,
"remedial measures by Canadians in the main stem of the SJR could be tied to U.S. abatement of its transboundary pollution."

This account of what happened at this meeting between federal and provincial Canadian officials raises several issues. Firstly, it is hard to believe that the suggestion that Article IV of the Boundary Waters Treaty implies different requirements for boundary and transboundary pollution was actually made at the meeting, without serious objections being raised by some experienced officials present, particularly from External Affairs. Secondly, the suggested strategy for Canada to deal with the U.S., i.e. demanding initially "pure water" and then proceeding to "a more realistic request," clearly ignored the recent developments regarding the Presque Isle (Chapter 9), especially the December 1971 Boston meeting in which, according to Mr. Hodges, American federal officials accepted the principle "that water crossing the border must be clean and its quality unimpaired," and which in turn led later to a request by Canadians of specific water uses and water quality criteria for the Presque Isle river as it crosses the border. Thirdly, the suggestion by Mr. Stone that "remedial measures by Canadians in

23 These comments made by Mr. Stone on the draft minutes were apparently intended to be included in the minutes themselves before circulation to the participants. Actually, following a suggestion by Mr. P. Wilson, who said, "the decision not to reach agreement with U.S. officials on May 16 (a) was excessively negative and (b) disregarded what may be the outcome of the May 16 meeting," it was decided that the minutes would not be circulated. Record of telephone conversation between Mr. Wilson and Mr. Stone. Bilateral Relations Branch Files.
the main stem of the SJR could be tied to U.S. abatement of its transboundary pollution" brings to the fore a "rational approach" to the negotiations which, according to available records, had not been considered before.

These issues lead one to conjecture about what new factor was responsible for bringing them to the fore for the first time. One possibility is the inclusion early in 1972 of the Bilateral Relations Branch in the negotiations. In this case then, the above-described issues were introduced by Messrs. Stone and/or Wilson, either at the meeting proper or in the process of drafting the minutes and thus represent more their perceptions of the issues than a consensus or even agreement among Canadian officials present at the meeting.

U.S.-Canada May 16 Meeting

The next day, May 16, the actual meeting of U.S. and Canadian officials was held. It was attended by a dozen officials representing the three levels of government on both sides of the border. The participants had before them that first draft document on the purposes and structure of a "Joint Working Group on the Saint John River Basin," prepared by the

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²⁴ Noteworthy was the presence of Mr. W.R. Adams of Maine's EIC, Mr. J.A. Barresi of the NMRPC, Messrs. W. Mansfield and J. Meek of EPA, and Mr. E.V. Nef of the State Department on the U.S. side. On the Canadian side, there were Mr. L. Chenard of the New Brunswick Department of Fisheries and Environment, Mr. J. Henderson, new planning director of the SJRBB, Mr. R.C. Hodges of Environment Canada and Mr. R. Robinson of the United States Division of the Department of External Affairs. Also present was Mr. R. L'Heureux, representing the Government of the Province of Quebec.
Americans. Introducing the document, Messrs. J. Meek and W. Mansfield of U.S.-EPA stressed the following points:

- Although the U.S. proposal had originally been conceived in relation to the CCMS Pilot Project, it should not be considered merely an academic exercise, for the institutional arrangements worked out "would lay the groundwork for years to come in the Saint John basin and other areas." They were in fact looking for new approaches to deal with U.S.-Canada environmental matters. On the other hand, "they did not want to create a precedent that would hinder either country in working out appropriate solutions to mutual problems."

- They recognized that, as presented, the draft terms of reference for the Group were too inclusive, and suggested that "any group formed would be in the first instance for the purpose of information exchange, and only in case of conflicts in objectives and timing in implementation would the Group be assigned further functions as required." Finally, they stressed the need for an informal and flexible institutional approach in which members would be decision-makers from federal, provincial and local authorities having a direct role in the Saint John River.²⁵

Speaking on behalf of the Canadians, Mr. R.C. Hodges reacted to the above comments, indicating that they favoured a

²⁵ This account is based upon draft minutes of the Meeting prepared by Mr. Peter Wilson, Bilateral Relations Branch, DOE, and notes taken by Mr. Donald Smith, Basin Planning Division, EPA, Boston. All references to this meeting are from these two sources.
less ambitious and more gradual approach by means of which water quality objectives would be negotiated and then each side would proceed to determine how they were going to achieve these mutually agreed-upon water quality objectives. In any case, Mr. Hodges added, any agreement should be confined to water quality rather than the broader aspects of water management.

Mr. Ray Robinson of the Department of External Affairs also spoke for the Canadians. He said that it was "difficult to work out an institution to deal with transboundary problems without a clear definition of problems actual and foreseen." He added that they were not sure that their own domestic programmes (meaning the SJRBB programme) had developed to the point where they could "plug-in" regarding planning on the U.S. side and that perhaps for the time being the existing institutions were adequate, although he was careful in pointing out that they were "not trying to raise false objections." To Mr. Robinson's argument Mr. Meek answered by saying that he thought the Canadians had already agreed at the Fredericton NATO-CCMS Symposium to explore new approaches.

At this point the two sides agreed to review the main features of the planning process on each side of the boundary, the organizations involved, the communication flows within and between the two sides, and their timetables for water pollution abatement, in order to ascertain what problem areas there might be.

Then, Messrs. Hodges and John Henderson proceeded to outline the three levels of activity on the Canadian portion of the Saint John River Basin, namely, federal, provincial and
those carried out by the SJRB Board. They also pointed out that the Board had been created and was being paid for entirely by the Canadian and New Brunswick Governments without any local government participation.

Messrs. W. Mansfield and J. Barresi then described U.S. planning activities on the U.S. side, explaining the similarities and differences between the two sides and calling attention to the important role that local industries and municipalities played in water management in Maine.

Both sides agreed that information was already being exchanged informally between the SJRB Board and the Northern Maine Regional Planning Commission, but there was room for improvement. Mr. Leonce Chenard, Deputy Minister, N.B. Department of Fisheries and Environment, pointed out that the Governor of Maine and the New Brunswick Premier had already agreed to expand contacts between state and province, especially in matters concerning the environment, and had requested their respective administrators to open additional channels of communication across the border.² In addition, there was already good communication between U.S. and Canadian federal agencies. However, information was not being exchanged in all cases vertically, for example, between EPA and the NMRPC, and

² The Premier of New Brunswick, Mr. Hatfield, and the Governor of Maine, Mr. Curtis, actually signed an agreement of co-operation on 28 June, 1973, calling for the maintenance and fostering of close co-operation in all areas of concern but particularly in the fields of environment, energy, trade, tourism, transportation, forestry, recreation, fisheries and agriculture. Globe and Mail, 29 June, 1973.
diagonally between the two countries, e.g., between the SJRB Board and EPA. Figure 5 shows how Mr. Henderson depicted the communication flows situation on a flip chart.

As a result of this discussion it was generally agreed that a broader and more systematic exchange of information would be useful.

Having discussed information flows between the three levels of government in each country and between them across the border, an attempt was then made by the participants to identify decision-making and planning levels in each country and how they related to each other across the border in a case such as that of the Saint John River Basin.

After considerable discussion the participants agreed that in both Canada and the United States four levels of information-processing - decision-making could be identified, namely, (1) decision-making proper; (2) policy-formulation; (3) planning;
and (4) data-collection (Figure 6). These information-processing - decision-making levels in their view were applicable to all government levels - federal, state-provincial, and local.

![Diagram showing levels of government in the U.S.A. and Canada]

**FIGURE 6**

Further discussion on this topic led to agreement on a number of items regarding organization and procedures:

(a) there was a need for greater exchange of information and coordination at the lower levels - data-collection and planning, and they could envisage an institution which would foster coordination and increase information flows at those levels.  

(b) it was not realistic to involve political decision-

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This idea, judging from Mr. D. Smith notes, was especially appealing to the local planning agencies (NMRPC and SJRBB).
makers (federal, state-provincial and local) on a regular basis. However, resource managers and administrative decision-makers from the three levels of government could play a key role in any international river basin institutional arrangement. They should participate in the institution (Group) representing their respective authorities.

(c) regarding the procedures to be followed there were suggestions that officials at the information-processing levels (2, 3 and 4) could meet every two months or whenever necessary, while officials at the decision-making level (1) could meet every three months, each country meeting separately for one day and then jointly for one or two days.

Returning to the question of terms of reference for the proposed "Joint Working Group", Canadians made the point that they still had reservations about the specific tasks which such a Group would perform. Mr. W. Mansfield then proceeded to expand on some of the tasks that the Group could carry on, including the following:

1) Determine in-stream water quality and identify pollution sources.

2) Define water quality objectives on each side of the border.

3) Agree on international water quality objectives.

4) Define the pollution abatement programme - including the degree of effluent treatment required and possible flow regulation.

5) Agree on a schedule of implementation.

However, some among the Canadian representatives apparently expressed reservations about the Group performing functions
beyond those of an information clearing house. Further, they argued that duplication of tasks should be avoided and that if the Group was formed it might be advisable "to refer specific matters to the IJC for consideration and recommendations." Finally, as it had been previously decided (Canadian Pre-Session Meeting), they told the U.S. representatives that while they would welcome further discussions on the subject, at that time they were not prepared to reach an agreement on whether or not the proposed group should be formed, nor on its terms of reference.

Nonetheless, both sides agreed to have Mr. W. Mansfield summarize the results of the discussions at this meeting and try to incorporate them into the proposal for the "Joint Working Group". They further agreed to meet again on June 27 in Montreal, and have a new version of the U.S. proposal circulated prior to that meeting. In addition, members of the Northern Maine Regional Planning Commission and the Saint John River Basin Board agreed to meet in Presque Isle, Maine, on June 12-14.

First Redrafting of the U.S. Proposal

Mr. W. Mansfield did not waste any time. The day after the Montreal meeting he had already drafted the proposal for a "Canadian-U.S. Joint Working Group on Water Quality on St. John River." A comparison between the texts of the first draft of the document (reproduced in its entirety on page xx) and this new
version reveals that the purpose of the Group (compare with Part I, p. 8) is now said to be:

A. To review periodically progress in the conduct of water quality planning, programs activities and other measures on both sides of the boundary in the St. John River basin with a view to facilitating progress toward enhancement of water quality."

B. To exchange appropriate information about plans, programs and actions which could affect water quality in the basin.

C. To assist in the coordination and consultation among appropriate authorities on matters affecting water quality."

D. To make appropriate recommendations to relevant authorities on both sides of the boundary regarding the improvement of water quality in the basin.

Thus, the Group is no longer envisioned as an institution entrusted with the authority "to recommend water quality objectives," nor is it to serve as "a mechanism for coordination and consultation," including "joint planning and management to maintain water quality objectives," as suggested in the first draft.

In addition, the new version of the document suggested that the Group would consider among its activities the following aspects of water quality management (added to Part I, p. 8):

A. The condition of water quality and the nature, extent, sources of pollution;

B. The need for and means of defining water quality objectives;

C. The need for and means of achieving agreed international water quality objectives;

28 Canadian-U.S Joint Working Group on Water Quality on St. John River. May 17, 1972. EPA-Boston Files. Emphasis added. All quotations are from this source.
D. The defining (sic) of programs and other measures to attain agreed objectives, including measures related to water quality and rate of flow and social and economic impacts;

E. The outlining and agreement on a schedule of implementation of programs and other measures;

F. The assignment of an overviewing responsibility and functions to assist in monitoring and reporting on progress made toward achieving the objectives.

However, the new text added the following:

It is understood that the discussions within the Working Group will serve to enhance and not to replace existing formal and informal discussions or other contacts among Federal, State, Provincial and local authorities.

There were no substantive changes in the new version of the document as far as organization and procedures for the Group were concerned (Part II), which implies that in Mr. Mansfield's view his earlier draft already reflected the concerns raised and suggestions made at the May 16 meeting. However, more important is the fact that in the new draft no mention is made of the IJC, although as was the case in the first draft, in the preambular statement it is stated that "The Group will conduct its work in a manner which is consistent with the objectives and provisions of the Boundary Waters Treaty of 1909."

This new draft of the U.S. proposal for the Joint Working Group was sent by Mr. Mansfield on May 18 to Mr. Peter Wilson for circulation amongst Canadian officials, and on the U.S. side specifically to Messrs. J. Meek (EPA-Washington), D. Smith (EPA-Boston), E. Nef (State Department), W. Adams (EIC-Maine) and J. Barresi (NMRPC). In the accompanying letter to Mr. P. Wilson, Mr. Mansfield made the following remarks:
(a) the Group was to aid responsible authorities on both sides to exchange information and to consult on the increasing water quality planning activities in the Saint John River.

(b) they did not believe the Group should have authority of its own but that officials with authority should be represented on it.

(c) through contacts and exchange of information they would hope that representatives would be capable of conducting their affairs with a better knowledge of what others are doing and how others would be affected.

(d) they hoped that by proceeding this way planning and coordination would be improved in order that potential problems could be identified early enough for appropriate action to be taken in an orderly way.

Mr. Mansfield concluded his letter pointing out that if in the view of Canadian officials the new draft did not define such an organization, to let them (Americans) know it. He also hoped the draft reflected the viewpoints expressed at the May 16 meeting and asked for comments as soon as possible.

In his letter to the American officials listed above, Mr. Mansfield raised the same points made in the letter to Mr. Wilson, but added that he expected a "more definite agencies' attitude" before the June 27 meeting with Canadian officials.

Canadians Insist on a Reference to the IJC

Although they attempted to show a cohesive position at the May 16 meeting with U.S. officials, Canadian federal and provincial officials apparently remained deeply divided on the U.S. proposal after that meeting. Mr. W.F. Stone, head of the Bilateral Relations Branch (DOE) apparently took upon himself the task of gathering the diverging views and trying to arrive at a common denominator. As we have seen, his own view on the subject was that the creation of such a Joint Working Group
could be a means to obtain pollution abatement action in the Saint John River Basin, both on the United States and Canadian sides. He had also suggested that remedial measures by Canadians in the international section of the river (Fraser Companies problem) could perhaps be tied to U.S. abatement of transboundary pollution (Aroostook, Presque Isle and Meduxnekeag rivers).

Mr. Stone's first reaction to the outcome of the May 16 meeting was that Canadian federal officials had failed to show a unified view and that there was a need for a report articulating how they should proceed vis-a-vis the American proposal. He stated then that

for several reasons we on PPR [Policy, Planning and Research Service] should encourage the establishment of some form of Working Group for the Saint John River, but the terms of reference of such a Group should be very limited: (a) essentially exchange of information; (b) consultative in nature; and (c) provide periodical reports to the IJC and NATO/CCMS."

The suggestion by Canadian federal officials that the Joint Working Group should report to the IJC evidently greatly displeased Messrs. A. Erickson of EPA and Harry Blaney of the White House/CEQ, for a few days after the May 16 meeting, Mr. Blaney invited Mr. Hodges to come to Washington to discuss the subject. Although the exact nature of the discussions which took place between these two officials could not be determined, later events seem to indicate that the CEQ was adamant in its

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2' Handwritten notes by Mr. Stone on Mr. P. Wilson's draft minutes of the May 16 meeting.
opposition to IJC involvement, contending that such involvement would diminish the show-off value of the U.S. contribution to the CCMS pilot.\textsuperscript{30}

In view of the above developments, Mr. Stone apparently abandoned his idea to prepare, based on the views expressed by Canadian federal officials at the May 15 meeting, "an interdepartmental paper, to be cleared at the Assistant Deputy Minister level in DOE before meeting with N.B. and U.S. officials on June 27."\textsuperscript{31}

The June 27 meeting was cancelled and instead a meeting took place in Presque Isle, Maine, on June 23, between officials of the SJRB Board and Environment Canada, on the Canadian side, and, on the U.S. side, officials of EPA, NMRPC, and EIC-Maine, plus consultants to the NMRPC.\textsuperscript{32}

At this meeting, Mr. John Henderson made a presentation of progress in the Canada-New Brunswick SJRB project, and Mr. Stan Goodnow, consultant to the NMRPC, described the work they were carrying on in the U.S. subbasins. Mr. Henderson suggested that

\textsuperscript{30} It was not possible to determine exactly when and where such a meeting took place. It is very likely that Mr. Hodges met Mr. Blaney either in Washington, D.C., on his way to France for the NATO/CCMS Seminar held at Pont-a-Mousson, May 29-June 2, 1972 or at the Seminar itself. There is, however, a clear reference to such a meeting on a note from Mr. W.F. Stone to Mr. P. Wilson, dated May 30, 1972. In his note Mr. Stone stated, "on hearing from Hodges on progress of negotiations we should decide whether to go ahead with the June 27 meeting."

\textsuperscript{31} Mr. Stone's note to Peter Wilson, mentioned supra.

\textsuperscript{32} Minutes of the meeting, prepared by Mr. J.M. Henderson, Planning Director, SJRB Board. NMRPC Files. All references are from this source.
when the planning phase on both sides was completed, then they should submit their plans to "an international planning body which would then resolve potential conflicts and develop agreed-upon criteria and standards for boundary and transboundary waters." He further pointed out that on the Canadian side "a number of sovereign governments are involved and that international planning may not have been established by the time the Jordan Co. report is ready - November 1973."

In response to the above comments Mr. J. Gammon of the NMRPC stressed that the Commission's plans would "be implemented regardless of whether a joint institution is formed" but in any case they would like to "negotiate acceptable criteria and standards."

Judging from the minutes of this meeting the important question of the exact terms of reference for the Group proposed by the Americans and the question of IJC involvement were apparently not discussed. It seems clear, however, that on the part of some Canadian officials (or at least Mr. Henderson) the U.S. proposal for a Joint Working Group, although acceptable in principle, was nonetheless an idea to be developed gradually.

By the end of July it appears that a consensus had already emerged at the higher echelons of the Canadian departments of External Affairs and Environment that the U.S. proposal would be

Nonetheless, Mr. Barresi, Executive Director of the NMRPC, was evidently concerned about the IJC involvement, for he wrote to Mr. E. Nef, Office of Canadian Affairs, Dept. of State, asking for information on the IJC and the Boundary Waters Treaty. Letter dated June 9, 1972.
acceptable only if the Group was given very limited responsibilities and if it was tied to a reference to the IJC. Actually, there are indications that the Department of External Affairs would rather dispense altogether with the idea of creating a new international institution, instead having only a "Reference to the IJC on Water Quality Problems in the Saint John River," which would then serve as a basis for further discussions, starting at the Maine CCMS Symposium in September.\(^3\) However, such a suggestion could not receive much support from New Brunswick and lower-level Environment Canada officials, and for this reason was apparently dropped. In any case, a draft reference to the IJC was forwarded to U.S. Federal officials in the first week of August.\(^4\)

Upon receipt of the draft reference to the IJC prepared by Canadian officials, Mr. A. Erickson contacted Mr. Hodges by phone and tried to persuade him of the "wisdom of establishing a direct bilateral mechanism rather than pursuing a reference to the IJC as a means of promoting international cooperation in dealing with problems of the SJRB." However, Mr. Hodges made it clear that he supported the proposed reference to the IJC. Mr. Erickson then asked for a meeting in Ottawa with Hodges to

\(^3\) The only source available for the events which took place during this period is a letter dated August 1, 1972, from Mr. David A. Munro, Director General, Liaison and Coordination Directorate, DOE, to Mr. Keith W. MacLellan, Director USA Division, External Affairs. A draft of the reference apparently accompanied this letter. Files of the Liaison and Coordination Branch, DOE.

\(^4\) Ibid.
discuss the matter and "Hodges did not refuse the request." A tentative date of August 22 was suggested for the meeting.  

At approximately the same time Mr. E. Nef of the U.S. State Department telephoned Mr. R. Robinson of the Department of External Affairs (Ottawa) to inform him that "because of continued CEQ opposition to IJC involvement in the Saint John exercise, Erickson was attempting to determine whether similar departmental differences on the IJC issue existed in Canada, and would be phoning Environment Canada for that purpose." (emphasis added). However, Mr. Robinson assured Mr. Nef that the draft reference to the IJC forwarded to them "represented an interdepartmental consensus."  

Following this interchange, Mr. Robinson asked Mr. Hodges to convey to Mr. Erickson that they would like to be present at the August 22 meeting and would like State Department to be there as well. Approached by Mr. Hodges regarding Robinson's suggestion, Mr. Erickson "did not show much enthusiasm." Finally, Mr. Robinson asked the Canadian Embassy in Washington to inform Mr. Nef that "Canadians would like a written response from Americans to their proposal, specially textual revisions to draft [Reference to IJC] to help them prepare for the August 22 meeting."  

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36 Note the euphemism of Mr. Hodges' alleged answer. Restricted telegram from Dept. of External Affairs (Ottawa) to Canadian Embassy (Wash. D.C.), dated August 11, 1972. Liaison and Coordination Branch Files.

37 Ibid.

38 Ibid.
Convinced that Canadians were determined to pursue a reference to the IJC, Mr. Erickson conferred with Mr. Nef and asked him to convey to Messrs. Robinson, Stone and Hodges that the meeting arranged for August 22 was "not likely required" and that the State Department was preparing a new draft of reference to the IJC on the SJRB, which should be available on August 16."

Hence, on August 16, 1972 a cable from the Canadian Embassy in Washington informed Messrs. Stone and Hodges of new U.S.A. proposals for a "Memorandum of Understanding" and a "Reference to the IJC" regarding a "Joint Planning Board" for the Saint John River. According to Mr. E. Nef (U.S. State Department), who evidently was given the task of explaining the rationale for the revised American position, the texts of these draft documents represented a "compromise between previous U.S.A. and Canadian positions" and that both drafts had been "cleared by CEQ, EPA and State" and were "acceptable to U.S.A. side of IJC" as well. Mr. Nef also stressed that the U.S.A. counter-proposal should be seen as an approach consisting essentially of the following:

(i) "Establishing a Joint Planning Group at the CCMS Inland Waters Pollution Meeting at Presque Isle, Maine (Sep. 18-22)."
(ii) "A Reference to the IJC on the SJRB."

This approach, Mr. Nef explained, would in the "eyes of U.S.A. authorities, ... satisfy the requirement of visibility, i.e.,

" Restricted telegram dated August 14, 1972 from the Canadian Embassy in Washington, D.C., to External Affairs, Ottawa. Liaison and Coordination Branch Files."
immediate creation of a Joint Planning Board plus [Canada's] requirement of IJC involvement." With reference to this new institution he added:

- it would "provide a forum in which we can ensure coordination of this (sic) planning."

- it would "provide the IJC with a report upon completion of its planning efforts" and the IJC "would in turn make further recommendations to Canada and U.S.A. Governments."

- "our proposal for a Joint Planning Group does not in any way involve implementation or funding of recommendations which might be produced by the Planning Group."

- it was desirable "to have the Planning Group report by the Fall/1973 so that joint U.S.-Canada experiences could be incorporated into CCMS project."

Finally, Mr. Nef stressed that "U.S.A. considers it essential that this joint body be set up at the Presque Isle meeting and begin work immediately thereafter" and he further called to the attention of the Canadian officials that their "proposed IJC reference alone would make meeting such a time schedule very difficult"... and consequently ... "U.S.A. authorities would wish that appropriate arrangements on St. John River Basin be dealt with on priority basis." 46

The Third Version of the U.S. Proposal

46 Telex FM WSHDC 3121, Aug. 16/72 (Confidential). DOE-Liaison and Coordination Branch Files. All quotes are from this source; they have been transcribed from cable into normal text form.
If one compares the text of Mr. Mansfield's second draft of the proposal for a "Joint Working Group" with the text of this new "Draft Memo of Understanding" re a "Joint Planning Group," in addition to editorial changes (such as the name of the Group), one finds several substantive differences between the two texts. These are:

(1) Before the "Preambular Statement" contained in the two earlier versions of the document (see page 8) the following justification for the creation of the Group has been inserted in the "Memo of Understanding":

Whereas the Governments of Canada and the United States in the light of their rights and obligations under Article IV of the Boundary Waters Treaty of 1909 with respect to the avoidance of transboundary pollution, are concerned about the quality of water in the international section of the Saint John River and in its tributary rivers and streams which cross the Canada-United States boundary;

Whereas water quality planning has been under way in the Saint John River Basin in both countries for more than a year, and proper coordination of this planning is urgently required to assure achievement of a unified approach to the problem and

Whereas the two Governments have been co-operating in this respect in the Inland Water pollution project of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society, and wish to examine in this context possible institutional arrangements which might be used with respect to inter-jurisdictional inland water quality planning; ¹

Note that the new text justifies the creation of the "Joint Planning Group" as the result of three main concerns: (i) transboundary pollution, which violates the Boundary Waters

¹ Telex FM WHDC 3122 Aug. 16/72 (Confidential). All quotes are from this source. Underlinings refer to passages which were later either completely deleted or replaced by other wordings by Canadian officials, as will be explained below.
Treaty; (ii) the urgent need for coordination of on-going planning; and (iii) the NATO-CCMS project, while in the previous versions the new organization was portrayed as an innovative measure "to assist the appropriate authorities in Canada and the United States to cooperate in conducting planning, programs and other activities to enhance the quality of water in the St. John River," whose activities would be "consistent" with the Treaty.

(2) The purposes of the Group (Part I) remain the same as in the last version (pages 30-31) of Mr. Mansfield's draft except that in the last item "D", a sentence is inserted adding the IJC to the "relevant authorities," the new paragraph thus reading:

D. To make appropriate recommendations to relevant authorities on both sides of the boundary and to the International Joint Commission (hereinafter referred to as the Commission) regarding the improvement of water quality in the Basin.

(3) As far as the water quality management activities of the proposed group were concerned, the points outlined in the second version (page 31) of the document (Part I) remained the same except that (a) new wording was given to item "E", which then became, "The recommendation of a schedule of implementation of such programs and other measures" and (b) item "F" was deleted, perhaps because it was somewhat redundant.

(4) The only substantive change as far as the organization and procedural rules for the Group are concerned (p. 9, Part II) was related to the actual membership in the Group. Instead of a vague reference to "Federal, State, Provincial and local representatives," the new document specified the following:
The Group shall consist of an equal number of members from each country and will include appropriate officials from the Governments of Canada and the United States; the Governments of New Brunswick, Quebec and Maine, and also representatives of the Saint John River Planning Board, and the Northern Maine Regional Planning Commission.

(5) A new section (Part III) was added to the previous versions (p. 8-9; 30-31) of the document. It read as follows:

III. Upon the completion of its efforts with regard to the co-ordination of water quality planning in the Saint John River Basin, the Group shall provide a report on its progress and activities for the Commission [the IJC]. If the Group has not/not completed its work within one year of the date of this memorandum of understanding, it shall in that event provide an interim progress report for the Commission by September 30, 1973, and to the extent necessary, annually thereafter.

The Group shall also provide a report on its progress and activities for the Governments of Canada and the United States as pilot and co-pilot of the Inland Waters Pollution Project of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society, prior to September 30, 1973, and to the extent necessary, annually thereafter.

The U.S. Version of the Reference to the IJC

We have seen the idea of a reference to the IJC on the Saint John River was unmistakably conceived by Canadian federal officials, especially External Affairs officials, although officials of the U.S. State Department were apparently

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42 This interpretation was substantiated both by Messrs. A. Erickson and E. Nef (personal interviews).
sympathetic to this idea. Although the original draft of the reference could not be found, there are strong indications in the available records that a first draft of such a reference was prepared by Canadian federal officials and sent to concerned U.S. officials in the first week of August.

The text of the new draft of the "Reference to the IJC," prepared by U.S. officials and forwarded by the Canadian Embassy in Washington to External Affairs and Environment Canada officials, is reproduced in its entirety below:

REFERENCE TO THE IJC

The Governments of Canada and the United States, in the light of their rights and obligations under Article IV of the Boundary Waters Treaty of 1909 with respect to the avoidance of transboundary pollution, and in light of their commitment under Article 2 of the North Atlantic Treaty to contribute toward the development of peaceful and friendly international relations by strengthening their free institutions, by bringing about a better understanding of the principles upon which these institutions are founded, and by promoting conditions of stability and well-being, are concerned about the quality of water in the Saint John River system, especially in the international section of the Saint John River and its upstream tributaries and in the downstream tributaries which cross the international boundary. The Government of Canada has undertaken to act as pilot country for a project relating to inland water pollution conducted within the framework of the NATO Committee on challenges of modern society. A part of this project concerns the Basin of the Saint John River. The Government of the U.S.A. has associated itself with this project, and is working closely with the Government of Canada to assure that the project will be successful and productive.

As a part of this project, the two Governments

Telex FM WSHDC 3122, Aug. 16/72 (Confidential). The underlined sentences and paragraphs indicate places where amendments were made by Canadian officials after receiving this cable, as will be discussed below.
have agreed to the establishment of a joint planning group composed of representatives of federal, state, provincial and local governmental agencies to undertake a review of progress in the conduct of water quality planning in the Saint John River Basin in both countries, to exchange information concerning plans, programs and actions which could affect water quality in the Basin, to assist in co-ordination and consultations among appropriate authorities, and to make appropriate recommendations to relevant authorities on both sides of the boundary regarding the improvement of water quality in the Basin. A copy of the Memorandum of understanding creating this joint planning group is attached to this Reference. It is therein specified that joint planning group will provide the Commission with a final report of its activities, together with annual interim reports as necessary.

On the basis of these reports and of such further investigation as the Commission deems appropriate, the Commission is requested, in accordance with Article IX of the Boundary Waters Treaty of 1909, to inquire into and report to the two Governments on the following questions:

1. What arrangements for continuing consultation between the two Governments in regard to implementation of water quality plans for the St. John River Basin, including consultations on their respective water quality programs and objectives and on prospective developments in one country which might affect the quality of the water in the other country, would be appropriate?

2. What joint institutional arrangements to assist the two countries in continuing their cooperative efforts to protect and enhance the quality of the water in the Saint John River system and to avoid transboundary pollution would be appropriate?

Until such time as the Commission, on the basis of the final report of the Joint Planning Group, is able to make a final report and recommendations in response to this Reference, the Commission is requested to submit to the two Governments from time to time such interim reports as the Commission may consider desirable.

In the conduct of its investigation and otherwise in the performance of its duties under this Reference, the Commission may utilize the services of engineers
and other specially qualified persons of the technical agencies of Canada and the United States and will so far as possible make use of information and technical data heretofore acquired or which may become available during the course of the investigation.

At this point one should call attention to several points concerning this reference. First, while the reference follows the usual format of references to the IJC (see Appendix I), the fact that an investigative Group was to be established by the two Governments directly and that it was to make recommendations directly to relevant authorities in the two countries, although reporting its activities to the IJC, represents a considerable departure from the established procedures for referring boundary water problems to the Commission.

Second, the creation of the Group is unquestionably attributed to the participation of the two governments in the NATO-CCMS pilot project.

Third, there is no suggestion that the IJC will have any say whatsoever in the appointment of the members of the Group, as is the normal procedure in the case of IJC's investigative boards.

Fourth, the two questions addressed to the Commission for investigation and reporting are essentially concerned with future institutional arrangements for the basin, although it is also said that in the performance of its duties "the Commission may utilize the services of engineers and other specially qualified persons..." which implies that it might also carry

"A full discussion of the implications of this reference is left for the final chapter of the thesis."
out technical investigations.

Finally, notice that the geographic coverage of the reference is the entire "Saint John River system," although it is stated that the Governments are especially concerned about the quality of the water "in the international section of the Saint John River and its upstream tributaries and in the downstream tributaries which cross the international boundary."

**Final Version of the Saint John River Basin Agreement**

When the U.S. drafts of the "Memorandum of Understanding" and of the "Reference to the IJC" reached Messrs. Stone and Hodges of Environment Canada, those two officials proceeded immediately to consult with other senior officials in their department and in External Affairs (but apparently not with New Brunswick and Quebec officials) and they found that the two U.S. drafts were quite acceptable, except that they wanted to ensure a still greater role for the IJC in the agreement, and lesser responsibilities for the Group.

Hence, after discussing these points over the telephone with Messrs. E. Nef of State Department and X. Burns of the U.S. Section of IJC, on August 21 they sent a cable to Washington suggesting some amendments, deletions and insertions to the two

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"The available records indicate that only in the first week of September were provincial officials again asked to comment on the drafts."
According to this cable the changes suggested by the Canadian officials were made for the following reasons:

(1) "to ensure that the IJC receives as much information as possible about the activities of the Group." Hence, both in the draft reference to the IJC and in the draft memorandum of understanding sentences were inserted stating that "copies of the proceedings of the Group's meetings" should be forwarded to the Commission.

(2) "to broaden IJC's mandate to include all relevant activities rather than be confined to institutional and procedural questions." Accordingly, the first question which the IJC was asked to inquire into and report to the two governments was amended as follows:

1. What action should be taken by Governments in regard to those matters examined by the joint planning group in the light of the final report of that Group?

(3) "to ensure that the IJC is not limited to the Group's report, in making its own assessment of the situation." For this reason, instead of asking the Commission to submit reports to the two governments "on the basis of the final report of the Joint Group," (page 45) the Commission is asked to do the same "following receipt" of the final report.

(4) finally, Canadian officials reasoned that "programs and

"Telex GWV279, August 21, 1972, from Messrs. Stone and Hodges to U.S. State Department (via Canadian Embassy). In the cable it is stated that Messrs. Nef and Burns had agreed that the documents were "deficient and invited our comments."

"Paragraphs and sentences where insertions, amendments and deletions were made have been underlined in the quotations of the latest U.S. draft proposals (pages 41, 44 and 45)."
measures must follow agreement on water quality objectives" and, considering that the timetable suggested for the Group was "too short to go beyond establishing common water quality objectives," they suggested that the last items (D and E) of Part I of the draft "Memorandum of Understanding" (page 31) be deleted. These items, as we have seen, deal with potential water quality management activities for the Group, such as "definition of programs and other measures to attain agreed objectives" and the "recommendation of a schedule of implementation of such programs and other measures."

The August 21 cable was followed by another one on September 1st, in which Messrs. Hodges and Stone informed their U.S. counterparts that, since neither Messrs. Russel Train (Chairman of CEQ) and William Ruckelshaus (Administrator of EPA) nor Minister Jack Davis would be able to participate at the NATO-CCMS Symposium in Maine, and considering that a "memorandum of understanding to be signed by Jack Davis would require Cabinet approval, diplomatic exchange of notes would be preferable as an instrument to set up the Joint Planning Group."

In answer to the above cables U.S. officials sent a cable on September 5 to Environment Canada and External Affairs officials," in which they complained about the deletion

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" Telex September 1, 1972, from Ext. Affairs Ottawa to CND Embassy Wash. D.C., for transmission to State Department.

"' The cable (Restricted) was sent by a Mr. Johnson of State Department via Canadian Embassy in Washington to External Affairs Ottawa.
(referred to above) by Canadians of items D and E (p. 31) from the potential activities of the Group, pointing out that one of the main purposes of the Group should "of course [be] to make plans which would lead to programs and measures to improve water quality in the Saint John" and that planning activities are necessary before agreement on water quality objectives can be reached. However, they were careful to point out that there was no intention on their part that "the Group should engage in implementation." They then suggested the following text to replace that part (items D, E and F, p. 31, item A remained the same) of the "memorandum of understanding" dealing with potential activities of the Group, which had been deleted:

(B) The need for and means of defining and achieving agreed international water quality objectives;

(C) The identification of programs and other measures needed to obtain a significant reduction in level of pollution with timetables for accomplishment, including measures related to water quality and rate of flow, taking account of social and economic impacts.

Finally, American federal officials insisted that they would prefer a "memorandum of understanding" (rather than an intergovernmental "exchange of notes") signed by officials at the ministerial level "to show to people in Maine and New Brunswick federal concern for water quality problems in the Saint John Basin."

As we shall explore in more detail in the next section, Canadians did not comply with this last request made by U.S. officials, but they did accept the suggestion to restore some of the broader potential responsibilities for the Group. Thus,
except for minor editorial changes and for a change in the title of the new institution from "Joint Working Group" to "Canada-United States Committee" which was made, evidently, only one week before the agreement was signed on September 21, 1972, these were the last changes in the texts of the Reference to the IJC and in the exchange of notes creating the "Canada-United States Committee on Water Quality in the St. John River." The final text of those documents are reproduced in Appendix II.
Last Stage of the Decision Process

Once agreement was reached on the texts of the "reference to the IJC" and the "exchange of notes," what remained to be done was to have an agreement which had been worked out at the middle management level approved by the higher levels of the government administration and the political decision-makers.

As must have become clear from the discussion thus far, as far as the U.S.A. was concerned there was little else to be done in this regard. They had taken the initiative to create the new institution and this initiative had originated at one of the highest levels of the federal administration, namely the Council of Environmental Quality (more precisely with Harry Blaney, who was also on the staff of the White House). In addition, as we have just seen, the U.S. drafts of the agreement and reference to the IJC had already been cleared by the CEQ, EPA and State Department, as well as by the U.S. section of the IJC.

However, on the Canadian side there was still need for clearance of the documents by a number of federal government departments, and for formal approval by the Minister of Environment, the Secretary of State for External Affairs and, last but not least, the Governments of New Brunswick and Quebec.

Therefore, on September 1st, Mr. W.F. Stone, Director, Bilateral Relations Branch, wrote a memorandum to Mr. A.T. Davidson, Assistant Deputy Minister, Policy Planning and Research Service, DOE, in which he tried to keep Mr. Davidson updated on the Canada-United States negotiations regarding the creation of the Joint Planning Group. A number of comments can be made about Mr. Stone's review of these negotiations.
First, Mr. Stone attributed the initiative to establish "some new mechanism for Canada-U.S. cooperation" in the Saint John River Basin to U.S. officials, and placed the beginning of the negotiations as "last spring" (i.e. spring of 1972).

Second, he explained that Canadian response to the U.S. proposal had been that:

1) "any such new mechanism should be developed within the IJC framework;"

2) "the functions of the new mechanism should be limited for the time being to facilitating exchanges of information and providing a regular forum for consultations between the two countries, and should have no executive or management powers of its own."

Third, he stated that agreement had been reached concerning the texts of the reference to the IJC and the exchange of diplomatic notes (he attached the latest drafts). He further stressed that:

1) "a 'Joint Planning Group' would be established, involving the participation of federal, provincial, state and local bodies concerned in both countries;"

2) "the two federal Governments would extend a 'Reference' to the IJC requesting the Commission to advise on the development of future institutional arrangements."

Fourth, Mr. Stone pointed out that it was somewhat uncertain whether arrangements could be made in time to exchange notes and send the urgent request to the IJC before the Maine Symposium. He then listed several tasks which still had to be done:
(1) prepare memorandum to the Minister (DOE), seeking his approval for those arrangements;

(2) obtain final clearance from New Brunswick and Quebec for the two texts.

Finally, Mr. Stone tried to convey to Mr. Davidson why he and the others who had worked out the agreement thought it was "very satisfactory from the point of view of the Federal Government":

(1) "the arrangements represent a good response to a U.S. initiative in a way which appears quite satisfactory to both federal and provincial authorities."

(2) they "might serve as a helpful precedent in developing parallel arrangements which we might wish to propose elsewhere in the boundary, including the boundary coastal waters."

(3) the IJC would be in a better position in a region where it has not been "very active or successful in recent years."

(4) the arrangements would be presented "as a constructive contribution in the context of the NATO/CCMS pilot project."

On September 11, using Mr. Stone's above-discussed memorandum as a basis, Mr. A.T. Davidson prepared two memoranda: one for the signature of Mr. R.F. Shaw (Deputy Minister) recommending Minister Jack Davis' approval for establishing the new Canada-U.S. arrangements for cooperation in the Saint John River, and another one to be circulated among the members of the Interdepartmental Committee on Water (ICW), of which Mr. Davidson was chairman. The texts of these memoranda are essentially the same, except for some minor points. The wordings of both are close to that of Mr. Stone's September 1st
memorandum.

The memorandum from Mr. Shaw to Mr. Jack Davis recommending approval of the new arrangements was dated September 13. The following points of this memorandum deserve attention:

(1) The memorandum indicated that Mr. Davis was aware of the negotiations taking place and in fact had probably himself discussed the matter with U.S. officials. The memorandum said:

At the time of your meeting with Mr. Train in mid-July we briefed you on the progress of our discussions with U.S. officials, then at an early stage, with regard to the establishment of some new mechanism for Canada-United States cooperation to assist water quality management planning in the international section of the Saint John River and its tributaries across the boundary."

(2) It gave the impression that Canadian federal officials had agreed all along with the need for such a new institution. It stated:

At a meeting in May with U.S. officials and New Brunswick and Quebec officials it had been generally agreed that some such new international mechanism was required in order to improve the exchange of information on water quality planning efforts on the two sides."

(3) It suggested that changes in the exchange of notes and reference to the IJC were still possible, for it said that the attached documents were "subject to final drafting changes in the texts and to final comments by provincial authorities."

(4) It indicated that "A similar recommendation [was] being made to Mr. Sharp [Secretary for External Affairs] by his department" and that department was "checking on whether cabinet authority [was] required for signing of the exchange of notes
and the IJC reference, or whether approval by the Ministers chiefly concerned [was] sufficient" ... and that Mr. Davis' "advice on the matter would be appreciated."

As far as Mr. Davidson's memorandum to ICW members is concerned,5 it was very similar to the one to Mr. Davis, except for the following:

(1) The proposed "Joint Planning Group" was now termed "Canada-United States Committee on Water Quality in the Saint John River" or simply "Committee."

(2) It stressed that External Affairs had informed U.S. officials that "Canadian authorities would like to be as co-operative as possible in order to conclude the arrangements by the end of next week, but approval by ministers[External Affairs and Environment] still remains to be obtained, and final comments obtained from New Brunswick and Quebec."

(3) In addition to the already mentioned reasons for the acceptability of the new arrangements to the Canadian federal government, the following were added: (a) they will serve to reinforce the federal-provincial co-operation which has been developed under the Saint John River Planning (sic) Board;" (b) they "will demonstrate again the interest and concern of the federal Government about water quality problems in the Saint John River area" and (c) they "represent a good response by Canada to an initiative to which the United States attaches

5 The memorandum dated September 15, 1972 was actually sent under the signature of Mr. S. Dakers, Secretary of the ICW, upon instruction of the Chairman, Mr. Davidson. Liaison and Coordination Branch Files.
considerable importance at a time when we are seeking their cooperation to resolve a number of bilateral environmental issues of special importance to Canada."

However, the claim originally made by Mr. Stone that the new institution would also help to improve IJC's image in the region was finally dropped in this memorandum.

A memorandum sent on Monday, September 18, from Mr. Shaw to Minister Jack Davis is the last available record on the communications within the Canadian federal government regarding the September 21 agreement. It summarized the situation five days before the agreement as follows:

(a) the texts of the exchange of notes and the IJC reference have been finally agreed, incorporating some minor drafting changes.

(b) An Order in Council has been obtained, authorizing Mr. Sharp to sign the exchange of notes. At the U.S. request it is planned that the notes, signed by Mr. Sharp, will be exchanged with the U.S. Ambassador in Ottawa at noon on Thursday, September 21, at which time Mr. Sharp's letter to Mr. Robichaud [Canada Co-Chairman of the IJC] will also be sent;

(c) the public announcement would be made also at noon on Thursday in Ottawa, by a release issued in Mr. Sharp's name and your own; and simultaneously a parallel announcement would be made in Washington. The final text of this announcement is still under discussion, but the latest version is attached.

(d) New Brunswick and Quebec officials have informed us that they are in agreement with all of these arrangements.

On Tuesday, September 19, Mr. Jack Davis, on his way to an international Salmon Symposium in St. Andrews, N.B., stopped in

51 The memo was drafted by Mr. A.T. Davidson, copies of the draft were sent to all assistant deputy ministers and directors general of DOE. Liaison and Coordination Branch Files.
Fredericton and made some surprising statements to the local press.52

The Minister was, understandably, careful not to preempt the impact of the forthcoming agreement - he said that an announcement would be made in the "near future;" nonetheless, he advanced that "international cooperation of the type involved in the recent U.S.-Canada agreement to clean up the Great Lakes will be seen in New Brunswick with the Saint John River system." He added that the International Committee [to be created] wouldn't be directly involved in studies or recommendations for cleaning up and developing the river system - such as the major study by the Saint John River Basin Board - but would play the role, if necessary, of a supra-national body acting as wise man.53

When asked about the role the IJC would play in the new cooperative undertaking, Mr. Davis said it could "become involved at any time," however, he added that "If planners from both countries were agreed on clean up measures, there would be no need to involve the IJC" ... "But if problems arose" ... "the IJC could be called into the venture." Mr. Davis further termed the IJC a "court of last resort" which could handle environmental problems if both countries got "excited enough about some issue." Finally, according to the press, he declared:

52 Several Canadian federal officials, including Messrs. R.C. Hodges and Peter Wilson, informed me that they were taken by surprise by Mr. Davis' remarks, while Mr. Wilson said he only heard of the speech after the Maine Symposium.

53 Fredericton Daily Gleaner, September 20, 1972, article, "Measures Forecast for River Cleanup."
The United States does not like the IJC. Their main reason is that Canada has an equal voice with the U.S. in decisions. More than that, when the IJC makes a recommendation it becomes binding on both countries.\footnote{Telegraph Journal, St. John, September 20, 1972. Article, "New River Agreements in Works."}

Finally, on Thursday, September 21, 1972, Mr. Mitchell Sharp, Secretary of State for External Affairs of Canada, and Mr. Adolph W. Schmidt, United States Ambassador to Ottawa exchanged the notes; Messrs. Sharp and William P. Rogers (U.S. Secretary of State) presumably sent identical references to the secretary of the IJC; and at the NATO/CCMS symposium in Fish River Lake, Maine, Mr. Fitzhugh Green, Associate Administrator (International Affairs) of United States EPA and Mr. L.E. Edgeworth, Assistant Deputy Minister (Water Management) of Environment Canada, released a joint statement to the press and the public about the new agreement. These documents are reproduced in full in Appendix II.

There are a number of noteworthy observations to be made about these final documents.

The notes convey to the reader that it was Canada who proposed the creation of the Canada-United States Committee on Water Quality in the Saint John River, when we know from the above description that this was certainly not the case. Mr. Sharp's note reads, "I have the honour to refer to the discussions ... and to propose that our Governments establish a Canada-United States Committee on water quality in the Saint
John River" ... while the U.S. Ambassador's note states that "The proposal meets with the approval of my Government ..." Therefore at the climax of the negotiations an inversion of the roles played by each government is offered to the reader.

The official press release by the two federal governments announcing the creation of the Committee is fairly straightforward and faithful to the official version of the documents concerning the agreement, except that it tries to portray the Committee as a novel type of institution concerned with planning to prevent pollution from occurring or increasing while, by contrast, the release stated,

Most of the existing joint arrangements between the U.S. and Canada on this subject seek to enhance water quality in the boundary waters by monitoring or surveying the waters after a pollution problem is identified. The International Joint Commission was established by the Boundary Waters Treaty of 1909 for this purpose (emphasis added).

Another statement in the press release which seems to have been made to convey the newness of the agreement vis-a-vis the IJC is the assertion that "membership in the Committee emphasizes local participation."

The relationship between the agreement and NATO-CCMS is explained to the public as follows:

The U.S.-Canadian action is timely for the NATO Symposium, which is considering alternative institutional arrangements for dealing with water pollution between countries. The NATO group is expected to make recommendations on various international approaches for solving pollution problems in shared water resources and it is using the Saint John River project as a case study. The new U.S./Canadian arrangements will demonstrate the effect of one such approach to transboundary pollution
and it will be evaluated by various nations within the framework of the NATO project."\(^{55}\)

\(^{55}\) Note that this explanation gives the impression that the Committee was created quite independently from the NATO/CCMS exercise, but nonetheless fitted nicely within the purposes of the exercise. A copy of the press release was obtained by the author himself at the symposium, September 18-23, 1972, Fish River Lake, Maine.
PART III
CHAPTER 11

FACTORS AND MOTIVES INFLUENCING COOPERATION IN THE SAINT JOHN RIVER BASIN

In this chapter use will be made of Analytical Paradigm 1 (API) to explain the factors and considerations that influenced Canada and the United States, as well as subnational government, public agencies and private groups in their pursuit of cooperation regarding pollution problems in the SJRB.

An analytical framework developed by David LeMarquand provides a very useful foundation for the development of this chapter because it is essentially an empirical adaptation of API for the analysis of international rivers cooperation.

Most of LeMarquand's analytical framework is based upon the assumption that three sets of conditions determine a national government's stand (i.e. its motivation) towards cooperation in an international river basin:

(1) Hydrologic-economic patterns of incentives and disincentives;
(2) International relations considerations; and
(3) Domestic political demands.

As we shall see below, these three basic sets of conditions can be further broken down into a number of "variables" which

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direct the analytical effort in the identification of the factors that hinder or facilitate agreement on a particular rivers issue.

However, with regard to domestic political demands, LeMarquand's framework is not appropriate for the purposes of this chapter for it is based not only upon AP1, but on AP2 (information processing), and especially AP3 (strategy) types of analysis. Therefore, we shall depart from LeMarquand's approach whenever we examine domestic political factors. Adhering strictly to AP1, we shall examine the roles and more precisely the kinds of demands made by the following categories of players: (1) sub-national governments; (2) government agencies; (3) private interest groups; (4) individual decision-makers.

It should be noted that although a number of alternative explanations could be given for the same event at each level of analysis, at each level we will explore only those events which in my judgement were not sufficiently or adequately explained at higher levels of analysis. Thus, when we reach the level of the individual decision-maker, the analysis concentrates on aspects of the issues which in my view would benefit from a discussion of the role of individual motives in the public decision-making process.

Before starting the application of AP1 to the case study it seems worthwhile to re-emphasize a point already made in chapter 2. The point is: this type of analytical framework demands of the analyst that he put himself in the position of each player (government, organization, or individual) and then try to infer from their actions which factors they took into account in their
decisions to seek cooperation or not. The inferences are then substantiated by adding some further information about the relevant players' behaviours. The approach does assume, therefore, that the decision-makers in the real world perceive and are motivated by the same factors identified by the analyst.

Hydrologic-Economic Patterns of Incentives and Disincentives

It is evident from the case study that the relevant political-economic units in the Saint John River Basin are Quebec, New Brunswick and Maine. Their geographical-hydrological location determines to a large extent the economic benefits that each can derive for itself from the basin as well as the externalities that each can pass on via the river system to the other units.

Let us examine to what extent their behaviour with regard to the SJRB has been influenced by their relative geographic position.

Quebec

Except for a reach of the St. Francis River which forms its boundary with Maine, the Province of Quebec is upstream of New Brunswick and Maine in all other situations. Thus, from a strictly economic self-interest point of view Quebec has no incentive to cooperate with other units in the basin except in situations where developments in its own territory (for example, a reservoir) might result in flow regulation benefits to a downstream unit. Up to 1972 no such developments were taking
place. The Quebec portion of the basin is the least developed and most sparsely populated.

As we have seen in Chapter 10, preliminary surveys by the consultants to the NMRPC did show that the Big Black River flowing from Quebec into Maine was carrying a heavy silt load into the Saint John River, whose origin was traced to some irrigation development in Quebec. Maine did complain about this transboundary problem, however, Maine's stance may have been due more to its desire to bring Quebec to participate in the Canada-United States Saint John River Agreement than a reflection of the seriousness of the problem.

Quebec's reluctance to participate in both the above mentioned agreement and the 1970 Canada-New Brunswick agreement can thus be easily explained by its hydrologic-economic position. It would gain very little from participating in those agreements, while participation might entail at least some costs in terms of sharing the expenses of the two institutions created by those agreements, respectively, the Saint John River Board and the Canada-United States Committee on Water Quality in the Saint John River.

Maine and New Brunswick

While, as we have discussed above, Maine is primarily a downstream unit in relation to Quebec, in relation to New Brunswick it is essentially an upstream unit. In addition, it can potentially use the international section of the Saint John River on an equal basis with New Brunswick.

As far as the tributaries flowing from Maine into New Brunswick are concerned, Maine's position has been essentially
consistent with its advantageous position and its self-interest. It has had a clear incentive to use within its territory the waste assimilative capacity of the Presque Isle, Meduxnekeag and Aroostook tributaries to the maximum extent, passing on pollution to New Brunswick.

Thus, the slow progress towards agreement between Maine and New Brunswick regarding pollution problems in the Presque Isle Stream and Meduxnekeag River can be quite satisfactorily explained by Maine's clearly advantageous hydrological position and New Brunswick's lack of a reciprocal advantage elsewhere in the basin. However, the fact that Maine has in principle accepted that province's demands regarding acceptable water quality standards for the Presque Isle Stream (December 1971, Boston Meeting - Chapter 7) indicates that there are other factors which are influencing that state's stance towards cooperation.

As far as boundary pollution is concerned, Maine's attitude in relation to New Brunswick is difficult to explain from the perspective of its hydrological position. It should have as much incentive to appropriate the assimilative capacity of that reach of the Saint John as New Brunswick has, yet it has not. The major user of this reach on the Maine side is the Frasers' Madawaska mill, which uses only about one-sixth as much of the assimilative capacity of the river as the Edmundston mill does. Municipal users of the water of the international section on the Maine side are also small in comparison with those on the New Brunswick side.

There are no records of any official or non-official
complaint by Maine to New Brunswick authorities about pollution of the waters of the international section by New Brunswick sources, especially the Frasers' mill at Edmundston, although they have been for many years now causing the worst pollution problem in the whole basin. Paradoxically, however, the Saint John River Basin Board did feel in a position to demand corrective actions from Maine regarding not only transboundary pollution, but boundary pollution caused by the Frasers' mill at Madawaska, Maine, as well. As we shall see later, the reasons for the intriguing postures of both Maine and New Brunswick regarding this issue go unequivocally beyond hydrological-economic considerations.

International Relations

LeMarquand has identified five international relations factors which contribute to shape a country's policy with regard to a particular basin it shares with one or more countries. The factors identified by him are: (1) Image; (2) International Law; (3) Linkage; (4) Reciprocity; and (5) Sovereignty. In my view a sixth factor could be added—transnational relations.

By transnational relations (as opposed to interstate) is meant interactions characterized by the presence of non-governmental players. Transgovernmental interactions, in turn, are relations between governmental subunits across state boundaries. Transnational relations include both non-official

\(^2\) Ibid.
transgovernmental and transnational interactions.³

Transnational interactions will be examined when we discuss domestic political factors. However, it should be borne in mind that in situations characterized by a high level of transnational relations (which as we shall see, is the case between the U.S. And Canada) it is difficult to distinguish amongst the most influential international relations factors on the one hand, and domestic political factors on the other.

Image

Hans Morgenthau has stressed that the image a country wishes to project in another country or countries "may be an important or even decisive weight, as compared with all the other factors to be considered in the formulation of a foreign policy."⁴

From Chapters 9 and 10 we learned that perhaps the main reason behind the creation of NATO's Committee on Challenges of Modern Society (CCMS) was the United States' desire to show other NATO member countries its commitment to the principle of good environmental relations among neighbouring countries. The United States' insistence in working out an agreement with Canada on the Saint John River basin can also be interpreted as being motivated primarily by its desire to make a favourable impression on Canadian and especially New Brunswick public

⁴ Quoted by LeMarquand, op. cit., p. 12.
opinion concerning its commitment to control of boundary and transboundary pollution. For instance, at the May 18, 1971 meeting between members of the NMRPC and the SJRBB and again at the First NATO/CCMS meeting in Fredericton in September of the same year, American officials alluded to the "show-off" value of the NATO-CCMS exercise in the Saint John. They later on also pointed out to Canadian officials the value of the proposed agreement "to show to people in Maine and New Brunswick federal concern for water quality problems in the Saint John Basin." Finally, one may recall that for U.S. officials, the immediate creation of a new institution for the Saint John at the Maine symposium was essential to "satisfy the requirement of visibility."

The Canadian response to the U.S. proposal can also be seen as one of concern for its image and its desire to build up a "reservoir of goodwill." Canadian federal officials justified their concurrence with the U.S. proposal on the grounds that it represented "a good response by Canada to an initiative to which the United States attaches considerable importance at a time when we are seeking their cooperation to resolve a number of bilateral environmental issues of special importance to Canada."

It should be noted, however, that the concern for national image naturally has more influence on national than regional

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5 Note that the Canadian reaction could also be interpreted as a tentative to establish linkages between different issues in Canadian-American relations. We shall discuss this point further below.
governments. The apparently reluctant acceptance of the 1972 SJRB Agreement by New Brunswick, and especially Maine, seems to indicate that the U.S. Federal government's concern with the success of the Saint John CCMS exercise was of secondary importance to them.

**International Law**

Canada and the United States are fortunate that they have more than vague principles of international law to guide their mutual relations. The Boundary Waters Treaty of 1909 indeed provides a valuable legal framework on which the two countries can (and have) based their negotiations regarding their frontier water and other environmental problems.

As we have seen both in the case of the SJRB and elsewhere along the boundary (Chapter 4 and Appendix V), the two countries have by and large abided by the terms of the Treaty (Articles III and IV) concerning the use, obstruction and diversion of waters.

As far as water pollution is concerned, Article IV, by expressly prohibiting pollution of boundary waters and waters flowing across the boundary, is considered a legal landmark in the development of environmental relations between the two countries. However, it is not precise enough to guide the settlement of pollution disputes between them.

In the SJRB situation we have seen that New Brunswick and Canada (for example, the 1969 brief to the Department of External Affairs, and the 1970 aide-memoire to the U.S. State Department), have based their request for pollution abatement in the Presque Isle Stream upon Article IV of the 1909 Treaty.
However, both have avoided a legal dispute by not demanding compensation for damages to New Brunswick, as they appear to have the right, both under the Treaty and under international law (Appendix V).

In the specific case of pollution of the Presque Isle Stream, it appears that, under Article II of the Treaty, injured New Brunswick residents had the right to sue the two Maine industries polluting the stream for compensation and remedies. However, this would not have been much help to them since, according to the relevant Maine laws, the polluters had until 1976 to comply with the water classification of the stream and, in order to sue them for causing public nuisance, Canadians would have to prove that the waste discharges by those industries constituted a substantial and immediate threat to health and safety.

Maine residents could have sued the Fraser Companies through the New Brunswick Courts, by benefiting from the same rights given to them by Article II. However, it is unlikely that this alternative was ever considered, for it was almost certainly clear to them that New Brunswick environmental laws are more lenient towards pollution than Maine's and, in addition, that they would not have the cooperation of the provincial bureaucracy upon whom the regulatory powers actually rest (Chapter 4).

Therefore, it is not surprising that none of the governments involved in the negotiations adopted a legal approach to solving their bilateral water pollution problems. They evidently agreed that over the long term it was more
sensible to work out some cooperative arrangement between them, as they both saw in the creation of the Canada-United States Committee of Water Quality in the Saint John a first step towards this goal. At the same time, by invoking the Boundary Waters Treaty in the preamble to the agreement, and by adding a joint reference to the IJC, they appeared to want to emphasize their commitment to the Treaty as a valuable legal instrument.

Linkage

In the course of normal relations between two countries there are sometimes opportunities for explicit political and economic trade-offs, and more often for less defined types of mutual concessions.

In the view of Holsti and Levy, however, issue area isolation is more common in situations, such as that between the United States and Canada, "where relations between two governments have become routinized and where there is a tradition of easy communication and access directly between the bureaucracies of the two countries." But the explanation for the lack of linkages between conflict issues may lie equally well on the impossibility of measuring benefits and costs or even who gains and who loses in relation to most intersectoral issues.

It has been suggested (Chapter 7) that the attitude of the New Brunswick government in relation to the Presque Isle

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pollution issue may have been influenced by its desire to reach agreement with Maine on a highway project along the border in Maine, which was considered advantageous to the province. A linkage has also been suggested between New Brunswick's stand on transboundary pollution from Maine and the former's concern that Maine might be less generous in its demands for a share of the substantial downstream benefits accruing to the province from future development of the Dickey-Lincoln project in the Maine part of the basin.

As well, suggestions for possible trade-offs in terms of Maine cleaning up pollution in the transboundary tributaries, while New Brunswick would clean up pollution in the international section of the Saint John River were, as we have seen in Chapter 10, made by some Canadian federal officials at the Montreal (Canadian pre-session) meeting in May, 1972, although evidently the suggestion did not encounter much receptivity amongst New Brunswick officials.

One may recall also (Chapter 10) that Canadian federal officials justified their willingness to enter into agreement with the United States on the grounds that it "might serve as a helpful precedent in developing parallel arrangements which we

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7 Mr. Leo V. Brandon, personal communication, July 22, 1980. Mr. Brandon also indicated that these concerns were transmitted to the N.B. Government by the very influential N.B. Power Commission.

8 Mr. Leonce Chenard, Deputy Minister, N.B. Department of Fisheries and Environment, indicated to me that such trade-offs were unrealistic, given the political realities of the situation in New Brunswick, and probably also in Maine. Interview, January 11, 1974.
might wish to propose elsewhere in the boundary, including the boundary coastal waters."

Therefore, one is tempted to conclude that, although trade-offs might be difficult to work out in practice, they are nonetheless often used by governments as arguments to justify their actions concerning cooperation with other governments on specific issues.

Reciprocity

One possible reason why Maine has been reluctant to prosecute major polluters of its Saint John River tributaries is that it would have to incur all the costs of pollution abatement for the benefit of New Brunswick, while New Brunswick seems unwilling to reciprocate by adopting parallel legal measures with regard to polluters in its own territory.

It may also be that Maine has been slow in imposing pollution controls in the case of boundary pollution in the Saint Croix River by an American pulp and paper company, because of New Brunswick's own handling of the Fraser mills pollution in the international section of the Saint John. In this case, different degrees of effluent treatment may signify an important competitive advantage for either firm in the pulp and paper market.

The case study seems to leave it clear that, at least as far as regulations are concerned, New Brunswick has been more lenient towards pollution than Maine. It is perhaps sufficient to recall the laws passed by the provincial legislature (Chapter 5), giving some industries immunity from prosecution for causing public nuisance.
In this connection, the United States' and Maine's position seem to have been explicitly articulated by Senator Muskie during his visit to Fredericton in 1969. He stated then (Chapter 7) that it was the responsibility of both Maine and New Brunswick "to concern themselves with creating effective enforcement action, and (he added) it's got to be reciprocal. It cannot be one way."

**Sovereignty**

Any agreement to some extent imposes constraints on a nation's sovereignty. Thus, all countries have a natural reluctance to enter into an international agreement. The rational thing to do for countries negotiating an agreement is to keep national dependence on such agreements to a minimum.

Then, in trying to explain why Canada and the United States agreed to the creation of a Committee on Water Quality in the Saint John River one must first explain to what extent the agreement limited the sovereignty of the two countries.

In a sense, the 1972 SJRB Agreement does not limit the sovereignty of either country in any way. The Committee established by the agreement is not a supranational organization, for it has no decision-making powers of its own. In fact, its responsibilities are limited "to assist the appropriate authorities in Canada and the United States to

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1 In the official exchange of notes one is led to believe that Canada proposed the agreement and the United States agreed. We know, however (Chapters 9 and 10), that in fact it was the United States that pushed for the agreement.
cooperate in such water quality planning as may be necessary to devise programs which will enhance the quality of water in the St. John River."

The question then becomes: why could Canada and the United States not reach a more substantive and comprehensive agreement in terms of pollution abatement programmes and other measures to protect and enhance water quality in the SJRB?

The available records of the negotiations which have taken place indicate that sovereignty considerations have indeed played an important role. Both countries have tried to deal with the Presque Isle Stream and Saint John international section pollution problems as if they were entirely domestic problems. Although New Brunswick and Canada have insistently demanded corrective actions from Maine regarding transboundary pollution, they have avoided any solution which would have involved an integrated cooperative effort.

There have been suggestions in both countries for the creation of some sort of binational basin management agency. For example, when the New Brunswick government was preparing the brief on the Presque Isle (Chapter 6 and 7), a suggestion was made by a consultant to create a Saint John and Saint Croix Board, in which Canada, Quebec, New Brunswick on one side, and the United States and Maine on the other side, would have proportional participation according to their geographical share of the basin. Evidently, one reason why the proposal did not have much support within the N.B. Government and presumably also the Canadian federal government, was that neither was willing to surrender part of their sovereignty to an independent or
supranational agency.

A similar suggestion for a basin management agency was made by the consultants to the NMRPC (Chapter 10). Their idea of an "International Policy Group" involved not only studies and coordination but also management responsibilities and negotiation of possible trade-offs. Again, the reason the consultants' proposal did not encounter the necessary support among Maine and U.S. Federal authorities was their unwillingness to surrender sovereignty, even in a small amount, to an independent basin agency.

The Canadian view at the time on the question of sovereignty, or at least that of the high levels of the Administration, is probably best exemplified by Dr. E. Roy Tinney's comments at the Fredericton Symposium (Chapter 9). He said, "Certainly the mood in Canada is not to surrender sovereignty on resource and environmental issues, but to put more emphasis on sovereignty within each country."  

Americans, as we have indicated above, were also concerned about the question of sovereignty. However, perhaps because of their overwhelming economic superiority over Canada, their concern in the case of the SJRB negotiations was never as explicit and adamant as that of Canadians. The only clear public statement on the subject by an American on record was that made

\[\text{[\text{supra-national authority}]}\]

However, his own argument against creating some kind of "supra-national authority" was not that it would increase Canadian dependence on such an international body, but rather that the struggle to establish such an institution would divert efforts away from the real problems.
by Senator Muskie (Chapter 7) during his visit to Fredericton in 1969. He stated then that he found it difficult to believe that either the United States or Canada "would agree to the creation of an agency that had greater power than either government separately."\(^1\)

Another area where concern with sovereignty clearly comes to surface is related to the different positions or attitudes which Americans and Canadians have assumed with regard to the IJC, the most independent bilateral institution between the two countries.\(^2\)

Presently, there seems to exist a widespread feeling among federal (and even more so by provincial and state) officials that other organizations of the IJC type "would not be welcome today because they are difficult to control by the central governments."\(^3\) On the other hand, it appears that Canadians and Americans do not look upon the IJC in the same way.

In this respect, a statement by Mr. Jack Davis, Canadian federal Minister of the Environment, to the press on September 19, 1972, that is, two days before the signing of the U.S.-Canada Saint John River Basin Agreement, is very revealing.

\(^1\) Mr. A. Erickson, of EPA-Washington, also stated in a personal interview with the author (November 13, 1973) that EPA officials never thought of a supranational agency for the SJRB, but rather of an agency whose major characteristic was representation from all levels of government involved.

\(^2\) For a comparison between the IJC's policy-making responsibility and adjudicatory powers and those of other Canadian-American institutions, see Holsti and Levy, op. cit.

\(^3\) This opinion was expressed by federal Canadian and American officials to Holsti and Levy, op. cit., p. 879, note 2.
He said then:

The United States does not like the IJC. Their main reason is that Canada has an equal voice with the U.S. in decisions. More than that, when the IJC makes a recommendation it becomes binding on both countries.  

Perhaps an even better indication of the different attitudes regarding the IJC prevailing in each country is the Saint John River Basin Agreement itself. As we shall explore further below, IJC involvement in the agreement was primarily the result of Canadian federal officials' insistence on a role for it, although they seem to have found quite sympathetic ears among U.S. State Department officials.  

**Domestic Political Factors**

In the preceding sections we explored the extent to which the 1972 agreement between Canada and the United States, which created a joint "Committee on Water Quality in the Saint John..."
River,"¹⁷ might have been influenced by such factors as the relative hydrologic-economic position of the five economic-political units; the concern that each country had for their image, possible linkages between the SJRB and other issues along the common border; and, perhaps most importantly, the concern of each country for their sovereignty. Deepening the level of analysis we shall now explore transnational, transgovernmental and entirely domestic factors which might have motivated the many players involved in seeking or avoiding cooperative action towards boundary and transboundary pollution. Thus, we shall proceed to analyze successively the relative role and the demands exerted by subnational governments, public agencies, private interest groups and; finally, individual decision-makers in the context of SJRB decision-making.

Before we proceed with the analysis it seems important to call attention to the special kind of relationship which prevails between the United States and Canada.

Canada-U.S.A Transnational and Transgovernmental Interactions

Despite some disagreements over shared water resources, of which negotiation of the Columbia River Treaty, the Skagit Valley controversy and the Garrison diversion are among the most notable ones,¹⁸ international rivers issues between the United States and Canada have never acquired the national importance

¹⁷ For a review of recent environmental issues between the two countries, see LeMarquand, D. and Scott, A.D., 1976, Canada-United States Environment Relations, Proceeding of the Academy of Political Science. Vol. 32, No. 2.
and the degree of animosity that, for instance, the Indus, the Tigris-Euphrates and the Parana have for the countries involved.

Maxwell Cohen has stated that "perhaps no two countries in the world have the degree of economic and social intimacy that characterizes the day-to-day and long term relations between Canada and the United States." Indeed, the two countries are separated by some 8,000 kilometres of unguarded frontiers, more than half of which are marked by common lakes, rivers and aquifers. The United States and Canada enjoy about the same level of technological development, share approximately the same concern over environmental quality, have similar cultural heritages and a common language. As a consequence, the two countries have probably attained one of the highest levels of transnational and transgovernmental relations found in the world today. In the specific case of the pollution problems in the Saint John River Basin, it appears that a long tradition of close cooperation and exchange of information between the New Brunswick Water Authority and Maine's Department of Environment


20 This last characteristic is particularly pertinent in the case of the Saint John River Basin, because English and French are spoken on both sides of the border.

21 Cox, R.W., 1971, "Labour and Transnational Relations, International Organization, 25:3 (Summer). Cox considers these two countries as the prime example of a transnational society, while Holsti and Levy (op cit. P. 885) have pointed out that "Canada and the United States maintain what is probably one of the most profuse bureaucratic relationship between any two countries in the world."
Protection (a common case between other agencies of the two
governments), is to a large extent responsible for keeping the
issues at a low level of conflict. However, the fact that the
state and the province have not been able to reach agreement on
several environmental issues is an indication that there are
other stronger influences at work.

It is reasonable to say, then, that on the whole these
conditions have contributed to a very favourable climate for
cooperation between the two neighbours.

Political Demands of Subnational Governments

Both the governments of New Brunswick and Maine, through
their handling of the boundary and transboundary issues,
consistently showed a preference to deal with each other
directly, rather than through their respective federal
governments. This preference for direct province-state
interactions is perhaps even stronger in the case of the
Province of Quebec. A number of instances reflect the tendency
at the time for an intensification of sub-national
transgovernmental relations.

After Premier Hatfield came to power in late 1970 in New
Brunswick direct contacts between the province and the state of
Maine seem to have increased. On April 8, 1971, for example, in
answer to a question from a member of the Legislative Assembly
as to whether he felt it was appropriate to contact United
States authorities directly, he answered that "I did not
say...that it is my responsibility to deal with the Government
of the United States to negotiate or enter into agreements with
them. I said it was my responsibility to convey my objection." Mr. Hatfield was referring to a telephone call he had made to the U.S. Consul General in Halifax, conveying his disapproval to a proposed U.S. Environmental law affecting the whole Canadian border. A similar tendency appears to have taken place at an even faster pace in Maine, for early in the Fall of 1972 the Governor of Maine created an Office of Canadian Affairs.

It is possible that the fact that the New Brunswick and the federal government no longer were under the leadership of the same political party may have contributed to an intensification of interactions between that province and the State of Maine. However, it appears that the desire for greater independence in negotiations between the two subnational governments started earlier. One may recall, for instance, the direct contacts between Premier Robichaud and Governor Curtis concerning the Presque Isle Stream issue. Also, Mr. Leo Brandon's proposal for a St. John-St. Croix Board, which he claimed to be based upon "a need for more local involvement in the development of projects in the region" (Chapter 6), appears to have been a reflection of the desire by the provincial government as a whole to become less dependent on the federal government and the IJC in its

\[\text{'22\ Proceedings of the Legislative Assembly of New Brunswick, April 8, 1971.}\]

\[\text{'23 Holsti and Levy, op. cit.}\]
dealings with Maine.\textsuperscript{24}

In this regard, it appears that both New Brunswick and Maine agreed that the IJC was even further removed from their political realities than Ottawa and Washington.\textsuperscript{25} Very likely, the province and state shared a fear that their interests might be sacrificed by their respective federal governments in trade-offs regarding issues along the common frontier. Thus, they both felt that their mutual problems should be solved on their own merits.\textsuperscript{26}

However, provincial and state dependency on their respective federal governments is determined not only by constitutional provisions, which give the latter jurisdiction over boundary waters, but also due to the so-called "power of the purse", that is, the regional governments' reliance on the larger resources of their federal governments to carry out water

\textsuperscript{24} In this regard, Mr. John Henderson has commented (personal communication, August 1, 1980) that "Leo Brandon's efforts to suggest a structure for a Saint John and Saint Croix River Board without reference to the IJC and with emphasis on local participation was probably based on an image that a good many of us had in those days of the IJC."

\textsuperscript{25} Commenting on the IJC Mr. James Barresi, Director, NMRPC, said that it was a "political foxhole", and that there was widespread feeling in Maine that a strong state-provincial institution would serve their interests better (personal interview, January 21, 1974), while Mr. Leonce Chenard, Asst. Deputy Minister, N.B. Dept. of Fisheries and Environment, commented that IJC Commissioners were worse than federal officials as far as the province is concerned, because, in his view, the former behave more like "diplomats". He added that, "They are neither accountable to the people nor to those who, ultimately, have to enforce their decisions." (personal interview, January 8, 1974).

\textsuperscript{26} This point was stressed by Mr. James Barresi, Director, NMRPC, personal interview, January 21, 1974.
Therefore, from the perspective of the subnational governments involved, namely, Maine, New Brunswick and Quebec, the 1972 SJRB agreement represented a step forward in the struggle by the provinces and the state to have a greater role in the environmental relations between the two countries. The agreement also represented a victory for those asking for greater participation of local governments and regional agencies in Canada-U.S.A. relations.

It seems important to point out that until that time (1972) the IJC Boards were composed essentially of officials from federal agencies of both governments which were not supposed to represent their agencies, but rather serve in a professional capacity. In the case of the new U.S.-Canada Committee on the SJRB, however, members were expected to represent their respective federal, provincial and local governments as well as their respective agencies (chapter 10 and appendix VI).

Demands of Government Agencies

In the discussion above we have explored some motivations which might have determined the attitude of each level of

\(^2\) For example, the Canada-N.B. Agreement, which stipulated that the federal government would finance 90 percent of the programme costs.

\(^2\) The Canada-United States SJRB agreement called for Quebec participation in equal standing with the other governments, while the Canada-New Brunswick agreement left the door open for Quebec to participate and contribute financially to the project. However, Quebec never did participate in either agreement, not only because of its advantageous hydrologic-economic situation, but apparently because of a dispute between Hydro-Quebec and the Rigie des eaux du Quebec over which agency should represent the province in those agreements. Mr. R.C. Hodges, pers. interview, October 19, 1973.
government with regard to the Canada-United States SJRB agreement. For analytical purposes we considered each government as a monolith, however, we will see that by examining the issue at a deeper level, taking government agencies as the unit of analysis, a somewhat different picture of the factors influencing the agreement emerges.\(^2\)

Within the United States federal government, EPA as a new agency was trying to establish itself as the nation's undisputed leader in the environmental control field, including relations with foreign countries. Consequently, there was a strong motivation on the part of EPA to show its competence and authority on international environmental matters as visibly as possible. Evidently, EPA was not content with its supporting role to the State Department and the IJC; EPA felt it was spending the money and doing the basic work while the IJC was getting the credit and telling the agency what to do.\(^3\)

But in order to fulfill its goal of acquiring greater responsibilities in international environmental relations, EPA

\(^2\) In this regard, it would perhaps suffice to recall (Chapter 7) a letter from a federal Fisheries official, Mr. C. P. Ruggles, to his Deputy Minister, asking for advice on "how the Department's interests are looked after by this Commission" (i.e., the IJC).

\(^3\) This view was actually expressed by Mr. Albert J. Erickson of EPA-Washington (personal interview, November 13, 1973). This interpretation of EPA's motivations was also shared by a staff member of the Canadian section of the IJC, Mr. Lloyd MacCallum (pers. interview, October 19, 1973). He remarked that since EPA and Environment Canada were conducting most of the investigations on water pollution for the IJC, it was natural for them "to want to have responsibility for the remainder decisions."
had to overcome the resistance of the State Department, which is traditionally and juridically responsible for international relations and for IJC matters. There was also possible conflict of interests between EPA and the U.S. Corps of Engineers, because they have some overlapping jurisdictions.

Therefore, in the negotiation of the 1972 SJRB agreement EPA was pushing for a bilateral institution "at the working level," that is, one which could function without the interference of the foreign affairs departments and the IJC, as well as for an agreement limited to water quality, rather than comprehensive river basin planning, to avoid possible interference in the agreement by the Corps of Engineers.  

As we have seen, CEQ (Council on Environmental Quality) involvement in the Saint John River affairs was entirely motivated by its desire to develop a successful project for NATO/CCMS. From the perspective of CEQ the important requirement was that the agreement and the institution created by it be both innovative and visible. They had rejected the idea of using the IJC as the case study for the CCMS pilot project because it did not fulfill that requirement. Thus one can see that CEQ interests largely coincided with those of EPA and consequently it is not surprising that the latter was chosen as the leading

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31 Mr. A. Erickson (October 1973 interview) indicated that what EPA thought was needed was a bilateral institution "capable of implementing recommendations and responsive to local people."

32 This view was to a large extent confirmed by Mr. Ed Nef, Bureau of Canadian Affairs, U.S. State Department, Personal interview, November 16, 1973.
agency in the CCMS project.\textsuperscript{22}

However, both CEQ and EPA interests run against those of the State Department which, as we have seen, was more concerned with maintaining its traditional role as guardian of, and spokesman for, the whole spectrum of U.S.A. foreign affairs interests. In addition, at least in the view of one of its negotiators, State Department "concerns were somewhat more conservative than the CCMSers'. We were concerned about developing a consistent pattern of relations on environmental issues along the border."\textsuperscript{33} On the other hand, both CEQ and EPA needed the cooperation of State Department, not only because of its jurisdictional powers, but because of its experience in international negotiations.\textsuperscript{34}

Within the State of Maine the Department of Environmental Protection (DEP) and the NMRPC were the only agencies involved in the negotiation of the agreement. The latter sought to be recognized as the regional agency responsible for planning on the U.S. side of the basin. While it appears that the DEP would have liked to be the sole agency responsible for water quality planning and management in the basin, since it did not have the

\begin{footnotesize}
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    \item Mr. William M. Mansfield, personal communication, July 5, 1980. In addition, he said, "we were working with the IJC mechanism here [SJRB] and in other places. We thought the pattern of cooperation evolving within this framework should be developed into a consistent whole."
    \item Mr. Ed Nef (Ibid) commented that CEQ and EPA at first thought they could negotiate an agreement on the Saint John directly with their Canadian counterparts. However, "when they ran into trouble" they asked for help from State Department. At the end, he added, those agencies realized that an agreement worked out by them could be against the "national interest."
\end{itemize}
\end{footnotesize}
staff and financial resources required for the task, it adopted a neutral position and did not actively participate in the negotiation of the agreement. However, since it was the agency which in fact had jurisdiction on the matter at the State level, it could not reasonably be left out of the Committee created by the agreement, whose major distinguishing characteristic from similar bilateral arrangements was representation of local and regional interests in it.

One should expect that Environment Canada, being a new organization, should have similar interests to those of EPA. Apparently, in general that federal department did share EPA's interest in having more responsibility for environmental relations between the two countries. However, as opposed to EPA, officials of Environment Canada were somewhat divided in their views towards agreement with the United States regarding the SJRB.

For one thing, Environment Canada was an attempt to put under the same umbrella parts of two federal departments having conflicting interests, jurisdictions and approaches to environmental and especially water quality problems. Parts of the two old departments of Fisheries, and of Energy, Mines and Resources were there under the same umbrella, but they continued to pursue their old approaches. While the enforcement arm of the Department of Fisheries, which was transformed into the Environmental Protection Service (EPS), favoured a regulatory approach under the Fisheries Act to deal with pollution, the Environmental Management Service (essentially formed by officials of the old Department of Energy, Mines and Resources)
preferred a managerial approach (based on the concept of the waste assimilative capacity of a river basin), under the Canada Water Act. The Canada-New Brunswick agreement was an expression of this latter approach.\textsuperscript{35}

Thus, it is not surprising that these different departmental approaches also surfaced in relation to the Canada-United States agreement and the reference to the IJC on the SJRB. In the view of Dr. R.W. Durie (Chapter 9), officials of the old Fisheries Department were worried that the NATO/CCMS exercise and the subsequent agreement would "identify the Canada Water Act approach as Canada's approach to pollution control."\textsuperscript{36} Consequently, it was natural for Fisheries' officials to be in principle against an agreement involving joint comprehensive river basin planning and especially joint basin management.

Most likely, EPS officials would rather have an agreement on reciprocal water quality laws and regulations, for in this case their own approach to pollution control would be reinforced. And, if that were the case, there would be no need to create a new institution, for the IJC had demonstrated to be capable of performing the needed coordinating role.

Thus, one can infer that the Department of External Affairs, which together with State Department favoured the

\textsuperscript{35} We shall see that in Chapter 13 these approaches can be considered as broad decision-making strategies.

\textsuperscript{36} Fisheries officials may have been especially suspicious of the agreement because negotiations with the U.S. regarding the Presque Isle and the CCMS project were being handled by former Energy, Mines and Resources officials.
conservative IJC approach to the SJRB problem, must have found attentive ears among Environment Canada-EPS officials. This alliance would explain, then, the decision by the Canadian federal government to ask the United States to join in a reference to the IJC and have the proposed Committee report to the IJC as well.

Although in 1972 three New Brunswick agencies (Water Authority, Power Commission and Dept. of Fisheries and Environment) were struggling to assert their leadership in SJRB water management, it appears that they held the common view that an agreement worked out directly between the province and Maine would serve their interest better. Thus it is not surprising that the indication of the N.B. Department of Fisheries and Environment to represent the province in the negotiations and later in the Committee went unchallenged by the other agencies. The issue was by and large a low-level priority for these provincial agencies, for it did not involve any significant reallocation of resources and powers among them.\(^3\)

It may be, however, that one of the main reasons why those New Brunswick agencies did not take a greater interest in the negotiations was that they felt that their participation in the SJRB Board was sufficient to assure that their interests would be taken into consideration. In any case, they had put as a

\(^3\) Mr. Leonce Chenard commented that he thought the duration of the Committee was just one year and for this reason had accepted to participate in the Committee (personal interview, January 8, 1974). This is an indication of the minor role the provincial agencies expected from the Committee.
condition for the choice of the SJRB as the case study for NATO/CCMS (Chapter 9), complete coordination, if not integration, between the Board and those responsible for the project. Furthermore, the Board made it explicit that it was one of its prerogatives "to get involved with discussions with U.S. representatives" regarding SJRB matters.

It appears that there was nearly a consensus among Board members that the IJC should be kept out of the negotiations and of any bilateral agreement concerning the basin. The rationale for this position was based upon the concern "that IJC would pick up our ball and run with it. We really wanted to accomplish something and we felt that we could accomplish more and sooner using our own institutions than calling in the IJC." go

Thus, the decision to include the IJC in the agreement in a secondary capacity can be interpreted as a compromise between those agencies which wanted a new institution, entirely independent of the IJC (DEP, EPA, CEQ, NMRPC, N.B. Dept. Of Fisheries and Environment, SJRB Board, Water Management Service-D.O.E.), and those who would prefer the more conservative path of a reference to the IJC and the consequent formation of an IJC investigative Board (State Department, External Affairs and

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3 The only exception among Board members seems to have been Mr. J.P. Parkinson of Environment Canada and formerly with the Dept. of Fisheries. He attributed the exclusion of the IJC from the negotiations to a desire by some federal officials to have a greater role for their organizations and themselves. Personal interview, January 26, 1974.

3 Mr. John M. Henderson, personal communication, August 1, 1980. He added that Water Management Service (Env. Canada) probably felt the same way.
Environmental Protection Service-E.C.). However, the composition of the proposed Committee represented at least a partial victory for those demanding local participation and direct agency representation in the new institution."

The inclusion of the NMRPC in the agreement appears to be the first time a local agency was specifically mentioned in an environmental agreement between the two countries. This does not apply to the same extent to the case of the SJRB Board, because although the Board was indeed the Canadian basin planning agency equivalent to the NMRPC, as opposed to the latter, it did not represent local interests, but rather those of provincial and federal agencies.

"Mr. Henderson (Ibid), pointed out that he (and presumably also some provincial officials) was actually taken by surprise by the decision to involve the IJC, and added that federal officials argued that "by going through the I.J.C. would be safer" for Canada."
Role of Private Interest Groups

We shall now apply API to explain the role of private interest groups in pollution control and international negotiations regarding the SJRB. Clearly, for interest groups to participate in public decision-making it is necessary that the issues must be perceived by them as important enough to deserve their attention. In addition, it is necessary not only that they be well informed about the nature of the issues, but that they have access to the appropriate decision channels.

The case study seems to make it clear that there was practically no participation by private interest groups in the negotiations of the 1972 SJRB agreement. On the other hand, these groups had a direct role in the Presque Isle transboundary pollution issue and a secondary role in the case of Frasers' boundary pollution. The question which needs to be answered is then why were these groups motivated to actively participate in one issue, mildly in another, and not at all in still another?

Presque Isle Stream Pollution:

From the case study it is clear that the number of political and private interest groups which participated in the Presque Isle issue was indeed large. Conservationist groups ranged from Maine's Biologists Association and League of Women Voters to environmental crusader Ralph Nader. Various Chambers of Commerce, industrial and labour associations were apparently
The activism of Maine interest groups in the Presque Isle issue can be explained by several factors. Firstly, the damming of the Presque Isle by New Brunswick residents was perhaps the most visible act of protest ever staged by Canadians regarding an environmental issue with the United States. Maine riparians downstream from Vahlsing industries were equally affected by the pollution overload and subsequent fish kills. Thus, citizens groups in Maine and New Brunswick had a strong motivation to participate in the debate and decision-making process surrounding the issue. The foundation of the relatively short-lived Citizen's International Pollution Committee (to my knowledge, the first and only transnational group ever formed to participate in environmental issues between that state and province) after the fish kills incident is certainly evidence of its importance as a motive behind the actions of private citizen's groups.

Secondly, in contrast to New Brunswick, the political process in Maine does give greater opportunity for public and private interest group participation in pollution control. The process is not only more open because of public hearings and direct access to information, but also because even not-so-important decisions such as changing the water quality classification of a stream is the responsibility of the

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See Chapter 7. A long list of interest groups is provided by Robert C. Zimmermann, 1969, Pollution of the Prestile (Presque Isle) Stream, Maine-New Brunswick: Domestic Politics and International Repercussions (report prepared for the N.B. Water Authority). Of interest groups involved.
Legislative Assembly. Therefore, private groups are motivated to take advantage of these opportunities for public inputs and lobbying.

Thirdly, the fact that the Presque Isle issue was lively debated by an independent news media must be seen as an additional encouragement for private group activism and influence in the public decision process. Several newspapers apparently lined up against the polluters (e.g. Bangor Daily News and Bath-Brunswick Times Record) or on their side (e.g. Portland Press Herald), while the Frasers' issue hardly came to the public eye in New Brunswick, due undoubtedly to the fact that in this province, the press was practically controlled by a heavy industrial polluter.\textsuperscript{42}

Thus, we see that in the case of transboundary pollution there was considerable pressure by private interest groups on the governments of Maine, and to a lesser extent, of the United States to do something about the problem. As a consequence, American officials were compelled to act more forcibly as far as pollution regulation enforcement regarding Vahlsing Industries is concerned. Solutions to the problem, however, turn out to be not so much one of motivation and will to tackle it, but more so one of lack of legal and administrative means.

As we have seen in Chapters 4 and 7 Maine's statutory laws put clear constraints on the kinds of action that could be taken

\textsuperscript{42} In this regard, it is interesting to note that the New Brunswick press did give extensive coverage to the Presque Isle pollution problem, obviously because it did not involve provincial polluters.
and their timing. The most important constraint was certainly the 1967 amendment to Maine's statutes which gave all polluters in the state until October 1976 to comply with the existing in-stream effluent standards. Therefore, as long as it was in force, polluters were motivated to postpone abatement actions until that date, resorting expectedly to token compliance with the schedule set up by the law.

The case of the Northern Maine Regional Treatment System (Chapter 8) is perhaps the best example in the basin of the importance of private groups motivations in the outcome of an issue. As we have seen, the food processing firms in the Presque Isle-Aroostook basins should have a direct interest in the success of that regional treatment system for it afforded the most economical approach to pollution abatement to the industry as a whole and to each firm individually, except for Vahlsing Inc. This firm had already invested considerable funds on its own land waste disposal system (although, as we well know, it was not working properly) and consequently was not motivated to practically abandon its investment and incur substantial additional costs to form the regional treatment system.

Potato Service, Inc., the largest food processing company in the region, had different reasons not to join the regional system. It decided to leave the regional system concept when it

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43 The NMRTS issue is in my view sufficiently important and interesting to deserve a separate study using API. It would be especially appropriate as a case study of the logic of collective action.
learned that federal funding would no longer be available for private firms joining area projects. In addition, it was apparently the only food processing firm which could afford to meet effluent requirements by its own treatment plant and remain competitive in the market vis-a-vis the other firms in the region. Thus Potato Service, motivated by its own self-interest decided not to join the system whose future was then thrown into question, because without that firm's participation the system lost some of the advantages of economies of scale. Consequently, what could have been a solution to the Presque Isle problem satisfactory to the food processing industry as a whole and to the regulatory agencies, was jeopardized by the self-interests of two individual companies."

Frasers' Pollution: In contrast to the Presque Isle issue, Frasers' pollution of the international section of the Saint John River was characterized by a remarkable low level of interest group participation. There are indeed private interest groups in New Brunswick concerned with water quality problems in the SJRB, as for example the N.B. Conservation Council, the Atlantic Salmon Anglers Association and the Fish and Game

"Note that we are reporting the situation as it was unfolding by the end of 1972. As of 1977 the regional system was being planned without the participation of Potato Service, which built its own treatment plant capable of doing better than the required effluent limitations. However, the plant cost more than expected and consequently the firm was pressuring the regulatory agencies to ask the other firms to comply with the same degree of treatment. As to Vahlsing, Inc., it later decided to join the regional system because it could not renew its license to operate the old deficient system."
Federation. However, as far as it could be determined these groups never raised any significant protests against Frasers' pollution; nor did those people living on the banks of the international reach of the Saint John. A number of reasons seem to explain this almost unusual apathy for what is indeed the worst pollution problem in the basin.

First, most of the people presently living on both sides of the international section have not known it to be in any other state. To most local residents the situation is not viewed as a deprivation of recreational opportunities for there are lakes and streams of pristine quality within a convenient distance. Consequently, there was much less concern with cleaning up the river than would be the case if that reach of the river had become severely polluted in recent times, and if there was a lack of alternative recreational opportunities.

Second, the Upper Saint John basin population is greatly dependent upon the Fraser mills for its livelihood. Both Edmundston and Madawaska are in fact company towns, for not only do close to 1,000 people work for the mills, but a large number of people depend indirectly on them as well. In view of this, even those people who are concerned do not dare to voice their opposition to either the polluters' practices or the government's leniency toward them.

Mr. Conrad Michaud, secretary of the Edmundston Chamber of Commerce, (personal interview January 15, 1974), exemplified the region's dependency on Frasers' by saying that if for some reason people would not get pay cheques from Frasers' for one week, business in those communities would collapse. He added that at least 90 percent of the population supported Frasers'.
Third, as opposed to the situation in Maine, the New Brunswick news media never gave any significant coverage to the Frasers' pollution problem despite it being the worst in the basin, evidently because the media was (at least up to 1972) practically controlled by one enterprise, K. C. Irving, which was also one of the major polluters of the basin. Consequently, not only the basin population lacked information on the situation, but conservation groups lacked a medium through which they could articulate their protests.

Finally, it is probably fair to say that the lack of institutional structure in New Brunswick for formal private group inputs into the public decision-making process, e.g. public hearings, inhibited the participation of conservation and other potentially interested groups in the process.

However, it appears that public hearings can only motivate to a limited extent interest groups to participate in low level conflict issues such as Frasers'. As we have seen (Chapters 5 and 6), at the September 1970 DEP hearing at Madawaska only three isolated Maine citizens dared to speak out against the company, although at the joint DEP-EPA hearing in 1973 there was greater participation by interest groups. In this latter hearing Fraser made strenuous efforts to get the support of the communities of Madawaska and Edmondston and particularly labour and business groups. As a result various local groups wrote letters to those state and federal agencies supporting the
relicensing of the company's discharge permit."

The 1972 SJRB Agreement: From our discussion of the political demands of government agencies on both sides of the border one is led to conclude that the negotiation of the 1972 Canada-United States Agreement on the SJRB was essentially the result of the interplay of bureaucratic interests. Several reasons may be suggested for this apparently complete absence of the influence of private interest groups on this agreement.

Firstly, the negotiations took place practically behind closed doors, almost entirely within the federal bureaucracies of both countries. The public only became aware of what was happening when the two countries joined in a press release on the very day the agreement was signed.

Secondly, the 1972 Agreement was indeed low-level, for it involved no substantial allocation of public funds or political powers in either country. Effective decision-making power remained with the regulatory agencies in both countries. Thus, even if aware of what was happening they would have little motivation to participate in the negotiations.

Thirdly, it appears that at the time most special interest groups in the United States, and especially in Maine, were convinced that the important decisions were being made by state

`` Mr. Conrad Michaud's interview, January 15, 1974.
legislatures,‘’ and consequently it was more effective for them to concentrate their attention and lobbying efforts at this rather than at the federal level, not to mention international activities. Thus, it should not be surprising that among those leaders of special interest groups interviewed in 1973-1974 some did not know of the existence of the Canada-United States Committee on the SJRB.

Role of Motivations of Individual Decision-makers

We have seen that motivation analysis (API) when applied to different levels of public decision-making can provide valuable insights into the role played by collective players (having sometime overlapping memberships), as in the case of the negotiation of the 1972 SJRB Agreement and development of the two most important pollutions issues in the basin.

One might now ask whether some of the collective decisions made regarding the issues examined could not be even better explained by examining them at yet another, deeper level of analysis, namely the level of motivation of individual players or decision-makers.

It is evident that only decisions and actions which could not be more satisfactorily explained at higher or more general levels of analysis need explanation at the level of the individual. Furthermore, as pointed out in Chapter 3 in the

‘’This opinion was expressed by both Messrs. Moe L. Kimmel, Vice-President, Potato Service, Inc. (interview (January 29, 1974) and Art. H Rand, Director, Environmental Protection, Fraser Companies (interview January 15, 1974). Mr. Kimmel actually substantiated his view with a paper by Martin R. Haley and James M. Kiss, entitled "Larger Stakes in statehouse lobbying". Harvard Business Review January, 1974."
context of API, the analysis of individual objectives and motives should be seen as a "last resort" or "residual" category of analysis. First, because the time and other resources required to undertake motivation analysis of individuals are in general very large. Second, because a research such as this one, in which the actual names of decision-makers are used poses limitations on the extent to which individual motives can be analysed without risking embarrassment to the individuals mentioned.

Thus, although the personal and group motives of every individual decision-maker involved in the issues examined probably counted to some degree in the collective decisions taken, we need only examine those situations or instances in which the individual's motivations clearly influenced the courses of action chosen. These are, most likely, situations in which individuals in positions of authority impart their own conception of the objectives to be followed even when they are in disagreement with those of the majority of the members of the group to which they belong.

The case study together with additional opinions expressed in interviews by a number of individuals involved in the decision-making process examined helped indentify the key decision-makers whose motivations appear to have influenced the course of events re the SJRB. In this connexion, it is important to point out that at the level of the individual it is difficult to separate the relative significance of individual motives versus the individual's information processing and storage skills. This subject will be discussed in Chapter 12.
The case study clearly indicates that the individual motives which counted most were not necessarily those of decision-makers at the top of the decision-making hierarchy. Highly motivated individuals at lower echelons did play a significant role in the decisions taken.

In the case of the Frasers' issue the record indicates that Mr. Jack Davis, federal Minister of Fisheries and Forestry, and later of the Environment (DOE), played a crucial role. His personal preference for the regulatory approach to pollution control over the Management approach favoured by officials of the Department of Energy, Mines and Resources (later with WMS of DOE) resulted in decisions favouring short-term remedial measures rather than long-term basin-wide pollution control policies which were then being contemplated by the latter in the spirit of the Canada Water Act in general and the N.B.-Canada SJRB Agreement in particular.

At the provincial level the key individual decision-maker regarding Frasers' pollution was certainly Mr. Ted Fellows, Chairman of the N.B. Water Authority who, as we have seen, was accused by a number of environmentalists of having close association with the Pulp and Paper Association of New Brunswick. Therefore, Mr. Fellows soft stance towards Frasers' in terms of subsidization of the company's pollution control effort, and particularly in terms of his willingness to accept the many delays and reschedules regarding effluent limitations requirements by the Company, can in part be attributed to that connection.

The influence that Mr. Leo Brandon might have had in the
Frasers' issue is not very clear. For the latter was definitely a highly motivated and outspoken environmentalist but he did not have decision-making powers. However, as an advisor to N.B. Minister of Natural Resources, W. Duffie, he appears to have been able to influence the Minister in taking a tougher attitude towards Frasers.

With regard to the Presque Isle stream issue the key individual players and their motivations are more easily identifiable. In the case of Mr. Robert Caines, the leader of the damming incident, he himself stated publicly (see Chapter 7) that he had been more motivated to act by the smell of dead fish than by his conservation principles. The explanation for his militancy after the incident certainly lies with his own personality. Personality seems to be also a factor closely associated with Mr. Freddie Vahlsing intransigent and evasive behaviour regarding abatement of pollution from his industries. Therefore, one is led to suggest that the motivations of those two individuals were an important determinant of the way the issue developed. Although, as we shall see in Chapter 12, the strategies they used were perhaps an even more important factor.

It has already been suggested (Chapter 7) that Mr. Erwin, Maine's Attorney General, was politically motivated when he filed a nuisance suit against Vahlsing Industries, for there were evidently other serious issues in the state about which he had taken no action. This suggestion was made as may be recalled, because at the time Mr. Erwin was planning to run for Governor against Governor Curtiss who was seeking re-election. Governor Curtiss, in turn, was apparently not highly motivated
to prosecute Vahlsing not only because he had strongly lobbed to bring the industries to Maine, but also because he was a personal friend of Vahlsing. Senator Muskie's situation was very similar to that of Governor Curtiss, except that he was in an even more difficult position because of his avowed reputation as defender of the environment. Thus, the decisions which each of those two latter public men took, to a large extent supporting Vahlsing must have been difficult personal compromises among conflicting motivations or objectives.

The participation of local/regional agencies in the 1972 SJRB Agreement and in the USA-Canada Committee created by it can be attributed to a large extent to the personal role of Mr. James Barresi, Executive Director of the NMRPC. This opinion, which was shared by several other decision-makers involved in the issue, can be inferred from Mr. Barresi's very great interest in promoting his organization to a leading position in pollution control in the region by having the regional treatment system implemented, and in his personal participation in the decision-making process."

It also appears to be true of several other decision-makers that in the course of the negotiation of the 1972 SJRB Agreement they felt that what was beneficial to their agencies was also beneficial to their countries. For example, this seems to have been the attitude of Messrs. H. C. Blaney (CEQ-White House), A.

"Mr. Barresi was indeed later appointed as one of the three American representatives in the Canada-United States Committee on the SJRB."
Erickson (EPA), and R. Millest and R. C. Hodges (both of WMS-DOE) for one can infer from the case study that they thought that by pursuing the objectives of their agencies as they perceived them, they were serving the interests of their country; even when other national agencies might have different conceptions of the national interest. For instance, Mr. Erickson on the USA side and Mr. Millest on the Canadian side apparently favoured an agreement confined to water quality management (excluding questions of quantity) to avoid other federal agencies in their respective countries from getting involved. Those players might also have been seeking self-promotion, but this is a matter for open speculation. Neither admitted to such a motivation nor should we expect that they would. Nevertheless, it is certainly a possibility, for both of them did get either promoted after the agreement (Erickson) or actually got to participate in the new committee (Millest).
CHAPTER 12

INFORMATION PROCESSING APPROACHES IN THE
NEGOTIATION OF THE SAINT JOHN RIVER BASIN AGREEMENT

In Chapter 11 using AP1 as the main framework for analysis we explored the factors and motives influencing cooperation regarding pollution control in the SJRB. The major thrust of the analysis was to give alternative explanations as to why certain courses of action were pursued by different players, and possible reasons for the formulation of certain policies. In addition, we identified the most important players and indicated to what extent they were constrained in the objectives they could pursue by the existing institutional framework. Thus, Chapter 11 provides a useful background for the information analysis (AP2) which will be carried out in this chapter, as well as the AP3 analysis in the next chapter.

As we have discussed in Chapter 2, AP2 analysts assume that players are information-processors operating in a policy-making environment. How they make decisions depends not only on their objectives or motives and the characteristics of the environment (i.e., factors and motives as described in Chapter 11) but also on how they process information as individuals and collective entities.

Thus AP2 examines three main types of information processing: individual, hierarchical (within an organization) and non-hierarchical (among players/individuals and/or organizations). The main task of the analyst is then to determine whether and how the information processed by each
player and/or amongst them was an important factor in the unitary and collective decisions made regarding the three main issues examined in the case study.

In this chapter we will, then, attempt to explain the various approaches to information processing used by players and determine their importance regarding some specific decisions and policies. For example, we will try to answer the following types of questions: to what extent was the behavior and position of the U.S.A. in relation to the 1972 Canada-United States Agreement influenced by the information generated by its various federal and state agencies and their consultants? And, to what extent did official brain-storming sessions and unorganized group meetings play an important role? Or, to what extent did Canada resort to various types of synoptic analysis and to incremental analysis in formulating its policies regarding the Presque Isle and the Frasers' issues? To what extent were various information processing approaches and techniques used to justify decisions already made, perhaps through non-rational approaches? To what extent did the nature of the decisions determine the kinds of information required, and the information-processing approach used? Did organizations tend to process information according to standard or traditional procedures? To what extent did collective decisions emerge from bargaining (information processing without a common goal) or from non-hierarchical information-processing (where participants have a common goal and seek a common solution)?
Development of New Brunswick Domestic Policy
Regarding Pollution Control in the SJRB

From public statements by high level federal and provincial officials it seems clear that they considered the 1970 Canada-New Brunswick Agreement on the SJRB an important event in the evolving policy toward pollution control in the basin.

As we have seen in the case study (Chapters 5 and 6) that Agreement envisioned a coordinated federal-provincial programme for the basin. First, a short-term or interim water quality plan (SJRIP) was to be prepared, within four months of the signing of the Agreement, which should lead to immediate pollution control action. Second, a comprehensive plan to satisfy all future quantity and quality requirements of the region was to be developed within a period of three years. The two plans were to be completely coordinated, and compatible with "existing undertakings" and the recommendations of the 1969 Atlantic Development Board study.

The Saint John River Basin Board, in charge of carrying out both plans, faced two important decisions regarding pollution control measures it should recommend to the two governments regarding the SJRB. One was concerned with the appropriate level of water quality in the river system for existing and potential uses of the resource. The other was related to the distribution of pollution control costs among the private and government sectors. To make these decisions the Board needed two kinds of information: technical-economic (to determine the relationship between given water quality levels and costs of pollution
abatement) and social-political (to establish the level of water quality considered desirable by the government and people and who should pay the costs).

**Processing of Technical-Economic Information**

Since the water quality survey carried out by the Department of National Health and Welfare in 1960, the nature of the SJRB pollution problem was fairly well understood. The 1969 ADB study added further knowledge. Thus, when the Canada-New Brunswick Agreement was signed in 1970 it was well known that the key to a solution to the basin's pollution problem lay in appropriate measures being taken to control the waste discharge of two pulp and paper mills: Fraser Companies and K. C. Irving Company. The former was the crucial one for the effects of its pollution were felt all the way down to Fredericton. The latter affected only the estuary, although very badly. The task of the SJRBB was then to decide how much effluent control it should recommend for these and other industries and municipalities in the basin. As we have seen, the task was delegated to its Planning Committee. The way the Committee carried out this information-processing task is revealing.

Not surprisingly, it retained the services of the Montreal Engineering Company, which had been responsible for the ADB study, to gather and collate existing information and make suggestions. This consulting firm produced a report which argued for requiring very high effluent treatment from these two principal industries. It claimed that this was the most cost effective measure, because the waste load contribution by Fraser mills was such that, even if advanced waste treatment was
provided for all other waste sources (industrial and municipal), there would not be any significant improvement in the water quality of the main stem of the SJR (particularly in the international section).

Actually, the 1968 agreement between the New Brunswick water Authority and Frasers already required of the company an 80 percent BOD reduction in its effluent. However, even at such a high level of treatment, there would still be a number of possible occasions when water in the Grand Falls headpond would become anoxic.

Apparently, there was no substantive disagreement with the conclusions reached by the consulting firm among either federal or provincial officials represented on the Board and the Committee. Disagreement arose when these two bodies considered the question of whether or not Frasers could afford the cost of high effluent abatement. While the Water Authority (and in particular, Mr. Fellows, its chairman) believed and argued that the company was going through a difficult financial crisis, others such as federal Fisheries officials and especially Mr. Leo Brandon, provincial hydrologist, believed that Frasers could afford the costs of pollution abatement.

Mr. Leo Brandon, with some help from the consultants, attempted to substantiate his views by carrying out an analysis of the Frasers' financial record. He concluded that the company, owned by a Montreal group, had improved substantially its financial condition since 1967 and was, in 1970, in a position to invest in pollution control, particularly considering the tax savings and government grants available. He and the other
Committee members realized, however, that in order to meet those high effluent requirements the company would have to convert to a new process (most likely Kraft), and that for this purpose it would need fresh capital from outside, which might imply the loss of control by the existing management.¹

Although Water Authority officials argued against Mr. Brandon's analysis, saying he overestimated Frasers' financial capability, the crucial questions were really whether or not the two governments should demand the necessary very high level of effluent abatement from Frasers and whether they should require the same level of treatment from all industrial waste dischargers in the basin. These were obviously social-political questions whose answers did not depend on the availability of further technical-economic data.² What was needed by the Board was information on the preferences of the people of New Brunswick and the provincial and federal governments. The Board itself was anxious for real improvement to be achieved during its term of office (Chapter 11).

¹ This actually happened seven years later, when the company was bought by the Noranda group and have been doing extremely well ever since. Mr. John Henderson, pers. comm., August 1, 1980

² As we have seen in Chapter 6, some Committee members were in agreement that what was needed was sufficient support from the ministers, for existing information and legislation were adequate.
Processing of Social-Political Information

The SJRB Board recommended in the SJRIP that the Fraser Companies at Edmundston should reduce its 1970 pollution load of BOD by at least 90% by June 30, 1973. It recommended the same measure for the K. C. Irving company, and an equitable policy for all industries in the basin. These recommendations clearly represented a compromise among Board and Committee members, who were serving on these bodies not only in a technical capacity but as representatives of their respective government authorities as well. The endorsement of their recommendations by the two governments several months later confirms the political support those members had.

The Board's recommendation regarding Frasers was evidently a compromise; not primarily because it demanded the same level of treatment from all industries in the basin (clearly a very expensive policy), but because at the same time it increased the level of effluent abatement required by the 1968 Frasers agreement (from 80% to 90% BOD reduction) and extended the deadline for compliance (from December 1971 to June 1973, the date in which the Canada-New Brunswick Agreement would expire), thus satisfying both the hard and soft liners regarding pollution control in the SJRB.

This compromise was arrived at through discussions during SJRB Board and Committee meetings. There was no public input. It was clearly a practical impossibility to try to involve the public in a four month planning process. The crucial question is, however, why had the SJRIP to be prepared in such a hurry? The forthcoming provincial elections are not sufficient
explanation, because the terms of reference and the schedule for completion of the interim plan were evidently prepared before a date for the election was set. The only available answer is that those who drafted the 1970 Agreement indeed wanted to show as much visible progress as possible during the original three year duration period of the Agreement.

Given that the terms of reference of the Agreement actually required a public participation as well as a comprehensive planning programme, the requirement for a speedy interim water quality plan does not seem reasonable.

The public participation programme for the SJRB was conceived entirely by officials of the federal Department of Energy, Mines and Resources, and sold to the New Brunswick government to run parallel the SJRBB planning activities (although the Agreement itself contained a provision for public involvement in the planning process). However, when authorization was finally given to hire personnel to carry out the programme (February 1971), the SJRIP had not only been completed but had already been endorsed by the two governments as well.

Thus, with regard to the most important policy decision concerning water quality in the SJRB, there was no opportunity for getting the public involved. No wonder it became so difficult to get basin people involved in the planning process when all the most important decisions concerning the basin had already been made. The only role left for a public participation programme was, then, one of monitoring the implementation of these policy decisions.
It is conceivable that if the public had been involved in the formulation of the SJRIP, it would have become clear that a policy aimed essentially at keeping Frasers in operation under existing management was not in the best interest of the majority of those affected by the policy. Since the group that owned Frasers was not from New Brunswick, it would not have mattered if the company had been bought at the time by another outside group, as in fact happened seven years later. No jobs would have been lost and pollution abatement would have been achieved much earlier. Instead, the New Brunswick government worked out an agreement with Frasers in 1972 which, although keeping the same effluent requirements of the SJRIP, was essentially open ended, for it only stipulated that the necessary plant conversion to a new process would take place when the parties agreed that the company had the ability to raise the necessary capital.

The Long-Term Comprehensive Plan

Considering that when the SJRB Board comprehensive planning activities started in about April, 1971, the most important decisions concerning level of effluent discharge and schedule for compliance for industries and municipalities had already been made, there was little more it could contribute in terms of water quality policy for the basin. Presumably, the comprehensive plan could recommend even stiffer measures in terms of a compliance and a monitoring programme. Further, one might argue that the original objectives of the comprehensive plan under the Agreement were not geared toward implementation but rather to develop and test comprehensive river basin planning methodologies (as one of three such joint
provincial-federal pilot studies within the spirit of the Canada Water Act).

However, the text of the Agreement itself (Chapter 6) indicates that the intention of the two governments went beyond an academic exercise. It stated that the implementation of the SJRIP would take place in accord with a "comprehensive plan for the river system for the optimum development and utilization of the entire basin." But it is evident that the equitable policy adopted in the SJRIP prevented the possibility of an "optimum" development of the water resources of the basin, at least from an economic point of view.

The governments' lack of consideration for economic and technical efficiency which could be achieved through comprehensive planning is even more evident if one considers that those preparing the interim plan were not given the opportunity to use the results of the SJRB optimization and simulation modeling studies, commissioned by the federal Department of Energy, Mines and Resources in 1969 (H. G. Acres, consultants), which were completed in August, 1971, i.e. seven months after the SJRIP was officially adopted.

Acres' models, although data deficient, could perhaps have served as a very useful analytical tool in developing the SJRIP. As the authors of the report pointed out, earlier use of the models "would have produced substantial economies in water quality management within the basin by clearly highlighting the most efficient pattern of public and private investment in effluent abatement facilities" (Chapter 6). Furthermore, in view of the policy already adopted in the SJRIP, that study's
examination of eight alternative water quality management policies, providing an order of magnitude of the costs associated with each one, as well as the suggestion that from a strictly economic efficiency point of view the effluent charges system offered the greatest advantages, was to a large extent an exercise in futility.

This investigation did not explore further the implications of the comprehensive planning exercise carried out by the SJRB Board (completed in 1974) for water quality management in the basin. However, it would not require much analysis to demonstrate that as far as water quality management is concerned the only contribution it could make would be in the area of institutional design for monitoring and enforcement; for all important resource allocation decisions had already been made by the time the planning exercise started. It could be argued, however, that the Comprehensive Plan to be prepared by the Board aimed not at an optimal allocation of resources, as many planners would consider it should, but rather at establishing or institutionalizing a continuous process of comprehensive river basin planning in the SJRB, in particular, and New Brunswick in general.

However, some might suspect that there was a tendency in Canada at the time to carry out comprehensive planning (e.g. the Acres report and the SJRBB comprehensive plan) after the most important policy decisions had already been made, in which case planning was considered as an information processing approach designed not to make decisions more rational, but to make prior decisions to appear rational, in which case this type of
planning would be synonymous with rationalization.

**Formulation of Canada And United States Policies Re Presque Isle Stream Pollution**

**Development of the Canadian Position**

The 1968 summer fish kills in the Presque Isle stream outraged New Brunswick residents and forced the provincial government to demand through the Department of External Affairs corrective measures from the governments of the United States and Maine.

As we have seen in Chapter 7, the initial reaction of Mr. Robichaud, Premier of New Brunswick, was rather emotional, e.g. asking for IJC intervention and soon after withdrawing his request. However, he later asked Mr. Duffie, New Brunswick Minister of Natural Resources, to form a task force to prepare a report supporting the provincial government's position on the issue. The output of this task force was the 1969 Brief to the Department of External Affairs (see Chapters 7 and 8).

**Preparation of the 1969 New Brunswick Brief:** Under the general supervision of Mr. Leo Brandon, the staff of the Department of Natural Resources proceeded to analyze the problem and develop recommendationations. According to Mr. Brandon himself, he was responsible for most of the integrative work

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3 Telephone interview, July 22, 1980.
and held extensive meetings and consultations with federal and especially Water Authority officials. The Brief went through at least three drafts, each addition and omission to it representing a deeper understanding of the nature of the problem. However, as we shall discuss later in this chapter, most changes in the drafts were not concerned with technical, economic or legal matters (about which there were few disagreements), but rather with the issue of whether or not the IJC should be brought in to the picture.

The 1969 Brief analyzed five different aspects of the Presque Isle problem: (1) the Boundary Waters Treaty and Maine water quality laws and regulations; (2) the finances of the two industries responsible for the pollution problem; (3) public reaction to the fish kills; (4) the nature and the extent of damages caused in New Brunswick; and (5) the relationship between this particular issue and the overall pollution problem between Maine and New Brunswick.

The analysis carried out by Mr. Brandon and his task force was far from comprehensive. The task force was perhaps forced to pursue a deliberately pragmatic approach because of time and other resource constraints. Nonetheless, it was considered sufficient by the provincial and federal governments to support a request for action on the problem by the United States. With regard to each of the five aspects of the problem listed above, the report reached the following main conclusions:

(1) Canada had the right under Article IV of the 1909 Boundary Waters Treaty to request immediate corrective measures from Maine. The relatively low classification of some of Maine's
trans-boundary tributaries to the SJR was unacceptable under the Treaty. Also unacceptable was the time schedule for industries to comply even with this low level of in-stream water quality. Despite the weakness of Maine laws, the State of Maine and especially the U.S. federal government had the power to act on this international river problem. However, as suggested by those preparing the earlier version of the Brief, Canada should avoid a legal battle, for this would surely imply great delays in effective corrective measures being taken by Maine.

(2) In any case, the direct measurable costs imposed by the industries' pollution in New Brunswick territory were relatively minor (e.g. clean-up, land devaluation, restoration and fish restocking costs). The riparian owners who suffered the most direct damages and inconveniences were not asking for compensation, but rather for effective mitigative measures. In short these were all reasons to avoid seeking legal arbitration and an award for damages.

(3) In the earlier versions of the Brief the task force tried to justify Mr. Robert Caines and his followers' forceful action, by saying that their intention when damming up the stream was to accumulate enough water behind the dam, which would then allow them to flush the stream (which, as we have described in Chapter 7, was not their intention.) However, in the final draft of the document this justification was omitted and mention was only made of the righteous activism of the Citizens International Pollution Committee, and the widespread support this organization had received, even in Maine.

(4) It is of note that a section of the final draft of the
Brief devoted to an analysis of the financial situation of Maine Sugar Industries and Vahlsing, Inc., the two major polluters of the Presque Isle, was hardly used. The analysis indicated that both firms were having financial problems and were having difficulty in repaying government loans. However, the only use made of this analysis was to point out that since the governments of Maine and U.S.A. had helped to finance those industries they had additional responsibility in making sure that they complied with existing pollution laws and regulations.

(5) Finally, the Brief stressed that "unless a planned, comprehensive, intergovernmental programme of pollution control [was] effectively followed" the problem would persist. Although the Brief candidly admits that there are also pollution control enforcement problems in New Brunswick, it concludes by suggesting that pollution of the Presque Isle "will be stopped only after firm diplomatic protests have been made to the United States by the Government of Canada." It is important to point out that the drafters of the Brief (who were also involved in the negotiation of the Canada-New Brunswick Agreement) took advantage of the opportunity to create a linkage between a solution to the Presque Isle pollution problem and the need for comprehensive river basin planning in the New Brunswick part of

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4 It is very likely that this analysis was done by Mr. Brandon himself for it was very similar to the one done by him re Fraser Companies, as we have seen in the previous section.

5 1969 New Brunswick Brief, emphasis added.

6 Ibid.
the SJRB for, they argued, only then would Canada be in a good position to realistically discuss the issue with American authorities. As will be discussed further in the next chapter, this appears to be a rather common bureaucratic strategy to get greater attention from politicians either to a less visible problem or to a proposal for comprehensive planning.

The Position of the Canadian Federal Government: It appears that officials of the federal Department of Environment and External Affairs by and large accepted New Brunswick responsibility to generate information regarding the Presque Isle affair. Those officials apparently were more concerned with leading the actual negotiations with U.S. officials. However, when forwarding the New Brunswick 1969 Brief to the American authorities the Department of External Affairs was careful to point out that the Canadian demands were being made without prejudice to the review of other transboundary pollution problems originating in either country.

As far as the Department of Environment is concerned, the only recorded attempt to carry out an independent analysis of the Presque Isle issue is a memorandum (Chapter 8) by Mr. D. Bellinger of that department and also secretary of the SJRB Board. In his memo, Mr. Bellinger suggested the possibility of using the model developed by the Acres study to test the effects of proposed pollution control measures by Maine in the Presque Isle and Aroostook sub-basins; as well, he made the suggestion that since it would take some time before these measures were implemented (he was referring primarily to the regional treatment system, to be discussed below) it was advisable to
continue a strict programme of monitoring the Presque Isle as it enters New Brunswick. Another point of note in this memo is that Mr. Bellinger complained that Maine formulated its proposal without consultation with Canadian officials.

However, the position of the Canadian federal government with regard to this issue was clearly articulated within the framework of the Canada-New Brunswick Agreement and especially during several SJRB Board and Committee meetings.

One may recall (Chapters 7 and 8) that at the December 1971 Boston meeting, American officials requested of their Canadian counterparts that they provide both to EPA and Maine's DEP a list of desired use designations and water quality criteria for the Presque Isle stream as it enters Canadian territory. The Canadian reaction was to establish a federal-provincial "Presquile River Water Quality Committee", reporting to the Chairman of the SJRBB, Mr. R. C. Hodges who was also chief federal negotiator with regard to the Presque Isle issue.

After analyzing the problem at a meeting in late December, 1971, this Committee unanimously recommended the following measure (Chapter 7):

1. Canada should approach U.S. authorities in terms they understand, i.e., Maine's own stream classification;
2. Given the circumstances and the Presque Isle stream situations, a "B-2" classification for this stream would meet the Canadian requirements;
3. Since it would take some time to achieve that water quality level (B-2) in the stream, it was important that Maine should adopt a contingency plan to avoid a repetition of the 1968 "catastrophe."
4. Canada should be advised of the detailed schedule proposed by Maine to upgrade the stream to class B-2.
5. Finally, the Committee recommended that
New Brunswick should open negotiations with Maine with the aim of obtaining the above described objectives.

However, when the recommendations were evaluated at a SJRB Board meeting, Mr. Hodges pointed out that from the perspective of the Canadian federal government, Maine's stream classification was unacceptable for international negotiations, because each state did not have an identical system. Thus, Mr. Hodges concluded, to avoid misunderstanding, Canada should define its water quality parameters requirements in numbers. As a result, the Presque Isle Committee had to prepare new recommendations translating the B-2 requirements into specific parameters and specifying desirable uses for the Presque Isle in Canada.

It is important to point out that Mr. Hodges (and presumably the federal government), was especially concerned with the outcome of the Presque Isle negotiation setting a precedent for further negotiation of water quality issues along the border. Evidently he, as well as other federal and provincial negotiators, were also concerned with keeping the Presque Isle and the Frasers' issues separate. This can be deduced from his statement that although they were well aware that the Frasers' Edmundston mill was the worst polluter of the international section of the SJR, they did not want to complicate the international discussions by opening that "can of worms." Their major concern was that water crossing the

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7 Mr. R. C. Hodges, pers. comm. July 17, 1980.
international border should have its quality unimpaired.

Development Of The United States Position

In Chapter 11 we pointed out that while in New Brunswick pollution control was essentially a closed bureaucratic process, in Maine the process was definitely more open and political. This difference is also reflected in the way Maine and United States players processed information for decision- and policy-making purposes in the case of Presque Isle pollution.

As far as technical-economic water quality information is concerned the two principal agencies responsible for SJRB matters were the DEP and NMRPC. Both EPA and the Corps of Engineers were not directly involved in water quality surveying and planning. Their activities, especially EPA's, were more related to pollution control enforcement.

While in the New Brunswick part of the SJR basin, the SJRB Board did play an important role in coordinating information processing, there was no institution in the Maine side which played that role. The DEP was, until late 1972, severely understaffed and under-funded, while the NMRPC did not have either funds of its own or jurisdiction over water quality matters in the whole Maine part of the basin. Thus, it was only after EPA designated the NMRPC as the agency responsible for carrying out the NATO-CCMS related comprehensive planning exercise for the U.S. sub-basins (subject to be explored further

* As we have seen (Chapters 5 and 6), the Corps of Engineers was only marginally involved in the Frasers' issue.
below), that the possibility arose of developing the basin-wide goals necessary for this type of information processing activity.

The Aroostook-Presque Isle Regional Treatment Plan: As we have seen in Chapter 7 the idea of a regional treatment system for the Presque Isle stream and Aroostook River sub-basins originated in 1967 as a response to a more severe and well-defined water quality problem in those two sub-basins. Industries and communities in the area were having difficulty in complying with increasingly stringent pollution control regulations, and water pollution was a constraint upon bringing in new industries to Aroostook county.

The development of the idea into a preliminary proposal for planning and designing the regional treatment system was also the product of local initiative. Only after this preliminary proposal had been prepared by consultants for the NMRPC with financial aid from local industries and communities, did the Committee seek funding for detailed studies from state and federal agencies and the necessary support of political figures.

Therefore it is unlikely that Canadian protests regarding Presque Isle pollution, before and after the 1968 fish kills, played an important part in the development of this plan. Nonetheless, the unusually large grant (for this type of project) given in late 1970 to the NMRPC by EPA to develop the regional treatment plan was most probably influenced by Canadian pressures (Chapter 7) on the U.S. federal government.

The regional treatment system plan was prepared almost entirely by consultants to the NMRPC. It consisted of two main
parts: (1) preliminary but sophisticated design and cost analysis of a large number of discrete as well as incremental alternatives for treatment of industrial and domestic wastes of the two sub-basins; (2) an economic, financial and institutional evaluation of these alternatives. When the plan was completed in March 1972, it recommended a system which involved the combined treatment of industrial and municipal wastes in several communities and in a central facility, as well as inter-basin transfer of water and wastes (see Figure 3, Chapter 8.) The plan promised to provide a permanent solution to the difficult problem of overuse of the small assimilative capacity of the Presque Isle stream.

However, implementation of the plan involved important private and public policy decisions. First, success of the system was dependant upon the financial support of local industries and their willingness to participate in a collective venture. Second, it required legal backing because the inter-basin transfer of water and wastes was in potential violation of both Maine laws and the 1909 Boundary Waters Treaty. Thirdly, the novel type of institutional structure necessary to manage the system required official approval of Maine's legislature. Fourthly, the system was conceived on the assumption that large federal subsidies would be available, but as we have seen, new federal legislation (early 1972), practically eliminated the possibility of subsidies for this type of joint venture. Finally, the system was based upon the principle of managing a stream's assimilative capacity; however, the concept would be considered illegal in the light of the new federal legislation.
requiring **zero** discharge by 1985.

Thus, while designing the system was a rather complex information-processing task, sorting out all those constraints and uncertainties was a much more demanding one. The implementation of the plan no doubt involved a great deal of bargaining (to be discussed in Chapter 13), but it also involved a substantial amount of non-hierarchical information processing by private and public players. Unfortunately, however, this bargaining and information processing took place largely after the signing of the SJRB Agreement in September 1972 and thus is beyond the time period considered by this study.\(^{10}\) However, it is apparent (Chapters 7 and 8) that information generated by NMRPC and EPA showing that the plan when implemented would enable the United States to meet its obligations to Canada under the 1909 Treaty played an important role in the final implementation of the plan.\(^{11}\)

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\(^{10}\) The Northern Maine Regional Treatment System was officially approved by both DEP and EPA in December 1972. The plan started being implemented in 1973 after Maine's Legislative Assembly passed a bill authorizing the formation of the Aroostook-Prestile Treatment District.

\(^{11}\) This information evidently did not influence the reaction of those industries which were reluctant to join the regional treatment system (Chapter 11.)
DEP's Analysis Of The Presque Isle Pollution Problem: At least up to 1972 Maine's DEP did not have either the financial resources or the necessary technical expertise to carry out comprehensive water quality planning in the state, although it did include among its responsibilities the carrying out of water quality surveys for purposes of stream classification, issuance of discharge licenses and monitoring of compliance. In any case, it appears that it saw itself primarily as a regulatory and enforcement agency.

As we have seen (Chapter 7) the response of Mr. W. Adams, DEP Commissioner, at the Boston Meeting, to the Canadian officials' demand for corrective actions re Presque Isle pollution was to ask them to specify what in-stream quality they desired for that stream at point of entry into New Brunswick, so that DEP could determine: (a) what controls could be effectively applied; (b) short-term regulatory measures; and (c) measures leading to the upgrading of the stream's classification.

After the meeting, Mr. Adams instructed his staff to carry out an in-depth review of the whole Presque Isle issue, including the latest developments re the Aroostook-Presque Isle regional treatment system. Early in 1972, thus after a fairly expeditious analysis, the DEP arrived at the following conclusions (Chapter 8):

(1) All alternative solutions to the problem (including the NMRTS plan) had some physical, technical or legal implementation problems.

(2) There were a number of historical, legal and technical problems which could prevent an in-stream classification higher
than the existing "C" from being achieved (remember Canadians had asked for the equivalent of B-2.)

(3) In view of these uncertainties, they recommended that: (a) the existing "C" classification be maintained for at least an additional year; (b) within this year DEP would do everything within its power to see that that classification would not be violated. (c) simultaneously, DEP would carry out further studies of the Presque Isle assimilation capacity.

As may be recalled, Maine's Board of Environment Protection approved the above recommendations, which were then forwarded to EPA, with DEP's "wish that both the United States and Canadian governments accept the logic of the proposed approach to seeking an answer to this very serious problem."

Notice that, pressured by Canadian officials, and despite the constraint of limited technical and financial resources, DEP was capable of conducting an in-house analysis which provided sufficient information to answer promptly the Canadian request. The analysis was certainly incremental, in the sense that it did not consider any alternative differing drastically from the status quo (except, perhaps, that it did consider the NMRTS, which was certainly a radical new solution although still on the drawing board.)

Not surprisingly, the recommendations resulting from the analysis were also in favour of grandualism in terms of implementation measures. The reasons for DEP's incremental analysis approach, as opposed to the NMRPC's innovative and comprehensive approach was due to a number of factors including its lack of resources to carry out synoptic analysis. However,
one suspects that it was probably due more to that agency's perception of the nature of the policy- and decision-making system in Maine.

As we have seen, the legal and preferred ways of obtaining information for decision-making concerning water quality issues in Maine are public hearings and legislative debates. At the hearings information generated by the investigation and planning activities carried out by a regulatory agency such as DEP (and EPA) is only one of the inputs taken into consideration. Despite their shortcomings, public hearings do provide the opportunity for a number of other interests besides the polluter and the regulatory agency to be represented and influence decisions. The result is that the process is more open and democratic, for, as the various hearings related to the Presque Isle and the Fraser Companies issues demonstrated, there is even opportunity for interests across the border to be represented.

However, there is also a tendency for the issues to drag for years without being clearly resolved. Thus, it is not surprising that, despite the approval by Maine's Board of Environmental Protection of the DEP recommendations to upgrade the Presque Isle and other measures, it was not until 1975 that the issue was brought to a public hearing. Furthermore, even after a favourable recommendation (to upgrade the stream to "B-1") from the Board at the hearing, several months later the 107th Maine Legislature rejected that recommendation, and the stream remained classified as "C".
Exclusion and Inclusion of the IJC

In the SJRB Affairs

Development of the Canadian Position

As one may recall, Premier Robichaud's first reaction to the Presque Isle 1968 fish kill was to send a telegram to federal minister Jack Davis suggesting that the matter be brought to the attention of the IJC. Mr. Davis, however, declined to accept the suggestion on the grounds that Canada should first develop good background information on the subject.

It seems evident that Mr. Robichaud's suggestion to refer the matter to the IJC was the result of a precipitate, quasi-emotional reaction, for four months later he withdrew his suggestion, apparently on the advice of his Minister of Natural Resources, W. Duffie, who argued that to refer the matter to the IJC would be against the province's interest.

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11 Notice that Mr. Davis was not objecting to IJC involvement per se. He later on (Chapter 10) defended IJC involvement.

12 Actually Mr. Robichaud is said not to have felt strongly one way or the other about IJC involvement. Mr. L. Brandon, telephone interview on July 22, 1980.
Exclusion of the International Joint Commission from the New Brunswick 1969 Brief: As we have seen in Chapter 7, Mr. Duffie's opinion was based upon recommendations of a task force that he himself had created to prepare a brief on the issue for the Department of External Affairs. Members of this task force were drawn from the same provincial group in charge of developing supporting material and negotiating an agreement with the federal government on the SJRB (Chapter 6.) Thus, it is not surprising that the task force should justify its recommendation to exclude the IJC from the Presque Isle negotiations on the grounds that what was needed was a "whole new approach," a "complete basin approach" and that a permanent solution for New Brunswick-Maine boundary water problems could be properly worked out only after "having established a good Canadian position on these international waters." The task force added that once the Canada-New Brunswick Agreement had been finalized, then they would be "in a position to create a river basin compact or joint management agreement with the United States and Maine."  

It was not difficult for those officials preparing the Brief to find a number of reasons for excluding the International Joint Commission from the Presque Isle affair. First, they argued that in their view the IJC's poor performance in the case of the boundary pollution of the St. Croix (originating mostly in Maine) did not justify its intervention  

13 In Chapter 7 we saw that a reference made in the first draft of the Brief to the possibility of the IJC being asked to assist in the discussions leading to such an agreement was dropped in the second draft.
in the Saint John. Second, they suggested that there was a possibility that Maine could retaliate by referring Canada's pollution of the international section of the Saint John to the IJC as well. Finally, they pointed out that bringing the International Joint Commission into the picture would most likely imply a delaying in action that industries and other polluters in Maine would prefer.

The way in which the IJC was excluded from the New Brunswick 1969 Brief on the Presque Isle can be interpreted as the result of a gradual process of group information processing. According to Mr. Leo Brandon, coordinator of the group, each version of the Brief drafted by him was subject to discussion and revisions by, among others, Mr. Roy Tinney (the Chief federal negotiator re. Canada-New Brunswick Agreement), Mr. Ted Fellows (Chairman of the New Brunswick Water Authority), Mr. J. J. Bates (former Chairman), and Mr. John C. Smith (Assistant Deputy Minister, New Brunswick Department of Natural Resources.) Among these men only the first one was favourable to some IJC involvement.¹⁴

The justification for the total exclusion of the IJC in the final version of the Brief emerged during the preparation of the Brief which was, in effect, a collective exercise in information processing. The task force also appears to have preferred to deal with one problem at a time, i.e. giving priority to the Canada-New Brunswick Agreement and then moving on the Presque

¹⁴ Telephone interview, July 22, 1980.
Isle affair. However, the final or actual decision of excluding the International Joint Commission from the negotiations with the U.S.A. must have been made by top level political decision-makers such as Mr. Robichaud, Mr. Davis, and the Secretary for External Affairs, for, as we have seen in Chapter 7, they did hold negotiations on the subject.

**Inclusion of the IJC in the 1972 SJRB Agreement:** As we have seen in Chapter 10, the Canadian decision to have a reference to the IJC simultaneously with the 1972 SJRB Agreement was made by officials of External Affairs and high level officials of the Department of the Environment.

A review of Chapters 9, 10 and 11 shows that New Brunswick officials maintained a consistent attitude against IJC involvement in SJRB matters since the preparation of the last version of the 1969 Brief. For instance, at the May 15, 1972 pre-session meeting with Canadian federal officials (Chapter 10) they argued strongly against the suggestion made by some high level External Affairs and Department of the Environment officials that if a new institution was to be created in the SJRB it should be within the International Joint Commission framework. They pointed out that for ten years or more the New Brunswick government had been opposed to the involvement of the Commission in its pollution problems with Maine, with the exception of the reference on the St. Croix, which in their view had been an exercise in futility.

The SJRB Board apparently had a similar position regarding IJC involvement although apparently for different reasons (Chapter 11.) The Board as a whole was concerned with the
possibility of the Commission interfering in their work. It "felt that a reference at that time to the IJC could result only in delay while that body established a Board ... we were 'afraid' ... that the IJC would pick up our ball and run with it. We really wanted to accomplish something and we felt that we could accomplish more and sooner using our own institution than calling in the IJC". On several occasions, Mr. Hodges, Chairman of the Board and representative of the federal Department of the Environment (WMS) was of the opinion that the IJC should be confined largely to a judicial role. He was strongly against trying to give the Commission, or its engineering boards, management responsibilities, a point he made forcefully when reacting to the proposal prepared by the consultants to the NMRPC (March 18, 1971 meeting.) In his view the Commission had not been, nor should it be, involved in water planning and management per se; however, he was in favour of negotiations and developing bilateral institutions for water planning within the framework of the Boundary Waters Treaty and the IJC. Mr. R. Millest, head of the Water Quality Branch - DOE, in turn, was more clearly against IJC involvement, for, as may be recalled, he stated at the Fredericton NATO-CCMS Symposium (October, 1971)

15 Mr. J. Henderson, pers. comm., August 1, 1980. He also suggested that both NMRPC in Maine and Water Management Service (DOE - Ottawa) had a similar view.

16 He stated later that "it was in fact preposterous for the consultants to base so much of their proposal on an assumption that the IJC would have some kind of implementation function." Pers. comm., July 17, 1980.

17 Ibid.
that there was a need for creation of new institutions capable of a commitment of implementation which the IJC was incapable of providing.

On the other hand, Dr. Roy Tinney, a high level official in DOE and former chairman of the SJRBB (Chapter 9), was in favour of a role for the IJC in the SJRB similar to the one it was going to play in the Great Lakes, which involved water quality planning, management and especially monitoring under the Commission's supervision. His argument was that new institutions could be viewed by the public as delaying tactics, instead of facing the real and immediate problems, and, further, that with political will the existing institutions were adequate.

Officials of the Department of External Affairs were much in agreement with Dr. Tinney. In addition, they pointed out that the idea of creating a new institution for the sake of the NATO-CCMS exercise was not very sound, for the purpose of the project should be to show NATO members how two countries could solve common pollution problems, not the creation of new institutions per se. In fact, they thought the IJC was an excellent case study for the CCMS project.

In view of this divergence in opinions among Canadian federal and provincial officials it is not surprising that those in charge of summarizing all the views and arriving at a unified position had great difficulties.

One may recall, for example, that in a preliminary version of the report of the Fredericton symposium it was concluded that there was general agreement among participants that there was a need to explore new arrangements to improve international
collaboration between the U.S.A. and Canada. While the final and official version of the same report, prepared by a DOE official, stated that no consensus could be reached either as to what kind of institutional arrangement was necessary or whether new arrangements were necessary at all.

There are even better examples of the difficulties the drafter of a Canadian position paper had in gathering differing views and attempting to formulate a consistent if not a unified position. For instance, before meeting with Americans on May 16, 1972 to discuss their proposal for a SJRB "Joint Working Group" outside the framework of IJC, Mr. Peter Wilson, an official of the Bilateral Relations Branch (DOE), tried in vain to write a Canadian position paper in response to the U.S. proposal (Chapter 10.) In his draft paper Mr. Wilson attributed a common view amongst federal officials, saying that they envisaged "activities of any Working Group leading quickly to submission of a reference to the IJC seeking the Commission's assistance in developing water quality objectives in the international section of the Saint John River" (Chapter 10.) However, other DOE officials (most likely Mr. Millest), objected to this wording and the paper was shelved.

The May 15, 1972 Canadian pre-session meeting, which took place a few days after Mr. Wilson's paper was prepared, clearly demonstrated that there was no clear consensus amongst federal officials regarding bringing the IJC into the picture. Yet, when he drafted the summary minutes of the meeting the same Bilateral Relations Branch official felt obliged to arrive at some general conclusions which in his view represented a consensus among
those attending this meeting. He stated in his report that Canadian officials had agreed that the IJC provided a suitable framework to deal with boundary waters problems, and that the role the Commission was soon to play in the implementation of the Great Lakes Agreement was more in the interest of Canada than the new approach proposed by the Americans.

However, we know (Chapter 10) that the above was only the opinion of certain high level DOE officials (such as Dr. Roy Tinney and perhaps K. C. Lucas) and the Department of External Affairs, and that the only thing Canadian officials had really reached a consensus on was that they should not reach any agreement with the Americans at the meeting the next day. No wonder, then, that for the May 16 meeting with American officials the same issues came to the surface again at the meeting. The high level federal Canadian officials did indicate to their American counterparts that a simultaneous reference on the SJRB was a pre-condition for them to accept the creation of any new bilateral institution for that basin. Their views were expressed quite unambiguously - any new institution should be primarily for the purposes of information exchange; specific matters would be referred to the IJC for consideration and recommendation. However, Canadian officials failed to show a consistent view.18

The preparation of a report summarizing what transpired at the May 16 meeting and articulating a Canadian position, was

18 We shall explore how the Americans tried to take advantage of this disagreement among Canadians in Chapter 13.
again the responsibility of the Bilateral Relations Branch. This time, Mr. W. F. Stone, head of the Branch, took up the difficult task himself.

Mr. Stone argued in his report for a positive response to the United States officials' request. He stated that in his view an agreement with the Americans on a new institution for the SJRB was acceptable to all Canadian officials' interests if the new institution had limited responsibilities: "(a) essentially for the exchange of information; (b) consultative in nature; and (c) provide periodic reports to the IJC and NATO-CCMS."

Mr. Stone's suggestions were quite literally accepted by those in charge of redrafting the U.S. proposal for a "Joint Working Group" and no new collective meeting such as the ones on May 15 and 16 took place. However, as we shall explore further in Chapter 13, this may have happened only because New Brunswick officials were almost completely kept out of the process of drafting and redrafting the two main documents concerning the 1972 Canada-United States SJRB Agreement, namely the "Exchange of Notes" and the "Reference to the IJC" (Appendix VI.) New Brunswick officials were apparently taken by surprise when in the very last stage of the negotiations they were asked to endorse the final versions of these two documents. ¹

As we have seen in Chapter 10, at one point in the process of exchanging different drafts of the documents, U.S.A. officials attempted to restore some of the broader

¹ Mr. J. Henderson, pers. comm., August 1, 1980.
responsibilities they had envisioned for the new institution, but were faced with even greater opposition from Canadian federal officials, who then insisted on a greater role for the IJC. They demanded that:

(1) The IJC be given a broader mandate in the agreement to make recommendations regarding any kind of activities in the SJRB and not only with regard to institutional and procedural questions, as the Americans had suggested in their revision of the Canadian proposal for a reference to the IJC;

(2) The IJC be given the freedom to make recommendations based on its own assessment of the situation, rather than be limited to the reports of the investigations to be carried out by the new institution;

(3) Provisions should be included in the agreement to ensure that the International Joint Commission would receive as much information as possible about the activities of the new bilateral organization.

Actually, at one point, officials of the Department of External Affairs stated that they would rather dispense with the new institution altogether and have just a reference to the IJC, which would then serve as a basis for further negotiations regarding the SJRB (Chapter 10.) Apparently, they thought this would be a sufficient Canadian contribution to the NATO-CCMS exercise.

It appears, however, that Canadian federal officials at the assistant deputy minister and higher levels were still reluctant to accept the wisdom of the new agreement with the United States, which had been worked out entirely by officials at a
lower level (division and branch heads.) For in his memorandum to Mr. A. T. Davidson (Assistant Deputy Minister, Policy Planning and Research Service, DOE) Mr. Stone, among other reasons, justified the agreement by saying that the "IJC would be in a better position in a region where it has neither been active nor successful." (Chapter 10.) This interpretation is reinforced by the fact that the above quotation was deleted from a memo having almost identical wording addressed to the federal Interdepartmental Committee on Water.

In addition, it appears that for Mr. Jack Davis, Minister of the Environment, the highest ranking Canadian official directly involved in the agreement, the inclusion of the IJC in the agreement was important, for he stated to the press (Chapter 10) two days before the agreement was signed, that the IJC could get involved at any time, although only if problems arose that couldn't be handled by planners of both countries. The possibility that he was in part responsible for the greater role the IJC ended up having in the agreement can be supported by his other statement that the United States "doesn't like the IJC because Canada had an equal voice with them in decisions." This could, however, be interpreted as a typical statement by a politician trying to gain a favourable impression from nationalistic voters.
Development of the United States Position

Early Developments: We have seen that one of Senator E. Muskie's first initiatives after he became involved in the Presque Isle transboundary pollution affair was to urge Maine's DEP (then called WAEIC) to request the IJC to investigate the problem. Apparently, members of the United States section of the IJC discouraged him from doing so, because they felt that if there was to be a reference it should address pollution problems in the whole basin.

However, Senator Muskie's later abandonment of the idea was probably due more to his visit to Fredericton in March, 1969, during which New Brunswick officials were able to convince him that what was needed was a new bilateral arrangement to manage pollution problems between the state and the province. He was apparently in favour of the idea, but warned that he found it difficult to believe that either country would agree on the creation of any supra-national institution.

Nonetheless, neither the idea of a reference to the IJC nor the idea of a new institution for the SJRB found fertile ground either at the state or federal levels of government in the U.S.A. It appears that the agencies having jurisdiction and responsibilities on the problem were satisfied with the way the problem was evolving and the performance of existing institutions.
A Solution in Search of a Problem: Then, in early 1970, Mr. Harry Blaney, a member of the White House staff responsible for coordination of the American inspired NATO-CCMS programme, suggested that Canadians become leaders of a "Inland Waters Pollution Pilot Project." Mr. Blaney, who, according to some American and Canadian officials, was very ambitious and aggressive regarding the CCMS project, further proposed that Canadians and Americans join in some kind of institutional arrangement to demonstrate to other NATO members how two nations could cooperate in the environmental field. As well, he pushed for a project both innovative and visible in the eyes of the public.

Thus, the question became one of finding a pollution problem along the Canada-U.S.A. border in need of an institutional solution. According to Dr. Durie, the obvious choice from the point of view of Canada was the SJRB. It was not difficult for him to justify the choice with a dozen reasons (see Chapter 9.) His initial proposal was for a public participation programme on the Canadian side of the basin, but he was pressed by United States officials and apparently also by officials of other NATO countries to broaden the scope of the project.

By September 1970, the initial internal opposition from the SJRB Board and Committee, as well as from the federal Department

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20 Opinions, for example, of Messrs. Ed nef (State Department) and Dr. R. W. Durie (then Canada Department of Energy, Mines and Resources.) Personal interviews, see Chapter 9
of Fisheries, had been overcome, and Canadians (or, more specifically, Dr. Durie and Mr. Hodges) were ready to discuss with American officials (chiefly Mr. Erickson of EPA and Harry Blaney, by then most closely associated with CEQ) their contribution to the inland waters pollution project. The position of those U.S. federal officials was that the most appropriate project for CCMS was an exercise in comprehensive, interjurisdictional river basin planning with emphasis on institutional aspects.21

In March 1971, to the satisfaction of U.S. federal officials, the Canadian proposal for a pilot project on "mechanisms and instruments for effective inland water quality management, especially in an interjurisdictional setting" was endorsed by the other countries participating in the NATO-CCMS project. The next step for the American officials was to find an agency in Maine capable of carrying out the comprehensive planning programme called for by their participation as co-pilot country in the NATO-CCMS Saint John River Basin project.

When Messrs. Albert Erickson and James Meek of EPA asked Mr. James Barresi, Director of the Northern Maine Regional Planning Commission, to consider the possibility of the Commission becoming the U.S.A. counterpart of the Canadian SJRB

21 It is of note that it was during one of those initial meetings that Canadian and American officials found "an original aim" for the case study: "to develop a situation that would encourage U.S. action on a source of pollution to Canada,"... and... "to put an emphasis on institutional aspects of international management that we had been attracted to in the beginning as a focus for this study." Chapter 9.
Board in a comprehensive water quality planning exercise for NATO-CCMS, they knew that the Commission had little experience with the subject.

Besides being responsible for the coordination of the consultants planning for the Aroostook-Presque Isle regional treatment system, the only other activity in the water resources field in which the NMRPC had been involved, consisted of planning for community water supply and waste disposal. Yet, Messrs. Erickson and Meek reasoned that the NMRPC had a much better chance of properly and expeditiously carrying out the planning exercise than Maine's Department of Environmental Protection, because at that time the latter, besides being understaffed and underfinanced, considered itself primarily a regulatory rather than a planning agency. In addition, they thought the Commission had demonstrated itself to be a dynamic organization capable of carrying out a task (planning for the regional treatment system) in a time constraint, this was what they needed.  

Thus, as opposed to its involvement in planning for a regional treatment system which, as we saw above, was motivated by a real need to solve an urgent problem, the NMRPC's involvement in comprehensive river basin planning resulted from the EPA's desire to find a problem to which to apply a specific type of solution, namely, comprehensive river basin planning.

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22 Mr. A. Erickson, personal interview, November 13, 1973. In addition, he stated that when approached on the subject, Mr. Adams, DEP's Commissioner, did not show much enthusiasm for the project.
However, the Commission approached the solution to the problem with its usual pragmatism. It contracted with the C. Jordan Company, the same consultant responsible for the regional system plan, to prepare a proposal for comprehensive planning in the U.S. sub-basins of the Saint John. Expectedly, the consultants gave great emphasis to mathematical modeling and economic analysis of the water quality problem. They hoped that all of the technical studies would be completed by September 1972, and that the results of those studies would be actually used in the negotiation of water quality objectives with Canadian authorities, not only regarding transboundary streams, but regarding the international section of the SJR as well.

Apparently because of difficulties in fitting the project within new U.S. federal legislation, it took more than a year for the project to be approved by EPA (in April, 1972.) It was evident then that comprehensive planning activities did not have much bearing upon either the Presque Isle or Frasers’ issues up to 1972, or upon the negotiation of the SJRB Agreement proper. While carrying out the initial water quality surveys in the upper SJRB, the consultant did discover that there was a siltation problem originating in Quebec which was affecting Maine. This information was then used by the Americans in the

23 Actually, the consultants had to deemphasize this aspect of the plan because new federal legislation requiring compliance with the strict effluent limitations made the use of water quality models less important.
negotiation of the September 1972 Agreement with their Canadian counterparts. It is interesting to note that as far as institutional arrangements are concerned, the original proposal prepared by the consultants on behalf of the NMRPC for EPA, called for involvement of the IJC at the international level (Chapter 10) while the two regional/basin planning agencies - NMRPC and the SJRBB, were assigned the responsibility of carrying out independently, but concurrently coordinated, water quality planning programmes. From the consultant's point of view, the international arrangements proposed were rather unique in the international river basin field, and thus would fit well into the NATO-CCMS project.

The initial consultant's proposal was developed without consultation with either EPA or Canadian officials. One may recall that at the March 18, 1971 meeting between members of the SJRBB and NMRPC, Mr. Barresi stated that the purpose of the gathering was to find out whether the planning programmes on each side of the border were going to be complementary and in tune. He stressed that although the primary objective of the planning programme was to make a contribution to the CCMS exercise, the Commission did not want to make it an academic exercise.

As we pointed out earlier, the Canadian participants did not have any objections to the plan, except that Mr. Hodges thought that the consultants were assuming too much about the role of the IJC (by giving it a "management function") and that Ottawa preferred to see the IJC in its traditional "judiciary" role. In the view of the consultants, the IJC's role was a
question requiring early resolution; while Mr. Barresi pointed out that in the case of the SJRB, IJC's concerns were too narrow.

However, it was not until the first weeks of 1972, when EPA was in the last stages of approving the NMRPC comprehensive planning proposal, that the name of the IJC was deleted from the proposal, and replaced by a new institution, tentatively named "International Policy Group." This was done through a direct request from EPA officials to the NMRPC.

Since, as we know, U.S. officials were already pushing for SJRB agreement to take place at the September, 1972 NATO-CCMS Symposium in Maine, it is evident that the results of the planning exercise and particularly those of the institutional studies to be carried out and completed much later, could not be used as input to the negotiation of that agreement with Canada. Thus, the action of EPA officials in February, 1972 to remove the IJC from the NMRPC's comprehensive planning proposal could only be interpreted as one of concern for consistency, not that they thought the planning activities would influence current negotiations.\(^2\)

\(^2\) This interpretation is reenforced by the fact that copies of the NMRPC proposal to EPA were actually distributed at the NATO-CCMS Symposium at Fish River Lake, in September, 1972, when the Agreement was signed.
What Kind of An International Agreement?: The first opportunity U.S., local, state and federal officials had to articulate their ideas on the kind of bilateral river basin institution they had in mind for the SJRB in connection with the NATO-CCMS project, was the October, 1971, Fredericton Symposium.

First, it appears that for the Canadians the objectives of the Symposium were limited to discussions of comprehensive river basin issues in general, to review the existing situation in the SJRB, and to reach an agreement on the organization for the CCMS project. On the other hand, most American officials (except perhaps State Department representation) the Symposium had also the purpose of addressing real issues concerning decision-making and institutional design for the SJRB.

There was apparently a general consensus at the Symposium that it was necessary to make the process of decision-making and policy formulation for the Saint John and other international basins more rational.

However, it was the consultants to the NMRPC (members of the same firm in charge of preparing the proposal for EPA) who argued strongly in favour of a process approaching a purely rational decision-making model (Chapters 2 and 9.) Their main concern was with having a structure in place capable of generating the required information for decision-making (and regarding, for instance, international water quality standards, management options and the crucial economic allocations;) as well, they stressed the need for a new "joint Canada-United States planning group," funded to coordinate planning activities (including the development of predictive basin-wide water
quality models) and to make allocative decisions to be made on each side of the basin.

Mr. Albert Erickson, chief U.S. delegate to the Symposium, chose a more pragmatic approach to convey to his Canadian counterparts with regard to the kind of institutional arrangements he (and presumably most of his colleagues) had in mind for the SJRB. First, he stressed that the CCMS exercise should have "meaning and bearing on our mutual problem with the Saint John River Basin, simultaneously." Aware of agency rivalries and different perceptions of the problem in each country, he stated that there was a need to resolve inter-agency differences before reaching an international agreement. He further expressed four kinds of concerns on which he thought Canadians were also in agreement.

(1) There was a need for informal discussions among officials of the two countries with regard to general and specific basin problems; (2) these discussions should lead to something like a "memo of understanding" between, say, two principal agencies in each country, which would the pursue the task of organizing a bilateral group responsible for carrying out technical studies, negotiating goals to be achieved, as well as for the coordination of management activities; (3) The appropriate level for representation on this board would be somewhere between high level administrative and technical levels; and (4) the work of this board could lead then to a formal bilateral agreement.

Finally, Mr. Erickson thought most American and Canadian participants were in agreement that they should try something
different in terms of bilateral arrangements for the SJRB, and use the experience to demonstrate to NATO members how well it would work.

As we have seen earlier, it appears that not all Canadian representatives were in agreement with all these points. In particular, they seem to have disagreed on the need for bilateral institutions on a river basin basis, as opposed to one serving the entire boundary, also some felt that there was an urgent need for a new institution for the SJRB, while others emphasized the need for implementation measures and an immediate attack on severe pollution.

**Drafting - Redrafting and Building a Compromise:** As we have seen, Mr. W. Mansfield was given the responsibility of drafting the first concrete U.S. proposal for a Canada-United States "Joint Working Group" (JWG), based upon the suggestion made at the Fredericton Symposium, as well as later discussions between EPA and CEQ officials.

The first draft of the U.S. proposal implied rather broad powers and responsibilities for the JWG. In addition to its information exchange function, the Group would be given the power to make recommendations to relevant authorities in both countries concerning water quality in the SJRB. It was also supposed to provide the necessary mechanism for consultations, joint planning and management to maintain water quality objectives. As far as membership was concerned, the document expressed, perhaps for the first time, the U.S. officials desire, not only that the Group be made up of federal, state, provincial and local agency representatives, but in addition
that they should represent their respective authorities. Thus, as opposed to the conventional IJC's "Boards of Investigation," members were to serve not only in a professional capacity but to have delegated decision-making powers as well. This provision was supposed to permit the concerned decision-makers in one country to conduct their affairs with better knowledge of both what their counterparts across the border were doing and of how their actions might affect them. There was no mention either of the IJC or of the NATO-CCMS exercise.

As we have seen earlier in this section, Canadian officials were divided on the merits of the U.S.A. proposal, but the main objection to the proposal came from External Affairs and high level DOE officials over the total exclusion of the IJC from the terms of reference for the JWG. The main concern of both New Brunswick and SJRB Board officials was with the possibility of the new institutions interfering with their domestic planning programmes. They were opposed to the U.S. idea of "unified" planning, and in any case preferred a gradual approach to the problem.

As a reaction to these objections, Mr. Mansfield drafted a second version of the proposal in which he attempted to take into consideration some of the objections. In this new version, the JWG no longer was entrusted with responsibility for joint planning and management, nor did it have the authority to recommend water quality objectives. But, again no mention is made either of the IJC or of NATO-CCMS connection, although, as in the previous draft it is stated that the Group would conduct its work in a manner consistent with the 1909 Boundary Waters
Treaty.

Nonetheless, a provision was added to the original text stating that the JWG would serve to enhance rather than replace existing formal and informal channels of communication among federal, state, provincial and local authorities.

As we know, the major opponent to IJC involvement in the agreement was Mr. Harry Blaney of CEQ. As the chief U.S. official responsible for the success of the NATO-CCMS exercise, he contended that such an involvement would diminish the "show-off value" of the exercise. Mr. Albert Erickson of EPA, although not as adamant as Mr. Blaney, also preferred to keep the IJC out. They both "wanted action" and they wanted CCMS to get credit for it. Consequently, they tried hard through personal communications to persuade Canadian officials of the "wisdom of establishing a direct bilateral mechanism rather than pursuing a reference to the IJC which had been suggested by Canadian External Affairs officials."

In view of the insistence by Canadian officials on a reference to the IJC and its inclusion in the agreement, U.S. officials asked Messrs. Mansfield and E. Nef (U.S. State Department) to redraft the latest version of the U.S. proposal for the JWG and the Canadian draft of the IJC reference. The emphasis of the U.S.A. counterproposal regarding the Agreement and the Reference was on public visibility for the new

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25 Mr. W. H. Mansfield, pers. comm., July 5, 1980. Mr. Mansfield referred to these gentlemen plus Mr. Barresi as the "CCMSers."

26 See discussion about this event in Chapter 13.
agreement. They proposed the creation of the JWG at the Maine CCMS Symposium in September, 1972, followed sometime later by a reference to the IJC on the SJRB. They justified this sequential approach on the grounds that attempting a simultaneous reference to the IJC at the Symposium would make meeting the proposed time schedule for signing the agreement (about four weeks) very difficult.

In addition, the new United States version of the text of the agreement included the following items, which represent a United States compromise:

(1) The name of the IJC was added to the term "relevant authorities" to whom the Group was supposed to report; (2) Based upon the Group's final report and recommendations, the IJC would make further recommendations to governments; (3) the group would not itself have management responsibilities; and (4) the activities of the Group were no longer stated as "consistent" with the 1909 Treaty, but rather under that Treaty.

However, U.S. officials insisted on the need to have an organization capable of coordination of on-going planning activities on both sides of the border to assure achievement of a unified approach to the basin's pollution problems. They also added in this new draft of the agreement a direct reference to who should be represented in the proposed bilateral institutions. These were, in addition to representatives of agencies of the governments of the United States, Canada, Maine, New Brunswick and Quebec, representatives of the Northern Maine Regional Planning Commission and the SJRBB.

As far as the Reference to the IJC is concerned, the
Americans proposed several important changes to the original draft prepared by Canadian federal officials. The U.S. version of the Reference emphasized: (1) The new institution was to be established directly by the two federal governments; (2) the IJC was not given a say in the appointment of members of the new organization (which was a normal procedure in the case of IJC Boards; (3) it was to make recommendations directly to relevant authorities in both countries as well as to the IJC (as opposed to IJC only;) and, (4) the questions addressed to the Commission for investigation and reporting were exclusively concerned with future institutional arrangements for the basin (rather than broad technical, economic and institutional aspects.) (5) The creation of the Committee was unequivocally attributed to the two governments' participation in the NATO-CCMS exercise.

One can see from the above that despite the fact that the new U.S. revisions of the two documents were drafted by State Department officials, they reflected more the determination of the "CCMSers" to reach an innovative and visible agreement with the Canadians in the eyes of NATO members and the public in general than the views of the State Department. Mr. W. Mansfield later stated that, as opposed to them (State Department officials), the CCMS group was "innovative, aggressive, and not bound by any knowledge of how U.S. -Canadian environmental relations were evolving." State Department officials, in turn,

27 Mr. W. Mansfield and most likely Mr. Ed Nef. Mr. Mansfield had actually been seconded to EPA at the time he drafted the documents.
"were operating in a context of a number of issues along the border. Primary among them was the Great Lakes Agreement. We were working with the IJC Mechanism here and in other places. We thought the pattern of cooperation evolving within this framework should be developed into a consistent whole."

Nonetheless, it appears that the new U.S. drafts were quite acceptable to the State Department and other "IJC oriented interests" because they "enabled the governments to pass the baton to the IJC easily if it were so decided later." In any case, as we know, the last amendments proposed by the United States were by and large accepted by the Canadian officials, although not without some reluctance. On two important points, though, the "CCMSers" did not succeed. First, they wanted the agreement to be at higher level ("Memo of Understanding") than the "Diplomatic Exchange of Notes" level which they obtained from the Canadians. Second, the reference to the IJC was simultaneously forwarded to each co-chairman of the Commission on the same day the Agreement was signed, rather than later, as those U.S. officials wanted it, thus diminishing the appearance of independence of the new Committee vis-a-vis the old Commission. On the other hand, in what may be considered a last diplomatic "twist," the official document on the Agreement stated that it was Canada which proposed the creation of the "Canada-United States Committee on Water Quality in the Saint John River" (Appendix VI), when we know that this was certainly

28 Mr. W. Mansfield, person. comm., July 5, 1980.
29 Ibid.
not the case.

**Last United States Effort to Call Attention to the Agreement:** The official press release by the two federal governments announcing the creation of the Committee was first drafted by U.S. federal officials and then revised by their Canadian counterparts. As we have seen (Chapter 10), the article was fairly straightforward and faithful to the official version of the agreement, although there is no mention of the Reference to the IJC.

However, the most interesting aspect of the press release is that it attempts to emphasize to the public the importance and newness of the Agreement.

First, it stated that, unlike the IJC and other existing organizations which are concerned with surveying and monitoring pollution after it has occurred, the new institution would be concerned with planning to prevent pollution from occurring, which is a misleading statement if one considers that in the case of the SJRB one can hardly imagine it receiving more pollution than it already was.

Second, it called attention to the fact that membership on the Committee emphasized local participation. Third, it stated that the creation of the Committee was timely for the NATO-CCMS Symposium, which was considering alternative international river basin organizations for dealing with water pollution. Well, we know that the NATO-CCMS exercise was the "raison d'etre" of the Agreement itself.
CHAPTER 13

DECISION-MAKING STRATEGIES AND INTERNATIONAL COOPERATION IN THE SAINT JOHN RIVER BASIN

As we have described in Chapter 2, analysts who use Analytical Paradigm 3 (AP3) consider public decision-making above all as an interactive social process. In this process, players pursue their own motives and implement their own objectives, not only by processing information in order to generate alternatives and predict their consequences, but also by actively pursuing adaptive, manipulative and sometimes coercive strategies.

In the analysis carried out in this chapter, the term strategy has two broad meanings, depending on the level of analysis. At one, higher level (national or subnational) the term "strategy" may be synonymous with policy itself, in the sense that it implies a general guideline to govern the future behaviour of subordinate units (i.e., players). At a lower level of analysis, a strategy is roughly equivalent to a move by an individual player (i.e., any concrete unit) in the course of interaction with other players.¹

The choice of a strategy by a player (any unit) is determined firstly by his own nature, i.e., his information processing capability, position and power relative to the other players in the policy-making arena; secondly by the constraints

¹ Notice that both these concepts of strategy are at variance with the uses of the term, either in game theory or in Lindblom's works. See Chapter 2.
imposed by the "rules of the game." As we have seen in Chapter 2, the "rules of the game" are essentially boundaries which control the behaviour of component units (subordinate players). They are either formal rules such as laws, acts, regulations, organization statutes, and so forth, or informal, such as the practically universal rule of reciprocity. Both form what is generally called the institutional framework of a social or political system. In short, the institutional framework distributes power and authority, it is to a large extent responsible for coordination of players' activities, and it imposes obligations and constraints, (e.g., in relation to coercion and deceit on the part of individual players). Thus, the institutional framework determines to a great extent which players get involved in the negotiation, formulation and implementation of public policies, as well as what action channels are used and the timing of participation and action.

The rules of the game may affect players differently. For instance, public collective players (e.g., a government agency) are, in general, more restricted in their choices of strategic behaviour than private ones (e.g., an individual or private firm), for, among other things, they are restricted by general rules of public or political accountability.

For purposes of analysis in this chapter, we shall adopt two classifications of players' strategies, each corresponding to the two broad meanings of the term given earlier, i.e., respectively "policy" and "move."

A classification of water resources politics developed by
D. Mann, based on the seminal work of T. Lowi to analyze conflict and accommodation between interest groups and national and regional governments, when they interact to formulate policy for a river basin issue, can serve as a general framework to classify the broad strategies used by national and subnational governments in the SJRB. Three categories of strategies can be distinguished: distributive, regulatory, and redistributive.

In the case of distributive strategy, a water resources issue is resolved by the increased expenditure of government funds to buy out opposition or resistance to government policy and action. The most common case is where there are two or more private groups whose conflicting interests must be reconciled before a policy can be implemented. The way to get the groups to agree on a policy (i.e., strategy) is to provide each of them with incentives to cooperate, usually in the form of government subsidies to each group's pet projects.

In the case of regulatory strategy, governments attempt to control the behaviour of water users through laws and regulations such as in-stream and effluent standards. Both the formulation and implementation of regulatory policies sometimes involve prolonged negotiations between the regulator and the

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regulated. Issues become complex and often drag for years, when, in addition to the regulatory government agency and the specific regulated interests (e.g. a polluting industry), there are other active interest groups (e.g. business associations and environmental groups and government agencies) which take sides in the dispute.

Finally, in the case of water resources, redistributive strategy means attempts by governments to reallocate rights to water use and the redistribution of authority among different levels of government or among different departments or agencies within a government.

The interpretations of the three case study issues, namely the Presque Isle stream affair, Fraser Companies boundary pollution and negotiation of the 1972 SJRB Agreement will take place in the light of these broad government strategies, while, simultaneously, a more detailed analysis of the strategies (moves) used by individual players is carried out.

The classification adopted here for individual players' strategies corresponds to some extent to Lindblom's classification of "methods of partisan mutual adjustment."

However, since we are using here the term strategy in the sense of a deliberate, active attempt on the part of a player to obtain a desired response from another player, Lindblom's concept of "adaptive" adjustment, meaning that a player passively adapts to other players' decisions without requiring a

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response from them, is not adequate. Our classification is, in a sense, an adaptation of his "methods of manipulative adjustments." This means, then, that in our use of the term, when a player uses a strategy, he always anticipates some kind of response from one or more players in the game.

Attention should be called to two major categories of individual strategies. One is the case in which player A tries to persuade player B by altering B's perception of the costs and benefits of a response that B is contemplating; the other is when A actually alters the advantages and disadvantages of B's possible response. In the first case, then, A calls B's attention to a benefit to which B had been unaware or oblivious; in the second case, A may, for instance, offer B a compensation for responding in the way A desires.

Lindblom further classifies "manipulated adjustments into nine "methods:"

- negotiation, bargaining, partisan discussion, compensation, reciprocity, authoritative prescription, unconditional manipulation, prior decision and indirect manipulation. Of these nine categories, the first three: negotiation, bargaining and partisan discussions (all three are forms of negotiation), are too vague to be useful for analytical purposes. Thus, we shall break down those first three categories into subcategories of strategies, and use the remaining six categories as a basis for developing a classification of individual players' strategies which is especially suitable for

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4 This formulation follows closely Lindblom's formulation of the two categories, *Ibid*, p. 62.
the analysis of the case study. Thus, it should be kept in mind that the classification of individual strategies used here corresponds only approximately to Lindblom's classification of methods of partisan mutual adjustment.

1. **Prior Decision**

   In this case, player A's strategy consists of making a decision to induce B to respond rather than forego the advantages of further negotiation with A. This type of strategy may involve a physical act, such as a private polluter stopping the building of a waste treatment plant, an interest group staging a violent protest, or a government agency withholding subsidies to a firm, in which case the prior decision unconditionally alters the benefits and costs of B's possible responses. A may also take a prior decision by using its own authority or prescribing exactly what response it expects from B.

2. **Threats, Blackmail, Bluffing**

   A's strategy in this case consists of trying to induce a response from B by conditionally threatening (or blackmailing) B, who, then, may follow a course of action which A desires. We have in the above case a real threat. The other possibility is that the threat is a bluff. A good example of either would be a private polluter industry threatening to close down or move out if pollution abatement measures are enforced.

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5 Examples of types of strategies will be given in this classification only when necessary for clarification.
3. **Compensation**

This is the reverse case of strategy (2) above. In this case, A induces B to respond by **conditionally** promising a benefit to B. Again, the promise may be real or a bluff. An example along the line of the previous examples would be the case of a government promising financial aid to an industry if it abates its pollution load.

4. **Reciprocity**

In this case, A uses the strategy of calling B's attention to an existing or operative reciprocal obligation, thus inducing B to respond favourably to A's strategy.

5. **Information Manipulation**

This strategy consists of A deliberately manipulating information produced by itself or others, to persuade B of the merits of its position. For example, A may create a linkage between a neglected problem about which it is concerned and another problem about which B is concerned. The linkage may be real or totally forged. A may also use the strategy of **selectively** providing information to B, or **selectively** disseminating information to all players, in accordance with its own interests.

6. **Decision Avoidance**

A may, as a strategy, deliberately postpone making decisions in order to gain more time and/or more information, useful to future decisions.
7. **Incremental-Sequential Decisions**

In this case, A's strategy consists of making decisions only incrementally different from previous decisions, in order to obtain feedback on B's possible responses to larger decisions.

8. **Factoring-Out Problems**

In this case, A's strategy consists of subdividing a policy issue into sub-issues or problems, and then proceeding to deal sequentially with the sub-problems, thus avoiding the commitment to a comprehensive plan or solution with all its inherent complexity and uncertainty. In some cases, the problems may be linked and the solution to one may bring information to bear on another.

9. **Coalitions**

In this case, A tries to form temporary or permanent coalitions with other players to induce B (and other players) to act in a way which A desires.

10. **Division of Opponent Players**

A's strategy consists, evidently, of selectively trying to persuade each member of an opponent coalition of players of the advantages of different courses of action, which will result in dividing them.

11. **Indirect Manipulation**

In this case, A uses any of the above strategies to induce a third player (C) to persuade B to make the desired response. For example, A may resort to a higher authority, C, to induce B
to act. A may also use its friendship with C, who has authority over B, to obtain a desired response from B.

It should be pointed out that each of the above strategies may be used in somewhat different "styles" by different players. Thus, threats by a private citizen may involve the use of demagogic skills or rhetoric. Bluffs may actually consist of outright deception or impressive promises by a private player. Information manipulation may consist of organized propaganda by a government agency or private firm; or it may involve simply the timely release of information. Division of the opponent players may consist of attributing to one player, C, of a coalition, actions of another player, D, of the same coalition, to persuade B of the merits of A's desired objectives.

In the sections below, we shall, then, interpret the three case study issues in the light of AP3 and using the two classifications described above.

The institutional structures operative in the SJRB will be described only to the extent that they can illuminate the role of "rules of the game" in constraining the range of strategies followed by players.

We shall see that interactions between the United States and Canada in the SJRB were, only to some extent, governed by the rules set out by the 1909 Boundary Waters Treaty; the range of alternative strategies followed by New Brunswick agencies was constrained by a number of federal and provincial laws and statutes, but were also facilitated by so-called "enabling legislation;" while Maine players (particularly public ones) were limited in their strategic actions by a large number of
federal, state and local government regulations. There are, of course, many informal and implicit rules and convention which also guided the strategic behaviour of the players. These informal rules will surface when we discuss the conditions which led particular players to choose certain strategies.

We shall take advantage of our analysis of the Frasers' pollution issue to suggest some of the potentials and limitations of game theoretic concepts when used for descriptive purposes. It is hoped that the advantages of a broader conceptual framework as provided by AP3 will become apparent.

Fraser Mills Pollution Control

Strategies of National and Subnational Units

The case study (Chapters 4, 5 and 6) seems to make it clear that, at the national level, the approach chosen by both the Canadian provincial and federal governments to deal with SJRB boundary pollution was to subsidize Frasers' pollution abatement programme. In view of the lack of strong groups having conflicting interests with Frasers', the only other interests which the two governments had to accommodate were other polluting industries in the basin, which demanded (and in general obtained) the same benefits from the public treasury.

Since the issue was, at least temporarily, settled in a typical distributional fashion, one might be led to conclude that the outcome resulted from both governments pursuing what we characterized earlier as a "distributive strategy." However, an examination of the issue at a deeper level will show that
players at all levels followed a variety of decision-making strategies.

The New Brunswick government indeed consistently followed a distributive strategy, for in the negotiations of the two agreements with Frasers (1968 and 1972), it tried to get the company to comply with effluent abatement requirements by providing the company with substantial subsidies.

The federal government (Department of Fisheries), in turn, also provided the company with funds for construction of waste treatment facilities because of its concern with the Mataquac fish hatchery, located downstream of Frasers'. However, the federal government did threaten to use its statutory powers under the Fisheries Act to force the company to reduce its wastes discharge, and actually stopped for a while its own subsidies to the company when the company failed to comply with the deadlines stipulated in its 1968 agreement with the province. Thus, it can be said that the federal government switched at this point to a regulatory strategy. Actually, the case study indicates that this was indeed the strategy favoured at the time by the Department of Fisheries. As may be recalled, during that period in time that federal department was in the last stages of winning a battle with the former federal Department of Energy, Mines and Resources over the merits of another strategy (management of the waste assimilative capacity of a surface water body) favoured by the latter to deal with

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6 Effluent regulations for the pulp and paper industry were passed by Parliament in November 1971.
pollution issues across Canada.

Thus, the federal government's later reinstatement of its own subsidies to Frasers must be seen as a favourable response to New Brunswick's pledge to continue, simultaneously, to pressure and subsidize that company in order to obtain the levels of pollution abatement desired by the federal government.

Moving the analysis of this issue up to the international and transnational levels, we can explore some of the strategies followed by Canada, New Brunswick, the United States, and Maine in dealing with each other, as well as several potential strategies which were not followed. In a game theoretic fashion, we could build a matrix of strategies versus payoffs for each player, but this is not really necessary for the explanation that follows.

Firstly, although some legal mechanisms to deal with Frasers' problem had been available for some time on both sides of the border, as well as at the international level (Boundary Waters Treaty), all governments avoided acting on the issue for some fifty years. The result of this strategy of "doing nothing" by all governments was that Frasers' was able to survive in the economic market, despite being incredibly inefficient. 7

The four governments could have gotten together and adopted a common strategy of demanding from Frasers a specified level of

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7 Actually, according to Mr. J. Henderson (personal communication, August 1, 1980), "the inefficiency of the superannuated mill (Frasers') was a major contributor to their poor cash flow and profit and loss position. It was so inefficient that they were washing about 55% of the tree out with the water."
effluent treatment plus a deadline for compliance. However, the record indicates that they never did get together on the subject up to September 1972. From hindsight, this was certainly the most desirable alternative from an economic point of view for all governments involved, because, even if the company had closed down temporarily, with the consequent loss of jobs in the region, it was likely that the company would have been bought by a larger group having the financial resources to make the necessary conversion to a Kraft process, and consequently desired water quality levels in the international section of the Saint John River could have been achieved much earlier.

However, on the one hand, the Frasers' pollution of boundary waters was treated by the Canadian and New Brunswick governments essentially as a domestic problem. Only on a few occasions did the federal government point out to the company that it was polluting international waters (Chapter 5), a strategy it used to impress upon the company the graveness and urgency of the matter.

On the other hand, according to available records, pressures from the United States and Maine to clean up came later, in 1972, as a result of several developments somewhat indirectly related to the issue itself. Due to new federal legislation, these two governments did follow a regulatory strategy of demanding from Frasers' a firm commitment and

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As we have seen, (Chapters 11 and 12) Frasers' was bought by the Noranda Group, which has modernized the mills, reduced pollution and are apparently doing very well financially. Mr. John M. Henderson, pers. comm., August 1, 1980.
schedule for pollution abatement at their Madawaska mill.' However, this joint approach of the two governments was more likely dictated by the aforementioned law than a deliberate decision to follow such a strategy."

In any case, the position of both the State of Maine and of the U.S. federal government was reasonable. For although progress in pollution abatement in Canada was definitely slow, it was nonetheless forthcoming. The fact that the New Brunswick and Canadian governments were paying for most of the Frasers' pollution abatement programme was probably understood by Americans as a sign of those governments' concern for the problem.

The issue is definitely complicated by the fact that Frasers', although Canadian owned, were (and still are) a binational firm operating and discharging wastes from both sides of the border. The Company had to be accountable to four governments, as well as to the International Joint Commission, all of which have jurisdiction on the issue."

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1 A public hearing conducted jointly by DEP and EPA in 1973 resulted in such a request to the Company.

10 As we shall see later, the attitude of the two governments can also be attributed to the negotiations over the Saint John River Basin Agreement and especially after the Northern Maine Regional Planning Commission got involved in the matter.

11 The IJC's jurisdiction over Frasers' pollution problem is dependent upon the two federal governments referring the matter to it for decision. Mr. Art H. Rand, director environmental Protection of the Fraser Companies, candidly admitted that the Company had indeed benefitted from having a "divided enemy". Personal interview, January 15, 1974.
Individual Players' Strategies

We have explored above the overall strategies followed by the four governments directly involved in the Frasers' issue. In this section, we shall describe some of the strategies followed by individual players within the context of the larger strategies.

We have seen in the case study that several players within the New Brunswick government attempted to deal with the Frasers' problem in different ways. In fact, they used some of the individual strategies listed earlier in this chapter.

For example, the strategies used by Mr. W. R. Duffie, New Brunswick Minister of Natural Resources consisted of (a) at the same time and with great rhetoric praising and threatening Frasers' publicly; (b) using third parties (Mr. Leo Brandon and the SJRB Board) to put pressure on Frasers' on his behalf. It may be recalled that on several occasions at the Legislative Assembly Mr. Duffie mildly praised Frasers' for its contribution to the province's economy and then proceeded to warn the company, indirectly, that it should not count on the new Canada-New Brunswick Agreement to delay its plans for implementing pollution control facilities in anticipation of more favourable subsidies to assist in construction, but it should rather cause the company to act more swiftly, because the new SJRB Board would likely recommend more severe penalties for failure to install waste treatment facilities. On another occasion he warned the company and other industries that he would "allow for court action and the application of fines and penalties where it is obvious that there is no intent to conform
with the Act."  

Another strategy used by Mr. Duffie was to privately ask Mr. Leo Brandon, Provincial Hydrologist and known environmental activist, to make a statement criticizing Frasers' at a DEP public hearing in Madawaska. As may be recalled, Mr. Brandon at this hearing protested against Maine giving a license to Frasers' to increase its pollution load on the U.S.A. side of the SJR when the company was receiving subsidies to abate pollution on the Canadian side.  

Mr. Ted Fellows, Chairman of the New Brunswick Water Authority, who favoured a soft stand towards Frasers', used the same type of strategy in order to persuade his opponents. One may recall, for instance, his statements at a Forestry and Natural Resources Committee meeting in which he pointed to the high costs of industrial and community waste disposal treatment, which "were paid for through higher taxes, higher prices and lower wages," and adding that the "faster it was done, the higher the cost would be."  

Mr. Cockburn, who replaced Mr. Duffie after the 1970 elections, on the other hand, chose a well known political strategy which consisted of attacking past and

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12 Proceedings of the Legislative Assembly of New Brunswick, Session of 1970. He was referring to the provincial Water Act. See Chapter 5 for details.

13 Mr. Leo Brandon made the statement opposing the measure speaking in a private capacity. At another hearing conducted jointly by the DEP and EPA in 1973, the new New Brunswick government actually supported extending Frasers' license.

advocating new policies, in laudatory terms, such as, "Let us replace the stop-gap measures that have been used up to now by a fundamental attack on the problem!" As one may recall in April, 1971, he told the Legislative Assembly that the most realistic approach regarding pollution control in the province was to "attack the cause rather than the result," and added that his government would stress "research and education which are the key to solving the causes within a total waste management policy." Nevertheless, as we know, he proceeded with an even more generous distributive policy than the previous government.

Within the Canadian federal government, Mr. Jack Davis, Minister of Fisheries, and subsequently Minister of the Environment, used several personal strategies to deal with the Fraser issues. For instance, when he became aware that Frasers was not complying with the terms of the Company's 1968 Agreement with the province, he sent a personal letter to the president of the Company, warning him that he would use the available "statutory powers to the fullest extent possible to see that Canadian contributions to the pollution of the Saint John River, an international river, are reduced" and added that he was working closely with New Brunswick authorities on the matter. Notice that Mr. Davis is both threatening the Company and appealing to a higher authority, i.e., calling attention to the

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15 This universal strategy used by politicians is well illustrated in Albert Hirschman's "Journeys Toward Progress" The Twentieth Century Fund, New York, 1963. The quote is from page 247.

fact that the Company was polluting international waters and insinuating that this had serious consequences. However, at the same time, Mr. Davis made recourse to the "third party strategy." He wrote to Mr. Cockburn expressing his discontent with Frasers' pollution abatement progress, stating that he had made the decision (prior decision) to halt federal grants to the Company, threatening to close the mill for non-compliance with adequate pollution control, but leaving the door open for further negotiations of a new agreement with the Company.\(^1\)

The reactions of the Fraser Companies to all these various pressures was to follow different strategies vis-a-vis different players. With regard to the provincial government as a whole, the Company is reported to have used a well known strategy of blackmailing. It threatened to move elsewhere, pointing out the disastrous consequences of such a move to the population and economy of the Upper Saint John River region.

In its dealings with the government of Maine, the Company signalled that it was exploring the possibility of exporting the wastes of the Madawaska mill for treatment on the Canadian side. As we have seen, (Chapter 5), this tactic actually did not impress the American federal officials in one way or another, but it did bother Mr. James Barresi, Director of the NMRPC, who saw the Company's move as a manoeuvre to avoid committing itself to construction of treatment facilities. Mr. Barresi then proceeded to propose to the SJRB Board officials that they work

\(^1\) Letter also dated May 13, 1971.
out a common strategy for dealing with the Company. Frasers’ strategy encountered serious opposition from Canadian federal officials as well as from the SJRB Board. These officials argued that the treatment plants being constructed for the Edmundston mill could not handle the additional wastes from the Madawaska mill.

Another strategy used by Frasers' was to enlist support from the local population and business community, on both sides of the border, by sending letters telling them how important the Company was to their livelihood, a strategy which apparently was very effective during public hearings in Madawaska. In addition, one could mention Frasers' bluffing and delaying techniques concerning compliance with the provisions of the 1968 agreement with the province. But this type of strategy is much better illustrated in the case of the Presque Isle Issue.

Presque Isle Stream Pollution Control

Strategies of National and Subnational Units

As opposed to the distributive strategy used by New Brunswick and, to some extent, the Canadian federal government, the governments of Maine and the United States can be said to have favoured strictly regulatory strategies for dealing with the Presque Isle stream pollution problem. No government subsidies for construction of treatment facilities were being
provided at the time in the region.\textsuperscript{18}

It appears that regulatory strategies are more difficult to carry out than distributive ones, for, as should be expected, the former generate substantial resistance on the part of the polluting entities. However, an equally important reason seems to be the fact that, in Maine, the political structure is more pluralistic than in New Brunswick. At the same time, the institutional framework in Maine opens more possibilities and impose more constraints on players' strategic behaviour.

First, in Maine there is a clear division of powers among local, state and federal governments; second, the pollution regulatory responsibilities are shared by the legislature, the judiciary, and the executive of the state and federal levels of government, or more specifically, by the Attorney General, the Legislative Assembly, the Department of Environmental Protection (formerly the Environmental Improvement Commission) and at least one federal agency, EPA. On the one hand, this political pluralism provided opportunity for more interest group participation and for a larger number of players to participate in the negotiations regarding the issue, and, as we shall see, for a greater variety of individual players' strategies; on the other hand, it did create obstacles for the government regulatory agencies to effectively carry out their enforcement

\textsuperscript{18} Although, for a while, it seemed that industries joining in combined treatment systems with municipalities would benefit from federal grants under the 1965 Clean Water Restoration Act.
actions. As we have seen, pressures by the federal government (mostly EPA) on the DEP to raise the Presque Isle stream classification and to take immediate steps to curb Vahlsing's pollution were being thwarted by Maine's statutory laws. In any case, the DEP only has the power to make recommendations on the matter; classification and reclassification of Maine's streams is a prerogative of the Legislative Assembly. Thus, although it appears that by 1972 both EPA and the DEP were committed to corrective actions on the Presque Isle issue, the crucial problem remained the 1967 amendment to Maine's statutes by the state legislature which gave the polluters until October 1976 to comply with the existing in-stream and effluent standards. Consequently as long as it was in force, polluters could avoid those agencies' pressures and legal suit by means of token compliances with the law.

Understandably, it was considerably more difficult for U.S. Federal officials to put pressure on Maine's legislature to change their regulations than to apply pressure on the DEP to enforce them.

When one analyses the Presque Isle issue at the international and transnational levels, the first thing that becomes clear is that while New Brunswick and Canada were able to keep pollution of the international section of the SJR by the Fraser Companies essentially a domestic issue, Americans were

As we have seen in Chapter 7, the fact that the Governor of Maine was a Democrat, the Legislative Assembly controlled by the Republican Party and the Attorney General independent (and an aspiring candidate for Governor) made the situation even more complicated.
unable to do so with regard to the Presque Isle. Although Maine certainly did try.

On the part of Canadian players, their most important strategy was to try by all means to keep the Presque Isle issue separate from the Frasers' issue, and, later on, from involvement in the negotiation of the 1972 SJRB Agreement. As we have seen in Chapter 7, in 1969 the New Brunswick government avoided pursuing a legal strategy with regard to the fish kills in the Presque Isle because it was concerned about the possibility of Maine retaliating with a reference to the IJC on Frasers' pollution of boundary waters. While from 1970 to 1972 the Canadian provincial and federal governments as well as the SJRB Board made all efforts to keep negotiations regarding the Presque Isle separate from the negotiation regarding the NATO-CCMS pilot project, and later on concerning the SJRB Agreement itself.

In terms of specific strategies, the New Brunswick and Canadian governments, as well as the SJRB Board, adopted the strategy of first making a series of strong diplomatic protests, and second demanding very strict compliance with the provisions of the Boundary Waters Treaty regarding transboundary pollution, but privately admitting that it would settle for less (Chapters 7 and 9).

The response of the United States and, to a lesser extent, Maine governments to the Canadian strategies was to a large extent in the opposite direction. Starting in 1970, U.S.A. officials tried to link a solution to the Presque Isle problem, first to Canadian participation in the NATO-CCMS pilot project,
and then to the need for a new bilateral institution for the SJRB.

In this regard it is interesting to observe that while high level federal officials, such as Mr. R. Hodges and Dr. Roy Tinney, definitely refused to link the issues, lower level officials, such as Dr. W. Durie and Mr. D. Bellinger did think the connection of issues was a good idea. For example, Dr. Durie suggested that a NATO-CCMS pilot project on the SJRB, a U.S.A. proposal, would be a good way to encourage American authorities to reduce transboundary pollution in the SJRB (Chapter 9).

As we have seen in Chapter 7, United States response to the Canadian strategies and pressure for corrective action on the Presque Isle pollution took the form of (a) a large grant to the NMRPC for studies of the regional treatment system which should provide a long-term solution for the problem, and of (b) direct pressure on the government of Maine for short-term remedial actions (as has already been mentioned above).

**Individual Players' Strategies**

Within the context of the larger game described above, with regard to the Presque Isle issue, smaller games were being played, in which a number of individual players used a variety of strategies, sometimes in a very personal style.

The central player in the Presque Isle issue is undoubtedly Mr. Fred Vahlsing. That flamboyant industrialist practically exhausted all strategies which could be played within the "rules of the game," and resorted to others clearly outside the rules
as well. About his personality and strategic style there were many comments in the press at the time. One state legislator claimed at one point that

"Vahlsing is unreasonable. He thinks his word is just a little less important than that of God. We're not fighting money - the cost of pollution abatement equipment. We're just fighting an obstinate nature."  

Taking advantage of the apparent weaknesses of the existing institutional structure, Mr. Vahlsing became an expert in evasive and delaying strategies. First, one should call attention to his rhetoric, impressive promises and public displays of goodwill; for example, in his application for a water license, he volunteered to promise adequate treatment of his industry's wastes or "cease operation." Later on, he stated to the press that "we feel the same as you do, that these rivers and streams should be protected." (Chapter 7).

Second, Mr. Vahlsing many times threatened to leave the state if his firm was forced to comply with existing pollution regulations. In the traditional fashion, he reminded the government and public of payrolls and taxes paid.  

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20 At one point, Mr. Vahlsing was accused by the leader of the majority in the State Assembly of having "cynically and flagrantly violated the laws of the state." Bangor Daily News, April 17, 1969.


22 These strategies were well described by Robert C. Zimmermann, in a report he prepared for the New Brunswick Water Authority entitled "Pollution of the Prestile (Presquile) Stream, Maine - New Brunswick: Domestic Politics And International Repercussions" dated June, 1969.

23 Ibid.
tried to get support from other industries by stating that a vote for pollution control was a vote against the potato and sugar beet industries in the region, and argued that investors outside Maine would be scared off by such "anti-pollution fanaticism."\textsuperscript{24} He further tried to convey to the legislature and public that the only way for his industries to survive in the region was for them to have a clear path with absolutely no legal or other bottlenecks.\textsuperscript{25} On the other hand, Mr. Vahlsing had no reservations about calling attention to impressive plans for pollution abatement in his firms, often appealing to the reputation of his technical consultants (Chapter 7).

Mr. Vahlsing proved to be a master in the art of manipulating information and the mass media. For instance, he always downplayed the fact that his industries, and particularly the sugar beet refinery, were heavily subsidized by both the state and federal governments. On the other hand, he managed to have local newspapers write editorials in eulogy of his integrity and contribution to both the economy of, and pollution control in, the region.\textsuperscript{26} This strategy was usually associated with well-timed announcements to the media. For instance, while he was having problems with the reclassification of the Presque Isle stream, he announced the sugar refinery and the sugar-beet allotment; when, later on, he was under fire because of the fish

\textsuperscript{24} Bangor Daily News, February 21, 1966.
\textsuperscript{25} Ibid.
\textsuperscript{26} Zimmermann, Op. cit.
kills caused by his industries, he announced a second potato-processing plant to be built at Easton, which would employ over 1,500 persons, and would be completely pollution free. At the same time, he tried to convey to the public the unimportance of the Presque Isle stream to the regional and state economy and population.

Mr. Fred Vahlsing also used all kinds of strategies to get public support for his stance toward pollution of the Presque Isle. For example, at a public hearing in early 1969, he was reported to have "packed" the hearing place with four busloads of his employees, although the latter were reportedly hardly aware of the issues at stake. In another instance, he invited all the members of the local chapter of the League of Women Voters, who were strong opponents of his plans and actions, to dine with him at his expense (Chapter 7).

On the other hand, Mr. Vahlsing several times resorted to harassment, discredit and neutralization of his opponents. For example, he sent to Mr. Robert Caines, the Canadian leader of the damming incident, a letter inviting him to visit the treatment plants being installed at his industries, and, at the same time, a subpoena to appear at a deposition hearing which was going to be held in his office. Unfriendly reporters were

27 Ibid.
also subpoenaed to appear at this meeting. Finally, he tried several times to discredit his opponents. For instance, he implied to the press that the town manager of Mars Hill and other local officials did not speak for the people. He also tried to discredit Mr. Caines, saying that the latter worked for a competitor, which Mr. Caines later claimed was not true (see Chapter 7).

These examples should more than suffice to show the range of strategies open to private players when they are willing to play within or outside the rules of the game. There are, however, other good examples of individual players' strategies in the development of the Presque Isle issue. One may recall, for instance, that in Mr. Robert Caines' own words the purpose of the damming of the Presque Isle was to stage a show of force for the benefit of Canadian and American authorities, but he and his followers did not actually want to carry the protest all the way through. They intended to bluff, but since there was no police intervention, they had to carry the job to its end.

When, later on, Canadian officials were writing a diplomatic protest about the fish kills to American authorities, they felt the need to rationalize Mr. Caines' group action by suggesting that they had other intentions when building the dam (that is, they claimed the purpose of the dam was to flush the stream banks of dead fish). In addition to violent protest, Mr. Caines also used several common strategies to get the attention of public decision-makers. For instance, he became an outspoken environmentalist, making frequent statements to the press, giving lectures at educational institutions on both sides of the
border, and, most importantly, he organized a "Citizen's International Pollution Committee" (Chapter 7), which, although short lived, had some significant influence on the domestic and international negotiations concerning the Presque Isle issue.

Finally, one may recall that Senator Edmund Muskie made recourse to the "reciprocity strategy" when he went to Fredericton to negotiate the transboundary pollution problem with New Brunswick authorities. He said, then, that he favoured corrective measures regarding the Presque Isle problem, but reminded the Canadians that "the Presque Isle situation happens to be a pollution problem arising in the United States that affects Canada, but there are undoubtedly pollution problems in Canada that affect the U.S." (Chapter 7). He then added that any corrective action regarding pollution would have to be reciprocal.

One could also interpret Senator Muskie's suggestion of referring the Presque Isle matter to the IJC as a delaying strategy, for it is almost certain that he was aware of the lengthy procedures involved in forwarding a Reference to the IJC.
Strategies of National and Subnational Units

In Chapter 11 we explored the extent to which the 1972 agreement between Canada and the United States, which created a joint "Committee on Water Quality in the Saint John River," might have been influenced by such factors as the relative hydrologic-economic position of the two countries, the concern that each country had for their image, possible linkages between the SJRB and other issues along the common border, and, perhaps most importantly, the concern of each country for its sovereignty. At a deeper level of analysis, we suggested that the motivations of a number of government agencies on both sides of the border likely played a crucial role in the outcome of the Agreement. In Chapter 12, in turn, we showed how information was processed and used by the various players involved in the negotiation of the Agreement.

In this section, we shall explore the major strategies used by the governments of Canada, New Brunswick, the United States, and Maine and their respective agencies to persuade each other of the merits of their positions vis-a-vis cooperation in the SJRB. As we learned from Chapter 11, there were indeed a number of different interests which had to be reconciled. However, we also learned that what was really at stake was a question of

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31 See Appendix VI for the full texts of the exchange of diplomatic notes creating the agreement, and of the simultaneous joint reference to the IJC.
reallocation of administrative powers and responsibilities amongst the IJC, the four governments, and a number of federal and provincial-state agencies. The allocation of the physical resources of the SJRB was a rather secondary issue. This, of course, is at variance with the views of those (e.g., systems analysis consultants, see Chapter 9) more inclined toward economic-technical analysis, which assume that the allocation of economic resources is the central issue in international rivers negotiations.

As we have already indicated, Canada and the United States basically followed two opposing strategies. As the promoter of the NATO-CCMS pilot project starting in early 1970, the United States vigorously pursued a strategy of linking a solution to the Presque Isle problem (which Canada, or at least New Brunswick, considered a sensitive problem created by the United States) to Canada's concurrence in a SJRB demonstration project for CCMS (Chapters 7, 9 and 10). Canada, on the other hand, tried as far as possible to keep the two pollution issues, namely Frasers' boundary pollution and Vahlsing's transboundary pollution, separate from the NATO-CCMS exercise, and, later on, from the U.S. proposal for a SJRB bilateral institution.¹²

¹² The Canadian position is best exemplified by (a) Dr. Roy Tinney's comments at a SJRB Board meeting that Canada wished to keep its freedom to act on the Presque Isle matter outside the context of the new institution (Chapter 9), and (b) by Mr. R. C. Hodges' remarks that, while he felt it was alright to pressure the U.S.A. on the Presque Isle because it was a "political hot potato," he obviously did not wish to include "that can of worms," i.e., Frasers', in the negotiations of the Agreement. Pers. comm., July 17, 1980.
However, Canada's position represents a change in strategy since 1969, when a diplomatic brief on the Presque Isle fish kills was forwarded to U.S. authorities. At that time, the Canadian (most likely New Brunswick's) position was that a solution to the Presque Isle problem required a comprehensive river basin approach, and that they would like to be in a position "to create a river basin compact or joint management agreement with the United States and Maine" (see Chapter 7). This change in strategy by Canadian authorities can be explained easily by the fact that, while at that time (1969), some New Brunswick and federal agencies were pushing for the establishment of a Canada-New Brunswick Agreement for comprehensive planning on the SJRB, after 1970, the SJRB Board being already firmly established, Canadian agencies had new goals and had to develop strategies which were consistent with them.

On the United States side, around 1970, new agencies also came into play. The U.S. strategy of creating a new bilateral institution for the SJRB within the NATO-CCMS programme was formulated with the active participation and support of the highest levels of the federal administration. The NATO-CCMS project itself, as we have seen in Chapter 9, was the brainchild of Daniel P. Moynihan, then one of President Nixon's close advisors. This strategy was developed by the CEQ, with the collaboration of EPA, without any real concern for the physical-economic situation in the SJRB. The United States' primary goal was to have a new bilateral water management institution with Canada, to show other NATO members what they
could accomplish in terms of international environmental cooperation. Given their overall economic superiority, and the relative insignificance of the SJRB in its full range of national resource relations with Canada, it is clear that the high echelons of American federal officials were prepared to meet almost any Canadian demand regarding the SJRB.

Thus, CEQ and EPA developed a double strategy, which consisted essentially of (a) conveying to Canada the importance (for them) of an agreement on the Saint John River, within the context of the CCMS exercise, and, consequently, also within the time constraint dictated by the project; and (b) impressing upon Canada and New Brunswick officials that they were resolved to find a solution to the Presque Isle stream and other United States originated transboundary pollution problems originating in the American portion of the SJRB.

However, there were practical difficulties in developing the above strategies into a unified United States strategy vis-à-vis Canada. Firstly, in addition to CEQ and EPA, there were other federal and provincial agencies which had an interest in the matter and whose concurrence was important for the success of the U.S. strategy. For example, the United States Corps of Engineers and the State Department had both an interest and jurisdiction in the SJRB matters.

Thus, EPA developed its own strategy, which consisted of pushing for a bilateral agreement confined to water quality management, for in this case there was little justification for the Corps of Engineers to get involved, and in fact, the latter never did get involved in any substantive matters. It was a lot
more difficult for the EPA to avoid State Department interference in their strategies. For one thing, the State Department was responsible for all international relations between the two countries. Consequently, those two agencies had to adapt their strategies to the reality of the State Department's likely interference.

EPA-CEQ strategy consisted, then, of arguing for an agreement which would be "something like a memorandum of understanding ... in which two principal departments or elements of the national government ... would agree on goals to be achieved and be establishing coordination of mutual planning and management activities." (Chapter 9). In this way, they argued, they would avoid the necessary diplomacy and protocol which must be observed in the case of more formal agreements, and would also avoid the related "inability [of formal agreements] to meet a time constraint." (Chapter 9).

However, as we have seen in Chapter 10, it was not an easy matter to overcome the objections and interference of the State Department in the EPA-CEQ strategy. But these latter agencies did follow a secondary strategy which turned out to be quite effective. They brought to EPA - International Affairs Division, Mr. W. Mansfield, an experienced State Department official, who then became responsible for advising those agencies on how to work out the SJRB agreement with a minimum of State Department interference.

Mr. Mansfield himself saw his role as one of mediator or coordinator between the "CCMSers" (i.e. CEQ-EPA), and State Department officials. Pers. comm., July 5, 1980.
interference."

As far as the State of Maine is concerned, the two agencies which had a direct interest in the subject were the State Department of Environmental Protection and the Northern Maine Regional Planning Commission. Although DEP had jurisdictional interest in SJRB matters, its lack of staff and financial resources put a severe limitation on its involvement in matters other than strictly pollution control enforcement. Consequently, it adopted an adaptive-passive strategy of getting involved in the negotiations of the Agreement only when it came to enforcement matters, which, as we have seen in Chapter 7 and discussed earlier in this chapter, actually took place parallel to negotiation of the agreement proper.

The NMRPC, on the other hand, had a direct interest in participating in the negotiations, for it wanted both greater responsibilities in SJRB affairs, and the prestige of being associated with the NATO-CCMS project (Chapters 9 and 10). The NMRPC strategy consisted essentially of supporting EPA's initiative, and pressing for more local involvement in the agreement and in the future bilateral institution, an endeavour in which, as we have seen, it was very successful.

On the Canadian side, the case study indicates that the federal and New Brunswick governments had quite different views regarding the need for a new SJRB institution outside the context of the IJC.

Earlier, the New Brunswick strategy with regard to its pollution problems with Maine, had been one of accommodation and trade-offs. It desired Maine's cooperation in a number of areas,
and thus, although publicly and through diplomatic channels it accused Maine of violating the Boundary Waters Treaty, in private it preferred to negotiate directly (i.e., without interference of either the federal government or the IJC) with that State possible trade-offs (Chapters 5 and 7) in the environmental, resource, and economic fields. During the period of the negotiation of the Agreement, however, New Brunswick's main concern was with keeping the IJC out of the SJRB affairs, and securing for itself a place in any new institution created for the basin. In this regard, the attitude of the SJRB Board as a whole was somewhat dubious, because its members were representative of both the federal and provincial governments.

The development of a Canadian response to the U.S.A. initiative and strategy regarding the SJRB was primarily the responsibility of Environment Canada (DOE) officials. This task was made somewhat difficult because of (1) internal divisions in that department, and (2) conflict of interests and ideas with the Department of External Affairs.

The new federal Department of the Environment was an effort to put together two old departments; Fisheries and Energy, Mines and Resources, which, as was mentioned earlier in this chapter, had quite different approaches to water quality management. Hence, there was some worry on the part of former Fisheries officials that an agreement worked out by former Energy, Mines and Resources officials would give the impression to Americans and NATO members that the river basin management approach was, in fact, Canada's approach to water pollution control. In addition, Fisheries officials seemed to be quite content with
the role the IJC had been performing in bilateral relations with the U.S.A.

Consequently, those DOE officials favouring a positive response to the U.S.A. initiative on the SJRB, had to work out, first, an intradepartmental consensus, then an interdepartmental compromise with External Affairs. Those compromises, in turn, resulted in a somewhat incoherent strategy, which, on the one hand, was intended to please the Americans (i.e., in order to build a "reservoir of goodwill") by agreeing with the creation of a new institution for the SJRB, while, on the other hand, was intended to retain the status quo to the largest extent possible. Nevertheless, they strove for, and did reach, an agreement on a new institution in which they would be the Canadian decision-makers (as opposed to the IJC's traditional approach of itself selecting the members of its Boards of Investigation).

In this regard, it is interesting to note that DOE officials apparently followed a deliberate strategy of keeping New Brunswick authorities barely informed of the progress of the negotiations with U.S.A. authorities. According to the record, the last time provincial officials were directly involved in the negotiations regarding the Agreement was during the May 16, 1972 meeting in Montreal. The same, incidently, seems to have occurred between U.S. federal officials and DEP, for the latter

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34 In this regard, Mr. J. M. Henderson commented that provincial officials were taken by surprise when they learned in the last week before the Agreement was signed that there would be a reference to the IJC. Pers. comm. August 1, 1980.
later complained that it had not been involved in the negotiations. (see Chapters 7, 9 and 11). Thus, to some extent, the fears of provincial and state authorities that their interests might be sacrificed in an agreement worked out entirely by federal officials had some basis.

On the other hand, the 1972 Canada-U.S.A. SJRB Agreement does represent a victory for both the provincial and state governments (as well as some of their agencies) in their fight to have a greater say in their bilateral environmental relations, and, in this sense, the outcome of the negotiations could be interpreted as the result of a loosely coordinated "transnational redistributive" strategy.

Even if one considers that the Committee created by the 1972 Canada-U.S.A. Agreement was not given the broader powers sought by the "CCMSers" and that an unwanted reference to the IJC became part of the deal, it is still to the credit of the CEQ-EPA strategy that an innovative organization was created in such record time.

In an important sense, the 1972 Canada-U.S.A. SJRB Agreement itself could represent a deliberate (particulary on the part of Canada) and coordinated strategy of both countries to cope with a complex situation laden with uncertainties. For, in effect, the Agreement provided for an institutional structure whose main purpose was to exchange information and to coordinate planning activities on both sides of the border. Supposedly, resource allocation decisions were postponed in order to await better information on many uncertain and unknown aspects of SJRB water quality management. From yet another perspective, the
Agreement represents an approach to experimental management, in the sense that a deliberate strategy was developed which aims at correcting mistakes as they occur, rather than attempting the unrealistic feat of predicting and avoiding them.

In the next section we shall explore some of the individual players' strategies which might have accounted to a large degree for the outcome of this issue.

**Individual Players' Strategies**

The case study and the preceding chapters seem to leave little doubt that the chief American strategist in the negotiation of the Canada-U.S. Saint John River Basin Agreement was Mr. Albert Erickson of EPA. Several of the decision-makers involved in the negotiations attributed the origin of the Canada-United States SJRB Committee to a "pipe dream" of Mr. Harry Blaney of the White House and CEQ. However, the implementation of Blaney's idea can be attributed primarily to Mr. Erickson's skilful strategizing.

First, many of the above strategies, which we attributed to the United States and EPA-CEQ were without doubt mostly Mr. Erickson's. In addition, however, he pursued a number of personal strategies which, it should be said, were not always successful. For example, at one point when some DOE and External Affairs officials were adamant in their demands for a reference to the IJC, Mr. Erickson telephoned Mr. R. C. Hodges of DOE, and tried to impress upon him the "wisdom of establishing a direct bilateral mechanism, rather than pursuing a reference to the IJC ..." He also, both directly and through Mr. Ed Nef of the State Department, tried to determine whether similar departmental
differences on the IJC issue existed in Canada." (Chapter 10).

Another strategy, attributed to Mr. Erickson, was to encourage the NMRPC's consultants to find a transboundary pollution problem in the SJRB originating in Canada, to persuade the Canadians that there was a reciprocal relationship between the two countries in the basin. As we know, it did not require much time for the NMRPC's consultants to find a siltation problem in the Big Black River, a tributary of the Saint John River, whose origin was traced to an agricultural development in Quebec.

However, Mr. Erickson also used some interesting strategies while interacting with other American officials. For instance, after the December, 1971 Boston meeting with Canadian officials on the Presque Isle stream pollution, he reported to his superiors and other U.S. federal agencies that

The government of New Brunswick would like to explore the establishment of a joint committee or compact commission with the State of Maine to coordinate water quality objectives, planning and quality controls on transboundary waters.

However, judging from reports by other officials present at this meeting, the discussions were related almost entirely to "the question of water quality criteria for the Presque Isle at point of entry into Canada," which, as had been requested by Canadian federal and provincial officials, was the main theme of

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35 In the opinion of Mr. Ed Nef, personal interview, November, 1973, Mr. Erickson was very active in calling federal Canadian officials behind their back, i.e. the State Department's.

36 Mr. J. M. Henderson, pers. comm. August 1, 1980.
the meeting (Chapters 7 and 10).

In addition, Mr. Erickson was very instrumental in providing the NMRPC with the necessary funding to carry out the comprehensive water quality plan on the U.S.A. side of the SJRB, as part of the CCMS exercise. Thanks mostly to his efforts, and despite some difficulties in fitting the project within the new federal legislation (1972), the NMRPC was awarded a very large grant on a priority basis. Of course, such a feat would not have been possible without the backing of the highest levels of the U.S.A. administration. One may also recall that he personally asked the NMRPC to delete the name of the IJC from its proposal to the above mentioned grant, allegedly because IJC's involvement would diminish the newness and visibility of the CCMS exercise.

On the Canadian side, the most important negotiator was probably Mr. R. C. Hodges. However, since the Canadians were, to a large extent, responding to a U.S. initiative, rather than actively pursuing a new policy for the Saint John River Basin, it is understandable that the strategies followed by Mr. Hodges and some of his colleagues were more adaptive than manipulative.

The major thrust of the strategies used by Mr. Hodges as chief Canadian negotiator vis-a-vis the Americans was to persuade the latter that there were advantages in pursuing a more gradual and less ambitious approach to the negotiation of the agreement. At one point, Mr. Hodges complained that the Americans were moving too fast, and that an example of a good approach to this kind of negotiation could be found in the negotiation of the Great Lakes Agreement, which proceeded over a
period of years, step by step (Chapters 9 and 10). He also argued that the planning programme on the Canadian side was behind schedule, and therefore it was wise to wait for further progress there before embarking on a bilateral agreement and new institution.

However, Mr. Hodges apparently had more confidence in the true intentions of U.S. officials than some of his colleagues, who asked him to investigate whether the U.S.A. had goals other than to create an institution which could serve as a model for CCMS (Chapter 10). Such a suspicion was reasonable, given the hastiness with which the negotiations were being conducted.

At one point (May 15, 1972 meeting), Canadian and New Brunswick officials used the strategy of deciding *a priori* that they would not reach an agreement with Americans on the feasibility of a new institution for the SJRB, but the next day proceeded to meet and discuss with the Americans, as if they had not yet made up their minds.

Once Messrs. R. C. Hodges and W. F. Stone of DOE stated to U.S.A. officials that their latter proposal, which included the creation of a joint committee and a simultaneous reference to the IJC, was acceptable to them, the major task ahead of them was to convince their superiors and other Canadian federal agencies that the agreement proposed by the Americans was equally satisfactory to Canadian interests. They followed then, a strategy which could be termed "ex-post reationalization," for it consisted essentially of finding a rationale for the decision they had already made, i.e., to agree with the U.S. officials on a new institution for the SJRB. How they processed information
for this purpose has already been documented (Chapter 10), and discussed (Chapter 12). Here it is sufficient to point out that this strategy was generously and widely used, and that Canadian negotiators had apparently no difficulty in justifying actions and plans about which they had had serious reservations not long before.

Finally, the press release on the Agreement, which was distributed on the same day it was signed (September 21, 1972), is an excellent example of how information can be manipulated to satisfy the requirements of a higher and broader strategy, namely President Nixon's policy of giving a new image to NATO through the Inland Water Pollution Project of its Committee on Challenges of Modern Society.
CHAPTER 14

CONCLUDING REMARKS

We have stated in the introductory chapter that the two main objectives of this thesis are:

(1) to arrive at a conceptual understanding of the factors and decision-making processes which led to the 1972 Canada-United States Agreement on the Saint John River Basin;

(2) to explore alternative conceptual frameworks to the study of collective decision-making, and especially public decision-making, which was considered as the process by which a society transforms the decisions of individuals into collective decisions.

In this concluding chapter I shall endeavour to demonstrate that in the development of the preceding thirteen chapters, both

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objectives have been fulfilled. Accordingly, I shall divide the general findings of this investigation into two categories: (1) contribution of the proposed paradigms (AP1, AP2, AP3, and, to a limited extent, AP4) to the analysis of collective decision-making, and (2) insights into the nature of public decision-making as revealed by the analysis of the case study.

However, before proceeding to make some concluding remarks directly related to the research effort, I would like to call attention to two important points.

I have made a deliberate, sometimes strenuous effort to keep normative considerations outside the scope of this investigation. This was done not because I do not recognize the importance of normative studies, or because I am unaware of important implications that some of the findings of this thesis have for the betterment of public decision-making. On the contrary, it is precisely because I consider normative inferences a very serious matter that I shall refrain, in this chapter, from jumping to conclusions and recommendations of an ethical nature. I do not have at this point the time and other resources required, both for a proper evaluation of the players' decisions and actions and for making recommendations on how they can be improved in the future, based upon democratic principles and other criteria. Instead of paying lip service to these important considerations here, I prefer to postpone tackling them until sometime in the near future. In the meantime, the reader is invited to pass his own judgement on the content of the descriptive-explanatory material provided in the previous chapters, and on the insights extracted from them in this
concluding chapter.

The inductive-deductive method used in this research somewhat underplays or, perhaps, preempts the importance of final conclusions. For, paradoxically, on the one hand, the analytical paradigms identified and described in Chapter 2 represent the climax of the research work, and on the other hand, the explanations of the case study provided in Part III represent the synthesis of the empirical investigations using the three paradigms. This, of course, is one way of expressing the classical epistemological question about the unity of theoretical and empirical knowledge.

In the process of carrying out this investigation, I have come to agree with Jean-Paul Sartre's belief that both man's interpretation of human history and history itself are part of the same process, which, incidentally, is the reason I chose that quote of his to head this chapter.

Although I believe that mine is in fact one of the most widely used approaches in scientific enquiries, many authors in the field structure their work in such a way that they mask the true nature of their research and methodology. The point I am trying to make could be illustrated by simply calling attention to the well known procedure used by researchers of leaving the introduction to their works to be written last. However, I know of a better example.

Being familiar with the research carried out by my colleague and friend David LeMarquand, I am aware that the conceptual analytical framework outlined at the beginning of his
book on international rivers cooperation\(^2\) was to a large extent the product of the analysis of the case studies that he carried out, and is described in the remaining chapters of the book. Thus, his conceptual-analytical framework could be easily transferred to the concluding chapter of his book, without any loss in the value of the contribution of that pioneering and important research.

The Analysis of Complex Collective Decision-making

An attentive reader of the previous chapters will have no difficulty in discovering that the findings of the present research confirm, to a large extent, Graham Allison's conclusions about the importance of different conceptual lenses in the explanations of collective decision-making, and particularly his observation that "different conceptual lenses lead analysts to different judgements about what is relevant and important."\(^3\) However, my findings substantiate only in part Allison's conclusions that:

(1) "analyses that concentrate on processes and procedures of organizations or on pulling and hauling among individuals, [that is, his Models II and III] demand much more information." [than his Model I type of analysis, which concentrates on inferring the objectives and


strategies followed by individual players].

(2). "... While at one level three models produce different explanations of the same happening, at a second level the models produce different explanations of quite different occurrences. And indeed, this is my argument. Spectacles magnify one set of factors rather than another and thus not only lead analysts to produce different explanations of problems that appear, in their summary questions, to be the same, but also influence the character of the analyst's puzzle, the evidence he assumes to be relevant, the concepts he uses in examining the evidence, and what he takes to be an explanation."*

In my view, the amount of information required by different analytical frameworks is dependent much more upon the levels of analysis to which they are applied than on their conceptual differences. Thus, the information required by Allison's Model I ("state-centric or unitary-rational actor paradigm") is much more modest than that required by his two other models, Model II ("organizational process paradigm") and Model III ("governmental [bureaucratic] politics paradigm"). The reason for this difference is that while Model I requires only information on the actions of nation-states as units of analysis, Model II requires information about processes internal to organizations, and Model III, in addition to information about organizations, also requires information on the behaviour of central individual players.

* Ibid.
In contrast, AP1, AP2 and AP3, which, I insist, are conceptually different paradigms, will require approximately the same amount of information if they are applied to the same level of analysis. Now, the reason why they do not require exactly the same amount of information at a given level is that, although conceptually distinct, AP2 and AP3 depend to a certain extent on an AP1 type of analysis to determine the objectives of the players. For, one obviously cannot analyse information-processing and strategic decision-making behaviour without making assumptions about the objectives of the players. Yet, as is shown in Chapter 11, one can apply AP1 independently of AP2 and AP3; as well, one can use AP2 and AP3 without having to explore a large number of motives for each player, as I have done in Chapters 12 and 13. Actually, many analysts belonging to the AP3 school often assume that only one dominant motive (such as economic self-interest) is operative in a given decision situation. Thus AP1 can be seen as a somewhat static analytical framework, giving emphasis to motives and institutional structure, or at most mechanical interactions, while AP2 and AP3 are dynamic, in the sense that they focus the analysts's attention on the processes by which the decisions of individual units are combined to yield collective decisions.

Nonetheless, the information requirements of AP1 are by no means trivial. It can be information thirsty if the analysis is carried out, as is done in Chapter 11, all the way from the international level to the inter-individual level, and the units of analysis chosen vary from the nation-state to the individual human being. The analysis carried out in Chapters 11, 12 and 13
would have been incredibly demanding, and probably impossible to carry out in practice, if I had also attempted to analyse internal conflicting motives of individuals, individual approaches to information-processing, and individual choices of strategies. This level of analysis, which I consider to be the "psychological level" of decision-making analysis, cannot, in my view, be carried out simultaneously with the "sociological level," which is the level of this research, because the analytical, financial and time demands would be simply staggering.

This point is important because, although AP1, AP2, and AP3 are applicable to any public decision-making situation at any level of analysis, the choice of the level of analysis will be dependent not only upon the objectives of the investigation, but also upon the availability of information. Thus, it is unlikely that one could apply any of the analytical paradigms at levels lower than the subnational government level to international river basin situations in Africa and Latin America.

Note, however, that the choice of analytical paradigms is dependent much more on the objectives of the analysis than on the amount of information which can potentially be made available. If, for example, the analyst is trying to determine whether technical-economic information (some would say "factual" information) had an important role in the outcome of the negotiation of an international river agreement, say between Brazil and Argentina, then obviously AP2 is the appropriate analytical paradigm to be applied. On the other hand, if the analyst is interested in explaining whether or not strategizing
played an important role in the courses of action chosen, then, the appropriate paradigm is AP3.

Whether the analyst will be able to carry out the enquiry at, for example, the inter-agency level, is a question dependent, not upon the nature of the paradigms, but rather upon either Brazil or Argentina giving him permission to gather the necessary data.

Another point deserves attention. The application of the three analytical paradigms to the psychological level of analysis would require some refinement of the propositions formulated in Chapter 2. However, the paradigms do not require conceptual adaptations. For example, one would need to add some assumptions about human information processing, but these would be, in my view, entirely consistent with the propositions made under AP2. In any case, the emphasis should be on the implication of psychological variables to collective decision-making, for this is the scope of the paradigms.

In this connection, an analytical model proposed and used by John Steinbruner is actually a version of AP2 which concentrates on the cognitive processes (hence, information-processing) of individuals. A point which Allison apparently did not fully understand, for he stated that Steinbruner's Model IV was "a gloss on Model III or Model II."

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In my view, Steinbruner's model is clearly a "gloss" on Allison's Model II, rather than model III, for this latter analytical framework concentrates on the interests of players and the rules of the game, rather than on information-processing.

Joseph Nye and Robert Keohane have also proposed a paradigm to analyse international relations. They have tentatively proposed a "World Politics Paradigm," which they claim attempts to transcend the "level-of-analysis problem" both by broadening the conception of actors to include transnational actors and by conceptually breaking down the "hard shell" of the nation-state.7

However, Nye and Keohane's analytical paradigm is no more than an empirical adaptation of Allison's three models, and especially his Model I (state-centric or unitary-rational actor paradigm), to situations characterized by a significant amount of transnational, and particularly transgovernmental interaction. Thus, the "world politics paradigm" is not a conceptually distinct analytical paradigm, but rather an eclectic adaptation of AP1, AP2 and AP3 to the transnational level of analysis, in which all the following concrete units of analysis are used: international organizations, nation-states, transnational organizations, governmental subunits, and "certain  


8 Ibid.
individuals."

Of course, there is nothing wrong with using an eclectic analytical paradigm, for, as Allison has remarked, some of the best explanations of international relations have been made by analysts who use his three models in different combinations. However, the findings of this research, emphasize perhaps even more the point that for most purposes, but particularly if one aims at normative inferences, the results of the analyst's work are better understood and accepted if the analyst uses distinct analytical paradigms, such as AP1, AP2 plus AP3, sequentially, rather than simultaneously. By proceeding in this manner, the analyst can better substantiate his interpretations, conclusions, and recommendations.

The above observation calls attention to another important point. By explicitly separating the case study (Part II) from its interpretations using AP1, AP2 and AP3 (Part III), I have provided an opportunity to other investigators of applying, if they wish, any other analytical frameworks, in order to determine whether more insightful interpretations can be made. Of course, no one is bound by the information I have gathered, and all are free to collect additional data to substantiate different interpretations. I do not claim to have provided the only possible explanations of the three issues described in the case study. In this regard I ask the reader's permission to quote Hegel once more: "the truth is the whole."

However, I do think that I have had a unique opportunity of gathering information on what government officials and interest group leaders were thinking, perceiving, saying, writing, and
doing, in such detail and so soon after the events took place (actually, some of the information was obtained while the events were actually happening), that I believe it would be hard to describe the three issues with greater confidence than I have. The fact that, with very minor exceptions, my account of the three case study issues has been to a great extent endorsed by some of the most important participants in the events, should substantiate the above contention. 

In many cases, the choice of analytical paradigms will be dependent upon normative and predictive considerations. In the case of normative studies, it is difficult to say which paradigm will be more important. Nevertheless, it seems that while variations of AP1 and AP2 (for example, systems analysis) have been frequently used in policy analysis, the application of AP3 has been somewhat neglected. To the extent that public decision-making can be considered primarily a social process from which collective decisions emerge as the resultant of the play of power and influence, as well as of the strategic behaviour of players constrained by the rules of the game, it appears that greater use of AP3 analysis should lead to better policy analysis and better policy-making.

However, there is also substantial room for improvement in conventional analysis based upon AP1 and AP2. For example, the consideration of economic and political objectives of national

* Among those who kindly reviewed the case study I would like to mention: Mr. Albert J. Erickson, John M. Henderson, William H. Mansfield, Richard C. Hodges, Leo V. Brandon, and Peter Wilson. Their titles are provided in the Appendix VII.
governments in international policy analysis could be expanded to include other types of motives and objectives for government players at the national, subnational and inter-agency levels, as well as the objectives of private interest groups. Inferences about a fuller range of objectives may be needed for players to negotiate with greater confidence. Analysis of the type carried out in Chapter 11 might facilitate both the negotiation and implementation of agreements, for it can offer a wider range of possibilities for trade-offs amongst players. Of course, the usefulness of API analysis will be greatly enhanced by complementing it with an AP2 type of analysis which concentrates on the information processing capabilities of the various players.

The choice of analytical paradigms for predictive purposes seems clear. Prediction of the behaviour of players and of the outcome of issues must be based upon assumptions of rationality, for no analyst can be expected to predict the consequences of non-rational behaviour. Thus, a combination of API and AP2 provides the essential framework for predictive studies, although an analysis of the past strategic behaviour of players (AP3) should constitute a useful guide in predicting their future behaviour.

Finally, the findings of this thesis appear to substantiate a fundamental insight derived from general systems theory: analysis of any phenomenon should proceed from higher to lower levels of analysis. Only when analysis at higher levels, using larger units of analysis, has proved to be unsatisfactory and information is available about lower level decision-making
activities, is expensive and time-consuming detailed lower level analysis justified. For example, AP3 analysis of individual strategies only acquires meaning, and becomes necessary, when analysis of broader strategies pursued by larger players has failed to yield satisfactory results.

Insights into the Nature of Public Decision-making

The previous section has hopefully demonstrated that the second objective of this research, namely to explore alternative conceptual frameworks for the study of complex collective decision-making processes in general, has, to a large extent, been fulfilled. We shall now turn our attention to the first objective, which was to arrive at a conceptual understanding of the decision-making processes which led to the 1972 Canada-United States Agreement on Water Quality in the Saint John River Basin.

In my view, the interpretation of the case study (Part III) fulfills the first objective. Chapters 11, 12 and 13 provide some very interesting and important insights into the nature of public decision-making processes, not only with regard to international rivers negotiations, but in general.

The analysis undertaken in Chapter 11 shows clearly that, in the negotiations of the SJRB Agreement, non-economic motives were definitely more important than economic ones, and that economic efficiency was not an important consideration in the views of the most important public decision-makers. Another, related observation yielded by the analysis, is that the assumption of mutual self-interest for the players involved in
the negotiations is quite satisfactory, as long as self-interest is not equated with economic self-interest alone.

Since David LeMarquand's analytical framework is, to a large extent, derived from API, it is not surprising that, in Chapter 11, I confirmed many of his findings and insights, particularly as far as explaining international rivers negotiations between the United States and Canada are concerned (he was also concerned with arriving at normative conclusions and recommendations which, as has been emphasized, is not the purpose of this research). In addition, I presume to have substantiated in much greater depth his observation that domestic political factors and especially the motives of government agencies are relatively more important in the interactions between those two countries than international relations considerations, such as: international law, linkages, image, and reciprocity, and perhaps even sovereignty. As the analysis demonstrated, however, these factors, plus hydrologic-economic matters did have an influence on the relations between the two countries and the subnational governments involved.

The application of AP2 to the case study in Chapter 12 clearly shows the limited extent to which technical-economic information was used in the development and outcome of the public decision-making processes related to the three issues examined. This observation acquires even more relevance if one

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considers that the SJRB is shared by two of the most technically
developed and richest countries in the world. Although
hydrologic and engineering data were not fully adequate for
purposes of allocation of economic resources, certainly much
better use could have been made of the technical information
which was available.

However, the 1972 Canada-United States Agreement could be
interpreted as a deliberate attempt on the part of both
countries, but especially in the case of Canada, to create the
necessary conditions for the generation and exchange of adequate
information on technical matters and government preferences as
well. Thus, the Agreement can be said to reflect a concern for
institutionalizing a mechanism for making informed collective
decisions regarding the SJRB.

Another insight arrived at in Chapter 12 was that although
a very large variety of information processing approaches were
used by players participating in the issues analysed, none of
the players appear to have made use of either synoptic analysis
or incrementalism as described by Lindblom in his famous 1959
article.11 The point is important because, while, as far as I
know, no one has ever claimed that synoptic analysis is used (or
should be used in the pure form described by Lindblom), he
insisted (until recently)12 that his "disjointed incrementalism"

12 Lindblom, Charles E., 1979, Still Muddling, Not Yet Through,
is in fact the information processing approach most commonly used, not only by policy analysts, but by administrators and policy-makers as well. The application of AP2 to the case study, on the other hand, indicates that at least some steps of Lindblom's "strategy," e.g. marginal analysis, are seldom, if ever, used by players. If anything, marginalism is a feature found only in some of the most sophisticated forms of synoptic analysis (e.g. systems analysis) and for special classes of problems only. In addition, Chapter 12 provides substantial evidence that both policy makers and policy analysts (including incremental analysts) were often guided by some kind of synoptic ideal or goal in their incremental or quasi-synoptic analysis, a point which Lindblom stubbornly denies.

The application of AP2 to the case study, together with some insights derived from the application of AP3, leads to yet another interesting observation. While partisan mutual adjustment, as described by Lindblom, is capable of explaining quite satisfactorily incremental politics, there are some aspects of politics, and especially bureaucratic politics, that are not entirely explained by the mechanisms proposed by Lindblom. The process of bureaucratic politics seems to have some analogies with the game of "word scrabble." This analogy became apparent while examining the process by which the texts of the 1972 Saint John River Basin Agreement and the Reference

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13 Marginal analysis was used, for instance, by the consultants responsible for developing the regional waste treatment system concept for the Northern Maine Regional Planning Commission. See Chapter 8.
to the IJC passed through several drafts before reaching their final forms. However, this analogy can only be fully appreciated by reading carefully the account of this aspect of the negotiation of the Agreement as provided in Chapter 10. On this point, and at this stage of the analysis, I am inclined to refrain from further generalizations, and leave to the reader the suggestion of examining by himself some of the most suggestive hints which the case study itself provides. More systematic observations on this point require further in-depth analysis using AP2 as well as AP3.

As well, the AP2 analysis shows that, although there were efforts on both sides of the border to carry out comprehensive planning, Canadian officials seem to have been much more concerned with institutionalizing the process than their American counterparts. However, the latter did try to justify the need for a new bilateral institution for the SJRB on the grounds that joint comprehensive planning, or at least coordination of planning activities on both sides of the border, was necessary to solve the transboundary pollution problem, although comprehensive planning was clearly not essential to solve the problem.

Chapter 12 also shows that the generation of certain information was often more important in the process of rationalizing or justifying both individual and collective decisions than in the process of preparing for them. In this regard, one should call attention to the important role that the drafters of group meetings played in the post-rationalization of collective decisions. As well, it appears that comprehensive
planning often followed, rather than preceded, important public decisions. Furthermore, it appears that the higher the level of decision-making, the less "synoptic analysis," strategic analysis and incrementalism (in this order) was used. Instead, policy-makers and high-level public administrators often relied upon some form of creative or intuitive thinking.

Non-hierarchical information processing (e.g. group meetings and workshops) were often used for both incremental and "synoptic" analysis and played an important role in the outcome of the Saint John River Basin Agreement.

The analysis carried out in Chapter 13 using AP3 confirmed to a large extent Neil Swainson's observations concerning the strategic behaviour of public decision-makers. This was to be expected, since Professor Swainson's analysis of policy formulation in Canada concerning the Columbia River was done using an analytical framework based primarily upon Lindblom's work, and this is a combination of AP1, AP2, and AP3. However, Prof. Swainson does appear to give greater emphasis to an AP3 type of analysis.

The analysis of the SJRB negotiations using AP3 confirms Prof. Swainson's observation that in complex collective decision-making situations such as the Columbia River negotiations, the choice of decision-making strategies both depends upon and is constrained not only by the rules of the

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game (which includes previous policies and broader strategies),
the objectives, perceptions and learning abilities of the
players, as well as time and other resources. In addition, that
choice depends to a large extent on individual and collective
intuitive and creative processes. While in Chapter 13 I have
carried out the analysis of individual players' strategies to a
greater depth than Prof. Swainson has (his analysis of "methods
of partisan mutual adjustment" is confined to one page of his
book), my analysis only reinforces his conclusions regarding the
Columbia River, which is that a variety of manipulative
strategies were employed by individuals and organizations, and
played a significant role in the formulation of both Canadian
and American policies toward the Saint John River Basin.

I agree with Prof. Swainson that the public decision-making
arena puts real pressures on players to satisfice, to settle for
less, but the analysis carried out in Chapters 12 and 13 also
suggests that some players (e.g., Harry Blaney of the White
House - CEQ staff) almost never gave up on aspiring higher.
Sometimes, they seem to cling almost obstinately to their
synoptic ideal, and it is only within the final hours of the
approaching deadline that they satisfice. In addition, players
seem to have a tendency to rationalize, to find justifications
for their decisions and actions, after they have taken them. In
the process, they may redefine the problem or issue, and even
change their alleged objectives to fit the courses of action
chosen. These seem to me to be universal human tendencies. They seem to me to be universal human tendencies.

The interpretation of the case study using AP1, AP2 and AP3 leads to the conclusion that the 1972 Canada-United States SJRB Agreement represents an attempt by both countries to cope with a pollution problem in a river basin which they share, and which had been for years a source of low level conflict between them.

However, the Agreement does not provide a solution to the pollution problem. Rather it institutionalizes a bilateral mechanism for the exchange of information, coordination of water quality plans, and, most importantly, for continuous negotiation regarding water quality objectives between relevant government departments in both countries.

The Agreement reinforced the right perceived by each side to determine and set its own water quality objectives, consistent with its domestic priorities, although within the constraints of its international obligations. It also represents a significant step towards a redistribution of power and responsibilities amongst government agencies in both countries concerned with international environmental relations.

Whether the Agreement represents a radical policy shift in Canada-United States environmental relations, and what are the origins of such a shift are questions which cannot be satisfactorily answered by the present investigation, for they

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One always wants to give rational explanations to one's self and to others about events and decisions which may have been, in fact, non-rational. One also tends to strive for perfection until reality sets in. I must admit that I could not escape from these tendencies while interpreting the case study, and bringing eight years of research to a conclusion.
require a comprehensive historical analysis of water resource agreements between the two countries along the entire border. Furthermore, as has been suggested in Chapter 2, a proper answer to these questions could not be provided by the application of AP1, AP2 and AP3, either in isolation or in combination, for what is required is essentially an analysis of social change. A fourth analytical paradigm (AP4) has been tentatively suggested to deal with this aspect of public decision-making. While the paradigm has not been as fully developed as the other three, a preliminary analysis of the case study using it has indicated the great potential of the paradigm and provided some interesting insights.

A basic question not adequately answered by the AP1, AP2 and AP3 analyses concerns the relative importance of new motivation, new insights, and perhaps new alliances in the formulation of a new policy for the SJRB. An AP4 analysis, on the other hand, would highlight the reasons and the ways in which that policy problem was selected for action, and once selected, was attacked and reattacked.

For example, from the perspective of AP4, the SJRB boundary and transboundary pollution problems, which for a long time had failed to get the attention of policy-makers in both countries, was finally tackled due to a crisis generated by the Presque Isle stream damming incident. The crisis created by that incident made it possible for the governments involved to take action against powerful interest groups which were, until then, well entrenched and quite invulnerable. The crisis not only stimulated gathering and processing information on the
transboundary pollution problem, and hence learning, but also encouraged the tackling of another problem (the Fraser mills pollution) considered until then somewhat insoluble.

As well, an AP4 analysis would most likely show that the 1972 Canada-United States SJRB Agreement did not result primarily from an advance in understanding about the nature of the basin's pollution problems. It was, rather, to a large extent the product of the entrepreneurship (i.e., creativity plus strong motivation) of a key individual (Mr. Harry Blaney). For this official, the identification of a policy (a new type of bilateral institution for dealing with boundary water problems) preceded rather than followed the definition of a problem requiring solution. It was truly the case of a solution looking for a problem.

On the other hand, the creation of the "Canada-United States Committee on Water Quality in the Saint John River" could equally well be attributed to the strong and sharpened motivation of some key Canadian officials (especially Messrs. R. C. Hodges and R. Millest) to do something about a problem whose solution had defied them for years. The American proposal for a new institution for the SJRB was seen by them as a welcome outlet to which a difficult problem-solving and policy-making task could be delegated.
APPENDIX I

THE STUDY OF DECISION-MAKING: SOME CONCEPTUAL AND ANALYTICAL CONSIDERATIONS

Levels and Units of Analysis

In decision-making studies, as in any other area of research, the choice of the level-of-analysis bears important implications for the results that the researcher should expect from his investigations. However, as David Singer has remarked in regard to the social sciences, "the choice often turns out to be quite difficult, and may well become a central issue within the discipline concerned," and he adds that

The complexity and significance of these level-of-analysis decisions are readily suggested by the long-standing controversies between social psychology and sociology, personality-oriented and culture-oriented anthropology, or micro- or macro-economics, to mention but a few.¹

Nonetheless, a review of the decision-making literature seems to indicate that the level-of-analysis issue may not be as complex as Singer implies. That is, the issue may depend rather on whether the observer analyses the decision-making situation from a compartmentalized or from a systemic point of view. For if one considers social entities as perfectly separable parts of society, the choice of level-of-analysis is reduced to selecting as the focus of the study an individual, or a group of

individuals, or a branch of government, or a level of government, or a government agency, or a private firm, or the nation-state, or an international organization, or to make the point to an extreme, human society as a whole. Thus, the level-of-analysis would be determined simply by the size and scope of the social entity being investigated. This in fact seems to have been the preferred approach by a majority of students of decision-making.

On the other hand, if one follows the systemic approach the problem takes on a different character because the requirements of general systems theory\(^2\) can be rather restrictive. First, however, it should be mentioned that it is not universally accepted that social activities and social entities exhibit systems behaviour and, therefore, can be studied from the perspective of the theory of systems.

At the most elementary level a system is an abstract way of looking at a part of reality, i.e., any entity containing information. It presupposes the existence of a set of interrelated components engaged in some kind of action having some persistence over time or which maintains itself through an equilibrating process. General systems theory would, then, attempt to explain the structural and functional relationships that give order to the apparent randomness often observed in

human social action. It assumes that the activities of social entities and the relationships among its components are not inherently random but rather are "characterized by a whole spectrum of states of determination, ranging from complete disjointedness" (i.e., entropy or lack of information and unpredictability) "through negligible, partial, or substantial, to nearly complete determination" (negentropy, i.e., complete information or predictability). In short, it assumes the existence of "social systems."

One could then distinguish two limiting cases. On the one hand, social activities and processes would be characterized by disjointedness and randomness; on the other hand, every social activity and interconnection would be potentially meaningful and should be taken into consideration. Obviously, if either of these positions is taken, social phenomena would be essentially unanalysable, through the systems approach or any other analytical method for that matter. Fortunately, however, as Dunn has remarked, social activities interact according to various types and strengths of linkages and consequently only a relatively small fraction of all possible interactions needs to be taken into consideration. Dunn says, "It follows that

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5 Ibid, p. 192.
activities must be arranged in functionally related clusters. These activity clusters are not simple aggregations. They are organized by system boundaries that impose controls upon component behaviours." But how does one define these "activity clusters?"

According to the theory of systems, strictly speaking, a system can only be defined by its boundaries. This implies that a system cannot be described entirely by its components and their behaviours, or, to put it in other words, the higher level system determines the meaning of the lower level systems or subsystems. When studying any system, understanding increases as one moves upwards from the basic unit of analysis to the overall system's boundary.

Thus, if one follows the system concept, the approach to a decision-making study should be from whole to parts, that is, from the larger social system to the smaller subsystems. However, it is important to emphasize that, as opposed to physical systems, social systems are less discrete and less precisely bounded. Seldom are social systems defined by physical boundaries, and even when their boundaries are physical (as in the case of a nation-state, a city-region) they do not necessarily determine the functional limits of the systems. Dunn* talks about social systems as having "behavioural boundaries," whose definition is essentially linked to the system's purpose and design. The implication of this is that it

is not useful or proper to define social systems in terms of physical boundaries because social systems do not always form a simple formal hierarchy, but commonly overlap in many ways to form exceedingly complex functional patterns" and Dunn adds that, consequently, social systems are characterized by overlapping boundaries and a low degree of "entitivity." He explains,

In overlapping systems the boundary conditions that define a system are rarely the sole operating organization principle affecting the behavior of component systems. Therefore, the only system that is unambiguously defined is a completely independent self-sufficient system - one where all of the functional linkages are endogenous and under the complete control of the organizing principle or boundary condition. The degree of entitivity is a function of the degree to which the boundary condition defining a system must share the control over its subsystem components with the boundary conditions defining other overlapping parallel or higher-order systems. 

The question of defining the boundaries of social systems for purposes of decision-making studies is thus not very unlike (perhaps just more difficult than) that which the planner faces in defining the appropriate region for his planning exercise. Planners and regional scientists, in particular, have proposed a number of criteria to help delimit the proper area for analysis, for example: the degree of isolation, homogeneity or interdependence of component activities. However, experience has shown that in practice these are rather difficult criteria to

' Ibid', p. 196.
follow, and planners have often had to rely either on existing political or physical boundaries (such as the river basin), or on some estimation of the area of greatest incidence of the problem at hand.

From the above, one is lead to conclude that the level of decision-making analysis cannot be defined a priori. And it may be that the level-of-analysis does not even have to be "temporarily resolved prior to any given research undertaking," as David Singer* insists. It seems to me that it is only during the course of an investigation that the analyst is in a position to define the area and scope of his analysis. And if the pragmatic approach of the planner is adopted, the decision regarding the level-of-analysis would be primarily dependent upon the definition of the decision-making problem which in turn, as we shall see, cannot be defined a priori either.

Therefore, the choice of a level-of-analysis in decision-making studies cannot be scientifically determined. It is a matter of judgement which can only be made, at least initially, in very broad terms, based upon the analyst's constraints in terms of time and other resources. The analyst must choose one level-of-analysis, and, of necessity, make assumptions about higher and lower levels. In this regard, a number of levels-of-analysis have been proposed by students of decision-making from various disciplines. However, two rather distinct levels can be identified as the approaches most frequently chosen. These are

The "psychological" level is the micro-level of decision-making studies. As the term implies it is concerned with determinants of either or both covert and overt behaviour of the individual. Studies of covert behaviour consist of clinical or laboratory analysis of such elements psychological or conceptual structures and personality in general, which are said to determine why certain alternatives are or would be favoured by an individual decision-maker. Studies of overt behaviour, on the other hand, focus on the external behaviour of the individual decision-maker, as perceived or inferred by the observer.

The "sociological" level is the macro-level of decision-making studies. What is important at this level of analysis is not the behaviour of the individual participants in the decision-making process, but the process itself. The individual decision-maker may still be considered the unit in the process, but it is assumed that all individuals are essentially psychologically equal. What distinguishes an individual from another is the role each performs in the decision-making network. However, it does not necessarily imply that only official positions are considered. Roles may also be defined in behavioural terms, but the emphasis is still on group or social processes. We shall review briefly some of the implications of

"I am borrowing the terminology used by Snyder et al., Snyder, Richard C., 1958, "A Decision-Making Approach to the Study of Political Phenomena" in Young, Approaches to the Study of Politics, Northwestern University Press, Evanston, Ill. 3-38 pp., although the scope of each level as suggested here is substantially different."
the "psychological" and "sociological" levels-of-analysis.

**Micro-level studies of Decision-Making**

Studies of decision-making at the micro- or psychological level can be conveniently divided into two major categories of analysis: cognitive-behavioural and motivation-behavioural.¹ These are not established terms in the literature, but seemed to me a convenient way to review the vast literature in the field.

**Cognitive-Behavioural Analysis:** The basic justification for this type of study is based upon the belief that the world outside the individual only acquires meaning when perceived or experienced by that particular individual. Or to put it in words closer to our subject, it is the perceptions, attitudes, and judgements of each individual decision-maker which should account for his actions, not the external objective conditions by themselves. This is the view of those who in sociology are often called phenomenologists, located in the diametrically opposite camp from those so-called structuralists (and foremost among them the "marxists"). The latter are only concerned with social behaviour and to explain this type of behaviour they claim it is only necessary to know the objective conditions (structures) and the ideologies (superstructures) in each situation. The meanings which individuals give to situations are rather irrelevant according to this view.

¹ The term, "reason analysis" is not appropriate in this context because it usually denotes a structured type of survey research which aims at constructing causal explanations for the decisions and actions of individuals.
Cognitive-behavioural analysis is founded on the concepts of the perception process and attitude formation. Although a complete understanding of these concepts can only be achieved through familiarity with certain psychological theories such as stimulus-response (S-R), Gestalt psychology and Lewin's theory of behaviour, a review of these theories here is impractical and, it is hoped, will prove unnecessary.

According to Gilbert White, one of the pioneers in the application of cognitive-behavioural analysis to water resources management problems, perception refers to "the individual organization of sensory stimulation," while attitude is a "preference held by a person with respect to an object or concept." Through perception the individual combines and interprets received stimuli with other information and past experiences, which are primarily social. Thus, the approach assumes that there can be no completely objective perception, and that, in fact, it is rather common for an individual to distort an unfamiliar event to fit it into a familiar pattern (a phenomenon known as cognitive dissonance).

Expressed differently, attitude denotes the psychological state in which the individual perceives a situation. It is the consequence or the residue of the individual's previous perceptions and learning. It may also involve the individual's outlook for the future. Attitudes may remain for a long time,

but usually change through the individual's learning process. Gilbert White\textsuperscript{12} adds that "(I)t does not in itself constitute a value or mark of value; it is the result of a valuation process of some kind, and always involves a preference." Presumably, these attitudes interact and support one another in an activity pattern which is reflected as the personality of the individual. Thus, attitudes should be an important element explaining consistency in human behaviour and knowing an individual's attitudes should, to a certain extent, permit predictability as far as decision-making behaviour is concerned.

Since the world inside the mind of an individual is clearly not accessible to outsiders, it can only be "observed" by the individual himself. However, decision and learning processes within the mind of the individual can be inferred from his overt response (verbal or otherwise) to certain stimuli. Thus, this type of study consists of submitting a small number of individuals to clinical analysis, controlled laboratory experiments or more directly relevant to decision-making studies, administering well-prepared interviews and/or questionnaires to a larger number of individuals (including decision-makers) with a view to gathering information on their background, perceptions, attitudes, and so forth, and then submitting this data to correlation, factor analysis, and other statistical techniques.

With the exception of the interview and questionnaire

\textsuperscript{12} Ibid.
approach, the other methods are prohibitive, in terms of time and financial resources, for direct applications in decision-making studies; not to mention the fact that it would be difficult to get decision-makers to agree to submit themselves to clinical analysis and experiments. However, even interviews and questionnaires aimed at gathering information on perceptions and attitudes and other similar psychological variables, are difficult to apply in complex situations and in cases involving international relations, it seems to be almost a practical impossibility.

The results of cognitive-behavioural studies have shed light on many aspects of individual decision-making behaviour and have confirmed what was already known through intuition or common sensical observations. Unfortunately, most of the more recent studies fit into the category of very general statements fairly well confirming expected conclusions. For instance, one such recent investigation, after extensive field work and statistical analysis, reached the rather uninspiring conclusion that "certain personality characteristics which have been molded perhaps by past experiences and inherent psychological and genetic factors, appeared to have an important influence on decision-making behaviour." In addition, this particular investigation showed that although "there was a close connection between views and behaviour" (actual decisions or

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recommendations made by decision-makers), it was also found that "there are relationships between views that are not directly related to an issue and the decisions or behaviour concerned with it." It is no wonder that this study recommended further inquiry "to determine the extent to which perceptions and attitudes account for variations in decision-making behaviour." And the author adds "(T)his latter research will require the development of an improved body of theory as well as empirical investigations to test relationships."  

In my opinion what is needed is a thorough revision of the innumerable theoretical and empirical studies in the field with a view to formulating a workable synthesis.

Motivation-behavioural analysis: This type of micro-level decision-making study is based upon the premise that to look for explanations for decisions and reasons for actions, in short, to seek answers for the "why" of behavioural analysis, is to bring to light the motivations of the decision-makers. Opinions among scholars about the importance of motivational analysis range between two extremes. Hans Morgenthau,\(^\text{15}\) for example, maintains that it is irrelevant to search for the motivations of decision-makers because they are "the most illusive of psychological data, distorted as they are, frequently beyond recognition, by interests and emotions of actor and observer alike," while

\(^{14}\) Ibid.

Snyder\(^{16}\) leads a group who think that to assume motivation begs many important questions in the study of decision-making.

Whether or not one accepts motivation as an appropriate object of inquiry is not as important as the fact that practically all students of decision-making at one point or another draw inferences about motivation from directly or indirectly observed behaviour. However, before we proceed with this review of motivation-behavioural analysis, it seems appropriate to distinguish between motive as an analytical concept and motive as a fundamental driving force behind human behaviour. Let us start with a brief explanation of the latter meaning.

It is presently recognized that man's behaviour is based upon three fundamental categories of motives: (a) deficit motives, (b) growth motives, and (c) motivations of social and environmental order.\(^ {17}\)

Deficit (or tension-reducing) motives are essentially inherited biological instincts associated with the self-maintenance and self-reproduction of all animals. The other two types of motives are primarily acquired through individual and social learning. Thus, they are secondary not in importance but in origin. Growth (or tension-seeking) motives are what make man different from all other animals, what impel human beings to


create their own meaning for the world ("Homo poeta"), and also give him a future-oriented purposive behaviour ("Homo sapiens"). The motivations for social and environmental order "stem in part from a basic desire of man for survival for himself and his species and in part from the value man places upon there being a measure of stability and order in the environment in which he lives" (Fox and Dunn, forthcoming).

At their roots individual and social values are the result of these three basic categories of human motivations. As explained by Fox and Dunn:

> In the case of deficit motives these help to establish what an individual considers to be his needs for food, shelter, family and so on. With regard to growth motives they determine the kinds of activities he considers rewarding and in the case of environmental order they indicate what the individual considers to be a stable and secure society.

However, this broad classification of the fundamental motives of human behaviour must be modified and adapted to be useful for analytical purposes. In a decision-making study one usually is not concerned with all the behaviours of all those involved in the decision-making process, but rather with the decision-making behaviour of a particular individual or group of individuals in specific situations.

This points to the need to simplify the motivational assumptions behind an analysis. There are a number of ways of achieving this simplification. One is to assume that there is a

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18 op. cit.
single or dominant motive for all decision-makers, or that there are multiple motives but they do not operate at the same time. Another is to choose a limited number of relevant motives and to scale what the relative strength of each of these motives will be in each type of decision situation. Obviously, the latter option involves many analytical difficulties.

Thus, we reach the heart of the problem behind motivation-behavioural analysis: the need to design an analytical framework based upon a limited number of motivational variables. Harsanyi\(^\text{1}\) has pointed out that "(i)f we make our assumptions complicated enough, then we can 'explain' any kind of behavior - which means that we are explaining absolutely nothing." This point is further emphasized by Mancur Olson\(^\text{2}\) when he criticizes certain theories of collective action based upon motives such as "instincts", "desires", "propensities" and so forth, for he says "(a)ny human action can be ascribed to an instinct or propensity for that kind of action, but that adds nothing to our knowledge."

For Olson, in the case of large groups the rational individual member will give preference to his self-interest over the group-interest because "his support will not in any case be decisive in seeing that the group goal is achieved, and when he

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would be as likely to get the benefits from the attainment of that goal whether he had worked for his attainment or not" (p. 129).

The reason why some latent economic groups can and do get organized is explained, according to Olson, by the fact that "these groups are also organized for some other purpose."²¹ He explains further that:

large economic groups are the by-products of organizations that have the capacity to 'mobilize' a latent group with 'selective incentives'. The only organizations that have the 'selective incentives' available are those that (1) have the authority and capacity to be coercive, or (2) have a source of positive inducements that they can offer the individuals in a latent group.²²

This kind of concern has led to two contrasting approaches to motivation-behavioural analysis. On one hand, there is a school of analysis which assumes that individual self-interest is the only motive that needs to be taken into consideration when explaining decision-making behaviour, at least as far as economic and political behaviour is concerned. Economists, for example, disregard all non-egoistic and non-economic individual motives, even when they are analysing political behaviour, as seems to have been the case of Downs²³ and Buchanan and

²¹ Ibid, p. 132.
²² Ibid, p. 133.
Tullock.  

On the other hand, there are those who assume that individual self-oriented motives can be completely neglected and what matters is the common or collective interests of groups of people, classes, or societies as a whole. I have already mentioned the disdain of marxist analysts for studies of individual behaviour. But certain well-known political scientists have adopted a similar analytical view to explain group action. For example, David B. Truman maintains that individual motives are in the main of trifling importance and in explaining public decision-making what matters are group motives, group interests, group attitudes and group pressures. All collective action can be explained in terms of pressure or interest groups conflicts. The unit of analysis in this case is thus not the individual but the group or organization. Both the interests or motives of individuals and those of society as a whole are either excluded as in the former case, or considered non-existent as in the latter case. However, in most cases group interest is considered to be primarily economic interest. Thus, one could say that there is no basic difference between pressure or interest group analysis and traditional economic analysis, (which considers either individuals, households or firms in isolation(502,735),(993,992)), for in both cases the motives of the individuals are transferred to the group - without any preoccupation with the aggregation problem. Therefore, the individualistic perspective  


remains, but instead of individuals, self-interested groups are seen as the primary force in economic as well as in political behaviour.

Mancur Olson, criticizing the views of members of this latter group, which he calls "analytical pluralists," states that: (t)hey generally take for granted that such groups will act to defend or advance their group interests and take it for granted that the individuals in these groups must also be concerned about their individual economic interests." 26 Olson then goes on to demonstrate in a logical and convincing way that these assumptions are rather unwarranted. He concludes his analysis by showing that "if the individuals in any large groups are interested in their own welfare, they will not voluntarily make any sacrifices to help their group attain its political (public or collective) objectives." 27 He adds that for his argument to be true it is not necessary that the individuals place greater value on their self-interest than on the group interest; it is only necessary that they be rational individuals. Olson makes an exception, though. He accepts that in relatively small groups (which he calls privileged or intermediate groups) individuals may voluntarily organize to achieve their common objectives. But he maintains that this is not true of large (or what he calls latent) groups. He, therefore strongly disagrees with the "analytical pluralists"

26 op. cit., p. 126.
27 Ibid.
that as problems become unmanageable at the small or primary group level, large groups or voluntary associations will arise to deal with those problems.\textsuperscript{28}

This review seems to indicate that two of the most important questions addressed by motivational analysis, namely, "What is the relative strength of individual versus group or social motives?" And "Can individuals sacrifice their individual interests on behalf of the group goal?", still remain largely unanswered.

The reader will also have noticed that the major assumption behind Olson's analysis is that individuals do or should behave rationally. Thus, the question of rational behaviour is closely associated with motivation-behavioural analysis. However, because it has been studied by different scholars in different fields and because it is so important for any decision-making study, it will be discussed separately. The subject of rationality is dealt with in Appendix II.

\textsuperscript{28} Ibid, p. 127.
APPENDIX II

RATIONALLY AND DECISION-MAKING

The term "rationality" is ubiquitous in all social systems, but is especially central to economics, management sciences and planning. For example, planning is often defined as a process which attempts to render decisions of individuals and groups more rational, while planners have been considered "historians of the future" and "artists of rationality." However, few planners, and perhaps even fewer managers are aware of the important implications that the assumption of rationality has or may have for the exercise of their professions.

It is not the purpose of this essay to defend or to attack rationality as a basis for decision-making, instead it aims at reviewing those aspects of rationality considered important for a study of individual and group decision-making behaviour.

Individual Rationality

It is often taken for granted that what distinguishes Homo sapiens from other animal species is his capacity for rational behaviour, an assumption which brings the difficult question of what constitutes rational behaviour.

Opinions among scholars about what criteria should be used to define rational behaviour vary within a fairly wide range. Some have suggested that the most important criterion is that the individual should be conscious of his behaviour. However, in addition to the problem that there is not complete agreement as to what constitutes consciousness (although there is a general
agreement that there are levels of consciousness), psychological studies have shown that even in mathematical activity - than which there can presumably be nothing more rational - certain steps may be carried out at a subconscious level.  

Another proposed criterion for rationality is that the individual should have a deliberate or purposeful goal for his behaviour. This criterion certainly serves to distinguish man from certain higher order animals which are capable of modifying their behaviour according to different situations, but must follow purposes set by their biological inheritance (essentially survival motives).

However, even if we add deliberateness or purposefulness to the criterion of consciousness, the combined criteria may still not suffice to define rational behaviour. An example from Simon illustrates the subtlety of the problem:

The typist trains herself to strike a particular key in response to the stimulus of a particular letter. Once learned, the act is unconscious, but deliberate. On the other hand, any person instinctively withdraws a finger that has been burned. This is "rational" in the sense that it serves a useful purpose, but is certainly neither a conscious nor a deliberate adaptation.

Moreover, acceptance of the criterion of consciousness and deliberateness still leaves us with the problem of objective versus subjective rationality. We say that behaviour is

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2 Ibid, p. 76.
objectively rational when it is oriented towards the external objective conditions of a given situation, i.e., if it de facto maximizes the values of the individual irrespective of his knowledge, skills, perception, attitude and other psychological elements. In opposition, we call behaviour subjectively rational if, given the individual's knowledge, access to relevant information, information processing capacities and other personal assets and limitations, it maximizes his values in a given situation. Consequently, the important criterion to distinguish between objective and subjective rationality is whether or not the values of the individual are in fact maximized, which in turn implies that the individual knows all his values and can order them.

Thus, if two individuals had identical objective values in a given decision situation and were objectively rational, they would necessarily choose from a discrete set of alternatives exactly the same course of action. However, if they were subjectively rational, only by chance would they choose the same course of action.

A number of researchers\(^3\) have elaborated and formalized models of objective or pure rationality as points of departure for their normative or descriptive decision-making models. From

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their work one can derive the following outline or model of the main steps and characteristics of a process of "pure rationality:"

**Pure Rationality:** To make an objectively rational decision an individual decision-maker would be required to perform a process of logical-deductive thinking and calculations in four major independent and sequential steps, as follows:

1. **Goal setting:** a complete set of discrete goals (ends) or strategies should be defined.
2. **Prediction:** all consequences (outcomes) that would follow from the adoption of each possible course of action (means) should be predicted. This would imply laying out all possible alternative futures.
3. **Valuation:** all possible outcomes should be compared with the individual's values or utilities and a calculation should be made of the net expectation for each alternative outcome, i.e., a scale of desirability should be established for the various alternative futures.
4. **Decision:** finally having the valuation system as criterion, the individual should single out the course of action having the highest net expectation.

Thus, the model of pure-rationality requires of the decision-maker full knowledge and perfect predictions capability, which is obviously a practical impossibility. However, it is precisely this impossibility which shows how important it is to understand how and how much actual human behaviour departures from this ideal model of objective rationality.
As has been mentioned before, a number of researchers have built upon such a model of pure rationality to describe how individual decision-makers in fact behave or should behave. Among them the work of Herbert Simon deserves to be singled out because it not only preceded the others, but because still today it constitutes a basis from which many other models are being built upon.

Bounded Rationality: John Dyckman's has pointed out that "Simon was not the first to be struck by the unreality of the attribution of complete information and rationality to actual decision-makers, but he took the lead in offering an alternative norm to optimizing, in substituting a concept of 'satisficing'. Simon compared the requirements of the objective rational model (prediction, perfect knowledge, and optimization) with the cognitive capacity of human beings and concluded that what was demanded from them resembled those qualities that we usually ascribe to God. Thus, focusing on the limited physiological and psychological attributes of decision-makers, he developed the concept of "bounded rationality", in which he attempted to show how people tend to decide. He stressed that due to physiological and psychological bounds, decision-makers must and do find ways of simplifying problems so that they can apply rational thinking. The main features of this approach to simplification are:

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Individuals divide complex problems into parts and deal with them one by one.

- Individuals do not consider all possible alternatives (means) and select the one with the best consequences (ends). Instead they search for an alternative which will meet a certain aspiration level, that is, one which satisfies, stopping the search with the first alternative that is "good enough." Thus, man is a "satisficing" rather than a "maximizing" animal.

- Individuals (particularly in organizations) avoid uncertainty, and are even quite reluctant to base their actions on probabilistic estimates of consequences of alternatives. As a consequence they prefer short-run objectives, thus reducing the need for betting in the future.

To make sure that his audience would not take the concept of satisficing as a synonym for quasi- or approximate optimization, Simon expressed the subtle but nonetheless important difference between these concepts as follows:

The terms satisficing and optimizing, ... are labels for two broad approaches to rational behaviour in situations where complexity and uncertainty make global rationality impossible. In these situations, optimization - the description of the real-world situation - is radically simplified until reduced to a degree of complication.

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6 About the meaning of this word, Simon says: "The Scottish word 'satisficing' (=satisfying) has been revived to denote problem-solving and decision-making that sets an aspiration level, searches until an alternative is found that is satisfactory by the aspiration level criterion, and selects the alternative." Op. cit., 1957b, p. 168.

that the decision-maker can handle. Satisficing approaches seek this simplification in a somewhat different direction, retaining more of the detail of the real-world situation, but settling for a satisfactory, rather than an approximate-best decision. One cannot predict in general which approach will lead to the better decisions as measured by their real-world consequences. In chess at least, good players have clearly found satisficing more useful than approximating and optimizing.

Notice that Simon considers all non-rational elements as binding on rationality, and does not accept the possibility that such elements can expand or improve actual rational behaviour (extra-rationality). Despite the many criticisms that have been made to the model of bounded rationality, it is undeniable that it has exerted a considerable influence of all subsequent studies of decision-making behaviour.

In the next sections I try to define and clarify a confusion which often exists among the terms, irrationality, non-rationality and extra-rationality.

Irrationality and non-rationality: A distinction between these two terms is not always clear in the specialized literature. However, for most psychologists an irrational decision is one which is made at a very significant cost to the decision-maker himself and which seems also to be completely out of proportion to the psychological satisfaction which he might possibly derive from such a decision. Hence, irrational behaviour is often attributed to psychotic conditions, although it may also be explained by other factors such as desperation, that is, when one has lost all hopes of solving one's goals by "rational" means.

However, one should note that when an individual faced with
a decision situation acts under influences and stimuli unconnected with the situation, it does not necessarily follow that he is behaving irrationally (as explained above). It would be more appropriate to call this type of behaviour non-rational. In fact, the individual may be better off by following non-rational psychological processes. Yehezkel Dror* groups these non-rational factors, which strengthen rather than weaken an individual's decision-making capabilities, under the term, "extra-rationality."

Extrarationality: Dror mentions specifically "intuition" and "judgement" as examples of extra-rational processes. Certainly, one could include in this category a number of less-known phenomena called extrasensory perception (or ESP). However, for our purposes, we can ignore these elusive and hard-to-believe phenomena and discuss intuition, judgement, and especially "creativity" or creative thought, which is in essence that threshold effect in decision-making and learning which psychologists call the "aha!" or "eureka!" phenomenon.

By "intuition" is generally understood direct apprehension of facts or "truth" independent of any clear sensory stimulation and of any reasoning processes, while "judgement" could be used with the particular meaning of having the ability to make a decision or render an opinion from both factual and subjective circumstances presented to the mind. Intuition and judgement could be considered as creative ways of arriving at solutions

and making decisions. However, these phenomena are generally considered to be the result of entirely unconscious processes, while the phenomenon with which we are especially concerned here is directed creative thought, which is the result of a goal-oriented process, but one which does not follow any predetermined rational rule. The phenomenon is still largely unknown and therefore difficult to define. However, a satisfactory explanation can perhaps be given with the aid of Gestalt psychology.

According to Gestalt psychologists, the same pattern of stimuli or bundle of data can be perceived and organized by the human brain into remarkably different patterns which cannot be logically predicted. In addition, recent research seems to indicate that the creative thought process may involve a threshold shifting of brain-wave activity from the left side of the brain hemisphere ("rational side") to the right side ("creative side").

Arthur Koestler\(^\text{10}\) describes the creative process as a relaxing of controls to reach a state in which we are indifferent to the rules of logic, contradiction and common sense.

Furthermore, it is presently widely accepted that the conditions which favour creative thought include having

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available in addition to knowledge of facts, experience and a
goal-oriented frame of mind, a certain degree of uncommitted
resources, that is, "thoughts" which are only remotely connected
to the decision situation. The amount of these uncommitted
resources and the facility with which they can be recommitted in
different thought configurations would then determine the
creative capacity of an individual.

Examples of this type of creative thought directly relevant
to this study could probably be found in the literature of
decision-making. However, an easier and perhaps equally relevant
source can be provided by historians of science, and most
prominently among them by Thomas Kuhn.

Kuhn\textsuperscript{11} has shown how scientific discoveries are frequently
the result of internal crises of ideas, in the minds of usually
young men or people new to a field of inquiry, which are finally
resolved by something like a "switch of Gestalt." He contends
that inventions or discoveries (we shall leave a discussion of
the concept of problem-solving for the next chapter) are
frequently based on something more than logical inference from
facts, that the pattern discovered could not have been forecast
in advance and that it sometimes emerged "all at once, sometimes
in the middle of the night, in the mind of a man deeply immersed
in crisis." He adds that "how an individual invents (or finds he
has invented) a new way of giving order to data now assembled -

\textsuperscript{11} Kuhn, Thomas S., 1962, The Structure of Scientific
Revolution. Phoenix Books, the University of Chicago Press,
must here remain inscrutable and may be permanently so."\(^\text{12}\)

Whether we accept extra-rational processes as concrete and legitimate or whether we discard them as "mysticism," decision-makers, as Dror\(^\text{13}\) puts it, faced with the limitations of the rational method, have little choice but to rely greatly on them. Dror\(^\text{14}\) also points out that in some phases of the decision-making process, for instance when "policy makers need 'creativity' to invent new alternatives," only extra-rational processes will work. Finally, he mentions that extra-rational methods have apparently played an important role in both personal and public decision-making, as substantiated by many accounts by political leaders of their own decision-making behaviour. It should also be mentioned that it has been mathematically demonstrated that in certain situations, such as non-communication, non-cooperation, and lack of trust epitomized by the famous "prisoners dilemma" game (a two-person, non-zero sum, non-cooperative game), individual rationality can lead to disaster, and that non-rational individuals or individuals with "extra-rational" abilities will do much better that rational ones.

**Group Rationality**

John Dyckman\(^\text{15}\) has correctly pointed out that "(t)he

\(^\text{12}\) Ibid, p. 89.

\(^\text{13}\) Op. cit.


rationality of social choice and group decision has been even more difficult to demonstrate than that of individuals." Although almost everyone recognizes that there is very little of rationality in the behaviour of large unorganized groups and is familiar with the characteristic irrationality of mob behaviour, many take for granted that decisions reached by relatively organized groups such as public and private enterprises are rational. Thus, the same mistaken assumptions behind individual rationality are transferred to the group without much questioning. Simon," for instance, maintained that the argument that "a theory of organizational rationality must treat the phenomenon of goal conflict, while a theory of individual rationality need not"..."is only partly correct, for goal conflict may be as important in individual as in group behaviour." Keeping within the same frame of thought, March and Simon" believed that if the factoring of problems within an organization (e.g. through specialization) is accurate there would be little possibility of inter-organizational conflicts and as a consequence what would be rational for each organization as a whole. However, they did admit that in many cases, such a factorization of problems will not be done properly; sub-units will develop conflicting goals and some mechanism for conflict resolution must be brought into the picture (e.g. by attending different goals at different times or


by adopting central decision rules). Nonetheless, as Simon's own emphasis, "(t)he principle of bounded rationality lies at the very core of organization theory, and at the core, as well, of any theory of action..."

However, Mancur Olson has convincingly demonstrated that size is probably a determining factor on whether or not it is possible that rational individual behaviour will bring forth group rationality or perhaps even more important, group-oriented behaviour at all. He summarizes this by concluding that "small groups will further their common interests better than large groups." Olson explains the problem with large or "latent" groups (as he calls them) as follows:

"If the members of a large group rationally seek to maximize their personal welfare, they will not act to advance their common or group objectives unless there is coercion to force them to do so, or unless some separate incentive, distinct from the achievement of the common or group interest, is offered to the members of the group individually on the condition that they help bear the costs or burdens involved in the achievement of the group objectives."

And he adds:

"The widespread view, common throughout the social sciences, that groups tend to further their interests, is accordingly unjustified, at least when it is based, as it usually is, on the (sometimes implicit) assumption that groups act in their self-interest because individuals do."


Thus, if one applied to large groups the same criterion of rationality that is commonly applied to individuals, namely that they should further their own interests, then according to Olson's analysis most of them would fail the test of rationality. Actually, Olson himself advanced that "(t)here is paradoxically the logical possibility that groups composed of either altruistic individuals or irrational individuals may sometimes act in their common or group interests."\textsuperscript{21}

Another important insight on the question of group rationality is provided by the theory of collective goods.\textsuperscript{22} The central point of this theory is that

\begin{quote}
With these goods, unlike others, rational individual behaviour normally does not spontaneously lead to a rational collective outcome. Only arrangements designed to give individual states an incentive to act in their common interest can bring a collectively sane result.\textsuperscript{23}
\end{quote}

From this theory emerged a good example of how individual rationality can lead to collective irrationality and possibly to disaster. Garret Hardin\textsuperscript{24} described a hypothetical situation, which he named the "tragedy of the commons," in which sheep herders sharing a common grazing land, by pursuing their

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{20} Ibid, p. 2.
\item \textsuperscript{21} Ibid.
\item According to Olson (Ibid, p. 35) "a collective good is, by definition, such that other individuals in the group cannot be kept from consuming it once any individual in the group has provided it for himself."
\end{itemize}
\end{footnotesize}
individual rational interests, brought ruin to all of them.

We could continue our discussion of group rationality by examining the implications of the assumption of individual rational value-maximizing behaviour for collective decision-making, on which several social theories, including liberalism and marxism, are based. We could elaborate, for instance, on the argument that these theories are inconsistent because they assume that man is above all a rational being, or the opposite argument as put forward by Olson\textsuperscript{25} that it is precisely because individuals are rational that these theories (especially marxism) do not have much support. However, such a discussion, although interesting, goes beyond the needs of the present research. The important point to be learnt is that, even more so than in the case of individuals and small groups, group decisions and social choices are not normally the result of a rational process. As Gilbert White has called our attention, regarding the complexity of collective action,

> to speak of a rational process is to ascribe a clarity of action and observation that rarely is attained. It is enough to struggle for rational, accurate description without seeking or claiming to find rationality in the action itself.\textsuperscript{26}

As has been amply demonstrated in the literature, although mostly implicitly, it is not difficult to give a rational


account to any action of a group or collectivity. Graham Allison expressed this point well when he suggested a "Rationality Theorem" as follows: "there exists no pattern of activity for which an imaginative analyst cannot write a large number of objective functions such that the pattern of activity maximizes each function."^{27}

APPENDIX 3

SOCIAL CHANGE: PER GRADUS OR PER SALTUM

Interpretations of the Concept of Social Change

There seems to be general agreement that the various alternative interpretations of the process of social change are derivations of major philosophical and scientific theories. With the age of "enlightenment" came the tendency to explain all phenomena - physical, biological, and social - in rationalist-mechanist terms. Similarly, after Wallace and Darwin put forward their theory of biological evolution it became current to explain social change according to their theory, which led to what has been termed "social Darwinism." And, since Marx, based on Hegel, developed his theory of social evolution, there has been a tendency (thus in the reverse direction) to explain all changes in nature in terms of dialectics. More recent examples are the influence of classical economic theory and of cybernetics on all social science disciplines.

There is then a tendency in the development of human

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knowledge to analogize and generalize from dominant philosophical and scientific concepts. This will become clearer as this essay unfolds. It is not our purpose here to evaluate the merits or the "validity" of the theories explored. Time is the only judge in establishing the contribution which theories can make to our understanding of human reality.

In discussing the ideas of two of the most influential scholars in the field at present, Thomas Kuhn and Edgard Dunn, it will become apparent the extent to which, in my opinion, the theories of Darwin and Marx (certainly modified by their followers) have affected our understanding of social change processes.

The Theories of T. Kuhn and E. Dunn: Based upon a historical analysis of the development of the "pure" sciences, especially astronomy, physics and chemistry, Kuhn\(^1\) arrived at the conclusion that "normal science" is the orderly and cumulative work of a community of scientists under a framework of thought or unifying theory, which he calls paradigm.

Kuhn believes that paradigms emerge out of earlier scientific practice and become dominant because they are successful in solving puzzles or problems that a scientific community recognizes as important. However, Kuhn tells us, at

times the normal problem-solving process of science under the guidance of a paradigm reveals the existence of anomalies which lead to either or both discoveries and invention of new theories. These, in turn, bring about crisis situations which culminate in a paradigm shift. Thus, according to Kuhn, scientific development is the product of two interrelated yet distinct processes: i) normal problem-solving and ii) paradigm shifts.

Edgard Dunn (1971), building on both Kuhn's insight and the modern synthetic theory of evolution, suggested that the two processes identified by Kuhn regarding scientific development are common to both biological evolution (phylogenesis) and social evolution (sociogenesis). However, because of the requirements of general systems theory (see Appendix I) and because he was applying the concept to a much broader subject, Dunn felt it necessary to redefine Kuhn's concept of paradigms as "the recognized functional boundaries of a social system (i.e. the accepted image of its entity) and the functional objectives of the system." 3

According to Dunn, in the case of a social system normal problem-solving is the equivalent of behavioural innovations under the guidance and control of a paradigm (as defined by him). When normal (I would say rational) behavioural innovations fail to improve the performances of the system, a series of

2 In the second edition of his book (1970) and in later writings Kuhn has, at the suggestion of some of his reviewers, replaced the term "puzzle-solving" by "problem-solving", the latter certainly being more appropriate for the purposes of this study.

failures (anomalies in Kuhn's terminology) will eventually lead to a complete revision of the social system goals and functional entitativity or, in other words, to a "paradigm shift in social organization and goals."  

In an illuminating discussion of the similarities and differences, especially as far as the results of the processes are concerned, Dunn shows that the processes of adaptive specialization and adaptive generalization in phylogenesis are the counterparts respectively, of normal problem-solving and paradigm shift in social evolution. In addition, Dunn points out that, as in the case of evolution:

...which form the process takes at any time depends upon certain aspects of the history of the system and the environmental context in which the system is operating. As in the case of phylogenesis, normal problem-solving is more common than the more general adaptations leading to paradigm shifts or social reorganizations.

**Dialectics:** It appears clear to me that Kuhn and Dunn, whether or not they are aware of it or willing to acknowledge it or not, (many people would be almost offended at such a suggestion!), have both been influenced by dialectics.

According to dialectics there are two types of change in nature: quantitative and qualitative. The process which causes quantitative changes is gradual, and does not in any way alter the quality of things. The accumulation of these incremental

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quantitative changes precipitates crises out of which, in a sudden leap a new quality emerges. It is not difficult to see the similarity between, on the one hand, the processes of quantitative changes and normal problem-solving, and, on the other hand, the processes of qualitative changes and paradigm shifts. Also note that, in all cases, crises are responsible for qualitative or paradigmatic changes.

One should, however, also be aware of the important differences among the mechanisms proposed for scientific development and biological social change by these scientists and philosophers. Although the exact mechanisms involved in the two fundamental modes of change remain to a large extent rather unclear (perhaps due to a serious lack of empirical research), it seems worthwhile to explore these concepts analytically in the hope that by so doing, some of the pitfalls and strengths involved in analogizing will come to light. This difficult task is pursued in the remainder of this chapter. I shall start with a review of some diverging formulations and interpretations of the concept of paradigm.

THE PARADIGM CONCEPT

A widening controversy has developed among the social

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6 In philosophy these changes are explained by Hegel's triad: thesis, antithesis and synthesis. Each state or phase of development is considered a synthesis which resolves the contradictions contained in the preceding stage, and which generates its own contradictions on a different qualitative level in an unending process of quantitative changes and emerging qualities.
sciences regarding the question of what constitutes paradigms and what are some examples of them. The situation is thus not very different from that which existed when Kuhn published the first edition of his book in 1962. At that time he stated that what led him to the discovery of the meaning and significance of paradigms for a scientific community was "the number and extent of the overt disagreements between social scientists about the nature of legitimate scientific problems and methods."

Since then, researchers in all social science disciplines have attempted to reformulate Kuhn's original definition of paradigms, i.e. as "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners," to fit their own research interests. Actually, Kuhn himself has revised his original definition, making a distinction between paradigm in the sociological sense, which he proposes to be "the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community" and paradigm in a narrower but at the same time deeper sense, which would be "one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science."

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8 Ibid.
Kuhn's reformulation raises the hypothesis that he may have adopted the two levels-of-analysis perspective (sociological and psychological) which are widely accepted among social scientists and which is discussed in Appendix I. The other possibility is that Kuhn was accepting a suggestion made by many of his reviewers that there should be a hierarchy of paradigms. In this regard, some reviewers* have gone as far as suggesting that paradigm is the highest level of a hierarchical chain of concepts which includes theory, conceptual/analytical framework model, typology and possibly other lower terms. Dunn interprets Kuhn as saying that each scientific discipline is under the control of a distinctive paradigm, and that they "have a hierarchical character so that one paradigm may have a controlling influence over the activities in several subdisciplines, each functioning under the control of subsidiary paradigms."** Although, in my opinion, this interpretation is by no means evident in Kuhn's work (not even in his revised book), it does suggest a convenient way of organizing conceptual schemes.

10 For instance, Dunn, Op. cit.,


There have been many candidates for paradigms in the social sciences, particularly in sociology and political science. Robert Friedrichs\textsuperscript{12} suggests that Talcott Parson's "General Theory of Action" was the first dominant paradigm of sociology and lasted up to the 1960's when apparently it was replaced by activism, which probably means Amitai Etzioni's "Active Society" concept (Dunn, incidentally, considers Etzioni's ideas the closest to his own).

Jerome Stephens\textsuperscript{13} reviews the influence of Kuhn's ideas on political science and mentions several candidates for paradigm put forward by such eminent practitioners of that discipline as David Truman and Gabriel Almond, both of whom are also said to have interpreted the development of political science using Kuhn's original formulation.

David Apter and Charles Andrain\textsuperscript{14} suggest that the Marxian, Weberian and Parsonian approaches to social processes are "omnibus theories," because, although they "cover the diversity of human behaviour at a social science level," they are all under the "choice paradigm," which they claim "is the central problem of the social sciences - the common term" which can be examined in normative, structural, functional and behavioural terms. Unfortunately they do not provide enough evidence to substantiate their claim.


\textsuperscript{13} \textit{Op. cit.}

One easily sympathizes with the difficulties social scientists are confronting in defining and identifying paradigms. However, it seems to me that progress in this area would be faster if instead of worrying about terminology, classification and normative questions, more attention was given to investigating to what extent the paradigm concept is representative of social reality and to what extent it helps us (as it should) in understanding that reality.

This subject is perhaps more the concern of epistemology and sociology of knowledge than of social sciences as the term is normally understood. However, if we are to accept Spinoza's statement, "the pattern of research should be the same as the pattern of what is being studied,"15 which suggests a unit of method of investigation and process being investigated, we should certainly examine more carefully the practical implications of that philosophical question of "being and knowing." In this regard a small step outside our main subject of study may prove helpful for our purposes.

Jean-Paul Sartre in his "Critique de la raison dialectique"16 and in his debates with Marxists17 sees philosophy as a method of investigation and of explanation which


reflects the nature of the social processes from which it emerges. It is at the same time a social and political weapon and an expression of the general processes of society and, as a consequence, two philosophies cannot coexist in the same society. He believes that both man's interpretation of human history and history itself are part of the same process (for him a dialectical one). He says:

> la pensée apprehende la réalité historique comme une totalisation, en même temps qu'elle se découvre elle même au milieu de l'histoire, comme à la fois totalisante et totalisée, selon le processus qui l'engendre et qu'elle connait.

I think that a similar statement could be made in relation to the nature of paradigms. They are at the same time a means of explaining a social process and an expression of the process itself. I had already occasion to mention (Appendix I) that there seems to be evidence that as knowledge about human behaviour increases through descriptive research, the more capable are social scientists of deriving normative inferences from such descriptions. The reverse is also true, normative models of behaviour (e.g. systems analysis) often become descriptions of actual social system behaviour.

Many of Kuhn's critics and followers have apparently neglected the sociological implications of his original formulation of paradigms as conceptual frameworks which bind

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scientists together as in a school of thought which for a time help them solve the problems which the paradigms themselves define as worthwhile solving. He also points out the commitment or allegiance of scientists to one paradigm. There we see that Kuhn agrees to a large extent with both Spinoza's dictum and with Sartre's view of the unity of knowledge and social reality.

Edgard Dunn seems to have fully accepted the above views, for he rejected the dichotomy between theory and fact, analytical frameworks and social processes for, as we have seen, he equates paradigms with the boundaries and objectives of the social systems themselves.

Keeping in mind this interpretation of the nature of paradigms we shall now turn our attention to our original objective, i.e. to attain a greater understanding of the two modes of social change, namely normal problem-solving and paradigm shifts.

**Problem-Solving Mechanisms**

Kuhn explains the process of normal problem-solving in science through an analogy with the process of solving a jigsaw puzzle. In both cases, he says, the puzzle-solver (researcher) follows known "rules" an has a clear idea of what the final picture (solution) will be or is likely to be. In such cases, the problem places the researcher and not the paradigm (or theory) in jeopardy. The problem-issue is solved without the researcher questioning the conceptual basis for its solution.

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This does not imply that paradigms are not gradually adapted to the problems to which they are applied. On the contrary, it is through this process of adaptation that paradigms are refined and made more efficient in solving problems. However, the essence, that is, the quality of the paradigm remains unchanged.

For Dunn, social problem-solving is typified by the normal, decision-making process by means of which the behaviour of components of established social systems are made more consistent with the functional objectives of the total system. If the process is successful it should narrow the gap between system objectives and performance. "Normally [Dunn says], the problems or anomalies that are revealed by the operation of the system are solved by experimenting with developmental hypotheses consistent with the general notion of social system entity and objectives." The performance improvements that are undertaken aim at the behaviour of social system components and subsystems. They do not modify the basic entity of the system and the "only goals that are modified are those goals or criteria that are instrumental to the fulfillment of primary system goals."

In this context, Dunn accepts that planning may be utilized as a technique in social problem-solving. But even so, he emphasizes, this is only possible for a limited number of social problems, that is, those susceptible to factorization and amenable to a relatively deterministic approach. In those special circumstances, he adds, the partial solutions yielded by

planning "can then be incorporated into the more judgemental and experimental aspects of social problem-solving."  

Paradigm Shift Mechanisms

We have seen that according to Kuhn a paradigm shift is the resolution of a crisis situation in a scientific community; crises are the consequence of anomalies revealed by discoveries and invention of new theories. However, we need to discuss further the meaning of terms such as "anomaly", "crisis" and "shift", used by Kuhn.

For Kuhn, anomalies are more than just discrepancies between theory and fact, for there are always difficulties in the fit between the two. He says that in order to generate crises and to move into "extraordinary science," anomalies must be seen by some of the field's most eminent men as exceptional puzzles of normal science, and they must attract the attention of more and more scientists. The result is the "blurring of a paradigm and the consequent loosening of the rules for normal research."  

A paradigm shift is not, Kuhn says, the result of the rational and deliberate decision of a community of scientists. The rational interpretation of data leads only to the recognition of anomalies and to crises; the shift itself is a "sudden and unstructured event like the Gestalt switch." He adds: "No ordinary sense of the term 'interpretation' fits these

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22 Ibid, p. 144, emphasis added.  
flashes of intuition through which a new paradigm is born" and, he insists, "the new paradigm, or a sufficient hint to permit later articulation, emerges all at once...." 24

The implication of the above seems to be that a new paradigm is born in the minds of one or several individuals as a creative thought process, (see Appendix I). However, Kuhn warns us that we should not expect scientists to "attest to these changes directly" but should rather "look for indirect and behavioural evidence that the scientist with a new paradigm sees differently from the way he had seen before." 25

This brings us back to a question which was raised before: if paradigms are representative of processes in the real world, does it mean that the world also changes with a change of paradigm? We leave Kuhn to answer this question. He says: "though the world does not change with a change in paradigm, the scientist afterward works in a different world." 24 He explains that two scientists practicing under two different paradigm shift, look at the same world phenomena and what they see does not change with their perceptions but, he adds:

...in some areas they see different things, and they see them in different relations one to the other. That is why a law that cannot even be demonstrated to one group of scientists may occasionally seem intuitively obvious to another. Equally, it is why, before they can hope to communicate fully, one group or the other must experience the

24 Ibid, pp. 121-122.
26 Ibid, p. 120.
conversion that we have been calling a paradigm shift. Just because it is a transition between incommensurables, the transition between competing paradigms cannot be made a step at a time, forced by logic and neutral experience. Like the Gestalt switch, it must occur all at once (though not necessarily in an instant) or not at all.²⁷

This last statement by Kuhn has raised a wide controversy in the literature, most of his reviewers objecting to what they consider mysticism and lack of "scientific" evidence in Kuhn's argument. Kuhn's critics cannot accept that scientists (who are expected to be even more rational than the rest of us) often change their minds about the interpretation of physical phenomena not based in "proofs" and "scientific arguments," but rather on intuition, judgment and, least of all, "faith" and "conversion," or "personal and inarticulate aesthetic considerations."

From our discussion about rationality (Appendix I) we can readily understand why Kuhn's critics are so adamant in their insistence on rational explanations for all phenomena (rather than for reasonable ones). It is quite possible that, although many of them have actually experienced such "conversions," they are unwilling to admit or accept them and can always find a way to rationalize their own experiences.

However, the fact that a good number of scholars have adopted (or, we might say, "converted" to) Kuhn's theory, shows that some people have not been innocent victims of that

"conceptual strait jacket of rationalism," as William Barrett\(^2\) and this tends to reinforce Kuhn's argument in favour of the non-rationality of paradigm shifts.

In addition, I think most people would agree that it would be rather farfetched to classify such "converts" as David Truman and Gabriel Almond as "mystics." Whether they have understood Kuhn well is a different question.

Dunn, as we have already mentioned, adopts Kuhn's two fundamental modes of change. However, he evidently has difficulty in accepting paradigm shifts as a non-rational, discontinuous and sudden process. Or, perhaps, his normative concerns lead him to suggest that it should not be. Nonetheless, he thinks of social change as a creative collective learning process (whose normative form is defined by him as "evolutionary experimentation") and does leave margin for the inclusion of non- or extra-rational elements in the process. Although Dunn's position is not altogether clear, his interpretation of paradigm shift as a more general social process is an important step in this direction.

In agreement with Kuhn's concept, Dunn believes that the controlling paradigm of a social system imposes some constraints on the kinds of innovations and changes which can be brought about by normal problem-solving. However, he maintains, that "the nature and scope of the required reorganization [paradigm

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shift] are revealed through the operation of the normal problem-solving process" and "is a logical out-growth of the normal practice of evolutionary experimentation."

Kuhn, on the other hand, insists that normal problem-solving only reveals anomalies, it does not indicate the nature and direction of change. Thus, while Kuhn makes his point perfectly clear, Dunn leaves room for interpretations - the clue may reside in Dunn's concept of "evolutionary experimentation." Some explanation of this concept is therefore necessary.

Dunn explains that when the goals of a social system's components (individuals or sub-systems) are not fully consistent with system goals and the environmental setting, this stimulates (or should) a creative experimental process which generates "new behavioural ideas calculated to modify the relationship of organism behaviour and environment in ways considered to be more consistent with the [system] goals." And he adds that if through experience the novel behaviour reveals goals convergence it is reinforced, if not it is replaced by still another behavioural innovation, and the new behaviour is sifted from the idea pool.

The analogy between the process of paradigm shift, as described above, and adaptive generalization in biological evolution is quite clear. However, as Dunn himself points out, there are some very important differences. First, a distinction


''' Ibid, p. 84.
should be made between the stochastic nature of changes at the level of the organism in natural evolution and innovation in individual human behaviour. The latter, Dunn stresses, is the product of the "active, conscious, discriminatory capacity of a learning organism."" Furthermore, as opposed to the case in biological evolution where the organism is eliminated, social systems have developed feedback mechanisms which can progressively eliminate errors, and the ideas of individuals die in their stead. Finally, Dunn is careful to add that "(j)ust as macromutations in the biological realm are lethal to the offspring, the discontinuous approach to social problem-solving" ... "leads to abortive results."" Thus, although Dunn talks about "creativity," "experimentation" and "innovation" and higher order system controls, he clearly rejects the concept of paradigm shift as an abrupt process, a discontinuity, or at least, this is his normative position. He apparently cannot accept Kuhn's formulation that the transition between competing paradigms is one between incommensurables and that for this very reason must occur suddenly or not at all. It is evident that Dunn believes that paradigm shifts can occur gradually and through reforms (rather than "revolutions" as Kuhn does) for he describes the process as modification or revision of social system entity and goals and labels the shift as social reorganization.

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1 Ibid, p. 82.
One possible explanation for this discrepancy between Kuhn and Dunn could be that the former puts emphasis on the process leading to a shift, while the latter emphasizes the process of acceptance of the shift once it has occurred. If this is the case, then the differences between the two are not as marked as appeared at first. Kuhn does suggest that the process of acceptance of a new paradigm is a gradual one. And Dunn seems to agree with him when he says that a paradigm shift occurs as an increasing number of individuals make learning adaptations through an interaction of ideas and behavioural modes, which includes cooperative group behaviour.

As far as the nature of paradigm shifts is concerned, Kuhnians are closer to dialectics than Dunnians. According to Marx and Engels, a qualitative change (paradigm shift) emerges out of the contradictions present in any system, which are revealed in the course of quantitative changes (normal problem-solving). But this qualitative change is always sudden and cannot but be sudden, in the sense that the new quality which emerges was not present before, and thus can rightly be called a "qualitative leap."  

Dunn is somewhat mistaken in stressing that there is nothing in Marx (I would say dialectical materialism) that points to the distinction between social change as normal problem-solving and as paradigm shift and that "there is a serious imbalance in Marx because he sees social change..."

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exclusively as a process by means of which a paradigm shift is brought about."

First, for "Marxists" social change is the paradigm shift, and until the shift occurs there is no qualitative change. Second, as we have seen, dialectical materialism does make the distinction between the two modes of social change; however, it does not accept that the normal problem-solving process can ever bring that qualitative change. At most, what it can do is to make the behaviour of social systems temporarily more consistent with their goals. This is because dialectics attributes the qualitative leap to a precipitation of crises generated by the contradictions inherent in any social system (which for Orthodox Marxists are determined by the mode of production in material life), which create the conditions for the rejection of the dominant paradigm and also give rise to its alternative.

At this juncture it seems useful to call attention to some additional points of convergence between Kuhn's concepts and the dialectical method. Although at first it might seem that Kuhn disregards, while "Marxists" put emphasis on, the contradictions in the material conditions of groups or classes as responsible for qualitative changes, this is not entirely so. In his original formulation (1962) Kuhn acknowledges that he did not take into consideration the influence which social and economic factors might have in the process of scientific evolution, although he definitely gives priority to intellectual factors.

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On the other hand, Marx and Engels admitted on several occasions that the pure and natural sciences might be exempt from the direct influence of the social and economic infrastructure.

In addition, both "Marxists" and Kuhnians believe that once a paradigm shift has occurred, it is unlikely that even after the crisis has subsided the collectivity will return completely to the older paradigm, although a number of individuals may remain faithful to it. Incidentally, this characteristic irreversibility of the processes of scientific and social evolution is also attributed to the process of biological evolution.

This last point raises an important question: can we then say that social change and evolution move toward a goal or terminal state? The answer given by Kuhn, Dunn, Darwin and their followers is an unmistakable no. In this regard, Kuhn's discussion of the idea of "progress" in the sciences is very illuminating.

Kuhn compared "progress" in the pure and natural sciences with the apparent lack of it in non-scientific disciplines (social- "sciences") and concluded that the question is misleading and "part of the answer to the problem lies simply in the eyes of the beholder." He explains that the absence in the "hard" sciences of competing schools that question each other's aims and standards (the inverse would be the case in the social sciences) is what makes progress so visible and, in addition,
makes the work of scientific communities so efficient in solving the problems which the paradigm defines. Therefore, he concludes, the result of the normal problem-solving process must inevitably be seen as progress.

However, one might argue, this is "progress" through normal problem-solving, but what about progress through paradigm shifts? According to Kuhn it should not be surprising either that the results of paradigm shifts (or extraordinary science) should be identified with progress for, he argues, that since revolutions

...close with a total victory for one of the opposing camps, will that group ever say that the result of its victory has been something less than progress?

No, he answers, for that

...would be rather like admitting that they had been wrong and their opponents right. To them, at least, the outcome of revolution must be progress, and they are in an excellent position to make certain that future members of their community will see past history in the same way."

Examples of such an interpretation of progress could be easily identified in the social and economic development literature. One study which comes readily to mind is Albert Hirschman's *Journeys Toward Progress*, which in my opinion could easily be reinterpreted through Kuhn's concepts and convey how useful his insight can be.

"Ibid, p. 165.

One final point which needs some clarification concerns the conditions which should favour a paradigm shift. We have discussed in Appendix I the conditions which favour creative thinking and which lead to discoveries and new theories. Now that we have introduced the paradigm concept, we can return to the subject and point out that, according to Kuhn, new ideas in science most often originate with individuals less committed to the dominant paradigm than their contemporaries, for various reasons such as the fact that they are new to the crisis ridden field. If we now turn to Dunn we will see that building on the synthetic theory of biological evolution, he provides us with some very valuable insights into the factors which may be conducive to paradigm shifts at the social system level.

Dunn shows that there are some similarities between the conditions normally associated with adaptive generalization in phylogensis, and those which often lead to paradigm shifts in sociogenesis. For him, the preconditions for paradigm shifts are primarily associated with the adaptability or learning capacity of the social system which, in turn, is ultimately dependent upon the learning capacity of the individuals who comprise the system.

As we have seen, at the individual level the most important requirement for creative thinking seems to be the availability of uncommitted resources (the equivalent of undifferentiated tissue in the case of organisms in phylogenesis). The creativity and novel behaviour of one individual when combined with that of other individuals eventually generate new group and social behaviour. Now, according to Dunn, it is the diversity and
complexity of individual and subsystem ideas and behaviours (the equivalent to a variegated genetic pool in biological evolution) which determines the learning capacity of the social system and constitutes the most important "precondition" for social change. As the learning social system interacts with its environment it generates at various points in its historical development threshold of opportunities which may bring about paradigm shifts. Thus, according to Dunn, paradigm shifts in social organizations are a function of both a process internal to the social system (problem-solving and creative play among components) and an interacting process between the system and its environment. Therefore the sources of change can be either or both endogenous or exogenous. But he stresses that even when the paradigm shift results from new behavioural ideas from exogenous sources it still requires a creative learning adaptation.

Finally, Dunn calls attention to an important point which has been a source of misunderstanding in the literature dealing with both biological and social evolution. He says that the "preconditions...do not form the basis for positive predictions that a social system or biological species will at a specific point undergo major changes in form and function." 38

As one should expect from this discussion, be it biological evolution, scientific development or social change processes, normal problem-solving is a process more common than the more

fundamental paradigm shift process.
APPENDIX IV

HUMAN INFORMATION PROCESSING AND LEVELS OF PROBLEM COMPLEXITY

Let us start by using a model or metaphor to describe the information processing/decision-making (IP/DM) attributes of an individual human being, even at the risk of instead presenting a caricature of him. Let us not argue whether he should be called an information processor or a decision maker, let us call him both, that is, an IP/DM. By discussing the different types of demands the problem environment places upon an IP/DM we shall learn something about what makes problem solving difficult.

The Individual Human Being as an IP/DM:

We can define an IP/DM as an advanced cybernetic entity capable of processing external and internal information: setting at least some of its own goals and operating rules; acting on the environment and monitoring the results of its own actions in order to modify subsequent behaviour, both in terms of short-term adaptations and long-term changes (learning).

Figure 7 is a very simple "black-box" model of an IP/DM. The black-box is actually shown open to call attention to some of the best known features of an IP/DM.

The most important element of an IP/DM is its control centre (0), which sets the entity's goals and programmes its behaviour. While it depends for its working on the operations carried on by the IP/DM's other five elements, the central control is the true decision maker of the system for it is the one which controls and programmes the operation of them all.
IP/DM's are indeed distinguishable from other cybernetic systems by their possession of this advanced self-programming centre. Other animals seem to be genetically programmed, while automata will always ultimately depend upon a human being to perform their decision-making functions.

An IP/DM has a sensing or perceptor apparatus (1) which is responsible for gathering signals or stimuli from its operating environment (E) which are then transformed into symbolic representations and transmitted to the second apparatus, the central processor (2). Note, however, that the perceptor apparatus must screen out a substantial part of the enormous amount of information potentially available in the operating environment and thus only a small proportion of the signals received is actually transmitted to the central processor. It is the central processing apparatus (2) which gives meaning to the
signals received from the sensors and thus constitutes the true information processor. In order to carry out its functions the central processor depends heavily on a memory unit which can be subdivided into short-term, long-term and external memories.

The output of the central processor is transmitted to the central control apparatus (0) which, in light of the entity's goals and decision-criterion stored in memory, chooses a course of action which is transmitted in the form of a symbolic output or activator signal to the effector subsystem (4). The effector apparatus (4) consists of symbolic and physical activators capable of producing change in the external operating environment. The entity has also an apparatus (5) which feeds back into the system information on any deviations between the predicted and actual results of actions on the environment for corrective measures.

The central control apparatus is constantly making choices (e.g. which information the perceptor apparatus should screen out). Often these choices are "programmed" so that they can be made automatically without direct intervention by the control centre. However, here these choices are not considered to be decisions. Only choices of courses of action which are actually (or potentially) transmitted to the effector apparatus for action in the operating environment are considered to be decisions. Decisions are final choices in the process described above.

For the purpose of this research the important part of the process described above is how individual IP/DMs perceive and process environmental information for decision-making. This
question can be translated into: how do IP/DMs choose appropriate representations and then adequate methods to solve new problems and make non-routine decisions in general? Newell and Simon, who probably have paid more attention to this question than most other researchers in the field, have remarked that this question points to the "most important terra incognita on the map of the theory of human problem solving today." Before we examine briefly some of the facets of the problems, let us state more clearly what is meant here by "representation of the problem environment" and "problem-solving method." Both concepts have been developed more fully by Newell and Simon.

The problem environment is represented in internal memory of the IP/DM as a "problem space" (which we can interpret for most purposes as a "model" of the environment). Problem solving is carried out in this problem space. The structure of the problem environment determines the possible structures of the problem space. In general, only those aspects of the problem environment which are relevant to the IP/DM's goals are represented in the problem space. The structure of the problem space (again model) determines the kinds of methods or programmes which can be used for problem solving.

Although some research in cognitive psychology, especially Gestalt psychology, has shed some light on the processes of

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2 Ibid.
perception and pattern recognition, which have important implications for the question of discovering representations of the operating environment and methods of solving problems (in Newell and Simon's sense), there is still much controversy on the nature of these processes.

The first controversy is whether or not there is a logical procedure to make such discoveries. Simon argues that since, at least for simple problems, one can construct a normative theory of discovering processes, i.e., an efficient means of making certain "discoveries," then discoveries "need not be attributed to chance, irrationality, or creative intuition." Karl Popper, on the other hand, argues that there is no such thing as a logical procedure for having new ideas, which translated to our case would mean, for discovering either new representations or methods.

I do not intend to settle the issue, but there seems to be overwhelming empirical evidence in favour of Popper. About the creative process we still know very little, except for the results of empirical investigations which indicate that the process involves combining "seemingly incompatible ideas," the ability to "perceive hidden analogies" and to look for information only remotely connected to the problem at hand and, in short, to reach beyond the acceptable to the sober, rational

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Whether the discovery of a representation or a method happens all at once or is the result of a gradual process of repeated interactions with the environment is another difficult question for which there are no sure answers.

The other important controversy is related to the question of what makes the demands placed by the problem environment difficult for an IP/DM. If we put aside individual differences among IP/DMs, the question assumes the following format: does the difficulty lie mostly in the discovery of an internal representation (problem space) of the operating environment or does it reside in the discovery of a method to solve the problem?

Again, there are scholars such as Michael Polanyi, and to a large extent Edgar Dunn, who argue that the whole difficulty in problem solving resides in representing the external objective environment internally in the IP/DM "problem space" and that once that representation has been completed, finding a method to solve the problem is actually a trivial matter. Thus, according to this school, the solution to a problem is dependent more upon a correct representation of the external environment (say, through a conceptual model) than upon the availability of

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methods (say, algorithms) to solve it.

On the other hand, there are others who insist that finding a method to solve a problem poses at least as much difficulty to the problem-solver as finding the right representation and, consequently, as the repertoire of methods grow larger problems become increasingly easier. The most distinguished proponents of this school are probably Herbert Simon and Allen Newell.¹

It seems clear to me that representation and method are two sides of the same coin and in certain situations one will be the important factor determining problem difficulty while in other situations it will be the other one. For our purposes, however, the important lesson to be learned from the above discussion is that the problem environment places two major kinds of demands upon an IP/DM: (i) a demand for ways of representing it in the IP/DM's internal problem space, and (ii) a demand for problem solving methods.

Now, if the structure of the problem environment determines those demands, it seems clear that the more complex the environment is, the more difficult it will be to meet those demands. We shall turn our attention to this question next, by analysing the representation and method question at three levels of problem complexity. This in turn will tell us something about the data and information demands of different representations and methods.

¹ See for example, Simon, op. cit., and Newell and Simon, op. cit.
Levels of Problem Complexity

Lower Level: this level can be thought of as including problem situations consisting of interacting mechanistic (physical, or symbolic) entities. The entities may be organized in a simple hierarchy. The entities are related to each other according to a time-linear chain of events and thus a causal linkage can be established between an event and the preceding one. As a consequence, each action in this system leads to a terminal state which can be predicted with certainty or assigned probabilities (risk situation). Thus, we are dealing at this level with technological systems whose functioning can be explained by analysing their component parts. This condition makes the representation of problems in this category unproblematic, although by no means trivial. Therefore, descriptive and predictive models are usually available.

When dealing with problems at this level an information processor can, at least in principle, always find a method, rule, procedure, mechanism, or an algorithm, which prescribes how to obtain a "solution" or specified goal in a finite number of steps. He may, however, have difficulties in actually finding the appropriate method. In some situations the difficulty may reside in the processing and computational powers required of a problem solver, but a solution is nonetheless guaranteed if we make use of powerful computers and make the processing time sufficiently large (this corresponds to a problem situation
called by Simon, '"asymptotically algorithmic" - exemplified by the known algorithm for chess). Problems are thus, in principle, solvable by the use of the classical maximizing algorithms of differential calculus and the more recent ones of operations research and computer sciences in general. Therefore, problems in this category in general demand more in terms of methods than in terms of representation.

As far as information requirements are concerned, problems in this level are trivial, for the methods specify exactly what information is needed to solve the problems, although, of course, difficulties may appear in actually gathering the information.

Middle Level: at this level we find problems involving cybernetic entities, that is, systems provided with feedback loops capable of modifying the time-linear sequence and additivity which interconnects systems components. It is no longer possible to recognize the nature of the whole by separately examining its constituent parts. Although in such a system for each action may correspond a large number of alternative events and outcomes, those events are repeated often enough for diversity of individual outcomes to average out, i.e., each possible outcome can be viewed as a member of a probabilistic series and consequently a basis for prediction.

exist (stochastic situation). This condition is what Ruth Mack calls "seriality". Therefore, although complexity and uncertainty may make the representations of such situations difficult, they are nonetheless possible and scientific models can be derived from these representations (e.g. the cybernetic paradigm) which have application to most problems in this category.

While in the case of lower level problem complexity, problem solving is a one-shot type of action, that is, once a method (algorithm) has been discovered it can always be applied to similar situations with guaranteed success, at this level, the problem solver takes advantage of the method of learning while doing, which consists of making use of the feedback about the relative frequency of events and their actual outcomes to modify future actions.

For example, the Bayesian approach to uncertainty has some applicability for problem situations at this level of complexity. In short, it consists of correcting the lack of information about the probability of outcomes by applying experience to prior subjective probabilities. Thus, a situation which at first may have appeared non-serial may turn out to be serial, and there are indeed statistical techniques for converting certain types of non-serial situations into serial ones.\footnote{Ibid.}

One can think of at least two other methods which take


\footnote{Ibid.}
advantage of the principle of feedback or learning to work on classes of problems at this level whose representation is no longer problematic. One is "simulation" and the other is commonly known as "heuristics". Any type of problem whose structure (representation) has become relatively well-known can in principle be simulated. An operational simulation model allows the problem solver to arrive at satisfactory solutions to problems. Through iterative runs of the model it is possible both to test the significance of information from the operating environment, i.e., types and quantity of data most relevant for the problem at hand, and to improve the model itself (of course within the limitations of the representation selected). It may even be possible through this procedure to arrive at quasi-optimum solutions.

For problems at this level of complexity whose representation is non-problematic but for which no algorithms are yet available, or which are available but require prohibitive computational powers, a problem solver can make use of heuristic methods. While, as we have seen, algorithmic methods aim at discovering procedures which will guarantee a solution to a given class of problems, heuristic methods aim at developing from previous experience "rules-of-thumb", "selective" trial-and-error procedures, and so on, that are likely to be more efficacious than random trial-and-error methods in discovering paths or short-cuts to satisfactory solutions of a whole class of problems. Heuristic methods are applicable to situations where representation is unproblematic, they take advantage of both information that is already
available in the chosen representation itself when the problem is posed and information from memory and the external environment that becomes available as a search for a solution proceeds. Thus, heuristic methods consist essentially of procedures for searching for information that will reveal the solution to a problem within a given representation.

**Upper Level:** this level of problem complexity includes problem situations typical of life systems, which are normally organised in complex hierarchies and linked by complex feedback loops. Thus, the boundaries of entities belonging to this level of complexity typically overlap to a considerable degree (see Appendix I).

Perhaps the most important characteristic of this level of problem complexity is that the entities which cause the problem (i.e. Human beings) are capable of truly independent, unique and thus unpredictable behaviour and therefore problem solvers may face situations characterized by discontinuity and non-seriality. While in the previous two levels we were dealing with problem situations which were difficult primarily because of the uncertainty associated with outcomes of man's actions in the problem environment, here we are also dealing with the problems of explaining why he acted in the first place, as well as predicting how he will act or react in a similar situation. Thus we are dealing with double uncertainty, which could perhaps be called "unexpectedness", uncertainty on the part of the operating environment and on the part of the behaving entity. This "unexpectedness" gives problems in this category a unique
or, as Rittel and Weber\textsuperscript{12} put it, a "wicked" character.

The difficulty presented by problems at this level of complexity is essentially related to the question of how problem solvers can find adequate representations of the problem environment and how they can then proceed to select and apply methods to "solve" them. Since the structure of the environment determines the structure of the internal representations and the latter, in turn, determine the selection of the problem solving method, it becomes evident that the crucial, although not necessarily the greatest, difficulty lies in the representation of the operating environment. Only after that representation has been discovered can the question of finding the appropriate method and acquiring the necessary data be tackled.

However, there is another important reason why problems at this level of complexity are difficult. This additional difficulty arises because these problems, being unique, there are no tests or criteria which can be applied in advance to determine whether a proposed solution is in fact a solution. "Solutions" to this kind of problem can only be known after the outcome of the application of a method to the problem situation becomes known.

But if, nonetheless, some problem solvers are often successful in "solving" this type of problem, how can their success in choosing appropriate representations and then

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adequate methods be explained and how could we help problem solvers in general to make better choices of representations and methods?

If we accept Popper's view that there are no logical procedures for discovering models and methods (my interpretation), then we cannot arrive at normative criteria to guide the search for them. However, one can still suggest (based upon empirical investigations) which conditions favour those discoveries.

At the individual level, empirical evidence indicates that exposure to many different concepts and "facts" often not directly related to the situation, plus a certain amount of uncommitted theoretical resources (mostly in terms of models and methods), as well as a willingness to abandon the rules of logic favour discoveries and innovations.

At the group level, the interaction among IP/DMs having different expertises and backgrounds also favour creativity and innovation.
APPENDIX V

THE BOUNDARY WATERS TREATY AND THE INTERNATIONAL JOINT COMMISSION¹

The Boundary Waters Treaty of 1909

The International Joint Commission (IJC), United States and Canada is an outgrowth of trans-governmental negotiations on various boundary water resources problems between the two countries at the end of the nineteenth century.² A temporary "International Waterways Commission" was formed and started operating in 1905. The results of its investigations led the two governments to recognize the need for the establishment of mutually satisfactory ground rules for the use of waters of their common concern. They foresaw the desirability of a set of permanent procedures which would not only facilitate conformance

¹ Among the most important studies the following are especially relevant to this review:

to the agreed principles but would help to settle future problems as they arose. As a result of this forward-looking effort, the governments of the U.S.A. and Great Britain in the name of Canada, signed the Boundary Waters Treaty of 1909.

In its preamble, the aims of the 1909 Treaty are stated to be "to prevent disputes regarding the use of boundary waters and to settle all questions which are non-pending between the United States and the Dominion of Canada involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along their common frontier, and to make provision for the adjustment and settlement of all such questions as may hereafter arise." Although the 1909 Treaty was signed by the British Ambassador to the United States, the actual negotiations were conducted for Canada by a Canadian. Before, "(T)o Canadians, Anglo-American arbitration usually meant British sacrifice of Canadian interests"..."Distress over this problem gave impetus to Canadians' desire to handle their business with the United States more directly."

Article VII of the 1909 Treaty established an International Joint Commission of the United States and Canada composed of six

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5 Piper, op. cit., p. 522.
commissioners - three from each country. The Commission started operating in 1911, and in the next year adopted its Rules of Procedure, which have remained up to the present with only small alterations. The Commissioners are appointed by their respective federal governments, however, they are not to act as two bargaining teams, each trying to foster the interests of their own country. Rather they are expected to operate as a group of individuals seeking the most rational solution to problems that are presented to them. This ideal seems to have been to a great extent fulfilled by the many members which the Commission has had. A long time observer and participant of IJC activities has stated that, indeed, he had always seen "the commissioners to act more like a panel of judges."

However, D.C. Piper observed that "there is the occasional tendency of individual Commissioners to behave as anointed guardians of the national heritage and not as members of an international body."

Problems which are presented to the IJC for consideration can be divided into two categories: (1) use, obstruction or diversion of waters with respect to which under Article III and IV of the Treaty the approval of the Commission is required, (2)

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"Thompson, op. cit., p. 2.

7 Interview with Mr. John Hendrickson, November 16, 1973. Mr. Hendrickson was then on the permanent staff of the S.S. Section of the IJC. As pollution expert with the former Federal Water Pollution Administration, he participated for six years on IJC's pollution advisory boards.

8 Piper, op. cit., p. 556."
questions on matters of difference arising between the two countries along the common frontier, which under Article IX of the Treaty can be referred to the IJC. Accordingly, the terms application and reference correspond respectively to petitions which involve the first and second categories.

The IJC has two offices. The American section had its headquarters in Washington, D.C., and the Canadian section is in Ottawa. Each office has a small staff consisting of an executive secretary and supporting administrative personnel. However, until recently the Canadian section was better staffed, employing a legal and an engineering advisor on a permanent basis, while the American section employed consultants on an "as-required basis." Besides advising the commissioners, it is the duty of the permanent staff to maintain the communication flow between them and all public agencies, private organizations and individuals dealing with the IJC. The Commission meets regularly twice a year - once in Washington and once in Ottawa. These are mandatory sessions in which members review reports and activities carried out by their staff and ad hoc and semi-permanent investigative boards.

Figure 8 shows schematically the legal framework under which the IJC operates. According to the Treaty, in addition to its quasi-judicial (applications) and investigative (reference) functions, the Commission has a third one, as an arbitral body, a function which has never been used up to the present. Below is

a brief description of how the IJC has been performing these tasks. Figure 9 depicts the normal process which the IJC follows in order to perform the tasks assigned to it by the 1909 Treaty.

The IJC as a Quasi-Judicial Organization

Applications: - Articles III and IV of the 1909 Treaty specify the situations in which any uses, obstructions and diversions of boundary and trans-boundary waters must first be approved by the IJC. These situations are: boundary waters, waters flowing from the boundary and waters at a lower level than the boundary in rivers flowing across the boundary. In all other cases, each of the contracting parties reserve to itself the exclusive jurisdiction and control over the use and diversion of these waters whether temporary or permanent (Article II).

According to the Treaty a person (province, state, department or agency, municipality, corporation, association, partnership or individual) may file an application with the IJC. However, the IJC rules determine that no person can initiate proceedings before the Commission without the consent of his government (federal). In the case of applications, IJC's orders of approval are "binding to everyone, both members of the public and the two governments as well as the applicant." 


11 Bourne, Ibid, p. 64.
FIGURE 8 - CANADIAN-AMERICAN DECISION-MAKING SYSTEM ACCORDING TO THE 1909 BOUNDARY WATERS TREATY AND I.J.C.'S RULES OF PROCEDURE.
1. OPPORTUNITY OR PROBLEM IDENTIFICATION IN THE PRIVATE OR PUBLIC SECTOR

2. SUBMISSION TO I.J.C. OF APPLICATION BY ANY PERSON WITH CONSENT OF FEDERAL GOVERNMENT

3. I.J.C. FORMS TECHNICAL ADVISORY BOARDS RECRUITING PERSONNEL FROM GOVERNMENT AGENCIES, HIRING CONSULTANTS

4. ADVISORY BOARDS CONDUCT INVESTIGATIONS HOLD PUBLIC MEETINGS PRODUCE INTERIM REPORTS

5. I.J.C. EVALUATES REPORTS; CONDUCTS HEARINGS AND CONSULTATIONS

6. I.J.C. ISSUES AN ORDER OF APPROVAL TO APPLICANT OR MAKES RECOMMENDATIONS TO FEDERAL GOVERNMENTS

7. APPROPRIATE GOVERNMENTS NEGOTIATE AGREEMENTS AND RECIPROCAL LEGISLATION AND OTHER MEASURES NECESSARY TO IMPLEMENT ORDERS OR RECOMMENDATIONS

8. I.J.C. FORMS BOARD OF CONTROL TO MONITOR IMPLEMENTATION OF ITS ORDERS OR RECOMMENDATIONS

FIGURE 9 - STAGES IN THE NORMAL DECISION-MAKING PROCESS OF THE I.J.C.
The IJC as an Investigative Organization

References: - Article IX of the 1909 Treaty provides that water resources problems which are not the subject of applications, or "any other questions or matters of difference arising between them involving the rights, obligations or interests of either in relation to the other or to the inhabitants of the other, along the common frontier -- shall be referred from time to time to the International Joint Commission for examination and report, whenever either the Government of the United States or the Government of the Dominion of Canada shall request that such questions or matters of difference be so referred."

Therefore, pursuant to this article references can only be forwarded to the IJC by one or both of the two federal governments. However, in practice the terms of a reference are first agreed by the two governments and then forwarded as a joint reference."¹² Normally, a reference consists of a set of questions which determine the purpose and the scope of the investigations to be carried out by the IJC. There have been references on a wide range of problems, some outside the water resources field, e.g. air pollution in the heavily industrialized area of the Great Lakes. The scope of the references are usually quite broad, for instance, in the same year in which it began functioning, the Commission received a joint reference to conduct an investigation of "Pollution of

¹² Thompson, op. cit., p. 2.
Boundary Waters." On the other hand, terms of a recent joint reference on the Skagit River between the Province of British Columbia and the State of Washington restricted the Commission to investigate the effects in Canada of raising the level of a dam in the United States. The governments did not even request the Commission to suggest alternative solutions to the problems created by flooding in British Columbia. On the other hand, the reference on the Columbia River asked the Commission to undertake a very comprehensive study of the whole basin. In general, however, the two federal governments ask the Commission to determine and recommend in its judgement what appropriate courses of action should be taken in each side of the border to correct a water use problem or to promote water resources development in the common frontier.

The nature and scope of a reference is determined through consultations and bargaining among the various federal, regional and local agencies and private interests concerned with the problem.13 In principle, the IJC itself cannot take the initiative on a reference, however, it does participate in the process of preparing them. References are forwarded to the Commission by the Secretary of External Affairs of Canada and the Secretary of State of the United States, but their respective departments usually have a significant role only in the later stages of preparing a reference. However, these

13 Interview with Mr. J.L. McCollum (Assistant Chairman and Legal Advisor, Canadian Section of the IJC, since 1952. October 19, 1973.
departments may have the final word on whether or not to refer a
matter or a question of difference between the two countries to
the IJC.

Once the IJC receives a reference (the same is usually
applicable to applications) it starts to mobilize the necessary
technical and professional experts to carry out the task.
Qualified personnel, as well as general information and
technical data are provided upon request, following the terms of
the reference by the competent governmental agencies. Care is
said to be taken to avoid duplication of efforts and unnecessary
expenses. It is customary for the Commission to appoint an
"International Technical (or Engineering) Advisory Board," at an
executive meeting soon after receiving a reference. The
composition of these advisory boards is based upon the principle
of equal representation, i.e. the same number of members from
each country. The advisory boards, like the Commission itself,
meets in Washington, D.C. and Ottawa. The advisory boards may,
in addition, designate a working group composed of regional
representatives of the federal agencies concerned and may invite
the participation in these groups of provincial and state
agencies, and sometimes local interest groups as well.

The members of an advisory board are not representatives of
the departments or agencies employing them. They are supposed to
"serve in a personal and professional capacity under the
directions of the Commission, and their employers or superior
officers are not committed in any way by the actions of the
individual members or of the board as a whole."¹⁴ The advisory boards produce interim reports which are submitted to the IJC for study and assessment of their findings, proposed developments and their possible consequences on the inhabitants of the area under consideration.

Hearings: - Once a reference (or application) is received by the IJC, it can and usually does hold public hearings at any time thereafter. According to Article XII of the 1909 Treaty, the purpose of the hearings is to give all parties having an interest in the issue under consideration by the Commission an opportunity to be heard. The Commission has the power to compel witnesses to appear in any proceeding. At least two public hearings are held for each locality, one on each side of the border. In addition, usually before attending the hearings the members of the Commission visit the area under consideration to make an in loco inspection of the situations.¹⁵ In accordance with IJC's rules of procedure all hearings of an application shall be open to the public, but hearings of a reference may not be open to the public if the Commission so determines. However, it is widely known that only those with vested interests participate at these hearings; the public at large is conspicuously absent.

The most important hearings are the final ones held after the advisory boards present their reports and before the

¹⁴ Thompson, op. cit., p. 2.
Commission reports to governments in accordance with the terms of the reference.

The advisory boards do not conduct public hearings but are provided with copies of the record of any hearings held by the IJC which relates to matters within the board's terms of reference.

The reports written by the boards are normally available only to the Commission as a whole and government officials concerned. However, edited versions of these reports are published. The verbatim transcripts of the proceedings at hearings are usually also available to the public.

According to Mr. J. Hendrickson of the American Section of IJC, until about 10 years ago "public hearings were very quiet. Now, things are quite different, the IJC is in the middle of public controversy and unable to handle it." In addition, he pointed out that the Commissioner had now undertaken the task of explaining to the public what the International Joint Commission is. According to Mr. Hendrickson, one of the first steps in this direction has been IJC's direct contacts with U.S.A. Congressmen, which are still quite unaware of the Commission's existence. He added that now Congressmen from the Great Lakes States are especially concerned with IJC's activities.¹⁴

In addition, in Mr. Hendrickson's opinion, the Commission believes that hearings are "one way" type of communication, that they should be complemented by public meetings, where 2-way

¹⁴ Interview, November 1973.
communication is possible. These public meetings in his idea should be rather informal, e.g. no need for verbatim transcripts; only one commissioner and one staff from each side need to be present. Furthermore, he stated that the Canadian members of IJC fully agree with his proposals. However, both Mr. E. Weber and Mr. McCollum¹' in interviews to me have stated that the Commissioner has in fact already been doing that. Mr. Weber, for instance, mentioned that the Commissioners quite often visit industries and municipalities and confer with the public. In his 25 years with IJC Mr. Weber said he has met with the public and special interest groups more than 50 times and that some of these meetings are a natural follow-up after the hearings.¹⁸

Professor Bourne affirms, however, that "(I)n the course of the investigation, public hearings are usually held both during the investigations by the advisory board and after the submission of its report. The Board's recommendations are thus tested by exposure to public scrutiny before the Commission formulates its own final report and recommendations to the two governments. "¹⁹

**Recommendations:** - After receiving the reports from its technical advisory boards, together with "the evidence and opinions presented at public hearings and subsequent written

¹⁷ Interview with Mr. Weber, Nov. 15, 1973, and interview with Mr. McCollum, October 19, 1973.

¹⁸ Interview with Mr. Weber, November 1973.

¹⁹ Bourne, *op. cit.*, p. 133.
briefs, the Commission deliberates and formulates its own views. In the same way that it is limited in its investigations by the original terms of reference and possible subsequent modifications, the IJC is limited by the terms of reference on what, in its judgement, it should recommend as appropriate courses of action to be taken on either side of the border to correct a water use problem or to promote water resource development on the common frontier. In addition, in accordance with Article IX of the Boundary Waters Treaty, reports and recommendations of the "Commission shall be regarded as decisions of the questions or matters so submitted either on the facts or the law, and shall in no way have the character of an arbitral award." Once they have received the Commission's recommendations the two governments are free to take any further action as they please. However, the IJC's recommendations have served as guidelines for agreements and treaties and have led the two governments to accomplish the suggested goals. In summary, as Mr. Thompson of the staff of the Canadian section put it, the recommendations "are not binding on either government but exert a strong influence on the ultimate settlement of such (boundary water resources) problems."

Since the Commission has no enforcement authority, the

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20 Thompson, op. cit., p. 2.
21 Bourne, op. cit., p. 65.
22 Weber, op. cit., p. 179.
23 Thompson, op. cit., p. 2.
legitimization and adoption of any of its recommendations is the responsibility of the appropriate legislative bodies and enforcement agencies in both, or at least one, of the countries. The level of government involved depends, of course, on the nature of the recommendation. For instance, in cases of major issues such as the agreement on the Great Lakes or the Columbia River Treaty, legislative approval at the highest level of government in both countries was required. Diplomatic negotiations and legislative battles over these issues usually follow. The role that interest groups play in legislative and executive lobbying have been well documented. Often there are also differences among levels of government concerning IJC's recommendations. There were serious disagreements between provincial and federal governments in Canada and state and federal governments in the United States concerning the St. Lawrence Seaway, and more recently regarding the Skagit Valley controversy. Those facts have been one of the major sources of criticism of the IJC for some claim that the Commission too often has put forward recommendations which are not integrated with national policies.

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27 Interview with Mr. J. Hendrickson, November 1973.
As a reaction to those criticisms, the Commission has lately created international boards of control whose functions are to maintain continuing monitoring and coordination of the implementation of its recommendations. (The composition and responsibilities of these control boards are similar to that of the advisory boards). Yet, one staff member of the Commission has pointed out recently that the implementation of the agreed-upon objectives must depend ultimately "on the powers of persuasion and action by state and provincial and in some cases federal authorities."

In addition, in its recommendations IJC has asked, as it did in the case of the Great Lakes, for additional responsibilities, such as the drafting of legislation appropriated for each country, the providing of new channels of communication, the continuing review of contingency plans for dealing with certain special problems, etc. The Commission has recently also requested an expansion of its responsibilities for which it would need a larger staff on a permanent basis, a strengthening of its subpoena powers and a free hand on publishing its findings without reference to governments.

However, it seems that neither the U.S. nor the Canadian governments will ever delegate part of its sovereign enforcement powers to an "impartial" quasi-judicial international body such

28 Thompson, op. cit., p. 5.

as the IJC. This reluctance is not only strong with the federal governments, but particularly among provincial and state governments, which have otherwise primary responsibilities in water resources development and conservation and are very zealous about their jurisdictional powers.\(^{30}\) The IJC, nonetheless, has been involved in the important task of drafting reciprocal legislation to be enacted by each country, although the power to set laws, rules and regulations and to enforce them is likely to remain with each sovereign government and their respective enforcement bodies.

Another significant development that some of its students\(^{31}\) have pointed out, is that it has moved from the traditional approach of dealing with existing problems and recommending remedial solutions, to a new emphasis on medium and long range water resources planning. Of the latter type, there have been several major studies, among which stands out the Columbia River, and the Pembina River Studies.\(^{32}\)

The International Joint Commission has handled almost 100 cases between applications and references, as of December 1973. Although the total number of applications is still greater, since the 1940's the Commission's investigatory function has predominated. It has studied an array of water resources

\(^{30}\) Willoughby, 1972, \textit{op. cit.}


problems varying from an application by a farmer for approval of a small dam on the head waters of the Saint John River, to a reference requesting the Commission to study navigation and hydro power developments in the St. Lawrence River.\textsuperscript{33} It has also studied problems outside the inland water resources field. In 1928 it received the first reference on air pollution, the Trail smelter investigation and in 1949, upon request by the two governments it undertook an investigation of air pollution in the area of the cities of Detroit, Michigan and Windsor, on St. Clair, Ontario. The Commission has also been involved in the study of developing the international power potential of the Passamaquocly Bay.

Only in three cases was the IJC divided along national lines: the St. Mary and Milk Rivers irrigation study in 1929, the Waterton-Belly-Rivers diversion and apportionment dispute in 1948, and the Skagit River controversy over the raising of a dam in 1942 and 1958. In each of these cases the two sections prepared separate reports recommending different courses of action and as a result either the case is still pending or each government tried to implement an alternative which required a minimum of international cooperation.

Although the institution of International Boards of Control has secured the implementation of most of the IJC's orders and recommendations, in some cases (e.g. the St. Croix River) the process has been too slow and consequently a major source of

\textsuperscript{33} Bloomfield and Fitzgerald, \textit{op. cit.}, provide a large number of case studies, from which these examples are taken.
criticism of the Commission. However, some of its defendants claim that this is only so because of the IJC's lack of enforcement authority and therefore if it was entrusted with some regulatory powers, its efficacy would be greatly increased. Nonetheless, as a member of the staff of the American section pointed out, the record of achievements of the IJC is without parallel in the world. It has built for itself a reputation of an impartial and competent organization and consequently has developed persuasion powers which many agencies which have legal enforcement authority do not enjoy.

The IJC as an Arbitral Organization

Article X of the Boundary Waters Treaty leaves open to the governments of Canada and the United States the possibility of referring for decision to the IJC any question, or matters of difference arising between the two countries. In case a majority of votes among the Commissioners on an issue cannot be obtained, the matter would be referred for final decision to an umpire chosen by both countries according to the Hague Convention for the specific settlement of international disputes. Therefore, in the case of a reference forwarded to the IJC under this article, the Commission would not only have the duty to examine and report, as in the case of Article IX, but also of making an arbitral decision.

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34 This opinion is to a great extent shared by Weber, op. cit., Willoughby, 1972, op. cit., and Dwivedi, op. cit.
This arbitral power of the Commission has never been invoked and the fifty years of experience of the Commission seems to indicate that it never will. However, D.C. Piper mentions that in 1933 the State Department suggested the utility of having Commissioners with legal training, "so that the U.S. without hesitation could invoke Article X to arbitrate any dispute." This could be interpreted as a resentment of lawyers in that department against trend, particularly on the part of the U.S. Government, to nominate commissioners with an engineering or political background.

Boundary and Transboundary Pollution

The provision dealing with boundary and transboundary pollution of Article IV of the Boundary Waters Treaty demonstrates a rather remarkable foresight by the drafters of the Treaty. Article IV reads (emphasis added):

The High Contracting Parties agree that, except in cases provided between them, they will not permit the construction or maintenance on their respective sides of the boundary of any remedial or protective works or any dams or other obstructions in waters flowing from boundary waters or in waters at a lower level than the boundary in rivers flowing across the boundary, the effect of which is to raise the natural level of waters on the other side of the boundary unless the construction or maintenance thereof is approved by the International Joint Commission.

It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of

Piper, op. cit., p. 555, footnote #19.
health or property on the other.

The Treaty (Preliminary Article) defines boundary waters as follows:

waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.

According to David Olmstead37 the requirements of the provision dealing with pollution in the Treaty "are stiffer than those in international law, which require 'serious' or 'substantial' injury to be proved."

As opposed to the case of water quantity, under the Treaty water quality problems are not part of the adjudicatory jurisdiction of the IJC. The adjudicatory provisions of Article IV refer only to uses, obstructions and diversions which will affect the natural level of waters on the other side of the boundary, in which case IJC approval is required.

Pollution problems are thus among those which can be referred by either party to the IJC for investigation, report,


38 Ibid. If a decision is desired, the consent of the two federal governments is required.
and recommendations under Article IX. Thus, implementation of the Commission's recommendations rested ultimately on the willingness of each country individually to enact laws and regulations so carefully drawn in regard to their reasonableness and their consideration of each country's laws as to stand the test of their courts.

Article II of the Boundary Waters Treaty also seems to be relevant to pollution problems between the two countries. It reads:

Each of the High Contracting Parties reserves to itself or to the several State Governments on the one side and the Dominion or Provincial Governments on the other as the case may be,... the exclusive jurisdiction and control over the use and diversion, whether temporary or permanent, of all waters on its own side of the line which in their own channels would flow across the boundary or into boundary waters; but it is agreed that any interference with or diversion from their natural channel of such waters on either side of the boundary, resulting in any injury on the other side of the boundary, shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs...

Thus, the first clause of this article would appear to give each country the right to do whatever they pleased with flowing waters before they cross the boundary (which can be interpreted as an embodiment of the Harmon Doctrine); however, the second

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clause and especially Article IV, as discussed above, make it clear that such an interpretation would be incorrect.

Article II does leave the possibility opened that injured residents of a Canada-United States basin have the right to sue polluters of waters flowing across the boundary or into boundary waters (the situation of discharges directly into boundary waters remains unclear), for compensation and remedies, as if those causing the pollution problem and those affected by the problem were residents of the same jurisdiction. In this case, however, the injured party is at the mercy of the laws of the polluter's place of residence.
APPENDIX VI

INTERNATIONAL SAINT JOHN RIVER AGREEMENT:

TRANSCRIPT OF THE OFFICIAL EXCHANGE OF NOTES,

REFERENCE TO THE INTERNATIONAL JOINT COMMISSION (IJC),

AND JOINT PRESS RELEASE.
No. GWU-310

His Excellency
The Honourable Adolph W. Schmidt,
Ambassador of the United States of America,
OTTAWA.

Excellency,

I have the honour to refer to the discussions which have taken place between representatives of our Governments regarding the preservation of the quality of water in the international section of the St. John River and to propose that our Governments establish a Canada-United States Committee on water quality in the St. John River and its tributary rivers and streams which cross the Canada-United States boundary. The composition, purposes and objectives of the Committee, which shall conduct its work in a manner which is consistent with the provisions and objectives of the Boundary Waters Treaty of 1909, are set out in the Annex to this Note.

If the foregoing proposal is acceptable to the Government of the United States of America, I have the honour to propose that this Note, together with its Annex, which are equally authentic in English and French, and Your Excellency's reply to that effect, shall constitute an agreement between our Governments which shall enter into force on the date of your reply.

Accept, Excellency, the renewed assurances of my highest consideration.

/S/ Mitchell Sharp

Secretary of State
for External Affairs
EMBASSY OF THE
UNITED STATES OF AMERICA

Ottawa, Canada

September 21, 1972.

No. 176

The Honourable
Mitchell Sharp, P.C.,
Secretary of State for External Affairs,
Ottawa.

Sir:

I have the honor to refer to your Note No. GWU-310, of September 21, 1972, with attached Annex, proposing the establishment of a Canada-United States Committee on water quality in the St. John River and its tributary rivers and streams which cross the Canada-United States boundary. The proposal meets with the approval of my Government, and I have the honor to confirm that your Note, together with its Annex, and this reply, shall constitute an agreement between our Governments which shall enter into force on the date of this reply.

Accept, Sir, the renewed assurances of my highest consideration.

/S/ Adolph W. Schmidt
ANNEX

Whereas the Governments of Canada and the United States in the light of their rights and obligations under Article IV of the Boundary Waters Treaty of 1909 with respect to the avoidance of transboundary pollution, are concerned about the quality of water in the international section of the St. John River and in its tributary rivers and streams which cross the Canada-United States boundary;

Whereas water quality planning has been under way in the St. John River Basin in both countries for more than a year, and proper co-ordination of this planning is urgently required to assure achievement of a unified approach to the problem;

It is hereby agreed that a Canada-United States Committee on Water Quality in the St. John River and its Tributaries crossing the International Boundary (hereinafter referred to as the "Committee") be established to assist the appropriate authorities in Canada and the United States to co-operate in such water quality planning as may be necessary to devise programs which will enhance the quality of water in the St. John River. The Committee will conduct its work in a manner which is consistent with the objectives and provisions of the Boundary Waters Treaty of 1909.

The purpose of the Committee shall be:

(A) To review periodically progress in the conduct of such water quality planning on both sides of the Canada-United States boundary in the St. John River Basin, with a view to facilitating progress toward enhancement of water quality;

(B) To exchange appropriate information about plans, programs and actions which could affect water quality in the Basin;

(C) To assist in co-ordination and consultation among appropriate authorities on matters and actions affecting water quality;

(D) To make appropriate recommendations to relevant authorities on both sides of the boundary and to the International Joint Commission (hereinafter referred to as the "Commission") regarding the improvement of water quality in the Basin.
In the conduct of its work the Committee should consider in particular the following aspects of water quality:

(A) The condition of water quality, and the nature, extent and sources of pollution;

(B) The need for and means of defining and achieving agreed international water quality objectives;

(C) The identification of programs and other measures needed to obtain a significant reduction in level of pollution with timetables for accomplishment, including measures related to water quality and rate of flow, taking account of social and economic impacts.

It is understood that discussions within the Committee will serve to enhance and not to replace existing formal and informal discussions or other contacts among federal, state, provincial and local authorities.

II The Committee shall consist of an equal number of members from each country and will include appropriate officials from the Governments of Canada and the United States; the Governments of New Brunswick, Quebec and Maine, and also representatives of the St. John River Planning Board, and the Northern Maine Regional Planning Commission. The members will represent the respective authorities (who will pay such expenses as may be incurred in this respect) and provide the special skills, experience and information required to carry out the above terms of reference. The Committee should have the smallest number of members effectively to perform its functions. Advisors or observers to the Committee may be paid by Governments or serve without salary or expense allowance. The United States and Canadian sections of the Committee shall each designate a Chairman of its section. The Chairmen of the two sections shall be Joint Chairmen of the Committee and shall be responsible for providing proper liaison between the Committee and their respective authorities. The Chairmen will keep their respective section members informed of plans, activities and progress. Each Chairman after consulting the members of his own section of the Committee may appoint a Secretary of that section.

III Upon the completion of its efforts with regard to the co-ordination of water quality planning in the St. John River Basin, the Committee shall provide a report on its progress and activities for the Commission. If the Committee has not completed its work within one year of the date of this Exchange of Notes, it shall in that event provide an interim...
progress report for the Commission by September 30, 1973, and to the extent necessary, annually thereafter. The Committee shall also provide the Commission with copies of the proceedings of its regular meetings.

The Committee shall also provide a report on its progress and activities for the Governments of Canada and the United States as pilot and co-pilot of the Inland Water Pollution Project of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society, prior to September 30, 1973, and to the extent necessary, annually thereafter.
Mr. D.G. Chance,
Secretary,
International Joint Commission,

Dear Sir,

The Governments of Canada and the United States in the light of their rights and obligations under Article IV of the Boundary Waters Treaty of 1909 with respect to the avoidance of transboundary pollution, and in light of their commitment under Article 2 of the North Atlantic Treaty to contribute toward the development of peaceful and friendly international relations by strengthening their free institutions, by bringing about a better understanding of the principles upon which these institutions are founded, and by promoting conditions of stability and well-being, are concerned about the quality of water in the St. John River system, especially in the international section of the St. John River and its upstream tributaries and in the downstream tributaries which cross the international boundary. The Government of Canada has undertaken to act as pilot country for a project relating to inland water pollution conducted within the framework of the NATO Committee on Challenges of Modern Society. A part of this project concerns the Basin of the St. John River. The Governments of Belgium, France and the United States have associated themselves with this project and are working closely with the Government of Canada.

In conjunction with this project the Governments of Canada and the United States have agreed to the establishment of a Canada-United States Committee composed of representatives of Federal, State, Provincial and local Governmental agencies to undertake a review of progress in the conduct of water quality planning in the St. John River Basin in both countries, to exchange information concerning plans, programs and actions which could affect water quality in the Basin, to assist in coordination and consultations among appropriate authorities, and to make appropriate recommendations to relevant authorities on both sides of the boundary regarding the improvement of water quality in the Basin. A copy of an Exchange of Notes effected in Ottawa today creating this Committee is attached to this Reference. It is
therein specified that the Committee will provide the Commission with a final report of its activities, together with copies of the proceedings of its meetings and with annual interim reports as necessary.

On the basis of these reports and of such further investigation as the Commission deems appropriate, the Commission is requested, in accordance with Article IX of the Boundary Waters Treaty of 1909, to inquire into and report to the two Governments on the following questions:

1. What action should be taken by the Governments in regard to those matters examined by the Canada-United States Committee in the light of its final report?

2. What joint institutional arrangements to assist the two countries in continuing their cooperative efforts to protect and enhance the quality of the water in the St. John River system and to avoid transboundary pollution would be appropriate?

Until such time as the Commission, following receipt of the final report of the Committee, is able to make a final report and recommendations in response to this Reference, the Commission is requested to submit to the two Governments from time to time such interim reports as the Commission may consider desirable.

In the conduct of its investigation and otherwise in the performance of its duties under this Reference, the Commission may utilize the services of engineers and other specially qualified persons of the technical agencies of Canada and the United States and will so far as possible make use of information and technical data heretofore acquired or which may become available during the course of the investigation.

Yours sincerely,

/S/ Mitchell Sharp
PRESS RELEASE
FISH RIVER LAKE
12:00 Noon-Sept. 21, 1972

U.S. AND CANADA AGREE ON MEASURES TO ENHANCE WATER QUALITY IN ST. JOHN RIVER

Fitzhugh Green, Associate Administrator of the U.S. Environmental Protection Agency, and L. E. Edgeworth, Assistant Deputy Minister, Water Management of Canada's Department of the Environment, announced here today that the United States and Canadian Governments have agreed on joint measures to cooperate in water quality planning and to recommend programs to enhance water quality on the St. John River and its tributaries along the international boundary between the State of Maine and the Provinces of New Brunswick and Quebec. The agreement was announced at the international symposium at Fish River Lake, Maine. Members of the Inland Water Pollution Project of the North Atlantic Treaty Organization (NATO Committee on the Challenges of Modern Society, attended by delegates from six alliance countries at the symposium, are considering international institutional arrangements to deal with trans-boundary water pollution.

The two Governments have established through an exchange of notes a U.S.-Canada Committee on Water Quality in the St. John River and its international tributaries. Composed of representatives of federal, state, provincial and local governmental agencies, the Joint Committee will review progress in conducting water quality planning in the St. John River basin in both countries. It will also exchange information on plans, programs and actions which would affect water quality in the basin, assist in coordination and consultation among appropriate authorities, and make recommendations to the appropriate jurisdictions on water quality in the basin.

In addition, the two governments have requested, by letter of reference, the cooperation of the International Joint Commission (U.S.-Canada) in addressing pollution problems of the St. John River. The Commission is being asked to review the work of the new U.S.-Canada Committee and recommend to the U.S. and Canadian Governments measures the two countries should take to protect and enhance water quality in the river system.

This is a further step in the U.S.-Canadian efforts to control pollution along the U.S.-Canadian border since it establishes a planning committee to prevent pollution from occurring or increasing. Most of the existing joint arrangements between the U.S. and Canada on this subject seek to enhance water quality in the boundary waters by monitoring or surveying the waters after a pollution problem is identified. The International Joint Commission was established by the Boundary Waters Treaty of 1909 for this purpose; an important example of the work it is asked to perform can be noted in the Great Lakes Water Quality Agreement which was signed by President Nixon and Prime Minister Trudeau on April 15, 1972.

Emphasizing local participation, membership in the new U.S.-Canada Committee will consist of representatives from the U.S. and Canadian federal governments, the governments of Maine, New Brunswick and Quebec, and officials of the Northern Maine Regional Planning Commission and the St. John River Planning Board.
NATO's Committee on the Challenges of Modern Society was created in 1969 to add a new dimension to the alliance's activities. It has undertaken a number of other collaborative environmental projects. Officials from Belgium, Canada, France, Germany, the United Kingdom and the U.S. are participating in the symposium at Fish River Lake. The U.S.-Canadian action is timely for the NATO symposium which is considering alternative institutional arrangements for dealing with water pollution between countries. The NATO group is expected to make recommendations on various international approaches for solving pollution problems in shared water resources and it is using the St. John River project as a case study. The new U.S.-Canadian arrangements will demonstrate the effect of one such approach to trans-boundary pollution and it will be evaluated by various nations within the framework of the NATO project. Canada is the pilot country for the project and Belgium, France and the U.S. are acting as co-pilot nations. The French role in the project is concerned with indirect economic controls in inland water pollution; Belgium is studying mathematic modeling as applied to river basin pollution.
APPENDIX VII

LIST OF PERSONS INTERVIEWED 
and of 
REVIEWERS OF THE CASE STUDY 

Balch, R. E., President, New Brunswick Conservation Council (1973-74).


Barnes, Brian B., Chief Engineer, New Brunswick Member SJRB Advisory and Liaison Committee (1971-74); Assistant Deputy Minister, New Brunswick Department of Fisheries and Environment (1977). Member Canada-United States Committee on Water Quality in the Saint John River Basin (1974-75).


Reviewer of the Case Study, July 1980.


Interviews: Ottawa, February 1, 1974.

Bewell, Budd, Coordinator, Public Participation Program, SJRB (1971-74)

Bradley, Keith T., Chief, Public Participation Section, Water Planning and Management Branch, WMS, Canada Department of the Environment (DOE), Ottawa.

Interviews: Ottawa, February 1, 1974.

Brandon, Leo V., Provincial Hydrologist, New Brunswick Department of Natural Resources (1967-70); Study Director, SJRB Board (1970-71), Fredericton; presently, Senior Advisor, Canada Department of the Environment (DOE), Halifax.

Interviews: July 22, 1980 (telephone).

Reviewer of the Case Study, July 1980.

Briggs, James Ezra, Former Member of Maine's Senate (1959) and State House (1965-73).

Interviews: Caribou, Maine, September 8, 1977.

Brochu, John, Regional Engineer (1974), Environmental Director, Presque Isle Office, Maine Department of the Environment.


Buck, Maxwell, Ex-city manager, Presque Isle, Maine.


Caines, Robert M., President, Citizen's International Pollution Committee (1968-70), former Mayor of Centreville; In Charge of Waste Treatment Plant (1977), McCain Foods Limited, Florenceville, New Brunswick.

Campbell, A., Staff member, Scientific Relations and Environmental Problem Division, Bureau of Western Hemisphere Affairs. Department of External Affairs, Ottawa.


Chance, David G., Secretary, Canadian Section, International Joint Commission (IJC), Ottawa.


Chenard, Leonce, Deputy Minister, New Brunswick Department of Fisheries and Environment; Vice-Chairman (1971-73) and Chairman (1973-74) SJRB Board, Fredericton.


Collins, Michael P., Regional Representative, SJRB Public Participation Programme, DOE. Minto, New Brunswick.

Interviews: Minto, January 26, 1974.

Cyr, Alban, President, Cyr Foods, Inc., Caribou, Maine.

Interviews: Caribou, January 17, 1974.

Dalziel, John A., Chief, Operations Branch, Maritime Region, Environmental Protection Service, Canada Department of the Environment (DOE) (1973-74), Halifax; member, SJRB Advisory and Liaison Committee (1971-74).


Davar, K. S., Professor, Department of Civil Engineering, University of New Brunswick, Fredericton.


Done, Tom, Sanitary Engineer, Permits Branch, Environmental Enforcement Division, U.S. Environmental Protection Agency (EPA), Boston.


Interviews: Ottawa, February 1, 1974.

Erickson, Albert J., Acting Chief, Division of Planning and Inter-agency Programs (1970-71), Chief, Water Quality and Non-Point Source Control Division (1973); presently, Associate Deputy Assistant Administrator Water Regulations and Standards, Washington, D.C.


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Everett, T. L., Manager-Treasurer, Town of Woodstock, New Brunswick.


Fast, Marvin, Office of Water Programs, U.S. Environmental Protection Agency (EPA), Washington, D.C.


Fenety, Jack T., General Manager, Radio Atlantic, Ltd., and Vice-president, Atlantic Salmon Association (1973-74), Fredericton.


Folster, David, Freelance Write and CBC contributor,
Fredericton, New Brunswick.


Franklin, Marvyn, Dean of Science, University of New Brunswick; President, New Brunswick Environmental Council. Fredericton, New Brunswick.


Gammon, Jeffrey L., Chief, Water Planning Division, Northern Maine Regional Planning Commission (1968-74), Caribou, Maine.


Gagne, Jean-Marie, President, Agence Regionale sur l'Environment, Edmundston, New Brunswick.


Gauthier, Pierre, Regional Representative, SJRB Public Participation Programme, DOE.


Gillis, Mary M., Regional Representative, SJRB Public Participation Programme, DOE. Fredericton.


Gomori, Steven, President, New Brunswick Labour Council (1968-74).


Grant, Ernie, President, New Brunswick Salmon Anglers Association.


Harding, Floyd, Lawyer, Presque Isle, Maine.


Interviews: Presque Isle, January 17, 1974; Caribou, September 7, 1977.

Hatfield, Fred, Industrialist and member Town Council, Hartland, New Brunswick.


Hayward, Douglas G., Senior Engineer, New Brunswick Electric Power Commission; Member, SJRB Advisory and Lisaison Committee (1971-74).


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Hendrickson, John, Member, IJC Pollution Advisory Board on the St. Croix River (1965-71) and Staff of EPA (up to 1972); Staff Member, U.S. Section of IJC (1973-74).


Hill, Harry M., Consultant, H.G. Acres, Ltd., and Department of Civil Engineering, University of Waterloo (1972-73).


Hodges, Richard C., Director, Programme and Policy Development Branch, Water Management Service, Canada Department
of the Environment (DOE) (1972-73), Ottawa; Vice-Chairman, SJRB Board (1973-74); presently with the World Bank.


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Irvine, Robert, Staff Member, Bilateral Relations Branch, Canada Department of the Environment (DOE) responsible for coordination of Inland Waters Pollution Project, NATO-CCMS (1973-74).

Interviews: Ottawa, February 1, 1974.

Kimmel, Moe L., Vice-President, Potato Service, Inc., Presque Isle, Maine.


MacCollum, Lloyd, Assistant Chairman and Legal Advisor, Canadian Section of the International Joint Commission (IJC).


McLellan, Keith, Director, U.S.A. Division, Canada Department of the Environment (DOE), Ottawa.


McLoon, Frank C., Production Manager, New Brunswick Electric Power Commission; Member SJRB Board, Fredericton.


MacNeill, Kenley, Regional Representative, SJRB Public Participation Programme, DOE... Woodstock, New Brunswick.


Mansfield, William H., Senior Officer, U.S. State Department (formerly with the Office of International Activities of EPA), Washington, D.C.

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Milsted, Richard M., Chief, Water Quality Division, Inland Waters Directorate, Water Management Service, Canada Department of the Environment (DOE), Ottawa; Chairman, U.S. Section, Canada-United States Committee on Water Quality in the SJRB


Michaud, Conrad, Secretary, Edmundston Chamber of Commerce (1973-74).


Nef, Ed V., Senior Staff Member, Bureau of Canadian Affairs, U.S. State Department Washington, D.C.


Rand, Art H., Director, Environmental Protection, Fraser Paper Ltd., Madawaska, Maine, and Fraser Companies, Ltd., Edmundston.


Rioux, J. A., Vice-President, Atlantic Provinces Economic Council; former President, Chamber of Commerce, Fredericton.


Ruggles, C. P., Chief, Resource Development Branch,
Maritime Region, Canada Department of Fisheries (1968-1970); Regional Director, Environmental Protection Service, DOE (1974), Halifax.

**Interviews:** Halifax, January 4, 1974 (telephone).

Smith, Donald, Chief, Water Quality Section, U.S. Environmental Protection Agency, Region I, Boston. Also Secretary, U.S. Section, Canada-U.S.A. Committee on Water Quality in the SJRB (1973-75).

**Interviews:** Boston, November 9, 1973; September 2, 1977.

Steeves, Charles H., Conservationist, Woodstock, New Brunswick A member, Citizen's International Pollution Committee.

**Interviews:** Woodstock, New Brunswick, January 28, 1974.

Stewart, Carl (Bud), Businessman, Member, Town Council, Woodstock, New Brunswick.

**Interviews:** Woodstock, January 25, 1974.


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Willoughby, William R., Professor, Department of Economics and Political Science, University of New Brunswick, Fredericton.

**Interviews:** Fredericton, October 30, 1973.

Wilson, Peter, Senior Advisor, Canada-U.S.A. Relations Branch (formerly, Bilateral Relations Branch), Planning and Finance Service, Canada Department of the Environment (DOE),
Ottawa. Secretary, Canadian Section, Canada-U.S.A. Committee on Water Quality in the SJRB (1973-75).

**Interviews:** Ottawa, October 18, 1973; January 31, 1974; September 23, 1977; July 16, 1980 (telephone).

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_Yorke, E. M._, Regional Representative, SJRB Public Participation Programme, DOE.; formerly, President, New Brunswick Wildlife Federation, Saint John, New Brunswick.

**Interviews:** Saint John, January 26, 1974.

_Zeman, A. W._, Staff member, U.S.A. Division, Bureau of Western Hemisphere Affairs, Department of External Affairs, Ottawa.

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