WORKING PAPER

SYSTEMS ANALYSIS OF INTERNATIONAL LAW: AN INQUIRY INTO ITS APPLICATION

Marcel Brus

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IIASA
International Institute
for Applied Systems Analysis

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PREFACE

One of the aims of systems analysts is to develop tools for decision makers who must deal with problems in which there are many interacting elements. Marcel Brus, a student in international law of the University of Leiden, examined the applicability of systems analysis to international legal research as part of the 1988 Young Summer Scientist Program within the Transboundary Air Pollution Project. A special look was taken at the Regional Acidification Information and Simulation (RAINS) model. The conclusion in this report is that systems analysis certainly help to identify important elements of the problem, but the analysis must consider not only judical but scientific and social issues as well.

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ABSTRACT

This report investigates the usefulness of systems analysis as a methodological tool for the analysis of the world legal system. Due to increasingly complex relations between states, traditional methods for legal analysis are no longer sufficient to provide adequate explanations of the changing features of international legal regulation. Systems analysis offers the opportunity to combine methods used in legal and social sciences and, moreover, to focus on the dynamics of international law development. The development of a regime for the prevention of long range transboundary air pollution in Europe serves as a case study.

In the report three levels of analyses are distinguished: (a) a theoretical level concerned with the general legal and political theories explaining the international behaviour of states; (b) a policy making level dealing with international (legal) cooperation in practice, i.e. the process of acceptance of specific international rules; and (c) an instrumental level which deals with specific techniques and technologies used to facilitate the policy and law making process and, for example, to supervise the behaviour of states and to enforce international agreements. Examples are (satellite) monitoring techniques and the use of integrated computer models like the RAINS model developed at IIASA.

The first two levels of analyses receive most attention in this report. The main conclusion is that systems analysis forms a promising methodology to be used in legal science. However, more extensive research remains necessary.

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SYSTEMS ANALYSIS OF INTERNATIONAL LAW: AN INQUIRY INTO ITS APPLICATION.[1]

1. INTRODUCTION

When I was invited by the International Institute of Applied Systems Analysis (IIASA) to take part in their Young Scientist Summer Program (YSSP), I had no idea what was meant with 'applied systems analysis'. I have to admit, even today I would not be able to give a clear definition of this phrase. Nevertheless, as the choice of the title suggests, I have at least some ideas about systems analysis and I even accepted the challenge of taking a look at its application, although I realized only recently, almost half a year after my stay in Laxenburg, that I was analyzing a system and even to my surprise I was trying to apply this systems analysis to the practice of international law.

One of the reasons for this delay in enlightenment was the fact that I tried to reconcile a discussion on two essentially different systems. The question which IIASA asked me to do some research on concerned the use of computer models in international diplomatic conferences. The computer model in question was the RAINS model (Regional Acidification INformation and Simulation) which is designed in order to facilitate international agreement on acid rain abatement. One possible approach would be to take a look at the application of such a computer model in a very specific situation, i.e. the European attempts to stop further acidification. The computer model in this case is a simplified version of the complex European environmental system. The question then is: Is this simplified system acceptable for diplomats, or for decision makers in general, to perform as a basis for their decisions? Would they accept the result of a 'simulation game' in their negotiations, and if so, under what circumstances and to what extent? Thus, in this approach the system is the environmental/ecological system in Europe, represented in a computer model.

The other approach takes a look at the way how international decision making works. The focus is not on the object of legal decision making, but on the process. If one can gain an insight into the particularities of international decision making,

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[1] The author would like to thank all members of IIASA, the Transboundary Air Pollution Project (former Acid Rain Project) and especially Dr R.W. Shaw for their support and assistance during his stay in Laxenburg in the summer of 1988. This would not have been possible without the financial support of the Stichting IIASA Nederland (Foundation IIASA-Netherlands).

this would of course be useful for the assessment of the possible use of newly developed tools like computer models. However, contrary to the first approach, the system under analysis is not the computer model, or the system it represents, but the international system in which states operate. World order as object of systems analysis. Conclusions with respect to the usefulness of a specific tool like RAINS can, as a result of this, only be of a general nature, but the 'world order approach' does provide a foundation for research into the more specific questions related to the use of models like RAINS.

In the present study I will follow the second approach. This is therefore more a study of world order than of the application of computer models. Nonetheless, I will try to structure this research report in such a way that it not only deals with abstract questions regarding the process of decision making, but that it gradually comes down to a more concrete discussion of decision making with respect to acidification and the use of the RAINS model. Since so many fundamental questions will be touched upon in this study, I do not seek completeness. This research report should be seen as an attempt to formulate questions which can become the basis for further research. Also, and this is a general problem for those trying to follow a interdisciplinary approach, it will not be possible to extensively discuss all elements considered relevant in a certain field of scientific study. Critique by specialists in these fields is therefore welcomed by the author.

The title of this study is inspired by a recent attempt by two international lawyers to describe the actual crisis in (the methodology of) international legal thinking in terms of systems analysis.[2] Although, in my opinion, the results of their approach remained rather meager, they at least identified the current problems in international law and provided the elements for further research. Contrary to their approach which is limited to the discussion of legal aspects, I will try to go beyond a purely legal discussion by taking into account the results from (international) political and policy science. Also, I will try to apply the results of the general analysis of the international system to a more concrete situation of environmental law making. Whether I will succeed remains to be seen.

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[2] Kiss & Shelton, *Systems Analysis of International Law: A Methodological Inquiry*, XVII Netherlands Yearbook of International Law 45-74 (1986). *See also* Sorensen, *Autonomous Legal Orders: Some Considerations to a Systems Analysis of International Organisations in the World Legal Order*, 32 The International and Comparative Law Quarterly 559-576 (1983).

As already suggested before, it is extremely difficult to define a system. I do not intend to embark upon this discussion, but as an illustration I will provide the definition given by Kiss and Shelton: "Systems are integrated wholes whose properties cannot de reduced to those of smaller units, entities whose whole is greater than the sum of its part".[3] Systems are characterized by a dynamic interrelation between the elements of which they consist; by a dynamic balance maintained by positive and negative feedback mechanisms. In the international system, modern states are actors in an international web of relations; they can no longer be regarded as coexisting units that can fulfill their traditional functions and responsibilities unaided. The web of international relations has become an essential element in the existence of a state. The international (legal) system can no longer be understood on the basis of the study of (the behaviour of) individual states. "[A] systems approach .... reverses the structural construct of the international legal system by making as its foundation the entire international community/system, rather than building from the base of individuals States."[4]

In their article Kiss and Shelton start with the observation that the general perception of international law is still based on the seventeenth century vision of the world existing of "sovereign states which should co-operate but which are masters of their own destiny and which do not need to take into consideration, unless they wish to, the interests of others and those of the world community." However, the world has changed, among others as a result of technological changes. The basis of international cooperation is no longer the purely voluntary act of a state to engage in international relations. Modern states are necessarily part of a larger system, both for reasons of guaranteeing its own existence (in economic terms for example) as well as for the fact that they can hardly close its borders for transnational influences of non-state actors such as multinational enterprises, terroristic organizations, international press agencies and of course individual human beings. Notwithstanding the enormous changes in this respect in the last decades, the approach to international law has remained essentially the same. This leads to a discrepancy between international legal thinking and the actual behaviour of states, which has to be overcome through the development of new concepts and a new approach to international law. The systems approach, based upon dynamic interrelationships, offers the necessary foundation.

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[3] Kiss & Shelton, *supra* note 2, at 49.

[4] *Id.* at 68.

Kiss and Shelton select three fields of international law to illustrate their point: human rights, the preservation of cultural property and the conservation of the environment. Since this study is concerned with environmental law, I will only comment upon this aspect of their study.

Kiss and Shelton identify three particularities of environmental protection as a new field of international law: its physical characteristics (the environment knows no frontier); economic considerations; and public opinion. It is clear to everyone who makes a study of international environmental law, that the traditional concepts of international law necessarily fail to provide the answers to the current problems. Transfrontier pollution cannot be dealt with solely on a basis of reciprocity, prohibitions and sanctions (basic concepts in 'traditional' international law), but must be encountered with international, perhaps even supranational cooperation and the creation of international programs of a global character in order to safeguard the common interest. However, Kiss and Shelton rightly raise the question who is to determine the common interest and in the name of what?

The economic component of environmental law is also evident. The cost of anti-pollution measures may bring a competitive advantage upon those countries that do not take these measures. Also problems like the dumping of waste in developing countries, or the sale of products prohibited in the industrialized countries are examples of the economic component of the international pollution question.

The third mentioned particularity is the role of the public opinion. In no other field has it become so evident as in international environmental matters that a public awareness exists that does not know of any frontier. In no other field of international relations (except perhaps with regard to the international arms race) so much public reaction is aroused, increasingly leading to effective pressure on governments to take action (this perhaps in contrast to the arms race).

International (regional or global) legal rules are required to deal with the environmental problems: legal rules in a framework of an international law in which the problem and its solution are taken as a starting point and not the preservation of the sovereignty of the state. The development of such new legal rules is of course not only possible trough the work of lawyers and international diplomats. An interdisciplinary, 'holistic' approach, in which experts of all scientific disciplines cooperate, is needed.

The systems approach, defined by a dynamic interaction between its component parts, implies a change in the static conception of international law and leads according to Kiss and Shelton to a dynamic conception of the role of law. The law

is to be based upon the concept of the common interest of mankind, or in other words a world-wide value system. Consequence of this is that state sovereignty has to be considered in functional terms rather than absolute. The state of today is primarily - when viewed from within - a utilitarian institution, existing to ensure the basic needs of its citizens. As such the state should also be considered in functional terms in relation to its role in the international community. Where a state cannot individually perform certain tasks they are obliged to cooperate: "In these cases States competences must be determined by the functions they can and will perform."[5] International cooperation is inevitable and with this international institutionalization. International institutions, with the United Nations as a general meeting point and framework for action, are necessary to guarantee continuous cooperation in the fields where a permanent exchange of information, coordination of action etc. is required.

The systems approach is not something remote from the observable practice of today. Especially in the field of environmental law, treaties already reflect the need for a different approach. These treaties, like the Convention on the Endangered Species of Wild Flora and Fauna (1973), are of a flexible character, allowing modifications of the terms of agreement whenever this is thought necessary for example on the basis of new scientific information. Also, modern treaties sometimes provide a kind of framework or program of action, like the Convention on Long-Range Transboundary Air Pollution or the Ozone Convention. Not only the form of the treaties has changed. Also the process of international law making is subject to change. Principles for international behaviour have been adopted by international organizations or conferences representing the entire international community. Such principles were in some instances transformed into binding obligations under international law at a later stage. "Clearly, such principles and their role in international life can only be really understood in the light of their ulterior development, when functions are taken into account."[6]

Kiss' and Shelton's approach is an interesting example of an attempt to find a concept of international law which both explains changes in international law that occur nowadays and also provides a foundation for the dynamic development of an international law based upon a common interest of mankind. A systems approach is useful in this respect, although their approach is in some instance of a too

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5 *Id.*

6 *Id.* at 70.

simplistic character. Their conclusion is an evident example of this. The statement that "a description of how modern international society functions supports recognizing that a global system exists" and that this "calls for revising the fundamental approach to international legal problems through redefining the role of States and international organisations in a functional, interdependent manner and accepting not only the need for, but the inevitability of, international law as one means of solving the growing list of transnational social problems"[7] is of a disappointing generality and is not of a very practical value. The systems approach itself, nevertheless, offers an important starting point for further research of development of modern international law. It is along this line that the rest of this study will be undertaken.

In my approach I distinguish at least two levels of analysis. (1) A theoretical level which is concerned with a more general explanation of the international behaviour of states. Especially changes in their behaviour as well as changes in the process of the formulation of new fundamental international rules and principles are important. In this respect, the direction of change is of utmost significance. Political as well as legal theoretical concepts, such as for example the concept of sovereignty or of common interest of mankind, will provide the basis for this part of my analysis. Chapter II will deal with these questions of theory building.

(2) A second level of analysis is the policy making level. Policy making should be given a broad meaning in this respect. It refers to policy decisions and the process of reaching these decisions at an international level. This concerns, for example, the establishment of international environmental monitoring agency, but also the acceptance of specific international rules, often in the form of a formal treaty, for example concerning the abatement of acid rain. This latter form might be called 'legal policy making'. At this level we are interested in international cooperation in practice, both political and legal. (Chapters III and IV)

(3) A possible third level that could be distinguished can be called the 'instrumental' level. It is difficult however, to draw a sharp line between the policy making and the instrumental level. This third level is mainly concerned with policy control and law enforcement, but it is arguable whether this should be distinguished from policy making or the discussion on the basic concepts. One reason for a distinction would be the fact that in the international legal system law enforcement

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[7] *Id.* at 74.

is still a very weak element. How can this be changed? Can, for example, modern technology, like international environmental monitoring with the help of satellites, be made instrumental to a system of legal responsibility and liability of states for damage caused to other states or to the international community in general? What would be the effects of these kind of technological changes for international cooperation? It will not be possible to deal with these questions in this study, although the discussion on the use of the RAINS model (in Chapter V) is a first step into this direction.

As a central theme in this study, I will use the concept of 'international learning'. I have chosen to use this concept since I intend in this study to identify and, as far as possible, clarify developments that show that the international system is a dynamic system indeed. One reason for this is the constant change in the perception of the system as a result of accumulation of knowledge about the world we live in. A continuous learning process exists - sometimes it is an extremely slow process, since it takes time and especially interest of those involved, to accept and integrate new knowledge into new policies. Sometimes the process is fast, for example as a result of an emerging crisis.[8]

Taking as a basic definition of learning "to alter one's beliefs as a result of new information"[9] or even simpler "reinterpreting one's interests"[10], makes clear that this touches upon the heart of the discussion on the emerging international system. The concept of learning can be helpful in answering questions like: How can the still prevalent view on international law and international relations, with absolute state sovereignty as its foundation, be adjusted to the needs of today in which the

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[8] Keohane & Nye, *Two Cheers for Multilateralism*, 60 Foreign Policy 148-167 (1985); *Cf.* the example of the Chernobyl disaster and the speedy adoption of two IAEA treaties; The Convention on Early Notification of a Nuclear Accident (opened for signature 26 September 1986, entered into force on 27 October 1986), *reprinted in* 25 International Legal Materials (hereinafter I.L.M.) 1370 (1986); The Convention on Assistance in the Case of a nuclear Accident or Radiological Emergency (also opened for signature on 26 September 1986, entered into force on 26 February 1987), *reprinted in* 25 I.L.M. 1377 (1986). *See, e.g.*, A.O. Adede, The IAEA Notification and Assistance Conventions in Case of a Nuclear Acident; Landmarks in the Multilateral Treaty-Making Process 134 (1987); Cameron, *Nuclear Safety After Chernobyl: The Role of International Law*, 1 Leiden Journal of International Law 121-135 (1988).

[9] Keohane & Nye, *supra* note 8.

[10] Haas, *Why Collaborate? Issue-Linkage and International Regimes*, 23 World Politics 370 (1980).

national interest has in fact become dependent on a common international interest? In this respect we can follow Prof. Ernst B. Haas' suggestion that

> "learning has taken place when actors adopt new rules of behavior that make use of new information and knowledge, or adopt ways for the search for such knowledge .... New knowledge, then, is used to redefine the content of national interest. Awareness of newly understood causes of unwanted effects usually results in the adoption of different, and more effective, means to alter one's ends."[11]

An important aspect of stimulating international cooperation and promoting the awareness of international interdependence is therefore the channeling of available information (in a usable form) to institutions and decision makers who are responsible with respect to a certain issue, like environmental management. This is all the more important because of the complexity of most of the current international problems. No individual can acquire all the factual and scientific knowledge about these problems. Yet, policies will have to be adopted, built upon this imperfect knowledge. Therefore, flexible international structures are needed to provide a framework in which the learning process of states (and for this matter the individuals and institutions of which a state consists) can take place.

Again, it remains to be seen whether it will be possible to discuss all the elements I mentioned in this introduction (and all the elements I have in mind but did not mention) in one research report and whether I will succeed in bringing these together in a more or less consistent whole. However, whatever the result may be, the challenge was too great not to at least give it a try.

2. BASIC CONCEPTS FOR THE ANALYSIS OF THE INTERNATIONAL SYSTEM

2.1. Building bridges

In this chapter I will try to join concepts used in international political theory with international legal concepts. Although these two fields of study cover to a large extent the same subject - the study of the international system - in scholarly writing they are usually treated separately. Of course, there are some valid reasons for this division, but if one wants to discuss the fundamental issues of the international community, a distinction between the two academic fields is not always very useful.

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11 *Id.* at 390.

International legal rules and principles determine to a certain extent the behaviour of states (and other international actors), but the assertion that the development and implementation of these rules and principles is dependent on political structures and concepts, like the power distribution, is also correct. We are not dealing with two separated worlds, but with just one world in which the interconnectedness between politics and law (and in this respect especially law making) becomes more evident every day.

The problem with combining two academic disciplines that have been developing separately for some time, is that specific terminologies and theoretical approaches have been developed. These are not always easily linked together. However, an attempt to build bridges between international law and international politics might be useful for a better understanding of the prospects for change and especially the constraints on such change.

International law is valuable in this respect since it provides information about the formalized structures of international cooperation, both in a normative sense and in an organizational sense. This structure incorporates, for example, general principles of international law (*pacta sunt servanda*), fundamental norms (a prohibition of genocide, respect for fundamental human rights, a ban on the use of force), and numerous treaties regulating all kind of aspects of international cooperation. Also of great importance are of course the institutional aspects: the law of international organizations; rules dealing with the formation of international law; and rules on sanctions and settlement of disputes.[12]

Traditionally, international lawyers merely deal with the 'products'[13] (the principles, norms and rules) of international law, their application in a particular situation and the *formal* process of their development. Their interest is not in the first placed concerned with the "broader social, psychological, economic, and political factors responsible for the lawmaking and unmaking behavior of states"[14]. Of course, it cannot be denied completely that many lawyers are also interested in

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[12] Compare Hart's distinction between primary and secondary rules. Primary rules lay down standards of behavior and rules of obligation. Secondary rules are mainly procedural and remedial. H.L.A. Hart, The Concept of Law (1961).

[13] Or the 'outcome aspect'. *See* Ahmed Sheikh, International Law and National Behavior; A Behavioral Interpretation of Contemporary International Law and Politics 310 (1974).

[14] *Id.* at 308.

the political aspects of the process of law making, especially since many lawyers take part in the process themselves, for example as members of national diplomatic delegations to international (law making) conferences. Nevertheless, they are primarily interested in the process since this can provide valuable information about the interpretation and implementation of legal instruments.

On the other hand, political scientists are less interested in the formalized 'products' of international cooperation. They are more interested in understanding the broader factors mentioned in the preceding paragraph. The explanation of state behaviour is their main concern. International law does not play a very important role in this respect. It is seen by most political scientists as but one aspect of the complex structure of international society. Especially in the traditionalist's view, international law, or the 'products' of international law, are not recognized as a highly relevant factor in the explanation of state behaviour. Other elements, such as the balance of military power or resource related capabilities, play a much more important role. Their main argument is often based on the absence of an international legislator and the fact that international law lacks the necessary coercive power, since no effective international enforcement authority exists.

These political scientist are to a certain extent right in their skepticism with regard to the role of international law. International law has thus far not been able to regulate state behaviour in all its aspects. However, important changes in international relations have taken place in the recent decades, not only as the result of 'physical' changes like, among others, the decolonization, the increase in world trade, the introduction of nuclear arms, the threats to the natural environment, but also of a growing awareness of common human values, like the respect for civil and political human rights, the right to a decent minimum standard of living in the least developed countries and the right to a healthy natural environment. These changes call for a drastic increase in the role of international law and therewith for a change in perspective of both political scientists and international lawyers.

International political scientist can contribute to the insight in the 'input aspect' related to the necessary changes.[15] With the term 'input aspect' Sheikh refers to the various processes of international bargaining and consensus formation prior to deliberate law development through treaties and other formal agreements.[16]

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[15] *Id.* at 310.

[16] *Id.*

However, we could broaden this concept somewhat by also including the motivational aspect of law observance.[17] The question then is not only why and how legal norms are developed, but also, why states do obey most of these rules?[18]

As already mentioned, in this chapter I intend to provide a theoretical framework for analysis by joining international political and legal theories. Of course, it is impossible to deal with all theories and all nuances of these theories as they have been developed in the past years. I therefore have to select (aspects of) those theories that seem most relevant for the present study. I will take theories of international relations as a point of departure. In the selection of these theories, three concepts were of central importance: complex interdependence, international regimes, and international learning. These concepts will be discussed, and where possible related to legal concepts.

2.2. Complex interdependence

In the modern study of world politics several approaches can be distinguished. First, the traditional approach in which 'power and security' plays a dominant role. This approach is often labelled as 'realism' or 'traditionalism'. Second, in a more recent approach, often called neorealism, this preoccupation with (military) power and security is diminished. More attention is paid to changes in the international society that decrease the assumed independence of states. The theory of 'complex interdependence' will be the main example of this approach. A third, radically different perspective for the study of world politics are offered by the 'dependency' theories. These focus upon the structural inequality between the dominant centres of economic and political power and the dependent periphery.

Yet another approach, the so called 'postrealist' theory, can be distinguished as a new direction of research. This approach focusses on the development of normative values as the basis for international cooperation. Values like the concern for human rights and for the environment, the rejection of the use of weapons of

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[17] Although violations of international law by states attract most attention, Henkin is right when he states that "almost all nations observe almost all principles of international law and almost all of their obligation almost all of their time". Louis Henkin, How Nations Behave; Law and Foreign Policy 47 (2d ed. 1979). *See also* Franck, *Legitimacy in the International System*, 82 American Journal of International Law 705 (1988).

[18] Perhaps this input aspect is to a certain extent comparable with Hart's 'internal aspect' of law. H.L.A. Hart, *supra* note 12.

mass destruction as an acceptable political tool are of central importance in this view. It is perhaps even more closely related to the systems analysis approach, than I the other approaches. However, lack of time makes it impossible to incorporate a discussion on this postrealistic, or 'normativist' approach at this place. One important difference between the normativists and the present approach, however, I would like to mention. This is the fact that I will try not to take (subjective) values as a point of departure, as normativists do, but the necessity of international cooperation between states as a consequence of todays' global challenges. The basis for this cooperation has to be founded on the existing premisses of state sovereignty (as in the realist and neorealist theory). The, in my view, necessary adjustment of sovereignty (from absolute to functional sovereignty) and the fact that this coincides with the development of international common values, does not follow from a preoccupation with these values, but from the (objective) self interest of states. I will try to demonstrate with the discussion in the subsequent chapters on the development of international environmental management that these changes are indeed taking place.

In this study I will only consider the first two approaches. Dependency theory deals predominately with the structure of global economic relations.[19] Although this might clarify, for example, certain structural constraints for the adoption of effective environmental strategies in developing countries, it is clearly beyond the scope of this study. I have already explained the reason for not discussing postrealism.

Basic elements in realist theory

The realist theory of international relations[20] is in the first place state centric. Sovereign states, not subject to any higher source of authority, are the main actors

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[19] *See, e.g.*, A.G. Frank, Capitalism and Underdevelopment in Latin America: Historical Studies of Chile and Brazil (1971); J. Galtung, *A Structural Theory of Imperialism*, 13 Journal of Peace Research 81-94 (1971); I. Wallerstein, *The Rise and Future Demise of the World Capitalist System: Concepts for Comparative Analysis*, 16 Comparative Studies in Society and History 387-415 (1974).

[20] See generally some of the most influential representatives of realist theory: Hans J. Morgenthau, Politics Among Nations: The Struggle for Power and Peace (6th ed., Kenneth W. Thompson ed. 1985); Kennan, *Morality and Foreign Policy*, 64 Foreign Affairs 205-218 (1985/1986); H.A. Kissinger, American Foreign Policy (1969); K.N. Waltz, Theory of International Politics (1979); *See also* J.W. Nobel, De Utopie van het Realisme: De Machtstheorie van Hans J. Morgenthau en de Kritiek op het Amerikaanse Beleid in de Koude Oorlog (1985).

in the international system. Other actors, like international governmental and non-governmental organizations, also function in the international system, but their role is without doubt subordinate to the role of states.

The behaviour of states is dominated by an intense competition for scarce resources and a continuous threat of interstate conflict. "States are always seeking to assure their own security and prosperity within the limits of (...) scarce resources."[21] No effective international machinery exists that can guarantee the security of the state. The international system is essentially an anarchical system in which states have to rely on self help for the protection of their national interests. Military power provides the best source for this. The use of military force is therefore seen as a usable and legitimate instrument of foreign policy. Keeping a 'balance of power' between the main powers is seen as the best guarantee for stability in this anarchical society.

Since military power and economic capabilities are dominant forces in international relations, other issues are necessarily lower in the hierarchy of national foreign policy goals. The promotion of international peace or welfare as a foreign policy goal, is in the realist view subordinate to the protection of national interests. Foreign policy should be independent of ideology or abstract moral obligations, its only goal is the protection of national interests.[22] "Its primary obligation is to the *interests* of the national society it represents, not to the moral impulses that the individual elements of that society may experience."[23]

In the realist model, international law does not play a very important role in explaining international state behaviour. It is not a necessary nor an essential condition of international order. "International law cannot fulfil any of the functions that have been ascribed to it unless other conditions, not guaranteed by international law itself, are present."[24] The main function of international law is in the opinion of Hedley Bull, to identify, as the supreme normative principle of political organization of mankind, the idea of a society of sovereign states.

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[21] M. Smith, R. Little, M. Shackleton (eds), Perspectives on World Politics 15 (1981).

[22] Van Staden, *De Heerschappij van Staten: Het Perspectief van het Realisme*, in Internationale Betrekkingen in Perspectief 22-26 (R.B. Soetendorp & A. van Staden eds. 1987).

[23] Kennan, *supra* note 20, at 205-206.

[24] Hedley Bull, The Anarchical Society; A Study of World Order in World Politics 143 (1977).

International law states the basic rules of coexistence among these states and other actors, and helps to mobilise compliance with the rules of international society.[25]

The need to broaden the concept of an 'international law of coexistence'

The rules of coexistence or 'the international law of coexistence' (as opposed to the 'international law of cooperation'[26]) are generally recognized as the classic form of international law. They represent the traditional sphere of diplomatic interstate relations which was characteristic for the international society between the Peace of Westphalia (1648) and the first half of this century. It was the society of sovereign states, governed by a 'law of liberty',[27] built upon the assumption of conflicts of national interests.[28]

However, the changed circumstances in the second part of this century shows that national sovereignty is a relative value. "National sovereignty must give way to international co-operative action as soon as the nation-state proves powerless to solve certain problems of defense or economy."[29] States were no longer able to guarantee the wellbeing and security of their population without a growing dependence on international cooperation.

Therefore, an 'international law of cooperation' had to be developed, built upon a community of interest. This requires a fundamentally different perception of the role of international law and an adjustment of the traditional methods of international law making in a world of coexistence. Of course, the law of cooperation will never replace the law of coexistence as long as states are the main actors on the world stage. The increase in the number of international organizations, with the extended UN family as the most important example, and especially the increase in their importance, both with respect to law making and policy formulation, are clear exponents of the developing law of international cooperation.

The emergence of an international law of cooperation is also easily perceptible in international economic law. A close link exists between national economies and the

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25 *Id.* 140-141.

26 W. Friedmann, The Changing Structure of International Law (1964).

27 B.V.A. Röling, International Law in an Expanded World 85 (1960).

28 Friedmann, *supra* note 26, at 57.

29 Röling, *supra* note 27, at 77.

international economic order. States have become dependent on international economic exchange and international legal cooperation. International rules and regulations have become an absolute necessity. Nevertheless, although based on a common economic interest, basic objectives of international economic law do not need to be contrary to the above mentioned principles of the law of coexistence. According to Petersmann, three basic legal objectives (in which elements of a law of coexistence are clearly present) are pursued in this 'new' law of economic cooperation:

- the protection and delimitation of the autonomy of independent actors;
- the coordination of their autonomous activities; and
- the enhancement of legal security and order, thereby making international economic transactions and government interventions predictable and reducing transaction costs. [30]

The example of the efforts to promote a community of interests based upon a (legal) principle of solidarity between developed and less developed countries, shows that the role of self interest of states cannot be wiped out. The efforts, especially in the seventies, to formulate new principles of international economic cooperation- the New International Economic Order (NIEO) - have not been very successful and did not yet lead to structural changes. This demonstrates that in order to reach consensus on principles which should establish the basis of a real community of interests, the realities of state sovereignty have to be taken into account.[31]

With respect to the preservation of the environment it is almost unthinkable that a community of interest will not arise. The serious threats to all mankind as a result of the constant assault on the natural environment, will have to bring the actors closer together, and lead to the development of a effective system for environmental management based on the self interest of states, if not on their survival.

However, before discussing this question in greater detail, I will first examine some recent trends in the field of international political science. New concepts, as a reaction to the no longer (completely) satisfactory realist paradigm, did not only emerge in legal science, but, of course, also in political science.

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[30] E.U. Petersmann, *Constitutional Functions of Public International Economic Law*, in Restructuring the International Economic Order: The Role of Law and Lawyers 51 (P. van Dijk, F. van Hoof, A. Koers, K. Mortelmans eds. 1987).

[31] *Cf., e.g.*, Van Dijk & Rood, *Function and Effectiveness of Supervision in an Economically Interdependent World, Id.* at 135-149.

The theory of complex interdependence

The realist model of international relations has been (and still is) subjected to much criticism. Among the most important shortcomings are (1) the absolute dominance of states as world actors and the fact that states are seen as rational and coherent units; (2) the (linear) relation between the role states play in international affairs and their place in the overall international hierarchy of (military) power; and (3) the assumption that in the absence of international authority a continuous threat of international conflict exists. These fundaments of realist theory are, according to its critics, no longer (completely) valid for the explanation of international state behaviour. The oil crisis in the seventies, for example, showed that military power is no longer the only or most important source of state power. Other elements have to be taken into account as well. Also, for instance, the politization of issues in international relations and the formation of alliances of states, or of non state actors like multinational enterprises (e.g. bank consortia), undermines predictions made on the basis of national military or economic power about the outcome of international negotiations. Examples of this are the law of the sea negotiations in the seventies and the ongoing attempts to solve the current debt crisis.

Based on these criticisms new perceptions of the structure and process of international relations have been developed. One of the most important achievements, which have laid the foundation for a new school of thought, is the 'complex interdependence' approach followed by Keohane and Nye.[32] Their ideas about international cooperation are based upon three assumptions:

1) Multiple channels connect societies. States do not monopolize these contacts. There are many formal and informal connections, not only between governmental representatives at various levels, but also between transnational non-governmental organizations (commercial enterprises, political pressure groups) and individuals. International coalitions are formed irrespective of international boundaries. This makes it difficult, if not impossible, to identify one unified national interest.
2) The realist assumption about the hierarchy of issues is not accepted. Security issues do not necessarily dominate the international agenda. Economic, social, cultural, humanitarian, or other issues are not of a lower ranking than security

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[32] R.O. Keohane & J.S. Nye, Power and Interdependence; World Politics in Transition (1977) [hereinafter Power and Interdependence]; *See also* Keohane & Nye, *Power and Interdependence Revisited*, 41 International Organization 725-753 (1987).

issues. A different organization of the international agenda is assumed. Issues and issue-areas are the main elements in this organization, whereby the politization of issues and linkages between issue-areas can explain some of the dynamics in the international system. Within an issue-area, the distinction between domestic policy and foreign policy often becomes blurred, mainly because many international issues arise from, or are closely connected with domestic policy.

3) The usability and efficiency of military force, especially in an era of a nuclear armament, is limited as an instrument of international policy. "Military force is not used by governments toward other governments within the region, or on the issues, when complex interdependence prevails."[33] The international distribution of power is not only related to the overall military power structure, but also to the relevant sources of power, the distribution of opportunities and vulnerabilities *within* an issue area.[34]

Approached from a somewhat different angle, it can be said that, in comparison to the realist assumptions, in a situation of complex interdependence international cooperation does play a more important role in explaining state behaviour.[35] Also, and perhaps even more important for the purpose of this study, is the fact that processes of international cooperation form the basis for analysis, and not the individual actor. As far as the relations between actors in the international system

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[33] Power and Interdependence, *supra* note 32, at 25.

[34] The limitation on the usability of military force as an instrument of national policy, of course raises the question of alternative instruments. Economic bargaining power is important in this respect, but economic sanctions, for example, as an alternative instrument of national policy are much more difficult to use, mainly because of the repercussions this might have for the economy of the country invoking such sanctions. The role of peaceful methods of regulating interstate conflict increases, and with this the need of international (legal) principles forming the basis of this. The assertion that the lack of effective instruments guaranteeing the fulfillment of national interests in case of international conflict, suggests that (legal) methods for the peaceful settlement of disputes will become more important. However, if one takes a look at the present state of world affairs, there appears not to be much support for this thesis in reality. But if one takes a closer look at issue areas (like the law of the sea, international trade or environmental control) then some justification for this reasoning can be found. This line of reasoning can unfortunately not be further explored in this study.

[35] However, Keohane takes a more conservative position in *After Hegemony*. R.O. Keohane, After Hegemony: Cooperation and Discord in the World Political Economy (1984).

are concerned, the following figure summarizes the main difference between the realist and complex interdependence approaches. (Annex I)

Although one can with respect to the theory of complex interdependence savely speak of a new school of thought, it remains important to realize that not all basic concepts of realism are rejected. Keohane and Nye state in *Power and interdependence* that it is not their task to argue either the modernist or traditional (realist) position[36] and conclude "that the traditional tools need to be sharpened and supplemented with new tools, not discarded"[37]. Furthermore they stress the point that, like the realist model, complex interdependence is an ideal-type, a model, and not always a completely reliable reflection of the real world.[38] "'Complex interdependence,' by contrast, is an ideal type of international system, deliberately constructed to contrast with a 'realist' ideal type ..."[39]

2.3. International regimes

The theory of complex interdependence is based, among others, on the assumption that current world politics cannot be explained by referring to the overall performance of states, but also, or in some instances better, by looking at state behaviour in the context of a specific issue or issue area. Within these areas so called 'international regimes' have developed. The concept of international regimes offers a basis for a better explanation, not so much of the actual behaviour of individual states, but especially of changes therein, than the balance of power concept in realist theory does.

The international regimes were introduced in international political science in 1975 by Ruggie[40] and shortly thereafter accepted in scholarly writing as a basis for new research. Since the beginning of the eighties, the definition suggested by Krasner is widely followed. He defines international regimes as

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36 Power and Interdependence, *supra* note 32, at 4.

37 *Id.* at 162.

38 Keohane & Nye, *Power and Interdependence Revisited*, *supra* note 32, at 731.

39 *Id.*

40 Ruggie, *International Responses to Technology: Concepts and Trends*, 29 International Organization 557-583 (1975).

> "sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations. Principles are beliefs of fact, causation, and rectitude. Norms are standards of behavior defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice."[41]

To make a clear distinction between principles, norms and rules is not an easy task. Keohane in *After Hegemony*, for example, specifies that norms should not be perceived as morally binding regardless of considerations of narrowly defined self interest, but simply as standards of behaviour, whether adopted on grounds of self interest or otherwise.[42] Ernst B. Haas, on the other hand, merges principles and norms in his definition, since it is very difficult to make a operational distinction between these two.[43] He defines regimes as "norms, rules and procedures agreed to in order to regulate an issue-area".[44] I do not want to enter at this place this highly theoretical discussion and therefore I will take this definition as a basis for the rest of this study.

The distinction between international regimes as defined by political scientists and international law is not always clear. In international legal literature the word regime is since long used to described the rules and regulations in a certain area: a fishing regime, money regime, trade regime. Even in the research undertaken by political scientists most attention is given to the regulatory aspect of regimes, to the rules and procedures, thus to the aspects shared with the international legal definition of regimes. Why then, is it necessary to make this distinction?

It could be said that the legal regime is more a formalized approach in which the subjective aspects plays a relatively minor role. It concentrates on rules and procedures, on rights and obligations. However, the subjective aspect which is part of the regime approach might be important in order to explain the underlying reasons for international cooperation, and in relation to this, to explain changes in regimes as a function of changes in the subjective values, or norms. The subjective,

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41 Krasner, *Structural Causes and Regime Consequences: Regimes as Intervening Variables*, 36 International Organization 186 (1982). *See also* Rood, *Internationale Regimes*, in R.B. Soetendorp & A. van Staden eds., *supra* note 22, at 214.

42 R.O. Keohane, *supra* note 35, at 57.

43 *See also* Haggard & Simmons, *Theories of International Regimes*, 41 International Organization 491-517 (1987).

44 Haas, *supra* note 10, at 358.

or perhaps it is better to call it the normative aspect, helps to explain *why* states wish to cooperate in a certain issue-area; it reflects a sense of common purpose, a basic value underlying the regulation in rules and procedures.[45]

For example, in most theories - political as well as legal - state sovereignty is adopted as the fundamental value upon which a system of world order is built and *has to be built*. Briefly, I admit, we have seen how this has been worked out in realist theory. Also in the neorealist theory, sovereignty is maintained as the most important basis for analysis, although realist theory is amended by taking into account changes in the process of international cooperation. Self interest is the most important motivation for states to engage in international cooperation or to participate in an international regime. No high moral values play a role in this. A role for international law, the acceptance thereof also being motivated to a large extent by self interest, is however fiercely rejected by international political scientists.

A case in point is the role attached to international law in neorealist theory. The acknowledgement of the existence of international regimes, which as we have seen resemble legal regimes, does not change this perspective. Keohane, for example is quite outspoken in this. With respect to the question whether regimes could make up a kind of international constitutional framework, he observes: "...world politics is decentralized rather than hierarchic: the prevailing principle of sovereignty means that states are subject to no superior government. The resulting system is sometimes referred to as self-help. Sovereignty and self-help mean that principles and rules of international regimes will necessarily be weaker than in domestic society,"[46] and "[i]nternational regimes should not be interpreted as elements of a new international order 'beyond the nation-state'. They should be comprehended chiefly as arrangements motivated by self-interest: as components of a system in which sovereignty remains a constitutive principle."[47]

However interesting this abstract discussion on the relation between international political regimes and international legal regimes may be, I will not proceed in this direction at this place. I have to conclude here that there seems to be a tremendous gap between political and legal reasoning with regard to the role of international regulatory mechanisms (regimes). International lawyers see these as

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[45] *Cf.* Hart's 'internal aspect' of law, *supra* note 12.

[46] Keohane, *supra* note 35, at 62.

[47] *Id.* at 63.

examples of the existence of international law, whereas political scientist try to downplay the legal element in regime theory as much as possible. In my opinion, there is no reason for such a strict distinction. The only result of this is that two related fields of study develop in different directions, while leaving uncultivated the common ground in their theories. I hope that I will be able to come back to this in a later stage of my research. I will now return to the general discussion about regimes.

First, what are possible functions of international regimes? Nye and Keohane regard international regimes essentially as a mechanism to link the basic structure of the international system to processes which take place within this system:

> "International regimes are intermediate factors between the power structure of an international system and the political and economic bargaining that takes place within it. The structure of the system (the distribution of power resources among states) profoundly affects the nature of the regime (the more or less loose sets of formal and informal norms, rules, and procedures relevant to the system). The regime, in turn, affects and to some extent governs the political bargaining and daily decision-making that occurs within the system."[48]

To be more concrete, at least four functions of a regime can be distinguished. First, regimes facilitate burden sharing. They help persuading governments to contribute to a collective objective, since standards are established that apply to all states. Second, regimes provide a body of shared information, which is essential for effective international action, but also for international stability. Government policies based on shared information might be more predictable, and less subject to unanticipated reactions to unexpected events. Third, regimes bring some kind of order in international relations by clustering issues. For great powers with multiple and varied interests, it especially is important to have frameworks (of rules) in which particular negotiations can take place. Fourth, international regimes reinforce continuity in foreign policy when national administrations change.[49]

Often cited examples of international regimes are the trade regime (GATT), the international money regime (IMF, World Bank), the regime of the oceans (UNCLOS III) and the oil regime.

In most writings, regimes are especially conceived as mechanisms which can help to create a better understanding of the international system, and of changes that take place within it. However, at this point a basic question should be asked: is it sufficient to use regimes, or regime theory, to explain (changes in) international

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[48] Power and Interdependence, *supra* note 32, at 21.

[49] Keohane & Nye, *supra* note 8, at 153-154.

state behavior, or should regimes be explained themselves? Most regime theorists concentrate on the first aspect. Critics of regime theory hold that regime theory itself does not explain international structures, but that they themselves have to be explained first.[50] Probably both are right. A combination of both is necessary. In the next paragraph I will deal with some of the 'internal aspects' of regimes.

2.4. International regimes and international learning

Haggard and Simmons mention four different approaches in regime theory: structural, game theoretic, functional, and cognitive.[51] The first three are quite different from the last one - the cognitive approach. Haggard and Simmons contend that these first three are more or less state-centered, presuming unified rational actors, thus downplaying the central assumption of complex interdependence that foreign policy is integrally related to domestic structures and processes. In these theories, regimes are used as a variable to explain the international system. I will limit myself here to some remarks with regard to the cognitive approach, which is directed at the structure and processes. Cognitivists try to understand why cooperation exists within an issue area; they try to explain the substantive content of regime rules and their creation. They recognize the importance of ideology, the values and beliefs of actors, and the knowledge available to them about how to realize goals. Actor learning plays a central role in this, since learning can alter actors' interests and values.

The combination of knowledge and ideology, values and perceptions is important since in the cognitivist view, rational utility maximalization cannot in itself explain regimes.[52] States or individuals do not respond similarly to the same constraints and opportunities; much is dependent on past history, knowledge and purpose.[53] Especially in situations characterized by incomplete information, uncertainty, and complexity, decisions are not necessarily the outcome of rational decision-making:

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[50] *See, e.g.*, Rood, *supra* note 41, at 238. See also S. Strange's fundamental critique on the concept of regimes: *Cave! Hic Dragones*, 36 International Organization 479-496 (1982).

[51] Haggard & Simmons, *supra* note 43, at 498.

[52] Compare Keohane's notion of 'bounded rationality'; Keohane, *supra* note 35, at 112.

[53] Haggard and Simmons, *supra* note 43, at 511.

"[T]he *degree* of ideological consensus and agreement over causal relationships ... is an important variable in international cooperation."[54]

Development of international consensus over a certain body of knowledge, therefore, involves bridging of ideological differences.[55] It is a form of 'cognitive convergence'. Successful negotiations, from this point of view, can be seen as a learning process, in which perspectives on national interests change.

> "Learning takes place if and when the bargaining positions of the parties begin to *converge* on the basis of consensual knowledge tied to consensual goals (or interests), and when the concessions that are exchanged by the parties are perceived as instrumental toward the realization of joint gains."[56]

Knowledge[57] and goals become consensual when they succeed in dominating the policy-making process.[58] This means that they have to be accepted by all major actors in the process. Yet, more is necessary for successful international collaboration. Joint gains have also to be identified, as is stressed in the last part of this quotation. It seems therefore important that the body of consensual knowledge provides information about these joint gains, or better, about the costs and benefits of the policy options. In a situation of complex interdependence, where a multitude of actors play a role in international regime-building, the task of providing this kind of information can easily be associated with international research institutes, think-tanks, and other forms of (non-governmental) international scientific collaboration.[59]

It is impossible to create regimes with only benefits and no costs. Joint costs, however, is a concept that is more difficult to understand than joint gains, but at the same time it is probably a more important concept. Problems in reaching agreement upon the distribution of costs are very likely to prevent efficient cooperation in many areas, since, of course, this touches directly upon the self-interest of states. What are equitable or equivalent contributions of states in a

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54 *Id.*

55 Ideology might be perceived in this respect as a set of fundamental principles and values which form the basis for the behaviour of a state, or of its representing individuals and other actors active in international cooperation.

56 Haas, *supra* note 10, at 393.

57 "The sum of technical information and of theories about this information (...)", Haas, *Id.* at 368-369.

58 *Id.* at 370.

59 *Id.* at 389.

situation in which it is often extremely difficult to determine these (long-term) costs? The difficulties, for example, in reaching agreements on the protection of the natural environment, which in many cases have to be based upon imperfect knowledge about causes and effects are probably a case in point.

Not only material cost are perceptible. Also immaterial cost, like the loss of sovereignty, or for example the transfer to an international court of the power to settle disputes, might be regarded as joint costs connected with the establishment of, or accesion to, an international regime.

2.5. Conclusion to chapter two

What conclusion can one possible draw from a chapter in which so many theoretical concepts are mentioned and only dealt with very briefly? The only conclusion I can think of is the fact that although there are many difficulties in combining theories from two disciplines, it is worth the effort. Reading about these theories it was not difficult to shift elements from them that seem useful for further elaboration. The greatest difficulty will be to find the right methodology for doing this.

Systems analysis, as described in the introductory chapter, will provide the basic methodology of resarch in this study. As explained, it concentrates not on the individual actors and their individual motives, but on the dynamic interrelationships between the actors in the system, thereby concentrating on problems and challenges that these actors can only solve through a common effort. International environmental law, or to accomodate international political scientists, the development of an international environmental management regime, will serve as a test area. The European attempts to stop the acidification resulting from longe range transboundary air pollution will be treated as a case study.

In the discussion of these European efforts, I will point at several elements that are important in a systems analysis approach. However, as already stated in the introduction, I will refrain from trying to present a comprehensive analysis of the (European) environmental management system.

3. THE EMERGENCE OF A EUROPEAN REGIME FOR THE ABATEMENT OF ACID RAIN

3.1. Introduction

The theoretical concepts introduced in the preceding chapters will now be applied in a more practical context of acid rain abatement in Europe. Five considerations have led to the choice this subject. *First*, the subject matches clearly the basic features of 'complex interdependence' as described briefly in the second chapter. This does

not need much illustration. (i) Acid rain can not be stopped by the use, or threat of military (or economic) power. (ii) it is a subject that is not subordinate to the so-called issues of 'high politics' (e.g. negotiations on arms reduction are taking place side by side with negotiations on environmental matters. This does however not exclude the linkage of these issues in international negotiations.[60] (iii) environmental policy is apparently not (longer) belonging to the exclusive domain of foreign ministries, but is one of the most striking examples of the present democratization of international relations.

The fact that the European discussion on acid rain abatement takes place in a east-west context make it even more suitable as a case study of interdependence.

Second, environmental problems of this kind are also interdependent in the sense that they cross disciplinary boundaries. The interplay between science - or scientific progress in the understanding of the causes and effects of acidification - and policy-making is of profound importance. Every day new information is added to the knowledge about acid rain. This increasing amount of information makes it of course more difficult for the decision-makers to keep track of all the new developments. An information gap between scientists and those responsible for taking action on the problem already exists[61], and a widening of this gap should be avoided. Therefore, new, more sophisticated (international) organizational approaches have to be chosen. It is one of the characteristics of an emerging international regime that policy-making and policy-preparation have to take place in an increasingly interdisciplinary (or multidisciplinary) and therefore more complex environment. International negotiations have become an essential element for the management of complex systems,[62] of which a certain degree of decentralization in international

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60 See *infra* text accompanying note 74.

61 Alcamo, Amann, Hettelingh, Holmberg, Hordijk, Kämäri, L. Kauppi, P. Kauppi, Kornai, Mäkelä, *Acidification in Europe: A Simulation Model for Evaluating Control Strategies*, 16 Ambio 232 (1987).

62 *Cf.* Mautner-Markhof, *International Negotiations: Mechanisms for the Management of Complex Systems*, 23 Cooperation and Conflict; Nordic Journal of International Politics 95-106 (1988).

decision making is also characteristic. With respect to legal decision making, Livingstone pointed at a situation that

> "In responding to the challenges of science and technology, international law is thus caught in the paradox of centralizing its norms and organs, while decentralizing its process."[63]

Third, traditional conference diplomacy can no longer fulfil the requirements of decision making in highly complex regimes. Internationalization and the development of permanent channels of contact and continuous cooperation are inevitable.[64] The structure of the international negotiations (or, better, international policy-making) on measures to abate acid rain seems to be developing into such a direction. It meets the requirements of modern conference diplomacy, as for example developed during the UNCLOS III negotiations, or more recently in the negotiations on the IAEA conventions on notification and assistance in the case of nuclear accidents.[65] But, at the same time, it moves beyond these new directions in international negotiation, since the negotiations are no longer held in the framework of a conference, subject to a time schedule, but are a continuous process.

Fourth, an international *regime* is developing. It is obvious that international regulation in the form of (binding) rules and regulations is absolutely necessary for effective, long term strategies. The Convention on Long-Range Transboundary Air Pollution and its Helsinki and Sofia protocols are first steps in this direction. The acceptation of rules and regulations - as we have seen in the second chapter - is one essential element of international regime building.

Fifth, the other important element of an international regime is the presence of shared norms and values. These provide a basis for international cooperation in the form of a regime. Acceptation of rules and regulations in itself is not enough. Without these shared norms, *active* cooperation would hardly be possible and would not lead to the creation of a regime. In the case of absence of shared norms it might be better to speak of 'coexistence', a form of minimal cooperation based upon the avoidance of (open) conflict. In the present case of environmental regime building this means that states have to move beyond the accepted norms of 'good

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[63] D. Livingston, *Science, Technology, and International Law: Present Trends and Future Developments*, in The Future of the International Legal Order, Volume IV, The Structure of the International Environment 119 (Black C.E. and Falk R.A. eds. 1972).

[64] Kiss & Shelton, *supra* note 2.

[65] See *infra* paragraph 4.2. on modern conference diplomacy.

neighbourliness' and the duty of information and consultation, which are more or less of a 'coexistence type' of norms. Active cooperation, in which concern for the environment as a norm will have to be incorporated in national and international (economic) planning and in which ecological notions are not seen as impediments but as prerequisites for further development, is an absolute necessity.[66]

This implies that states and international organisations (whether governmental or non-governmental) will have to go through a learning process in order to reconcile their current international value orientation which is in most cases still based on notions of coexistence. Again, the east-west context, until recently marked by a rigid 'peaceful coexistence' approach, is an appropriate test area.

3.2. The Convention on Long-Range Transboundary Air Pollution

With the Convention on Long-Range Transboundary Air Pollution (Geneva, 1979) a first multilateral instrument in the field of air pollution was adopted.[67] A period of about ten years had been necessary for governments to realize that acid deposition, or acid rain, posed a serious threat to large areas in Europe and that joint action was needed.[68] Yet, even in 1979 many governments still saw the problem as a local, or regional one, mainly concerning Scandinavia and Canada. This accounts for the

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[66] *Cf.* World Commission on Environment and Development ('Brundtland Commission'), Our Common Future: Report of the World Commission on Environment and Development (1987); Experts Group on Environmental Law of the World Commission on Environment and Development, Environmental Protection and Sustainable Development: Legal Principles and Recommendations (1986).

[67] Entered into force on 16 March 1983, *reprinted in* 18 I.L.M. (1979). For some background information regarding this convention and other international environmental legal instruments, *see, e.g.*, A.L. Springer, The International Law of Pollution: Protecting the Global Environment in a World of Sovereign States (1983); Sohn, *The Stockholm Declaration on the Human Environment*, 14 Harvard International Law Journal (1973); L.K. Caldwell, International Environmental Policy; Emergence and Dimensions (1984).

[68] For more detailed information on the problem of acid rain, *see generally*, P. Mandelbaum (ed), Acid Rain: Economic Assesment (1985); D.D. Adams & W.P. Page (eds), Acid Deposition; Environmental, Economic, and Policy Issues (1985); C. Flinterman, B. Kwiatkowska, J.G. Lammers (eds), Transboundary Air Pollution: International Legal Aspects of the Co-operation of States (1986); I.H. van Lier, Acid Rain and International Law (1980): Pallemaerts, *The Politics of Acid Rain Control in Europe*, 30 Environment 42-44 (1988); Sand, *Air Pollution in Europe; International Policy Responses*, 29 Environment 16 (1987); T. Schneider (ed), Acidification and its Policy Implications, Proceedings of an International Conference Held in Amsterdam May 5-9, 1986 (1986).

fact that the Convention on Long-Range Transboundary Air Pollution does not contain many specific obligations for states. In fact, real pollution control measures were not accepted, but the obligation to develop policies and strategies against air pollution. Article 3, for example, states that

> "The Contracting Parties, within the framework of the present Convention, shall by means of exchanges of information, consultation, research and monitoring, develop without undue delay policies and strategies which shall serve as a means of combating the discharge of air pollutants, taking into account efforts already made at national and international levels."

Nevertheless, the Convention on Long-Range Transboundary Air Pollution, as we can observe almost ten years later, set into motion an irreversible process in which slow but steady progress is made in the acceptation of stricter international emission standards for some of the most important air pollutants. At least it was recognized in 1979 that virtually all European countries are affected by the acidification problem. The forest dieback, damage to agriculture and building materials are examples of manifest and costly effects (both in terms of material and immaterial wellbeing).

From 1983 onwards, the Convention entered into force on 16 March 1983, parties to the Convention have become more determined to adopt commitments for effective action. First, they decided to finance on a long-term basis the Cooperative Programme for the Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (EMEP).[69] Second, they adopted in Helsinki the Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at Least 30 Per Cent.[70] Third, in November 1988 the Protocol on the Control of Emissions of Nitrogen Oxides was adopted in Sofia.[71] SO_2 and NO_x are among the most important sources of acid deposition. These recent developments show how the Convention on Long-Range Transboundary Air Pollution - in first instance seen as a declarative document without teeth - gradually evolves into a framework for further

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[69] Protocol to the 1979 Concerning the Long-Term Financing of the Cooperative Program for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (Geneva, 28 September 1984), *reprinted in* 27 I.L.M. 698 (1988). EMEP was established in 1977 by the ECE, with support from UNEP and the WMO.

[70] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on the Reduction of Sulpher Emissions or Their Transboundary Fluxes by at Least 30 per cent (Helsinki, 8 July 1985, entered into force 2 September 1987), *reprinted in* 27 I.L.M. 698 (1988).

[71] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes, Sofia, 31 October 1988, *reprinted in* 28 I.L.M. 212 (1989).

action, although it has to be admitted that the action taken until now is insufficient. Individual states, and for example the European Communities are in a process of accepting much stricter standards than those laid down in the protocols. Nevertheless, the Convention is the best available basis for pan-european action.

The Convention was prepared within the United Nations Economic Commission for Europe (ECE). At least in the European context, the ECE seems to be a most suitable forum,[72] since it is the only organization within Europe that meets the requirement of a membership of all European states. Furthermore, the ECE has a long standing experience in dealing with (environmental) matters on a European scale.[73] An important impetus for the discussion of air pollution within this body came from the 1975 Helsinki Conference on Security and Cooperation in Europe (CSCE). During that conference, the East European socialist countries wished to "set off Western pressure on basket-three issues (human rights, freedom of information, culture, etc.) *inter alia* by promoting basket-two issues (trade, scientific exchange, environment, etc.). This brought the ECE into the focus of negotiations".[74] It was recommended in the Final Act of the Helsinki Conference as a specific measure that

> "within the framework of the United Nations Commission for Europe a study be carried out of procedures and relevant experience relating to the activities of Governments in developing capabilities of their countries to predict adequately environmental consequences of economic activities and technological development."[75]

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[72] I will not deal with the North-American controversy concerning the abatement of acid rain. For this discussion *see, e.g.*, G.S. Wetstone, & A. Rosencranz, Acid Rain in Europe and North America; National Responses to an International Problem (1983); Munton, *Dependence and Interdependence in Transboundary Environmental Relations*, 36 International Journal 139-184 (1986). Buttolph Johnson, *The Dynamics of Acid Rain Policy in the United States*, in Public Policy and the Natural Environment 261-283 (H.M. Ingram & R.K. Goldwin eds. 1985).

[73] The ECE was established in 1947 by the Economic and Social Council (ECOSOC), in order to "initiate and participate in measures for facilitating concerted action for the economic reconstruction of Europe, for raising the level of European economic activity, and for maintaining and strengthening the economic relations of the European countries" (Terms of Reference, Art. 1(a)) Since 1975 the UN ECE is composed of 34 member countries. For further information on the work of the UN ECE, *see* Economic Commission for Europe, ECE 1947 - 1987, (United Nations Publication, Sales No. E.87.II.E.17, 1987).

[74] Björkbom, *Resolution of Environmental Problems: the Use of Diplomacy*, in J.E. Carroll (ed), International Environmental Diplomacy; The Management and Resolution of Transfrontier Environmental Problems 123-137 (1988).

[75] CSCE, Final Act, II.5.

Already before the end of the Helsinki Conference, the ECE had initiated at its thirtieth session in April 1975 a "broad-based programme of action on the implementation of the pertinent provisions of the Final Act".[76] In 1976 the Senior Advisors to ECE Governments on Environmental Problems and its subsidiary body, the Working Party on Air Pollution Problems, started to prepare a draft agreement on long-range transboundary air pollution. With the assistance of groups of experts they succeeded within three years in drafting a text that was adopted in 1979 by acclamation at a High-Level Meeting within the Framework of the ECE on the Protection of the Environment.[77] The Convention entered into force in 1983 upon the twentyfourth ratification.

3.3. The ECE as a Framework for European Environmental Cooperation[78]

The ECE; activities and procedures[79]

The United Nations Economic Commission for Europe (ECE) deals with a wide range of subjects, including trade, industrial cooperation and standardization, science and technology, long-term economic planning and projection, environment protection, energy. The ECE carries out its work with a minimum of formality and by consensus. Basically, a two way system for programming of work is followed. The Commission provides overall guidance to its principal subsidiary bodies, while these bodies send recommendations for action to the Commission. The principal bodies are thus able to carry out their work semi-autonomously.

The Commission meets once a year for about two weeks. Simple majority voting was the rule when the ECE was set up in 1947, but in that same year it adopted a resolution stressing the benefits of unanimous decisions. Since then, the Commission has adopted draft resolutions by consensus without a vote. In order to facilitate consensus, negotiations on draft resolutions take place outside the formal framework of the session, in an open-ended 'contact-group'. When agreement has been reached,

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[76] ECE, 1987, pp.8-9.

[77] Together with the Convention two resolutions were adopted; a Resolution on Long-Range Air Pollution, and a Declaration on Low- and Non-waste Technology and Re-utilization and Recycling of Wastes. ECE Report ECE/HLM 1/2, Annex II & Annex III.

[78] Reference to the Convention automatically includes the protocols unless explicitly stated otherwise.

[79] Based upon Economic Commission for Europe, *supra* note 73.

decisions are taken by acclamation. Majority voting has become rare, the last majority decision was adopted in 1957.

The overall plans and policies of the Commission are carried out by a network of specialized subsidiary bodies. (See Annex II.) Currently there are 16 principal subsidiary bodies, amongst which the Senior Advisors to ECE Governments on Environmental Problems. With the help of their own specialized subsidiary bodies they carry out the tasks assigned to them by the Commission. The principal subsidiary bodies enjoy a high degree of autonomy. They can agree on all matters within their competence and make recommendations directly to participating governments. Representatives of ECE governments participating in these bodies are authorized to enter into agreements on behalf of their governments.

Meetings of the Commission are held in public, those of all its subsidiary bodies are held in private. This enables participants to speak openly and tends to foster constructive and businesslike exchanges. A relater characteristic of the ECE's subsidiary bodies is its procedural informality. These bodies operate under the procedural rules of the Commission, however, in practice these rules are only applied with respect to the election of officers. All decisions are taken by consensus.

Formal resolutions are rarely adopted. The substance of agreement is usually recorded in reports, which constitute a recommendation for governmental action, although the adoption of formal agreements is nor precluded. Examples of formal agreements can be found in the field of norms and standards for foodstuffs or the construction of motor vehicles. These are of special importance for the harmonization of policies and legislation in the ECE region. Another example is, as we have seen, the Convention on Long-Range Transboundary Air Pollution.

The Secretariat (an integral part of the UN Secretariat) plays an important role in the preparation of meetings. (See Annex III) Since its financial resources are insufficient, those governments interested in a particular project offer the services of specialists - called rapporteur - to carry out (free of charge) substantive work which otherwise would have to be undertaken by the Secretariat. Especially if several rapporteurs are assigned to a task, subsidiary bodies are provided with substantive reports covering a wide range of expertise.

The Senior Advisors to ECE Governments on Environmental Problems and the Executive Body

The Convention on Long-Range Transboundary Air Pollution has been established within the context of the air pollution unit of the ECE Senior Advisors on Environmental Problems. Beside air pollution, the Senior Advisors deal with subjects

like environmental impact assessment, treatment of waste, resources etcetera. The Senior Advisors have established the Working Party on Air Pollution Problems, which together with subsidiary bodies established by the Executive Body, work on the evaluation and implementation of the Convention.

The Executive Body is one of the two permanent organs established under the Convention (the other is the Secretariat). It is constituted in the framework of the Senior Advisors and functions as the assembly of representatives of the contracting parties. It meets at least annually and has the duty to:

(a) review the implementation of the present Convention;

(b) establish, as appropriate, working groups to consider matters related to the implementation and development of the present Convention and to this end prepare appropriate studies and other documentation and to submit recommendations to be considered by the Executive Body;

(c) fulfil such other functions as may be appropriate under the provisions of the present Convention.[80]

In accordance with paragraph 2.b of Article 10, the Executive Body has established a large number of working groups, groups of experts, and task forces, all dealing with technical, economic and scientific aspects of the air pollution problem. A schematic overview of the organizational structure is provided in Annex IV.

Political aspects are not dealt with by these subsidiary groups. However, as we already have seen in the second chapter, it is impossible in the process of learning to make a strict distinction between the political aspects and the scientific aspects of a problem. A compromise in the 'scientific phase' of negotiations, involves what we have called ideological choices. If parties can agree on the causes and effects of, for example, acid rain, this will have an enormous impact for the wider negotiations on a abatement strategy. This was acknowledged in a report by the Norwegian Government, in which it was stated that

> "The assistance of the designated experts has proved to be an efficient way of providing state-of-the-art reviews. Although experts participate in their personal capacity during informal meetings of 2-3 days, there is little doubt

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80 Art. 10(2).

that many confrontations are sorted out, and many compromises take shape already at this preparatory level."[81]

Especially the fact that these 'working groups' and 'task forces' are rather informal and that discussions are not intended to be made public, but that they nevertheless operate within a clear structure, makes this form of cooperation/consultation a useful basis for an informal dialogue. An institutional framework for the implementation of the results of such a dialogue is of course necessary for an optimal result. As was set out in a Swedish study, it is not enough to indicate potential gains of international cooperation with the help of sophisticated scientific or technical models. Without a proper institutional framework much of it will be never be effected.[82]

It would, in my opinion, be a positive development when information on political positions would be exchanged in small, informal groups, in the same way as is done with respect to scientific or technical aspects of the problem. Identifying and clarifying international and especially national political constraints might facilitate the creation of the right atmosphere for political decision making. Such an exchange of views could be of importance for the discussion on common aims and, thus, for a coordinated value orientation.

3.4. Conclusion to chapter three

The case of acid rain abatement has showed that at present most European states have accepted the need for an environmental policy, domestically as well as internationally, and take part in an international policy making structure. Within this system, consultation and exchange of information are the most important instruments for cooperation. Scientists, policy advisors and policy makers work together in a rather open and informal manner on a variety of issues connected with the problem of long range air pollution.

The outcome of this process in terms of legal, enforceable rights and obligations remains modest. Two, by far not adequate protocols have been accepted. This, however, is not the point I want to stress in this chapter. The question is, and I admit that I will not be able to answer it on the basis of my research thus far: Does this institutional structure provide a promising basis for further environmental

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[81] The special appointed 'rapporteurs' are called in the context of the Convention on Long-Range Air Pollution 'governmentally designated experts'.

[82] GE Cost/Benefit Analyses, EB.AIR/GE.2/R.15, 24 Sept. 1986.

cooperation in Europe? Or phrased in another way: Does this structure contribute to the formulation of shared (environmental) values in Europe, upon which a regime for environmental control can be build?

This is in my view a fundamental question. Just as free international trade provides the basis for GATT, and the freedom of the high seas is one of the general accepted values in the 'ocean regime', a common value orientation is needed for environmental management. It is evident that at this moment such a common value orientation is still absent, although, for example within the European Communities (EC) some positive developments are visible. At present however, the differences between EC-cooperation and ECE-cooperation are much larger than the similarities. Perhaps it is possible to say that 'learning' - redefining national interest on the basis of new information and knowledge - within the EC (with 1992 in sight) is taking place with increasing speed, while in the ECE context such a process did not yet start.

What the exact content of this common value orientation will be is hard to predict. One of the elements, however, will be the fact that states realize that internationalization of environmental management is required and that they have to give up part of their sovereignty as far as environmental decision making is concerned.

How can the development of such a common value orientation take place? Basically two mechanisms for change can be distinguished: pressure of external events and a rational learning process based on rational utility maximalization (or at least satisfaction)[83]. I will deal with some aspects of this in the next chapter, where I will turn to some more theoretical aspects of the - what I have called in the Introduction - secondary level of analysis. I hope that these considerations will be helpful for the further development of a systems analysis approach to environmental law making, c.q. regime building.

4. THE TRANSBOUNDARY AIR POLLUTION CONVENTION IN A WIDER PERSPECTIVE OF POLICY CHANGE

What is required in order to remove obstacles for a closer cooperation between ideologically opposing groups of states? How can the reluctant behavior of most European states be turned into active cooperation, into an environmental

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83 *Cf.* Keohane's 'bounded rationality', *supra* note 35.

management regime? We have seen in the preceding chapters that the adoption of certain rules and regulations providing the basis for active cooperation, or in other words, that going beyond the 'law of coexistence' is difficult without the existence of shared norms and principles. A common value-orientation is necessary.

To what extent are such norms evolving in the process of ECE environmental cooperation? Are exchanges in the ECE context taking place on the basis of an emerging common value orientation and is it possible to see the Convention on Long-Range Transboundary Air Pollution as a first result?

Phrased in this way, it would seem hardly measurable. One reason for this being the fact that such norm creation either takes place gradually, or through sudden change, by way of a shock. Frequently, crises will provide the most easily identifiable, explanation for change. An example of this is the changed attitude of states after the Chernobyl accident. This led to the speedy adoption of two conventions dealing with notification and assistance in case of nuclear accidents. Also, changes in value orientation will not seldom strongly depend upon, for example, the personality of the persons involved and a right timing.

In this study, I am not concerned with change as a result of shocks, but more with gradual change, although the difference is not always very clear. The awareness of, for example, the massive forest dieback - which is in itself a gradual process - may come as a shock to many people (decision makers included) after having seen a television documentary.

In order to assess whether gradual norm development, or change in value orientation, is likely in the context of European action against air pollution I will take a closer look at the process of international cooperation. This means, looking at the actors in the process, the interplay between science and policy/politics, and at (stimulating) changes of norms.

I will look at the process from two, not completely unrelated perspectives, namely a, what I call, 'policy analysis approach' and a 'diplomacy approach'. The 'policy analysis approach' is concerned more with actors, interests, believe systems, value orientation etc. and is to an important extent based on policy science literature, which is mostly related to observations in domestic situations. The 'diplomacy approach' is internationally oriented and deals mainly with the the law making process.

4.1. The process of cooperation; a policy analysis approach

A public policy analysis framework is not very frequently used for the assessment of international processes of cooperation. A reason for this is the fact that in the international sphere no real public policy making is assumed to exist. One of the features of 'complex interdependence' is however that we are moving away from the traditional, rather limited interaction between sovereign governments through diplomatic channels. Instead, international policy subsystems are developing in a variety of areas, amongst others in the area of environmental protection.

The use of techniques developed in policy science may contribute to a better understanding of these developments at the international level and, on a longer term, may strengthen the efficacy of international policy making. Policy science is mostly concerned with domestic policy making, but this does not necessarily preclude its usefulness it in an international setting, although one has to be constantly aware of differences such as the decentralised character of international policy making and the important role of self help as the result of the lack of adequate legal enforcement mechanisms.

In this section I will try to give an example of a possible approach of the incorporation of policy science into international political and legal theory. At this place it cannot be more than a preliminary attempt of such an approach. More research needs to be under taken in this respect. Here, I will follow the conceptual framework developed by Sabatier.[84] It is impossible to discuss this framework in all its aspects, therefore, I will have to confine myself to some of the basic elements and try to relate these to international policy making. For a more extensive treatment, and full references to the abundance of research and literature forming the basis for Sabatier's framework, I have to refer to the his article in *Policy Sciences*.[85]

Policy subsystems and advocacy coalitions

The core of Sabatier's approach is the concept of policy subsystems. A policy subsystem should be understood as the interaction of actors from a variety of public and private institutions, actively concerned with a policy problem or issue. Among the actors are administrative agencies, legislative committees and interest groups

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[84] Sabatier, *An Advocacy Coalition Framework of Policy Change and the Role of Policy-Oriented Learning Therein*, 21 Policy Sciences 129-168 (1988).

[85] *Id.*

active in policy formulation and implementation at various levels of government, as well as journalists, researchers and policy analysts.

Subsystems tend to become relatively autonomous as the actors become more specialized. Policy areas are so complex that specialization becomes unavoidable. It is hardly possible to be knowledgeable about more than one or two policy sectors.

Within subsystems actors can be aggregated into a number of advocacy coalitions composed of people from various organizations who share a set of normative and causal beliefs and who often act in concert. In most subsystems, the number of significant coalitions will be small.

In this context it should be stressed that a basic premise of Sabatier's conceptual framework is the fact that "public policies (or programs) can be conceptualized in the same manner as belief systems, i.e. as sets of value priorities and causal assumptions about how to realize them".[86] Public policies incorporate implicit theories about how to achieve their objectives, involving, for example, value priorities, perceptions of important causal relationships and perceptions of the efficacy of policy instruments.

Policy change proposed by advocacy coalitions is therefore closely related to the integration of knowledge of the state of problem parameters and factors affecting them, with the basic values and causal assumptions comprising the core belief of the advocacy coalition. This integration can be labelled as 'policy oriented learning'. Advocacy coalitions may change their beliefs or strategies on the basis of the adequacy of governmental decisions, or new information that becomes available. Policy oriented learning however, does not explain changes in the *core* aspects of a policy, but alters secondary aspects of a belief system. Changes in the core are often the result of external non-cognitive factors.

Examples of advocacy coalitions in the field of air pollution are for example a 'clean air coalition' and a 'economic feasibility coalition', both sharing a particular belief system. Elements of the belief system of the 'clean air coalition' are, among others, the primacy of human health, the perceived inability of 'the market' to deal with problems such as air pollution and a preference for legal control. Basic attributes of the belief system of the 'economic feasibility coalition' are the balance between optimal conditions for human health and economic development, a greater trust in market arrangements and the preference for economic incentives in stead of legal command.

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86 *Id.* at 131.

Between advocacy coalitions, a category of so called 'policy brokers' can be expected to exist, whose "dominant concern is with keeping the level of political conflict within acceptable limits and with reaching some 'reasonable' solution".[87] Often elected officials, or high level civil servants play such a role in a national setting.

In the international sphere a permanent secretariat of an international organization, or authoritative persons within them, could perform the function of broker. The Secretary General of the United Nations is of course an obvious example. The involvement of the IAEA and especially its Legal Division which was crucial for the outcome of the negotiations on the post-Chernobyl conventions forms another example.[88] However, the distinction between brokers and advocates can in this respect be seen as a continuum, sometimes 'brokers' also act as advocates. The UNCTAD Secretariat, especially during the seventies, was clearly an advocate of the Third World coalition, while UNEP has an explicit assignment to perform as a broker.

Structure of belief systems

Sabatier distinguishes between a Deep (Normative) Core "of fundamental normative and ontological axioms which define a person's underlying personal philosophy", a Near (Policy) Core of basic strategies and policies for achieving Deep Core beliefs in the policy area/subsystem in question, and a set of Secondary Aspects comprising a multitude of instrumental decisions and information searches necessary to implement the Policy Core in the specific policy area."[89] These categories are arranged in order of decreasing resistance to change. The table in Annex V may illustrate the distinction.

Members a coalition are assumed to substantially share beliefs on the level of Policy Core issues. Less consensus is expected on the Secondary (implementing) Aspects of the belief system. However, Secondary Aspects will be given up easier than acknowledging weaknesses of the Policy Core.

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87 *Id.* at 141.

88 Mautner-Markhof, *International Negotiations: Mechanisms for the Management of Complex Systems*, 23 Cooperation and Conflict; Nordic Journal of International Politics 98-99 (1988).

89 Sabatier, *supra* note 84, at 144.

Policy change within subsystems; policy oriented learning

Policy change can be the result of changes in the Policy Core and Secondary Aspects of the belief system, or be the result of external perturbation, such as changes in socio-economic conditions provoking changes in resources and constraints of subsystem actors. It is assumed that the Policy Core of a coalition is quite resistant against change over time. Secondary Aspects may be altered or abandoned in the search for realization of the core beliefs, but the core beliefs themselves are relatively stable and subject mainly to change through external pressure.

This has important consequences for the potential role of policy oriented learning. In this perspective policy oriented learning is important in understanding changes in the Secondary Aspects of governmental action, but plays a less important role for change in the Core Aspects.

Policy oriented learning can occur in different patterns: (1) Improving one's understanding of variables defined as important for one's belief system, e.g. by monitoring air quality by clean air coalitions; (2) refining one's understanding of logical and causal relationships internal to a belief system, thereby focussing on the search for improved mechanisms to attain core values, e.g. trying to reduce 'vehicle miles traveled' in order to reduce automotive emissions in stead of changing the cars; (3) identifying and responding to challenges to one's belief system, e.g. criticizing the (inefficient) legal command and control approach in the struggle against air pollution and in stead advocating an economic incentive approach.[90]

Thus far, policy oriented learning referred mainly to learning within a belief system. More important however, especially in the context of this study, is learning *across* belief systems. Learning across believe systems implies that one or all of the coalitions engaged in a analytical debate alter Policy Core aspects of their belief system, or at least important Secondary Aspects, as a result of this debate rather than of changes in external conditions.

Several conditions for learning across belief systems can be mentioned.[91] (1) All sides must have sufficient technical resources to be able to discuss the other's data and causal models, and the conflict must be of an intermediate character. If two sides launch a frontal attack on each other's core, it is not realistic to expect much changes in one of these. However, if the conflict is between Secondary

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[90] *Id.* at 149-150.

[91] *Id.* at 155-156.

Aspects of one belief system and core elements of the other, it is assumed that a positive condition for learning exists.[92]

(2) Probably more important however, is the forum in which the discussion between coalitions is taking place:

> Policy-oriented learning is most likely when there exists a forum which is: a) prestigious enough to force professionals from different coalitions to participate; and b) dominated by professional norms.[93]

Professionality is stressed because under such conditions a more serious analysis of the methodical assumptions, and the elimination of more improbable causal relations and data is expected. The forum can take a variety of forms, ranging from professional journals, to conferences and (permanent) commissions.

(3) Problems which can be expressed quantitatively are more conductive for policy oriented learning than problems of a more qualitative nature. Controlled examination of quantitative variables is better feasible than of qualitative variables which are subject to more subjective interpretations. Transboundary air pollution would in this perspective be a proper example for further examination. An important part of the debate focusses on quantitative variables and the most far reaching form of transeuropean cooperation in this respect is the establishment of an environmental monitoring programme (EMEP).

A better understanding, with the help of, for example, this policy oriented framework for analysis, of the factors affecting a policy area like transboundary air pollution, does not necessarily lead to ready made suggestions for resolving current policy conflicts. It will nevertheless be valuable for the assessment of ongoing processes on various levels of international cooperation. Especially with the development of an international (legal) environmental regime in mind, this policy

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[92] Two examples from the international scene can be given. First, during the law of the sea negotiations in the seventies, the discussion on the system for deep seabed mining were extremely difficult, but ultimately led to a satisfactory outcome for most participants. The discussion focussed on shared exploitation of the 'manganese nodules'. The industrialized states accepted the principle of a partly international exploitation for the benefit of the developing countries (the so called 'parallel system'), which implied a change in their Core values. After this acceptation the discussion on the exact formula can be said to have been of a Secondary nature. After Reagan came to power in the US, he made clear that in his perception the sharing of exploitation benefits, and especially of the technologies used, was in conflict with one of his Core values. He therefore decided to neglect the agreement already reached and not to sign the Law of the Sea Convention.

[93] Sabatier, *supra* note 84, at 156.

analysis approach clarifies some of the opportunities and constraints involved. In particular, it shows the importance of the differentiation between Core Aspects and Secondary Aspects, or - referring to the regime approach - between norms and rules. This offers a framework for the interpretation of current developments in international cooperation and for (national) policy recommendations. Nevertheless, however accurate this framework might be, it should not be forgotten that a critical, but unpredictable role is played by the already mentioned external events.

A useful conclusion from the discussion of Sabatier's framework is the fact that computer simulation models can play a role in policy oriented learning, but also that this role is probably limited to reaching agreement on Secondary Aspects. It is, on the basis of this framework, unlikely that this kind of tools for modern decision making will change basic perspectives of the actors involved. We will discuss this further in Chapter V.

4.2. The international process of cooperation; a diplomacy approach

The diplomacy approach focusses, in contrast to the policy analysis approach, more on the formal/institutional aspects of international cooperation. The first approach deals with elements that are important to understand (motivations for) the behaviour of actors, whereas the latter deals more or less with the circumstances that facilitate constructive international cooperation.

It is in my view important to be aware of changes in the methods for reaching international agreement, since these changes might be seen as an attempt to deal with the increasing complexity of multilateral (inter state) relations. We have seen that their importance is also recognized in the theory on international regimes. Decision making procedures are one of the basic elements of an international regime.

During the last decades several important law making conferences have taken place. The United Nations Third Conference on the Law of the Sea (UNCLOS III) is by far the most important and to a certain extent the most successful example. Other recent examples are the conferences on the law of state succession, the law of treaties between states and international organizations, and the already mentioned IAEA conference on nuclear accidents. These conferences are characterised by the use of all kind of - old and new - negotiating techniques to enable decision making in fora consisting of more than 160 states, divided into several opposing ideological groups. Much has been learned from these experiences.

I will give a short account of some of the developments and try to compare these with the negotiation model used in the ECE which was described in Chapter III.

One common characteristic of the modern negotiation models I will discuss, is the fact that they are applied in multilateral negotiations aiming at the establishment of new regimes. Translated into legal terminology this means that they concern 'the of codification or progressive development of international law', which implies in the first place the need for the adoption of new (legal) norms rather than rules and procedures.[94] Since with these agreements the basis of the international (legal) order is involved, it is necessary that most, if not all, states (within a certain issue area)[95] agree with them. A majority decision cannot constitute a viable basis for conventions constituting the fundament of the "United Nations treaty network [which] has become the prime source of international law".[96] This network presently consists of some 300 multilateral agreements.

Another characteristic of the models is that they concern global negotiations on issues in "need of action because, for example, large areas and not merely aspects of existing law are perceived to be in disarray, incomplete or unfair"[97]. Almost all states, and often many international (non) governmental organizations are taking part in the exchange. Prospects of substantial individual economic or political gains (utility maximalization) are essential to surmount the widely divergent political, economic, and cultural traditions.

In a recent contribution, Roy S. Lee gave an elucidating account of the recent trends in negotiation techniques:[98] informal meetings and negotiations in smaller groups (which are not subject to strict rules of procedure and in which a large degree of confidentiality exists), the package deal approach and the 'promotion of general agreement'.

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94 See the discussion on international regimes, *supra* paragraph 2.3.

95 Not all regimes do not have to be world wide or universally accepted to become of fundamental importance for international cooperation. A clear example is the international trade regime under GATT. Also the ECE can serve as an example.

96 Lee, *Multilateral Treaty-making and Negotiating Techniques: An Appraisal*, in Contemporary Problems of International Law: Essays in Honour of Georg Schwarzenberger 158 (B. Cheng & E.D. Brown eds. 1988).

97 Plant, *The Third United Nations Conference on the Law of the Sea and the Preparatory Commission: Models for United Nations Law-Making*, 36 International Comparative Law Quarterly 557 (1987).

98 Lee, *supra* note 96.

Informal meetings, often called colloquia, consultations, working groups or otherwise, do have certain common features such as "a smaller number of participants, no official records, closed meetings, no press releases, no observers and usually, no formal rules of procedure".[99] Direct dialogue is stimulated since only those states who are really interested participate in open-ended meetings[100]. Decisions in these groups are usually taken by consensus or in the form of 'general agreements' rather than by majority decision or unanimity.

The role of consensus

Unanimity was the rule in the League of Nations, while after the Second World War democratic majority decision became the (formal) ground rule in the United Nations (and many other international organizations). Both, however, proved to be unrealistic methods for finding solutions for the immense problems of an ideological and economical divided world. Unanimity provides all participants with the power of veto, making decision making extremely difficult, whereas the principle of majority voting does not reflect a realistic picture of the present day world in which military or economic powerful states are not prepared to give up their dominant positions.

Alternatives have been developed. One can think of weighted voting, as applied today in economic institutions like the IMF, or a refining of the majority rule by requiring 'special' majorities for certain decisions. The basic objective of all mechanisms, however, is the same:

> "to make sure that the decisions of the international community, taken within multilateral institutions, reflect a sufficiently wide consensus to be effective in practice as well as acceptable in theory."[101]

In practice, states have begun to develop and apply the concept of consensus itself as a method for decision-making in the UN context. Consensus is to be assumed

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[99] *Id.* at 159.

[100] In open-ended meetings are all participants have a right to participate. In practice many members stay away and only a small number actually participate. The often troublesome discussion on the allocation of seats is avoided in this way. *Id.*

[101] Henrikson, *The Global Foundations for a Diplomacy of Consensus*, in Negotiating World Order, The Artisanship and Architecture of Global Diplomacy 241 (Alan K. Henrikson ed. 1986).

when no formal objections exist against a proposal.[102] Unanimity requires the express consent of the participants in the decision-making procedure.

One of the earliest organizations, besides the ECE[103], to adopt consensus as the decision making rule (contrary to its formal procedures) was the UN Committee on the Peaceful Uses of Outer Space (UN COPUOS).[104] This was a compromise between the Soviet Union who demanded unanimity and the United States opting for the majority vote. On the one hand the consensus rule delayed decision making, but on the other it became a guarantee for the world wide acceptance of the space treaties since "all shades of views and interests were taken into account".[105]

A conference of major importance which adopted the consensus rule was UNCLOS III.[106] Here, on the basis of a 'gentlemen's agreement', it was laid down in the rules of procedure that voting on substantive matters might take place only after it had been determined that all efforts at reaching general agreement had been exhausted. This in fact meant that consensus was the rule.[107] It was applied during the conference and led to a comprehensive draft convention, accepted-sometimes grudgingly - without a single vote taken on any of the substantive issues. However, ultimately the United States, after the Reagan administration came to power, decided to ask for a vote on the Convention as a whole.[108]

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[102] In practice this means that "(i) a decision has been reached; (ii) no one officially or formally objects to it being declared adopted in that manner; and (iii) those who are not in complete agreement with the decision are prepared simply to make their views known and have them placed on record." Lee, *supra* note 96, at 165. *See also* A.Cassese, International Law in a Divided World (1986).

[103] *See* chapter 3 *supra*.

[104] UN Doc. A/AC.105/OR.2 and UN Doc. A/5181, Annex II; *See, e.g.*, E.R.C. van Bogaert, Aspects of Space Law (1986); N.M. Matte (ed), Space Activities and Emerging International Law (1984).

[105] Lee, *supra* note 96, at 167.

[106] *See, e.g.*, Buzan, *Negotiating by Consensus: Developments in Technique at the United Nations Conference on the Law of the Sea*, 75 American Journal of International Law (1981); Koh & Jayakumar, *The Negotiating Process of the Third United Nations Conference on the Law of the Sea*, in 1 United Nations Convention on the Law of the Sea 1982: A Commentary 29-134 (M.H. Nordquist ed. 1985); Plant, *supra* note 97.

[107] See also the difference between active and passive consensus, *infra* text accompanying notes 116-117.

[108] Van Dyke, *supra* note 92.

Other examples can be given, but at this place it is sufficient to conclude that the consensus rule has become a vital element in the adoption of basic treaties. Perhaps a negative example clarifies the issue further. In the late seventies and the beginning of the eighties negotiations on conventions dealing with state succession took place. These negotiations were successful in so far that they led to the adoption of two conventions.[109] However, the fact that an ideological gap existed between the Third World and the industrialized countries with regard to several subjects - and no persistent attempt was made to reach consensus on these issues- these conventions remain a death letter. Industrialized countries did not sign or ratify these conventions and the power of the (Third World) majority is not sufficient for the creation of new international law.[110]

The element of informality

In order to reach consensus, creative procedures for discussion are needed. The informal, small group approach is one of the models developing at present. Of course, this has to be seen as a development complementing the existing models and not as providing a complete alternative.]

Small groups have become absolutely necessary for efficient negotiations.[111] The number of the participants require breaking up large, unwieldy conferences into small and representative groups.[112] These groups can consist of interested individual states, or can be the reflection of the phenomenon of 'group diplomacy', with which is meant the participation in the negotiation of entities such as the Group of 77, the Non Aligned Movement, the OECD, regional groupings as the EC, NATO or ASEAN, or interest groups as landlocked countries, archipelagic states, or the industrial state group during UNCLOS III.

Small groups can help to create an informal atmosphere which enables more direct and confidential contact between participants - the basis for a more

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109 Vienna Convention on Succession of States in Respect of Treaties (Vienna 22 August 1978), *reprinted in* 17 I.L.M. 1488 (1978). Vienna Convention on Succession of States in Respect of State Property, Archives and Debts (Vienna 7 April 1983), *reprinted in* 22 I.L.M. 306 (1983).

110 Seidl-Hohenveldern, *Das Wiener Übereinkommen über Staatennachfolge in Vermögen, Archive und Schulden von Staaten*, 34 Östereichisches Zeitschrift für öffentliches Recht und Völkerrecht 173-199 (1983).

111 Henrikson, *supra* note 101, at 236-237.

112 Koh in Henrikson, *supra* note 101.

cooperative behaviour. Koh even holds that "[a]s a general rule, the more informal the nature of the group, the easier it is to resolve a problem"[113]. Confidentiality of the discussions is of major importance in this respect. Therefore, in informal meetings no official records are made, nor are the press or a large audience admitted to the deliberations. Only the results are presented in public. This is of course disadvantageous for researchers and others who have to interpret texts afterwards, since conference proceedings are a valuable source for their interpretation.

But things look different if one realises that one page of a type written verbatim record costs about $500 per language[114] and that these proceedings are not always very useful, since the real reasons behind positions taken during the negotiations are seldom publicly stated. Another cost related element is the convenient circumstance that it is not necessary to conduct informal negotiations in all official UN languages. Often one or two working languages are chosen. This is not only attractive from a financial point of view, but also avoids the inevitable loss of nuance during translation and interpretation into six languages.[115]

Of essential importance in informal procedures is creativity and influence of the presiding officer. He has to pave the way to consensus by identifying areas for agreement and submitting proposals to overcome disagreement; in short, he is the guide in a often rough and unexplored terrain. This importance is exemplified by the distinction made in recent literature between 'passive' and 'active' consensus, whereby the latter is

> "designed to provide impetus towards achieving consensus by according the president (...) the initiative in producing informal negotiating texts, which effectively obliged States to take positions to encourage or discourage the formation of consensus around them"[116]

Active consensus was the technique used in the UNCLOS III negotiations.[117]

That not just one single road leads to consensus is made clear by Adede when he describes the methods of work of three chairmen of subgroups during the

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113 *Id.*

114 Lee, *supra* note 96, at 160.

115 *Id.*

116 Plant, *supra* note 97, at 527.

117 For an extensive discussion see Plant, *supra* note 97; Buzan, *supra* note 106.

negotiation of the IAEA assistance and notification conventions.[118] The methods chosen by the chairmen were informal consultation, informal negotiation in an open-ended contact group, and an exchange of views on the basis of draft text followed by negotiation of specific texts in special negotiation groups. The negotiations resulted in - as already mentioned before - the speedy adoption of the two conventions by consensus in September 1986 and the subsequent entry into force of both instruments within half a year.

In the last few years we see another development, namely from official conference diplomacy towards policy making diplomacy. Contacts between the governments, or their civil servants, take place directly and more or less continuously. This is consistent with the expectations on the basis of the theory of complex interdependence as described in the second chapter. Multilateral conferences will perform another function in these situations. They will be used to formally confirm the consensus that has been emerged in these preliminary exchanges, or in order to break political deadlocks.

The actual work will be done outside conference centres. Modern communication techniques of course will play an enormous role in this. This development is probably closely related to the fact that the international dimension has become a standard aspect of policy preparation and implementation in national ministries.

The preparation of the Convention on Long-Range Transboundary Air Pollution is an example. Another point in case is the Ozone Convention and its Protocols.[119]

4.3. Conclusion to chapter IV

In this chapter we examined briefly two aspects of international policy change. They do not, on first sight, seem to be too closely related to each other, but if one takes a closer look at international policy making processes - legal as well as political - it will become clear that they are different aspects of the same issue.

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[118] *Supra* note 8, at 131-132; *See also* Mautner-Markhof, *supra* note 62.

[119] Vienna Convention for the Protection of The Ozone Layer (Vienna, 22 March 1985), *reprinted in* 26 I.L.M. 1516 (1987). Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 16 September 1987, entered into force on 1 January 1989), *reprinted in* 26 I.L.M. 1541 (1987). *See, e.g.*, Lang, *Diplomatie zwischen Ökonomie und Ökologie; Das Beispiel des Ozonvertrags von Montreal*, 43 Europa-Archiv 105-110 (1988); Doniger, *Politics of the Ozone Layer*, 1988 Issues in Science and Technology 86-92.

Public policy analysis, an advanced scientific discipline in domestic policy making, offers interesting concepts as a point of departure for *international* policy analysis. This is a discipline that did not yet get much attention in international studies. The increasing complexity of the system of international relations, however, necessitates creative new (scientific) approaches. Policy analysis might be one of these. This is certainly the case if one tries to describe the international (legal) system in terms of systems analysis.

I admit that international policy making presently is still in a first stage of development. 'Coexistence concepts' like absolute state sovereignty determine the greater part of the actual content of international politics. 'Cooperation concepts'- among others a functional state sovereignty and a more important role of international organizations - have not yet been widely accepted as a basis for the creation of new regimes. Nevertheless, awareness of elements that are important for the understanding changes within (sub)systems or across (sub)systems - especially the distinction between Core Aspects and Secondary Aspects - is essential for an adequate interpretation of current events, like for example the apparent changes in the attitudes of the socialist countries to international cooperation.

This also has consequences for the analysis of the international legal system. One element of this is the process in which international law is formulated. We have seen some developments in international conference techniques. This is one aspect of modern international law making. New methods in international diplomacy might provide new opportunities for the acceptance of legal instruments forming the basis of international regimes. Especially with respect to the acceptance of basic principles, the development of a common value orientation, these new methods might be of importance.

Of course, the current problems like transboundary air pollution will not be solved through the acceptance of certain discussion techniques, on the basis of new institutional arrangements, or with the help of public policy analysis. The point is, however, that the study of these aspects is important in order to understand current changes and perhaps to influence future developments. Moreover, the linkage of these issues might provide fresh perspectives on, for example, the role of international law in world society.

5. CONCLUDING REMARKS

5.1. Facilitating international cooperation; the use of computer models

At the end of this study I would like to return to the question that initiated this exercise: How can international computer models like RAINS be successfully used in

international negotiations? Or, more specific: What are the difficulties in having a scientific model such as RAINS being accepted for use in international negotiations and how are these difficulties to overcome?

In the preceding chapters I have tried to give a description of the process and structure of international law making and international decision making which can form a as a basis for an assessment of the use of RAINS. However, this provided only a few elements necessary for a comprehensive answer to the above mentioned questions. Detailed research on the building and application of computer models in the context of policy formulation or law making is also necessary.[120]

Furthermore, exact knowledge is necessary of the negotiation situation in which the computer model is to be used. What is the exact subject matter of negotiation, who are the negotiators, what positions do they represent, what are their main problems, is there any external pressure on them?[121] For a specific answer to these questions, much more research is needed. All I will try to do at this place is to relate some of the general aspects discussed in this study to the situation in which RAINS is supposed to be used.

We can take the framework discussed in paragraph 4.1. as a point of departure. Especially the distinction made between 'deep (normative) core' beliefs, 'near (policy) core' beliefs, and 'secondary aspects' can be helpful. The likelihood of the occurrence of policy oriented learning depends on the kind of changes that are envisaged. This varies from a change in the 'secondary aspects' to the 'normative core' changes. The last kind of changes is unlikely to be the result of the use of computer models. As we have seen, these kind of changes are mainly to be expected

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120 *See, e.g.*, L.C. Braat & W.F.J van Lierop, Economic-Ecological Modeling (1987); Caldwell, *Garrison Diversion: Constraints on Conflict Resolution*, 24 Natural Resources Journal 839-863 (1984): W.H. Dutton & K.L. Kraemer, Modeling as Negotiating; The Political Dynamics of Computer Models in the Policy Process (1985); P.W. House, The Art of Public Policy Analysis: The Arena of Regulations and Resources (1982); Jacobson, *Scientific Research, Risk Assesment, and Policy Development*, in P. Mandelbaum (ed), *supra* note 68, at 191; Macbeth, *Modeling in the Context of Law*, in Ecosystem Modeling in Theory and Practice: An Introduction with Case Histories 197-207 (C.A.S. Hall & J.W. Day Jr. eds. 1977); Williams, *Models as Tools for Abatement Strategies - Air Quality Management Approach*, in T. Schneider (ed), *supra* note 68, at 265-279.

121 *Cf.* the game approach followed by Mermet & Hordijk, *On Getting Simulation Models Used in International Negotiations; A Debriefing Exercise*, IIASA, unpublished paper, 1988.

as the result of external events. It is, as far as the use of computer models is concerned, therefore better to concentrate on changes in the Policy Core and the Secondary Aspects of the belief system.

In the context of environmental law making this means concentrating on the elaboration of rules, like emission standards and on devising mechanisms for effective control on international obligations. (Scientific) information is often regarded in this process as a neutral ground for agreement which can free the path for trading off legitimate differences in interests.[122] The negotiation process on most environmental issues in which a growing amount of scientific information has to be dealt with, is therefore often seen as "an exercise in joint learning to reach common understandings and eventual solutions".[123]

> "Negotiators must argue the merits of their cases, but they don't know the physical facts. There is a need for some mutual learning. How do they learn together and still protect their own interests? That is the beauty of the problem."[124]

Computers can play a role in dealing with this information in many different ways. Nyhart and Goeltner make a distinction between four primary functions and three significant characteristics of computer models designed to be used in negotiations.[125] Pattern Seeking Models are the first group, focussing on the analysis of complex past cases with common characteristics, in order to identify patterns useful to decision makers. They are retrospective and static in character. The second group concerns Simulation Models. The primary goals of these models is the representation in a real way the subject environment or situation. This enables parties to play "what if" situations and to test how different variables affect outcomes. A third group consists of so called Assessment Models. These are aimed primarily at estimating or judging the value or character of alternatives from among series of several choices. Often these models are subject to substantial uncertainty about the value of choices. The fourth group are the Solution Seeking Models. These are optimization models. They select the most suitable outcome on the basis

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122 J. Linnerooth, Negotiated River Basin Management; Implementing the Danube Declaration (IIASA Working Paper WP-88-4, 1988); *See also* Mermet & Hordijk, *Id.*

123 Linnerooth, *supra* note 122, at 28; *See also*, chapters 1 & 2 *supra*.

124 H. Raiffa (1984) p.45, cited by Linnerooth, *supra* note 122, at 28.

125 J.D. Nyhart & Ch. Goeltner, Computer Models as Support for Complex Negotiations, Massachusetts Institute of Technology, Spring 1987.

of pre-stated decision or solution criteria. Rule based decision support system models are an example of this category.

The three significant characteristics which are useful in the understanding of models in negotiation situations are: (1) the difference between 'context' and 'process' models. Context models deal mainly with the subject matter of negotiation (e.g. effects of the emission of air pollutants), whereas process models concern the dynamics and the structure of the negotiation. The number of actors and their relationship are among the major parameters of the latter category. (2) The distinction between descriptive and prescriptive models.. In prescriptive models actors get normative information, while descriptive models provide an analytic program for a better understanding of the dynamic of events. (3) The third characteristic refers to the role parties play in building the model (is this a joint process of all parties involved, or a ready made program?) and the intention of the model (Is it assumed to support all negotiating parties, i.e. is it to provide neutral information, or just one party?)[126]

This list of functions and characteristics is an indication of the wealth of factors one has to take into account when assessing the use of a certain model. This also can serve as a legitimization of the approach followed in this study. If one tries to develop a model to be used in international (environmental) negotiations, it is of great importance to have at least a relatively clear picture not only of the problems involved but also of negotiation structures and processes. Establishing an environmental regime involves more than reaching agreement on the formulation of norms for the emission of pollutants or the acceptance of standards for legal liability. It is without doubt that computer models can play an important role in the solution of these latter aspects of international negotiations. However, without the basis of an international (legal) regime, founded on a common value orientation, these models will not be able to break political deadlocks in negotiations.[127] Too much optimism about their role in this kind of situations is not realistic.

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[126] *See also*, Mermet & Hordijk, *supra* note 121, Linnerooth, *supra* note 122, Sebenius, *supra* note 92; Sebenius, *Negotiation Arithmic*, 37 International Organization 281-316 (1983); J.K. Sebenius, Negotiating the Law of the Sea (1984).

[127] *Cf.* the negotiations on a deep seabed mining regime in UNCLOS III. Here the MIT computer model was successfully used to overcome the deadlock in the negotations on a formula for profit sharing. The idea of sharing profits, however, had already been accepted in principle by the parties concerned. *See* Sebenius, *supra* note 92, at 80.

The RAINS model[128] might become, for example, a useful tool for the "linkages on a regional scale between the costs of controlling emissions and environmental effects [which] can result in more optimal use of funds in addressing problems such as the long range transport of pollutants and regional acidification in Europe"[129], but in my view only after the principle of sharing costs and benefits has been accepted. I am not very optimistic about the impact of this kind of computer induced information on the actual decision to transfer of from western to eastern Europe. Of course, once the decision has been taken to transfer funds, these models can give guidance to the amount involved.[130] Hordijk is right when he contends that

> "augmenting scientific information will not necessarily lead to the identification of suitable policies for controlling acidification of the environment. This information must be structured in a form that can be used for decision making to create a policy based on credible judgements about the probability of future events."[131]

This can only be effective in a situation of mature policy making. International policy making is not yet in such a state of development. It is still in a first phase of development.[132] This does not mean that the building of scientific models is not a useful exercise. The point is that their use is limited in situations in which the actors do not share certain basic values, or in other words where an international regime still has to be developed. In the case of the management of the international environment much remains to be done in this respect.

The ECE provides a promising framework for the development of such a regime. It offers an institutional basis for the development of rules and control mechanisms once on a high level of decision making, agreement is reached on fundamental

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128 For an extensive description see Alcamo et al., *supra* note 61.

129 R. Shaw, Transboundary Acidification in Europe and the Benefits of International Cooperation 8 (Paper presented at the conference 'Pollution Knows no Frontiers: Priorities for Pan-European Cooperation', Varna, 16 - 20 October 1988).

130 *Id.*

131 Hordijk, *Linking Policy and Science: A Model Approach to Acid Rain*, 30 Environment 17 (1988).

132 Perhaps it is in this context possible to draw a parallel between the use of computer models in the European Communities as tools for implementing European Community law, for example on the issue of safety regulation. In this situation, computer models can be used in a situation in which international law and policy making is (fully) accepted, and in which rules can, for example, be enforced through legal action.

principles. Building computer models will hardly influence the decision makers at this level, as can be concluded from the slow process of the adoption of insufficient measures taken until now, but will become of utmost importance for the elaboration of a European environmental management regime once agreement can be reached on the principles, leaving aside the question what kind of catastrophe (or perhaps sudden rational insight) can lead to such decisions.

5.2. Systems analysis and international law

Is there any future for systems analysis as a methodology for international legal research? I think that this is not the case if one tries to limit system analysis to strict juridical issues. The dynamics of international processes, which is the subject of a systems analysis of the international legal system, cannot be understood on the basis of legal research and reasoning only. A multidisciplinary effort is necessary.

I have tried to engage in such an effort in this study. The application of systems analysis to the development of an international environmental management regime showed that such a multidisciplinary approach does provide many challenging starting points for further research, not only with regard to environmental issues, but also other issues in international relations which are characterized by a high degree of interdependence. In these areas international cooperation and international (legal) regime building require creative solutions on the basis of new principles or values. Systems analysis certainly helps to identify elements that are of importance of finding these solutions.

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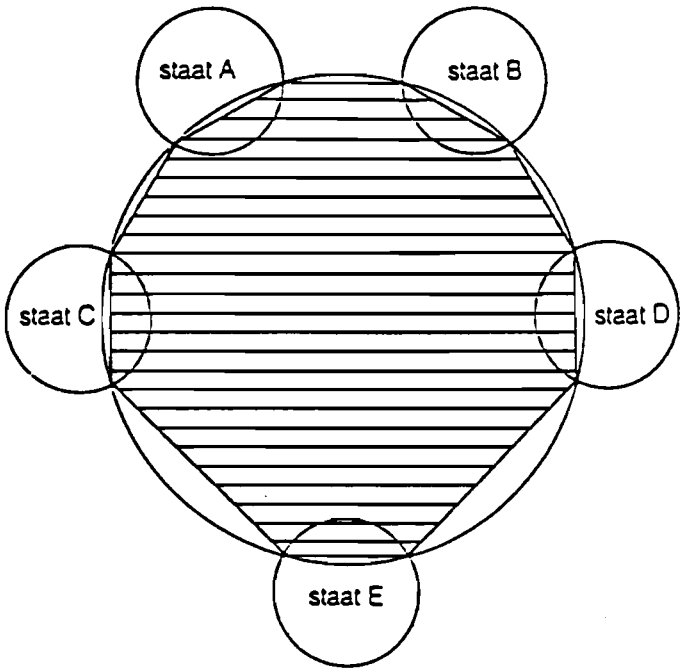
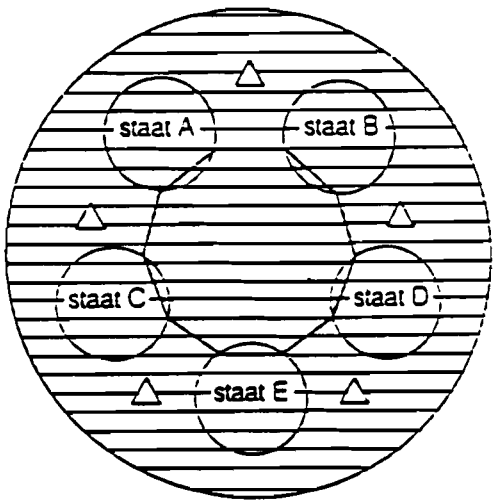
ANNEX I



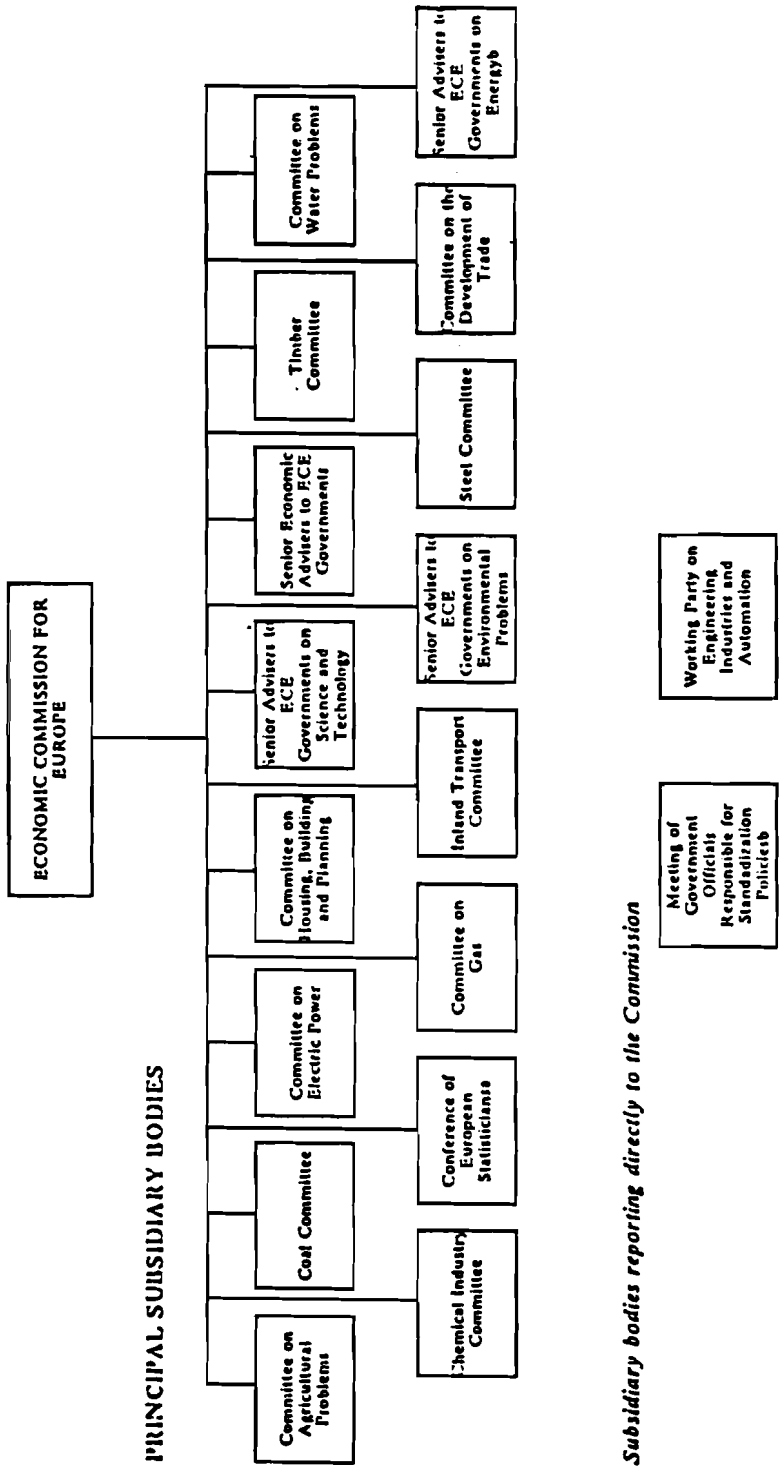
Figuur 2.1. Het interstatelijke model (The inter-state model)



Figuur 2.2. Het wereldpolitieke model (de driehoekjes geven de andere actoren aan.) (The world-political model)

From: J.H. Leurdijk, *De Analyse van de Wereldsamenleving*, Internationale Betrekkingen in Perspectief 40 (R.B. Soetendorp & A van Staden eds. 1987).

ANNEX II



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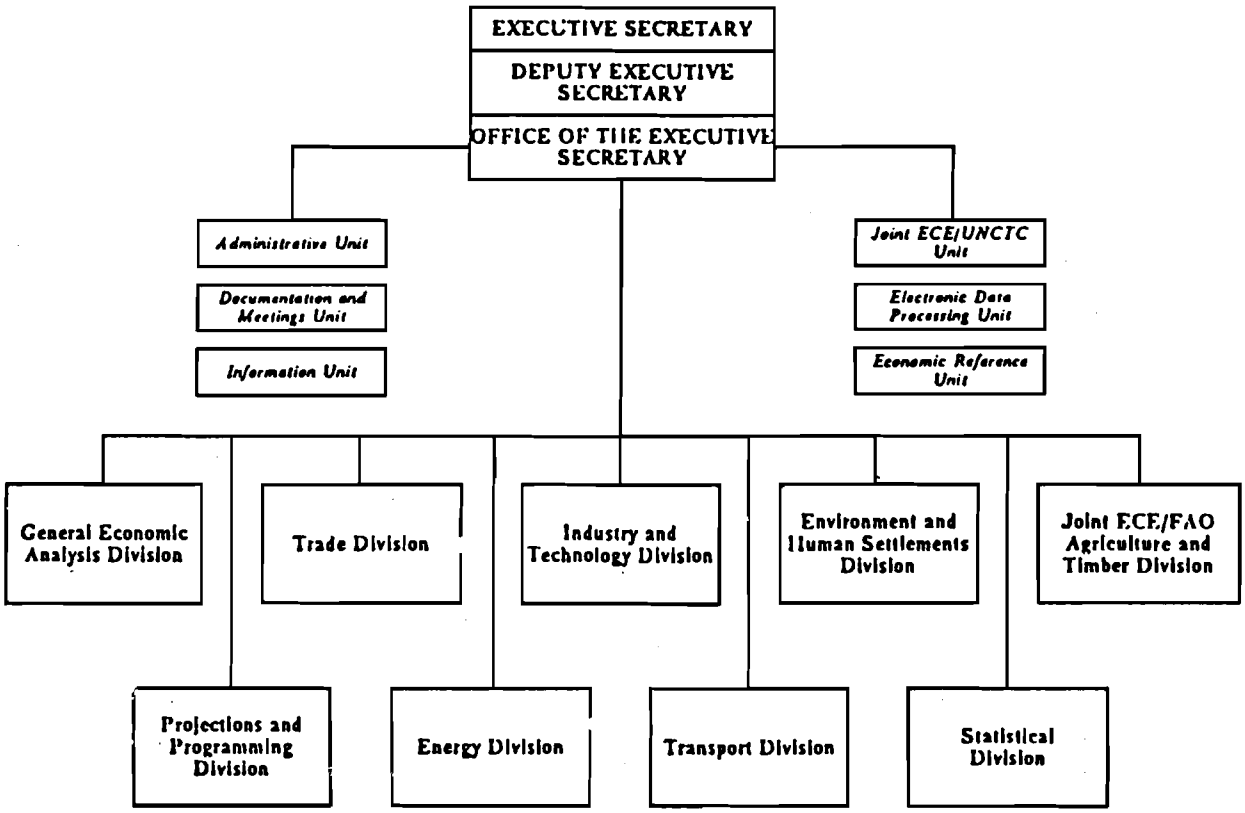
ANNEX III

SECRETARIAT



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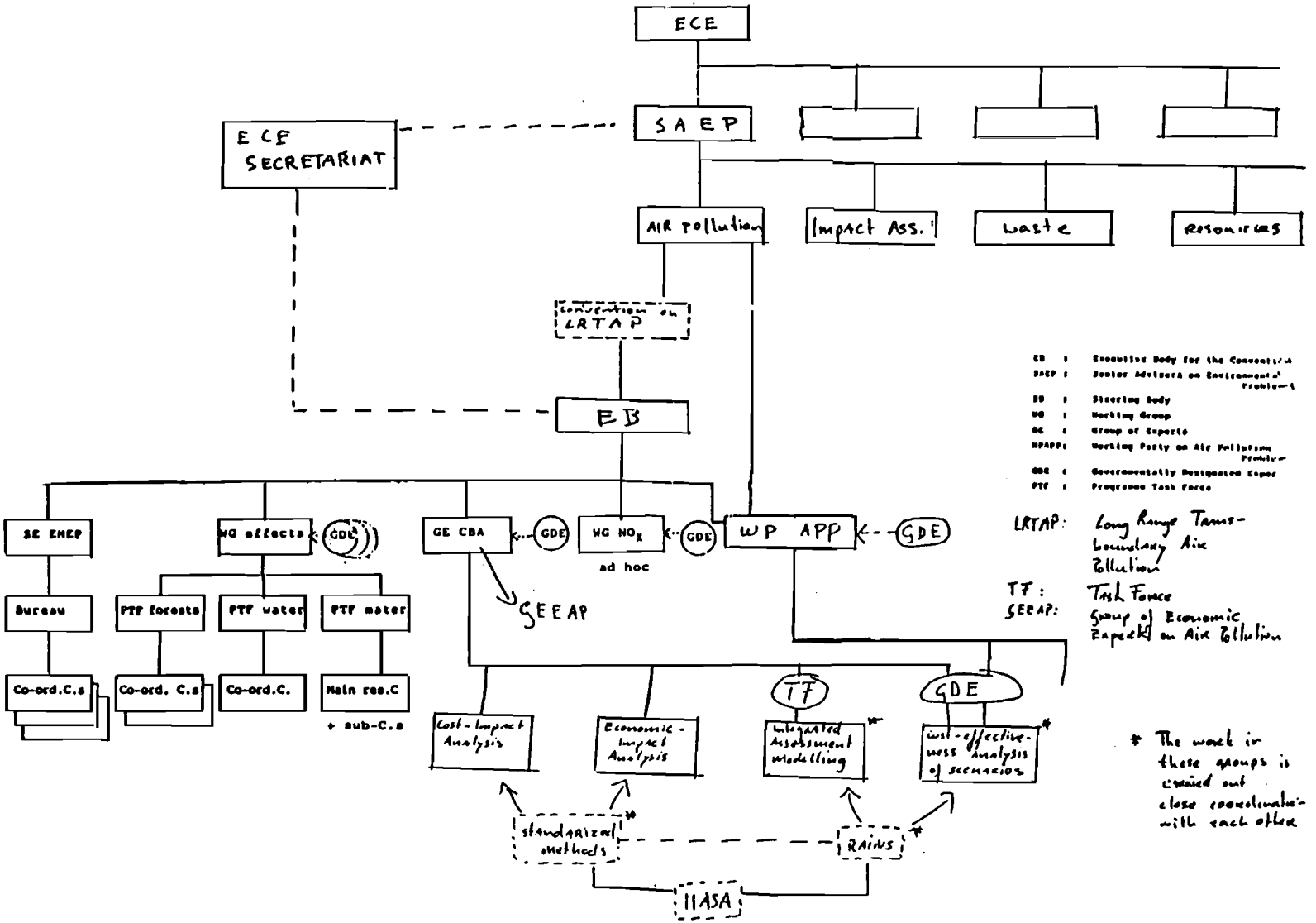
PRESENT ORGANIZATIONAL STRUCTURE



ANNEX V

Table 1. Structure of belief systems of policy elites[a].

	Deep (normative) core	Near (policy) core	Secondary aspects
Defining characteristics	Fundamental normative and ontological axioms	Fundamental policy positions concerning the basic strategies for achieving normative axioms of deep core.	Instrumental decisions and information searches necessary to implement policy core.
Scope	Part of basic personal philosophy. Applies to all policy areas.	Applies to policy area of interest (and perhaps a few more).	Specific to policy/ subsystem of interest.
Susceptibility to change	Very difficult; akin to a religious conversion.	Difficult, but can occur if experience reveals serious anomalies.	Moderately easy; this is the topic of most administrative and even legislative policy-making
Illustrative components	1) The nature of man i) Inherently evil vs. socially redeemable. ii) Part of nature vs. dominion over nature. iii) Narrow egoists vs. contractarians. 2) Relative priority of various ultimate values: freedom, security, power, knowledge, health, love, beauty, etc. 3) Basic criteria of distributive justice: Whose welfare counts? Relative weights of self, primary groups, all people, future generations, non-human beings, etc.	1) Proper scope of governmental vs. market activity. 2) Proper distribution of authority among various units (e.g. levels) of government. 3) Identification of social groups whose welfare is most critical. 4) Orientation on substantive policy conflicts, e.g. environmental protection vs. economic development. 5) Magnitude of perceived threat to those values. 6) Basic choices concerning policy instruments, e.g. coercion vs. inducements vs. persuasion. 7) Desirability of participation by various segments of society: i) Public vs. elite participation. ii) Experts vs. elected officials. 8) Ability of society to solve problems in this policy area: i) Zero-sum competition vs. potential for mutual accomodation. ii) Technological optimism vs. pessimism.	1) Most decisions concerning administrative rules, budgetary allocations, disposition of cases, statutory interpretation, and even statutory revision. 2) Information concerning program performance, the seriousness of the problems, etc.

[a]The policy core and secondary aspects also apply to governmental programs.

From: Sabatier, *An Advocacy Coalition Framework of Policy Change and the Role of Policy-Oriented Learning Therein*, 21 Policy Sciences 145 (1988)