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behaviour in the
IPCC process**

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by

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PREFACE

This study aims at investigating the impact of organizational and institutional setting on the outcome of scientific consensus-building processes. More specifically, the study will concentrate on the process of developing scientific consensus on the issue of global warming, the IPCC process.

This paper is primarily a *project outline* of this study, but I have also tried to give some *indications* of what we may expect to find in an in-depth study of the IPCC process concerning these aspects. However, the material has not yet been subject to sufficiently thorough analysis to constitute any basis for final conclusions to be drawn. I would therefore like to warn against regarding the indications presented as conclusions. The effort should rather be regarded as an "explorative" exercise, giving some indications of how the analytical aspects that are to be focused in the study relate to the situation characterizing the IPCC process.

The study will be carried out in collaboration with a team at the Fridtjof Nansen Institute and Sonja Boehmer-Christiansen at the Science Policy Research Unit at the University of Sussex, all working on similar projects. I am indebted to Steinar Andresen, Jørgen Wettestad, Sonja Boehmer-Christiansen and Arild Underdal for providing safe guidance in developing the design of the study. Furthermore, Leiv Lunde at the Fridtjof Nansen Institute has generously given me access to his material and to his knowledge on this issue. In spite of all this assistance, the responsibility of any errors or misinterpretations rests entirely with me. I look forward to continue our collaboration in the completion of the study.

CICERO, February, 1992,

Tora Skodvin

ORGANIZATIONAL SETTING, INSTITUTIONAL DESIGN AND ACTOR BEHAVIOUR IN THE IPCC PROCESS

Project Outline - Tendencies and Preliminary Observations

Tora Skodvin

INTRODUCTION

Throughout the 1980's global warming has become an increasingly "hot" subject on the international agenda. By 1988, the public and political concern with this problem area reached a point where a "definitive statement on the strength of the scientific basis for action and the possible policy response options" was needed (Zillman, 1991, p.16). The same year, the IPCC (Intergovernmental Panel on Climate Change) was established on the initiative of WMO in collaboration with UNEP. The objective of the establishment was to explore the issue of global warming scientifically, and to produce an internationally agreed scientific and policy assessment report. The result of the work would provide the main input to the forthcoming negotiations on the subject.

The work was divided into three areas; *scientific assessment* of climate change (Working Group I), *potential impacts* of climate change (Working Group II), and a formulation of *response strategies* (Working Group III). In the summer of 1990 the IPCC presented its report, and later the same year the IPCC consensus was accepted by the Second World Climate Conference in Geneva and the United Nations General Assembly, as an adequate basis on which to start negotiations. In February 1991 the first session of the Intergovernmental Negotiating Committee (INC) was launched.

The (preliminary) achievement of the IPCC is of significant importance in that the work has provided a platform of "consensual knowledge"¹ on which to start negotiations. Most scientists and decision-makers agree that *knowledge*, both in the form of theoretical understanding and descriptive information, constitutes a *necessary* (although not sufficient) *condition* for rational resource management (Underdal, 1989). This implies that the development of *scientific* consensus may prove critical in the process of developing *political* consensus concerning the manner in which collective problems should be addressed and resolved. If the scientific process fails to develop consensual knowledge concerning the issue areas in question, the *solutions* developed through negotiations may either be technically inadequate or, what is more; lack of consensual knowledge on which to base negotiations may imply that *scientific*

¹"Consensual knowledge" is conceived of as a common interpretive framework for identifying and "diagnosing" collective problems, see e.g. P. Haas, 1989.

disagreements (i.e., disagreement on cause and effect relationships) enter the conflict structure of the *political* deliberations "disguised" as substantial *conflicts of interest*. This implication may pose a severe threat to the possibility of succeeding in negotiations.

Scientific consensus-building is therefore an essential, but by no means straightforward task. The process is confronted by several barriers to success: Among other things, the process usually involves several disciplines, often without collaborative traditions, speaking different "languages" in terms of terminology and thus facing more or less severe *communication problems*. Furthermore, even more severe communication problems may occur when scientific advice is to be communicated to *politicians* to whom time is a limited resource, and the scientific terminology unfamiliar. Finally, the cost-benefit problem pervading the area of scientific consensus-building should be recognized: No easy answer can be given to the question of *how much* knowledge that is needed in order to take rational decisions, or *when* to stop information-gathering on the area of special concern. Evaluations of this kind are therefore usually based on *non-scientific* (e.g. political) criteria. By permitting non-scientific evaluations to enter the process, further complexity is added. Moreover, if not handled with care, the *political dimension* of the process may reduce the *legitimacy* of the outcome, thereby also reducing the applicability of the scientific advice in the negotiations, reducing the overall success of the whole effort.

The situation, characterized by the critical *importance* of scientific consensus paired with the *barriers* confronting scientific consensus-building efforts, raises the question of *how* a consensus-building process may be *facilitated*: What can we do to increase our chances of succeeding in efforts to develop scientific consensus?

Some may answer that we can do nothing. Scientific consensus emerges simply whenever (and *if*) it does; the process may neither be manipulated nor promoted by external means, it follows its own dynamics. Scientific consensus will develop "naturally" through gradually increasing knowledge of cause and effect relationships. Some will claim that science develops through *conflict*, not consensus. According to this interpretation scientific consensus represents some kind of "highest level" of knowledge, and this "condition" will stagnate scientific progress rather than pursuing it.

Important in this context however, is the distinction between *basic science* and *applied science*. Basic science refers to the production of knowledge concerning *basic cause - effect relationships*. At this stage it is most probable that science develops through conflict. Applied science on the other hand, refers to the *transformation* of basic scientific knowledge into *premises* for political decisions. Thus, applied science *builds on* basic science, it does not aim at producing "new" knowledge concerning basic cause - effect relationships.

Basic science is characterized by *isolation*; it develops largely within the borders of scientific disciplines and without direct linkages to specific policy problems. Applied science on the other hand, is often an effort at *combining* knowledge developed within the different scientific disciplines, in order to find solutions to specific problems. For the scientific advice prevailing from this effort

to be applicable to decision-makers, it must be based on a *scientific consensus* regarding the *status* and *implications* of existing scientific knowledge on the specific problem area in question. It is at this stage we will enter the process, in order to study how the development of this kind of scientific consensus may be facilitated.

From a political scientists' point of view, scientific consensus-building efforts are not only determined by the substantial (scientific) conflict, but also by the "structural environment" in which the consensus-building effort takes place: Participants of a scientific process may fail to achieve their aim of scientific consensus due to *organizational* or *institutional* barriers alone, maybe in spite of a *latent* scientific consensus between them. This approach implies that a scientific consensus-building effort may be facilitated by looking into the *mechanisms* of the process and the *institutional requirements* of success, and by organizing the process accordingly. How does the organizational and institutional setting of the process affect the possibility of success, and to what extent does this factor represent a potential instrument available to the participants?

The objective of this study, is to look into this question by focusing on the impact of *organizational setting* and *institutional design* on the (preliminary) outcome of the IPCC process. My primary concern will be to study how, and to what extent these factors have facilitated or complicated the achievement of the objective "...to provide the scientific, technical and analytical basis for informed and intelligent policy choices" formulated in the IPCC report (Summary and Conclusions, 1990). What are the requirements of success, and how are these requirements attended to through the institutional design?

Attention will be concentrated on three main variables; *organizational setting*, *institutional design* and *actor behaviour*. The study of *organizational setting* will focus both on the *external* setting; the location of the institution in relation to its surroundings, and the *internal* setting; the division of labour and hierarchy within the institution. The external setting is regarded as *given*; the variable holds no instrumental potential and may not be manipulated by participating actors in order to increase the possibilities of success. Furthermore, the character of the external setting *may* impose restrictions on the instrumental potential of the internal setting as well.

The study of *institutional design*, aims at investigating the impact of *formal decision-making procedures*: who the participants are, the ordering of the agenda, the rules of procedure, etc. The role and impact of *informal* decision-making procedures that may have evolved throughout the process will also be given attention. Institutional design is a social construction, and may as such be deliberately *changed*. Thus, in contrast to the external organizational setting this variable may be deliberately used by participating actors as an *instrument* to increase the possibility of success.

Finally, the impact of institutional design on *actor behaviour* in general, and on the performance of different forms of *leadership* in particular will be emphasized: To what extent has individual or groups of actors performed independent influence on the outcome of the process? Does the institutional setting promote and reward actor behaviour directed towards "problem-solving" and "conflict resolution"? (What does "problem-solving" and "conflict

resolution" imply with regard to a process of *scientific* consensus-building?) Does the institutional setting permit (and promote) the performance of leadership? If so, what is the nature of this leadership, and what is its impact?

In "traditional" international relations theory, "actors" usually refers to states. In our context, states do not constitute a "natural" unit of analysis, and the term will therefore primarily refer to *individuals*. This does *not* however, exclude *groups* of individuals from acting as one actor. In such cases it will be specifically noted, and the group establishment itself will be subject to scrutiny.

Before going into detail on these aspects however, we need to sharpen our focus on the dependent variable of the analysis, the *outcome*: What are the criteria of "success"?

OUTCOME: CRITERIA OF "SUCCESS"

Our approach aims at discovering how organizational setting and institutional design may be utilized as means to increase the "success-rate" of a scientific process. This approach therefore requires some definition of "*success*": When can a process be said to have "succeeded"? What are the criteria of "success"?

First, the concept must be related to the overall *objective* of the process: To what extent has the formulated objective of the process been fulfilled? Second, an evaluation of success should be related to the different *process levels*: The process may be divided into sub-processes, each with separate objectives. Success at each level is required in order to succeed as a whole. Finally, we may distinguish between *substantial* and *procedural* requirements of success. Substantial requirements are related to *what* has been achieved, while procedural requirements are related to *how* the achievement was obtained. In the following, these categories will be discussed very briefly.

Objective

The mandate given the IPCC implies a *dual* objective. The first objective is to develop a *scientific consensus* concerning the issue of global warming (Lunde, 1991, p.8):

"Approximate agreement within and among the relevant scientific communities (...) about the basic cause and effect relationships of a given issue or set of issues, and on the general status of knowledge as well as uncertainty in the respective field."

The second objective of the IPCC is to transform the scientific consensus into *scientific advice* to be *communicated* to policy-makers as premises for political decisions in a political process to combat global warming.

Thus, in order to "qualify" as a success, the IPCC must not only "produce" consensual knowledge on the issue of global warming, the knowledge must also

be applicable in the policy-making process. This is the only aim of the institution, and the yardstick by which its success is measured.

Process levels

The process of fulfilling the general objective of the IPCC consists of three main *process levels*, implying different *tasks* at each level; that of *production*, that of *communication*, and that of *learning*. These levels are chronological but iterative. We may assume that different groups of actors are dominant at each level. For the process as a whole to succeed, success at each process-level is required.

The general objective of the IPCC suggests however, that the process is seen within a broader framework; the process from a collective problem has been identified and diagnosed, until joint solutions have been developed and implemented. This perspective also gives attention to the relationship between the scientific and the political process. The relationship may be illustrated as in figure 1 below:

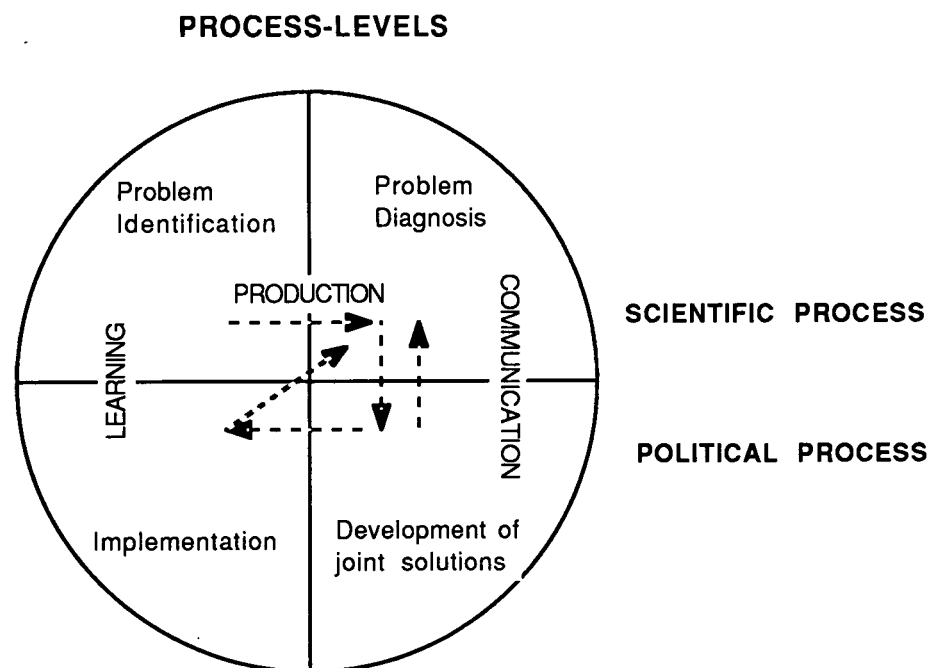


Fig.1. The process from a collective problem is identified and diagnosed, until joint solutions are developed. (See also Fisher & Ury, 1984, p.5).

The criteria of success at each level are not the same: The requirements to the scientific consensus are different at earlier stages in the process than at later stages. In order to *start* negotiations for instance, the scientists "only" have to agree that a problem in fact exists and give some (vague) indication of how it could be solved. For detailed *solutions* to be developed and eventually

implemented however, consensual knowledge at a much higher level of specificity is required. Thus, the evaluation of success must be related to specific stages.

Substantial and Procedural Requirements

The requirements referred to above, are *substantial* requirements; *what* the process has in fact achieved. The substantial requirements to success should however be distinguished from the *procedural* requirements the process must satisfy in order to be regarded as successful: *How* the achievement was obtained is also of significance when evaluating the process.

The main procedural requirement of a scientific process, is that of *legitimacy*. The requirement implies that the outcome of the process must be achieved without undue influence, primarily from political units. With regard to the participants of the process, the requirements to legitimacy imply that they have maintained their *professional independence* throughout the process. If the scientists participating in the process are *not* believed to have maintained their professional independence, the output of their efforts will be discredited and will not be *applicable* as input to the political process. The two requirements of legitimacy and applicability may however be seen as contradictory because of the danger of politicization that lies in the interface between science and politics. The nature of this problem therefore requires that procedures are carefully designed in order to meet the dual requirement of securing the professional independence of the scientists and keeping the communication channels between the scientific and the political process open and well-functioning.

The IPCC - Success or Failure?

The IPCC has not yet completed its work, and it is therefore not possible to give a final evaluation of success or failure. With respect to the preliminary character of the outcome, however, there seems to be a general agreement that the IPCC process has been a success this far.

The objective of developing scientific consensus concerning the issue of global warming has been achieved, although at a "low" level of specificity. This outcome has also been successfully communicated to the policy-makers, in that the IPCC consensus has been accepted (by the General Assembly and the Second World Climate Conference) as a basis on which to start negotiations. Furthermore, the IPCC conclusions seem to have been established as a point of reference to all sides in the *political* conflict concerning the issue, and thus seems to have high legitimacy. With respect to the aspect of learning however, a conclusion will have to await the outcome at later stages of the process.

The negotiations taking place in INC are far from completed, and not until we know, and may study in detail, the impact of the IPCC work on the political solutions developed through this institution, may we draw any final conclusions on its achievements.

THEORETICAL APPROACH

During the recent years increasing attention has been given to the question of what constitutes our capacity to solve global problems: Why does some efforts at joint problem-solving (collective action) fail while others succeed? (Underdal, 1990). An important contribution to this work has been provided by Peter Haas in his studies on the role of "*epistemic communities*" in international environmental and resource regime formation. Through his studies on ozone depletion and environmental protection of the Mediterranean, Haas has focused on the impact of *consensual knowledge* in global negotiations. He has found that the existence of "epistemic communities" has *facilitated* the negotiation process and increased its possibilities of success.

An "epistemic community" is defined as a "...professional group that believes in the same cause - effect relationships, truth tests to assess them, and shares common values."(Haas, 1990a, p.55). In addition to acceptance of a common body of facts, the members of the epistemic community "...share a common interpretive framework, or 'consensual knowledge'." Furthermore,

"...[t]hey identify problems in the same manner and process information similarly. They also share a common vocabulary, common political objectives to which such policies should be addressed, and a common network in which findings are exchanged and shared concerns are formulated." (ibid.)

The influence of an epistemic community, is gained through their "authoritative claim to knowledge". The primary channel of influence is *internal*; through the national political processes of the member countries. To the extent *external* influence is exercised, it is mainly "individual" and "positional": i.e., it is basically exercised through potential influential positions held by *individual members* of the group (e.g., in the negotiation secretariat). The epistemic community itself does not act as a *party* in the deliberations.

Another important approach to this field of study is the various contributions of "leadership theory"; studies of different forms of leadership² in negotiations, and their potential impact on the outcome of the process (Underdal, 1991, Young, 1991). In our context, special attention should be given to the "*intellectual leadership*" identified by Young:

"...an individual who produces intellectual capital or generative systems of thought that shape the perspectives of those who participate in institutional bargaining and, in so doing, plays an important role in determining the success or failure of efforts to reach agreement on the

²Leadership, as Young uses the term; "...refers to the actions of individuals who endeavour to solve or circumvent the collective action problems that plague the efforts of parties seeking to reap joint gains in processes of institutional bargaining" (Young, 1991, p.285). Underdal conceives of this term as "...an asymmetrical relationship of influence, where one actor guides or directs the behaviour of others towards a certain goal over a certain period of time." (Underdal, 1991, p.140).

terms of constitutional contracts in international society." (Young, 1991, p.298.).

Although not specified by Young, it seems reasonable to assume that intellectual leadership often will be performed *outside* the framework of a negotiation situation, notably *before* negotiations on a particular issue area starts. This assumption seems reasonable both because the results of such an effort may prove instrumental as a basis to negotiations, and because the production of knowledge and ideas is a time-consuming effort, and therefore most probably will precede actual negotiations on the issue area in question.

According to Young, all forms of leadership are performed by *individuals*, including intellectual leadership. In contrast, an epistemic community is a "professional *group*". However, although consensual knowledge per definition is provided by a group, *influence* is exercised by individuals; either in influential positions within their national policy making processes, or within the formal apparatus of the negotiations. Furthermore, an individual exercising leadership (within Young's conceptualization of the term), will always carry with him a *group identity* influencing his actions. Thus, an individual actor performing intellectual leadership, instrumental in *bringing about* the consensual knowledge that the epistemic community is based upon, or in *communicating* the consensual knowledge to the decision-makers, is therefore conceivable.

Both approaches are, however, primarily concerned with the process of developing *political* consensus, as clearly distinct from the process of developing *scientific* consensus. Thus, Haas' studies have been directed towards developing an understanding of how epistemic communities may influence the outcome of institutional bargaining³, while the question of *when* and *why* (under which conditions) these "professional groups" are established in the first place, has been given relatively less attention. Another somewhat neglected area in these studies, is the question of *how* such groups are established. In Haas' works, it is not made quite clear whether the establishment is an instrument for *developing* a "scientific consensus" or, whether it is a product of the recognition of some sort of existing "*common interest*" (an already existing "scientific agreement") between the actors of the group.

If the consensual knowledge was not *developed*, but rather served as a *cause* behind the establishment of the group, the observed impact of consensual knowledge on the agreed outcome (e.g. success in influencing the outcome of the institutional bargaining) may be *spurious*. It may *not* be the consensual knowledge in itself, but rather *who* the group representing it involves (the epistemic community) that is decisive for the end influence. If, for example, some influential interest or group is part of the epistemic community, this alone may be sufficient in order to achieve influence on the end product of the institutional bargaining, independent of the consensual knowledge the group represents. The substantial content of the term "consensual knowledge" may in this case also be questionable: *How many* and *who* must "believe in the same

³The term is used according to Young's definition: "...efforts on the part of autonomous actors to reach agreement among themselves on the terms of constitutional contracts or interlocking sets of rights and rules that are expected to govern their subsequent interactions." (Young, 1991, p.282).

cause-and-effect relationships" for it to "qualify" as a consensual knowledge? This question is also important in order to distinguish this notion of "epistemic community" from a traditional notion of a "winning coalition".

Furthermore, the chronology of the establishment of the epistemic community and the recognition of consensual knowledge is important, for the simple reason that with a *deliberate* establishment of an epistemic community, the development of consensual knowledge is the result of a conscious effort (that might fail). If the epistemic community is established in recognition of an *existing* consensual knowledge between some actors, the establishment in itself becomes "*coincidental*"; coincidentally some of the actors had a common understanding of the issues at stake, and these actors joined in a group that may be labeled an "epistemic community". In this last case, the occurrence of epistemic communities becomes largely unpredictable and non-manipulative. In the first case, however, it is interesting to look into the *conditions* of successful epistemic community establishments: when may we expect epistemic communities to develop, and what are our options to facilitate their development?

The differences may be illustrated by the distinction between "networking" and consensus-building. "Networking" refers to the effort at *developing* a network around an *already existing* scientific consensus, while the opposite situation is when the *consensus-building* effort takes place *within* an *already existing* network. The former obviously may be (too) closely associated with an effort at establishing a winning *coalition*.

Finally, Haas' approach does not give attention to the sometimes problematic relationship between science and policy. As noted above, a dilemma may arise with the dual objective of both producing sound science and communicating it to policy-makers. This dilemma is not recognized in the approach. On the contrary: the epistemic community is described as consisting of representatives from both scientific and political levels (both nationally and internationally), without discussing how this potential dilemma is avoided or resolved.

In a study on the IPCC-process these aspects will have to be addressed. The objective of the IPCC has been to *develop* a scientific consensus. Although skeptics may maintain that the IPCC consensus has prevailed as a result of an already existing "greenhouse coalition", we will regard the scientific consensus that has come out of this effort as clearly *intentional*, not "coincidental". Furthermore, the outcome will be studied as such; which factors have pulled in the direction of (and facilitated) a scientific consensus, and which factors have not been favorable in order to achieve this end?

Neither of the authors mentioned above have focused on the relationship between the organizational and institutional structure of the process and the performance of participating actors. Haas concludes his studies with an observation that epistemic communities have a significant (positive) impact on the outcome of environmental regime formation, without focusing on the *conditions* for the establishment and performance of epistemic communities. Likewise, Young assumes individual leadership to be a necessary condition for

success in institutional bargaining, without examining the *institutional requirements* for such a performance to be possible.

The impact of organizational structure and institutional design on the *performance* of the organization has however been the central focus of several studies in political science, although usually associated with studies of bureaucratic and public national institutions. Lately, insight from this discipline combined with the knowledge accumulated through the "structural" analysis associated with formal models of bargaining and decision analysis, have provided a valuable new approach to negotiations. The central aspect of this school of thought within negotiation theory - by Sebenius labeled "Negotiation Analysis" (in Kremenyuk, 1991) - is the acknowledgment that actor behaviour has an independent impact on negotiation outcome. Actors do not, however, "behave" in a vacuum. They also relate to a formal structure, e.g. the "rules of the game". Although actor behaviour *does* hold independent explanatory power, actor behaviour must be analyzed in relation to the structural framework within which the actions take place. The institutional framework, being a part of the structural context, may impose either constraints or provide incentives with a significant impact on the actors' perceptions of alternatives. Thus, actors' choice of actions, or reluctance to act in specific manners, may be explained by the framework within which the negotiation takes place. This is important because it also indicates a possibility to "manipulate" actor behaviour, by "manipulating" the *structural context* of their behaviour. The institutional framework of negotiations is a social construction, and may as such be deliberately changed. Thus, the institutional setting holds an *instrumental potential*: with knowledge of how the institutional setting affects actor behaviour, the institutional setting may be utilized according to this knowledge in order to increase the possibilities of success (Underdal, 1990).

The approach has primarily served as a theoretical framework for studying *negotiations*. By applying the framework as an analytical tool for analyzing a scientific process, however, the limits and possibilities of this approach may be assessed. Furthermore, the combination of these approaches may prove constructive in order to develop an "analytical link" between the process of developing *scientific* consensus, the process of developing *political* consensus, and the notion of *leadership* in both phases.

This theoretical approach constitutes our main point of departure for a study of the organizational and institutional structure of the IPCC process, and its impact on actor behaviour. Below we will proceed by examining the dimensions of the three variables in more detail, and give some indications of tendencies and preliminary findings with regard to the IPCC.

ORGANIZATIONAL SETTING

The organizational setting of the institution will be analyzed in terms of two dimensions: *external* and *internal*. External organizational setting refers to the *location* of the institution in the "organizational environment" it relates to:

Which linkages are there to other institutions, and how does this affect the performance of the institution in question?

Internal organizational setting refers to the *division of labour* and the *hierarchy* within the institution itself: How is the work organized in terms of "who does what", and what is the authoritative distribution between the different levels?

External Organizational Setting

The IPCC was established on the initiative of UNEP and WMO, and the establishment was confirmed by the UN General Assembly Resolution of 1987 (UN-Res. 45/212). The whole idea behind the establishment was to provide scientifically sound information on which to base eventual diplomatic initiatives to solve the problem of climate change; a linkage which in itself draws the attention to the uniquely *political* character of this *scientific* institution. The formal external organizational setting of the IPCC is therefore of a quite significant political character, in spite of the scientific traditions of the WMO. The WMO is however also intergovernmental, and in principle governed by political signals and priorities from national governments (Lunde, 1991).

The organizational environment of the IPCC may crudely be illustrated as in figure 2, with indications of the character of the institution (political/scientific) in brackets (next page).

The organizational location of the IPCC may have implications for both *design* and *performance* of the institution. On the one hand, the political character of the organizational environment may cause a strong *awareness* of, and a need for measures to create *distance* from, the strong political dimension of the process. On the other hand, the IPCC may be able to draw upon the reputation and the experience of the WMO, and thus *gain* credibility. Furthermore, the linkage gives the IPCC practical advantages, such as easy access to works already carried out by the WMO. A very important implication however, may be that the *internal* organizational and institutional structure of the process is designed by *external actors*, according to *political*, not scientific considerations. This may have implications for aspects such as recruitment mechanisms, the distribution of institutional authority among participating actors, decision procedures, and the like. Moreover, if the development of institutional design is totally controlled by external actors, the *instrumental* potential of this factor may be limited.

The organizational chart below illustrates the *formal* external organizational setting of the IPCC. The IPCC relates, however, to an "*informal*" external organizational setting as well, which also may have implications for performance, process, and outcome. What I have labelled the "*informal*" organizational setting refers to linkages between *scientific* institutions carrying out similar research projects on similar problem areas. With regard to the issue of global warming, the most important scientific linkage is the association to research concerning depletion of the ozone layer. The linkage is of both a

IPCC - External Organizational Setting

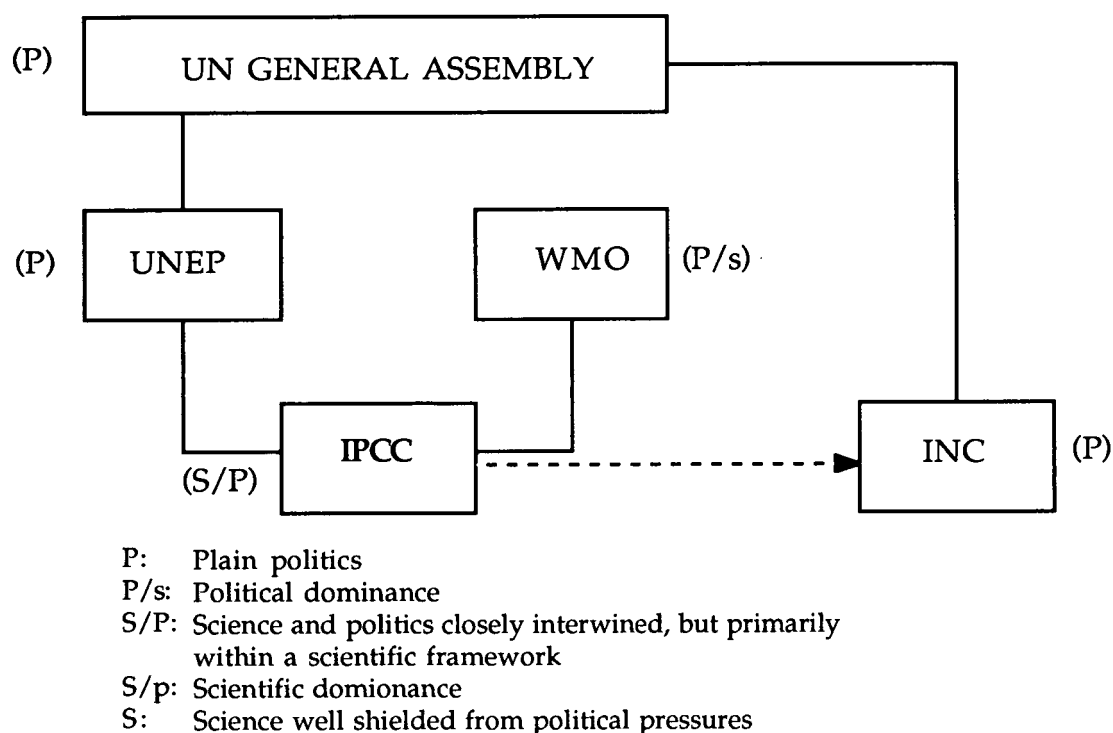


Fig. 2. Crude illustration of the external organizational setting of the IPCC (See also Lunde, 1991, p.4).

"professional" and a "personal" character: First, scientists may *build upon* conclusions drawn in the preceding ozone research with relevance to climate research. Second, the two scientific processes seem to recruit the *same scientists* to some extent. Apart from the practical implication of saving time by avoiding double work, the linkage may also have had "political" implications. It has been suggested that politically "unproblematic" conclusions of the ozone process, has been transferred to the climate process relatively easy, in spite of a much more (politically) "problematic" character within this context. Furthermore, it may seem as if this linkage has been "used" consciously by the scientists in the process in order to *increase* the scope of *politically acceptable* conclusions. If this proves to be true, it may imply that the scientific process of global warming has resulted in conclusions with more controversial political implications than would otherwise be possible: The scientific linkage of the two processes has been used *instrumentally* in order to *limit* the impact of the political dimension on the conclusions.

This aspect is associated with both recruitment procedures and actor behaviour, and will therefore also be discussed in more detail below. It may be assumed, however, that both formal and informal external organizational structure has had implications for process, performance and outcome of the IPCC. One important implication of organizational location, is the fine balance

between science and politics and the dominant political dimension of the issue area. The next section will focus on how this aspect was dealt with through the *internal organizational structure* of the IPCC; the division of labour and the hierarchical structure within the institution.

Internal Organizational Setting

Above, the significant political character of the external organizational setting of the IPCC process has been emphasized: The IPCC is located in an organizational environment dominated by *political* institutions. This has implications for the IPCC itself as well: Although primarily serving a scientific purpose, the institution consists of actors recruited from both political and scientific levels.

Some may maintain that politically motivated participation in a scientific body in itself is enough to *discredit* the legitimacy of the process. On the other hand, however, it may also be argued that politically "contaminated" issues *require* a political framework in order to *increase* the legitimacy of the process. This line of reasoning is based on the view that political frameworks around scientific processes, are necessary in order to *prevent* political interests from entering and affecting the process. The extent to which the process is regarded legitimate will be determined by the manner in which the two segments are separated *within* the organization, and the distribution of authority and tasks between them.

The approach is associated with the approach developed by J.D. Thompson in his study "Organizations in Action" (Swedish version, 1983). One of his main arguments is that all organizations are exposed to influence from exogenous variables, and that these variables are uncontrollable to the organization itself. All rational organizations therefore try to protect their "*technical core*" from external influence by establishing "input- and output units". These input- and output units are thought to function as *buffers* between the technical core, the production unit of the organization, and the environment to which the organization relates. In this manner the organization will increase its ability to adapt to a shifting environment, without affecting the production of the organization more than necessary (p.83).

In our case the "technical core" of the organization is concerned with production of scientific knowledge, and the environment to which the organization relates is dominated by political controversy. One essential task in order to succeed is, as emphasized above, to prevent the *political* controversy from entering the process and influencing the *scientific* conclusions. Paradoxically, the best way to do this may be to *integrate* the political segment in the organization instead of trying to isolate it. For one thing such an integration would permit *political actors* to deal with the *political aspects* of the issue, while *scientists* were given peace to deal with *science*. There is no reason to assume that scientists, to whom maybe the rules and mechanisms of the political game are unknown, are more capable to deal with political controversy than politicians and policy-makers. Furthermore, an integration of the political segment may also be constructive in order to prevent the process from being perceived as

illegitimate by non-participants. By integrating the political segment in the process, the problem of politicization may be openly addressed. This counts in particular for the question of recruitment procedures, a subject that will be dealt with in detail below. It should however be stressed that the *objective* of the integration is to *prevent* politics from influencing the production of scientific knowledge. In order to maintain legitimacy the division of labour between the segments must therefore be clear; political actors must not try to influence the production of scientific knowledge.

The integration between the scientific and political domains is a significant feature of the IPCC process. At all main organizational levels elements from both domains are represented, and both scientific and political considerations have been taken. The two segments are not, however, equally *dominant* at each level. It is possible to trace a clear pattern of dominance between the two segments in the internal organizational setting, that also may indicate that measures have been taken in order to *prevent* politicization. In figure 3 (next page) the internal organizational structure is crudely illustrated, with an indication of scientific or political dominance.

The "top" of the organization, the Bureau and the Plenary, are primarily *politically* dominated institutions. The main tasks of these institutions do not, however, concern the production of scientific knowledge, but rather the *administration* of the production of knowledge. The Bureau was established in order to co-ordinate the work of the three Working Groups and the activities of the Panel in the inter-sessional periods (Report from the first session of the IPCC, 1988). The Plenary is responsible for constituting working groups and task forces as well as establishing clearly defined and approved mandates and work-plans for these groups and sub-groups. The Plenary also has the highest decision authority of the organization. Thus, conclusions drawn by IPCC Working Groups or task forces are not official IPCC views until they have been discussed and accepted by the Plenary ("Principles Governing IPCC Work", IPCC-VI/Doc.7).

The Working Groups (WGs) on the other hand are, to a varying degree, primarily dominated by *scientific* norms and traditions. This counts in particular for WG I and II. The nature of the task of WG III, however, seems to have given this WG a clearer political imprint than the other two. The fourth "WG" is in fact a "Special Committee on the Participation of Developing Countries". The main task of this Special Committee is that of *participation*, not that of science as such, and may therefore be said to be characterized by a primarily *political* dominance.

The "technical core" of the organization may be found under WG I, in the scientific workshops and the review mechanisms of their work. These sub-groups seem to have been well protected from political pressure. The nature of the task forces and sub-groups of the other WGs has not yet been studied in detail, and we are therefore not in a position to say whether this is a general trend of all the sub-groups of the IPCC.

IPCC - Internal Organizational Setting

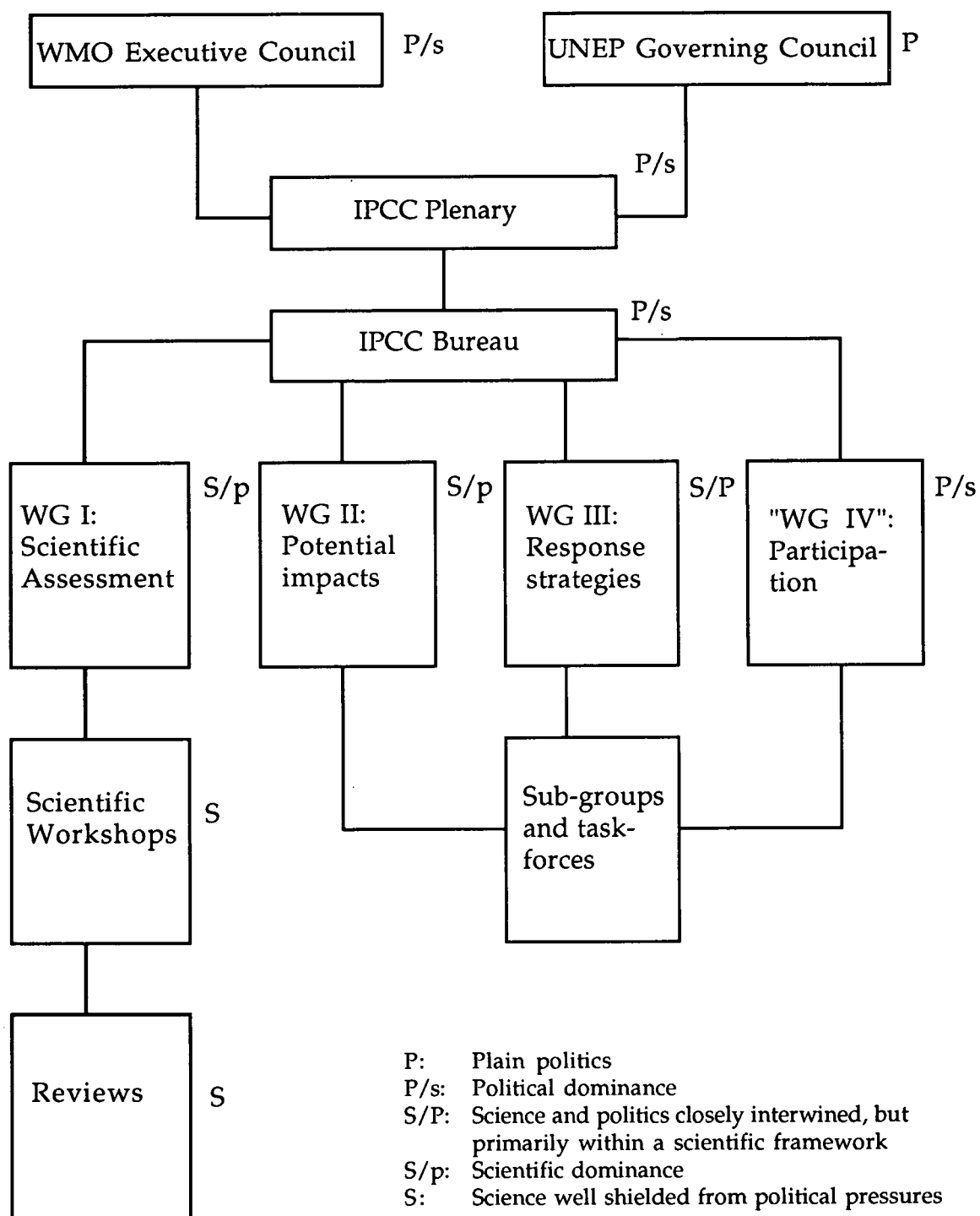


Fig. 3. Crude illustration of the internal organizational setting of the IPCC. (See also Lunde, 1991, p.4).

The "production unit" of the IPCC seems to have been well shielded from political pressures and influence. This implies that the scientific conclusions resulting from their work have not been significantly changed at other organizational levels, e.g. the Plenary. The result of the fourth plenary in August 1990 when the first assessment reports were adopted, may support this assumption. Although *political* actors played the main role in *negotiating* the draft texts, it seems to have been agreed that the conclusions from the scientists (WG I and II) should remain unchanged. The executive summaries of the assessment reports were however exposed to direct attempts by governments "to meddle with the initial message of the scientists." (Lunde, 1991).

One such attempt by the Americans to put stronger emphasis on the aspect of uncertainty than the scientists originally had agreed to, was met by chairman of WG I and head of Britain's Meteorological Office, John Houghton (Editorial, *New Scientist*, September, 1990):

"He simply repeated what the IPCC scientists had "calculated with certainty"... Because the scientists insisted that they do know a bit about what is happening on the planet, the American emphasis on uncertainty will not now be part of the IPCC's report to the World Climate Conference in November."

The episode may indicate that the primary function of the plenary was conceived to be to *communicate* the conclusions agreed to by the scientists, not *change* the result altogether. This does not however, change the fact that the drafts presented by the scientists were submitted to paragraph-by-paragraph *negotiations*, where political actors played the main role. This fact also constitutes the basis for some critical voices raised against the IPCC, charging the conclusions of the process of being *negotiated science*, or so-called "soft science". Issues of environmental and resource management do, however, place scientists in an unfamiliar situation: They are asked to provide scientific conclusions and advice at a time when scientific *uncertainty* dominates the field. According to Newby this situation reflects a new kind of relationship between science and politics (*New Scientist*, p.26, September, 1990):

"Traditionally this relationship has been based on the belief that science provides decision-makers with objective, "hard" facts on which to base their "soft", value-ridden policies. But now we find scientists delivering "soft", uncertain "facts" to politicians and policy-makers who face "hard" decisions."

This places natural scientists in a situation similar to that of social scientists: "...they can no more solve the problem of climate change than economists can stop inflation."

It may be argued that this new kind of relationship also places new requirements to the "*wrapping*" of science, when presented to lay-people such as politicians and policy-makers. When uncertainty dominates scientific conclusions, there is much room for *interpretations*. In a politically dominated

game, the *presentation* of scientific knowledge may be manipulated and distorted in order to serve the function of alibi to political interests. This may to some extent be prevented if the actors *formulating* the scientific advice are aware of the danger and are familiar with political games. In some cases therefore, negotiated science in this respect can be argued to be more "neutral" than if it was presented in its "pure" form because it is not as easily hostage to the more or less consciously distorted interpretations of politicians. Whether this is the case of the IPCC conclusions remains however to be seen.

Organizational structure determines external organizational location, the division of labour between the internal organizational levels and how they relate to each other in terms of authority. The institutional setting on the other hand, defines the rules and procedures according to which tasks are to be accomplished. In the next section attention will be given to the implications of institutional design.

INSTITUTIONAL DESIGN

The institutional setting defines the "rules of the game"; i.e. *decision rules*, principles of *recruitment*, *agenda* both with regard to the order of the issues and with regard to which issues that are included, and *arena*; where, in terms of institutional level, the discussions take place. A fifth factor that should be added to this list, may be labeled "*process openness*". This aspect concerns the principles guiding the institution's relationship towards an external audience; the extent to which media and different lobbying groups have had access to the discussions. Each of these factors may have significant impact on actor behaviour and process outcome.

Decision Rules

Although there are examples of *voting* as a way of making decisions in scientific processes (Lunde, 1991), a more usual and legitimate decision-making procedure is that of *consensus*. Decision rules as such may therefore explain rather little of the observed variance between different processes. This fact does not, however, render the factor without importance. The manner and mechanisms applied in order to *reach* consensus, may vary a great deal and thus contribute to an increased understanding of scientific consensus procedures.

In IPCC the consensus procedure is applied in matters of *substance*. In matters of *procedure*, however, the decision rules applied in WMO also apply for the IPCC. In the governing principles it is thus stated that (IPCC-VI/Doc.3, 1991):

"In taking decisions, drawing conclusions, and adopting reports, the IPCC Plenary and Working Groups shall use all best endeavours to reach consensus. If consensus is judged by the relevant body not possible: (a) for decisions on procedural issues, these shall be decided according to the General Regulations of the WMO; (b) for conclusions

and adoption of reports, differing views shall be explained and, upon request, recorded."

The *methods* of reaching consensus have not yet been analyzed sufficiently thorough for any conclusions to be drawn. Tentatively, however, I would like to draw the attention towards the mechanism of selecting "*lead authors*" on the various issues. This method may have given individual actors a *leadership potential*, and in that manner facilitated the consensus building process. In order to study this aspect further the procedures used for developing texts will be focused. The technique *may* have similarities to the "Single Negotiating Text" procedure of negotiating processes, where the Conference Chairs are given the responsibility for writing negotiating texts without alternatives. This technique has in some cases proved constructive in order to promote a cooperative strategy among the actors, and reduce the level of outspoken conflict.

Principles of recruitment

The question of *recruitment principles* concerns the *criteria* to follow when choosing the participants of the process. In scientific processes of the kind we discuss here, this question is an important one. Recruitment principles determine the extent to which the process is *representative*, and representativity is decisive for process legitimacy and credibility. Representativity may, however, be "measured" according to two, to some extent contradictory criteria; "*political loyalty*" and "*scientific competence*". Intuitively one could expect recruitment to a *legitimate* scientific process to be based on scientific competence. This tendency is also found by Fløistad in her studies of the ICES (Fløistad, 1990). With regard to an institution as the IPCC, however, paradoxically as it may seem, a *combination* of the two criteria may be necessary in order to prevent against *suspicion* of the participants *not* being chosen according to scientific competence. One example may illustrate this point: The climate issue holds a potentially strong ideological conflict between the North and the South. If recruitment to the IPCC is *solely* based on scientific competence, a reasonable expectation is that there will be a relatively larger group of scientists from the North than from the South. This situation may be *suspected* to be caused by a recruitment policy based on the *political loyalty* of the scientists (in favour of the North). Thus, the process may have more legitimacy when recruitment is openly based on a criterion of "political representativeness" rather than "scientific competence", as long as a *minimum* of scientific competence is maintained.

The issue also touches upon a question of *confidence* in "each other's" scientists. Recent disputes between different scientific groups have indicated that this confidence is not at its best. An illustrative case in point is the discussions between Anil Agarwal and Sunita Narain from Center for Science and Environment in India, and the American World Resources Institute. In their report "Global Warming in an Unequal World. A case of environmental colonialism" (1991), the two authors criticize the WRI "Greenhouse index" in sharp wording. The message of the two authors is unmistakable (p.1):

"The report of the World Resources Institute (WRI), a Washington-based private research group, is based less on science and more on politically motivated and mathematical jugglery...
The report is entirely designed to blame developing countries for sharing the responsibility for global warming."

If this controversy is illustrative for the relationship between "North and South scientists" in general, it is important that both groups are equally represented in the process.

In IPCC participation is governed according to a *combination* of the two criteria; geographic representativity within the framework of some basic scientific requirements. The WMO Executive Council has recommended that participants should be "at as high a level as possible and include persons knowledgeable of science, environment and related policy issues..." (IPCC-VI/INF. 2, p.8, 1991). As an indication of preferred level, the country's permanent representative with the WMO is mentioned.

Furthermore, it is stated that

"[t]he IPCC *Bureau* shall reflect balanced geographic representation. IPCC *Working Groups* and any *task force* established by Plenary shall reflect balanced geographic representation with due consideration for scientific and technical requirements."(my italics).

The distinction in wording between the rules applying for the Bureau on the one hand, and the WGs and task forces on the other, may give some support to the reflections made above, concerning political or scientific dominance at different organizational levels. Without pulling it too far, it may be argued that the requirement of *geographical* representativity (following the criteria of "political loyalty"), is weaker with regard to the primarily scientifically dominated WGs, than with regard to the politically dominated Bureau. However, the generally politicized character of the recruitment mechanisms of the IPCC should not be understated. As Lunde points out (p.87): "On the face of it, all participants (about 1000 all in all) in the IPCC process were politically appointed." This follows from the fact that national governments, UNEP and WMO were the main actors responsible for selecting delegates. With regard to WG I (and to some extent WG II) the situation seems however, to have been somewhat different (Lunde, p.88):

"...it seems that the climate science community captured the initiative from the very start. Decisions on who were to write up the different drafts and chapters, and who were to function as peer reviewers, were to a large extent taken by the scientists themselves, in cooperation with a largely depoliticised secretariat under the auspices of WMO in Geneva."

This was not the case with regard to WG III, however, where most participants were officials from various ministries. An "informal" principle of recruitment

may therefore have developed, where the two criteria are used in accordance with the functions of the institution (scientific or political dominance); i.e. organizational levels working in accordance with scientific norms and traditions, recruit their representatives according to the criteria of scientific competence while in the more politically dominated institutions the criterion of geographical representativity has predominance. This point has not been investigated however, so any conclusion on this matter will be premature.

A primary motivation for a geographical recruitment principle has been to secure equal participation between the North and the South. In spite of this, the South has been clearly underrepresented during the initial phases of the process (Lunde, 1991). In order to improve the situation, the earlier mentioned "WG IV" on participation from developing countries was established. It has served its purpose in that it has resulted in an increased participation from these countries, and probably also increased legitimacy.

The aspect of participation is however not only a question of which *objective criteria* that are followed; the *personal qualities* of the participants may also be of significant importance. The scientist's *ability* to capture the initiative (in terms of "tactical" and "diplomatic" skills), has most probably had significant impact on the outcome of the process. This point also counts for the above mentioned scientific linkage between global warming and ozone depletion, which seems to have had some implications for the outcome of the scientific consensus process of the IPCC. The two processes have to some extent recruited the same people. Thus, the scientists participating in the IPCC process also had intimate knowledge of the preceding ozone process, and *used it* instrumentally in order to increase the scope of politically acceptable (scientific) conclusions concerning climate change (see page 12-13).

Agenda

The determination and the ordering of the agenda is another procedural matter with potentially significant impact on process outcome. Three questions are in focus: *Who* decides agenda issues? *Which* issues are on the agenda? And, in which *order* are the issues to be discussed?

The question of *who* has the authority to decide agenda issues, determines the extent to which the participants themselves control the process: Is the agenda determined by scientists, or is it determined by some external (political) body?

First, an agenda determined by a political body may have reduced *legitimacy* compared to a situation where the scientists have determined the agenda themselves, because of the increased danger of politicization (Fløistad, 1990). Second, and more important, the *instrumental potential* of agenda setting is reduced if the control of the agenda is in the hands of an external body. As we will see below, *which* issues and the *order* of the issues to be discussed, are elements of importance to the outcome of the process. If these aspects are decided by the participants themselves, they may be used as *instruments* to increase the possibility of success. If an external body decides these questions however, the instrumental potential is reduced significantly.

Which issues are on the agenda? Or rather; is the agenda "complete"? Some problems may in many respects be easier to solve than others. If *all* relevant issues are included on the agenda, a consequence may be that the discussions become more difficult, more controversial, and with a reduced possibility of success. On the other hand, "contaminated" issues may be dropped altogether in order to prevent a "poisoning" of the rest of the agenda. This implies however a danger of reducing the overall impact of the outcome, in that the "contaminated" issues removed also may be essential to the "strength" of the outcome. In each case, pros and cons of this kind must be evaluated. Here, the important point is that these evaluations *can* be made, and that this aspect therefore holds an *instrumental potential*.

Likewise, the *order* of the agenda items may be important with regard to the outcome of the process. Instead of dropping "contaminated" issues altogether, they may be postponed until later in the proceedings. By discussing and resolving "easy" issues first, prestige and resources have been invested in the process, increasing the *costs of failure*. Furthermore, the resolution of one issue may be *dependent* upon the resolution of another, increasing the possibilities of success if these issues are discussed together as a "package". Or contrary; that the *combination* of issues prevents the resolution of either, decreasing the possibilities of success unless they are treated separately.

The agenda of the IPCC has to a large extent been governed by the parent organizations of the institution, WMO and UNEP. In the governing principles of the IPCC it is stated that: "The IPCC shall concentrate its activities on the tasks allotted to it by the relevant WMO Executive Council and UNEP Governing Council resolutions and decisions." (IPCC-VI/Doc.3, 1991). In addition, important input has come from INC. IPCC is regarded as an institution with an objective of *servicing* the INC negotiations, and their needs are therefore important guidelines as to which issues the IPCC should work with. Formally, however, the agenda of IPCC is decided by the IPCC Plenary, and the delegates of the IPCC have the opportunity to speak their mind concerning agenda proposals. An illustrative case in point is the recent discussions on whether or not to include the issue of social and economic impacts of climate change under the conduct of Working Group III. The issue has to some extent grown to be a "warm potato" within IPCC, because of the controversy connected to the question. The disagreement concerns the *mandate* of the IPCC; whether social and economic impacts of climate change are IPCC tasks, or whether the issue should be dealt with by INC. The arguments raised *against* this proposal, were primarily based on the strong political dimension of the issue, and the danger of "trespassing" on the original mandate given to the IPCC. The issue was discussed at the fourth session of Working Group III, August 1991 (Session Report, p.28):

"In their view [the critics of the proposal], neither Working Group III nor IPCC should take up socioeconomic analysis of response options, a subject matter with evident and far-reaching political connotations the consideration of which by the IPCC amounts to preempt the agreements eventually reached within the INC."

Others, however, felt that socioeconomic studies were essential in the consideration of alternative response options, and that an ad hoc group of experts should meet in order to produce a "state-of the art" report on this matter.

Due to lack of consensus on this issue, both in IPCC and in INC, a decision concerning the matter was postponed until later sessions. The issue was thus dealt with in the sixth session of the IPCC in October 1991, without any conclusion, and will be discussed again in the seventh session coming up in February 1992.

A discussion concerning the *details* of the agenda of IPCC regarding the instrumental utility of this factor will be premature. The documentation gives however a clear impression that the *general mandate* is given by WMO, UNEP, the General Assembly and INC in combination, while the details of each WG's agenda to a larger extent have been based on *scientific* criteria, and has thus been the responsibility of the participants. This could indicate that the potential for using the agenda instrumentally is maintained. It should however be borne in mind that the issue area as a whole is characterized by an unusual degree of *uncertainty*. This may have resulted in a more "pragmatic" development of the agenda than would otherwise be the case, both because the *range of issues* has been unknown to the actors at the beginning of the process, and because the *political implications* of the issues have been unknown.

Arena

Where do the discussions take place? This question may be decisive for the *possibilities* of reaching a consensus on the subject in question. Likewise, in scientific processes of the IPCC type, the answer to the question may also be decisive for the *legitimacy* of the outcome.

First, discussions may take place at different *organizational levels*. This aspect therefore touches upon the division of labour mentioned above. If issues of a largely scientific character are decided in politically dominated organizational bodies, the decision may be regarded illegitimate.

Second, discussions may take place either within or outside the *formal* framework of the institution. In some cases a transfer of the discussions from a formal to an informal arena may be necessary in order to reach an agreement because it removes the barriers to success presented by the formal structures of the institution. By transferring discussions from a formal to an informal arena, open and sincere discussions are facilitated. One of the functions of informal discussions, is to reduce the openness towards the external audience, and thus reduce participants' commitments. Furthermore, it may be a constructive means in order to loosen "frozen" positions. This indicates, however, that for this to be a useful instrument, the situation must include some element of *negotiation*.

In order to measure this instrument's impact in IPCC, it is necessary to have access to the more unofficial parts of the process. This has therefore not yet been the object of detailed analysis. Due to its "political" character, it may however be assumed that the instrument has had greatest impact in IPCC bodies with political dominance (primarily the Plenary and the Bureau).

"Process Openness"

The last factor that will be focused here concerns the institution's relations to the external "audience" of the process, with special regard to the different *lobbying groups* that in some way or another are affected by greenhouse politics.

The inclusion of "external" or "non-epistemic" groups in a scientific process, may be a two-edged sword. On the one hand, inclusion may increase the *representativity*, and thus the legitimacy, of the process. On the other hand, inclusion may provide grounds for suspicion of undue external influence, and thus *reduce* the legitimacy of the process. In our case, the *character* of the problem may imply that the process should be kept as *closed* as possible, in order to maintain sufficient legitimacy in all camps.

The problem of global warming may be characterized as "malign" both with regard to the scientific and the political problem structure (Lunde, 1991). *Scientific malignancy* is caused by scientific "*immaturity*", in terms of short scientific traditions on the field, scientific *heterogeneity*, in terms of involving several scientific disciplines, and an unusually high level of scientific *uncertainty*. This situation leaves the process more vulnerable to attempts at manipulation and illegitimate political influence. At the same time, *incentives* to try to manipulate the process are present, due to the *political* problem structure of the issue area. The essence of the political problem structure of global warming has been formulated by Lunde (p.33, 1991):

"Global warming differs from most other environmental problems in that the emissions of GHG are closely linked to fundamental economic activities, and in that most of them cannot be technically scrubbed away in the manner that is possible with e.g. sulphur dioxide, one of the main culprits of acid rain.

Thus, political action to combat global warming threatens to touch strongly vested interests in most economic sectors all over the world."

Thus, the situation is characterized by a scientific process vulnerable to external, "non-epistemic" pressure, and political surroundings with strong incentives to exert such pressure.

As we have seen, the IPCC process has included both scientific and political interests, in that the political segment was integrated in the process. The process included not only national governments however, but also the most dedicated lobbying interests; primarily the *fossil fuel industry* and several *environmental NGOs*. As we have indicated above, governmental attempts at influencing the scientific conclusions were largely unsuccessful (page 15-16). Although *influence* is difficult to measure, it seems as if similar attempts from lobbying groups have faced the same destiny (Lunde, 1991).

The two most important lobbying groups tried to pull the conclusions in opposite directions; the fossil fuel industry invested a great deal of energy in making the scientists spell out the *uncertainties* of global warming science more clearly than had been done, while the environmental NGOs wanted them to

emphasize stronger the potential *feedback mechanisms* that might *increase* the global warming effect. By looking at the IPCC conclusions in relation to these two interests, an impression of influence may be established; if the IPCC conclusions are clearly *biased* in favour of one of them it *may* indicate that the scientists have been influenced by external pressure.

The IPCC *has* been criticized for being biased in their conclusions, but the accusations have come from *both sides*. The fossil fuel lobby has accused the IPCC scientists of drawing conclusions on an unsound basis, while the environmentalist lobby has accused them of compliance to the interests of national governments in watering down the final conclusions in order to decrease the urgency of implementing efforts to combat global warming. This may indicate that the IPCC scientists have not been influenced by any of them, but have drawn their conclusions on independent basis.

Finally, a distinction between the *methods of influence* available to the two groups should be made. The fossil fuel industry seems to have had access deeper into the "heart of the process" than the environmentalist lobby. In many cases there is no clear distinction between government interests and the interests of the fossil fuel industry. Thus, a representative of e.g. the energy ministry may in fact also represent, and function as a representative of, the fossil fuel industry. This fact reduces the possibilities of protecting the process against undue influence through *institutional* means, and places a greater responsibility on the scientists in their conduct of the process. With regard to the environmentalists however, indications may be found that their influence has been reduced by excluding them from potential channels of influence. It has for instance been suggested that they did not receive the necessary information in time to prepare inputs to the process (Lunde, 1991).

All in all, this strengthens the impression that the organizational levels responsible for the production of scientific knowledge have been well shielded from political pressure, and that this has contributed to increase the possibilities of success.

ACTOR BEHAVIOUR

The organizational and institutional structure of the process has important impact on *actor behaviour*: A significant determinant to the outcome of the process may be the *actor incentives* immanent in the structural framework. *How* the structural framework affects actor behaviour is therefore an important question both with regard to exploring the *mechanisms* of scientific processes, and with regard to exploring the *instrumental potential* of this relationship.

This approach implies an assumption that actor behaviour holds *independent explanatory power*; the *skill* of the actors involved may determine the extent to which the effort at developing scientific consensus succeeds, as long as the skilled actors participating are given a sufficiently free scope through the organizational and institutional framework within which they act. It may be argued that this aspect concerns the extent to which the organizational and

institutional setting of the process is *capable* of *utilizing* the potential lying in the skill of participating actors.

At the most general level, we may distinguish between two ways in which structural framework affects actor behaviour: First, the framework is of significant importance with respect to actor behaviour in general: To what extent does the framework give incentives to engage in "problem-solving" and "conflict resolution"? Are the actors "rewarded" by behaving in a "problem-solving" manner? Second, and maybe more important, the structural framework may be of significant importance with respect to the scope for performing different forms of *leadership*. In our study both aspects will be touched upon. Here however, the performance of leadership will be emphasized.

The study of leadership has primarily taken place within a political framework; in order to highlight the development of *political* consensus. In this respect the two approaches to actor behaviour outlined above are representative (Haas, 1990, Young, 1991). In order to study the phenomenon of leadership within the context of a *scientific* process, the characteristic features of scientific processes will have to be acknowledged. Several features of scientific processes in general, and the IPCC process in particular will have implications for a study of leadership.

We will concentrate our discussion on two questions: First, *what* is "scientific leadership" (in contrast to the "political leadership" of political processes)? The question will be studied by focusing on the *functions* this role may imply. We do not assume, however, that leadership in scientific processes only will take the character of "*scientific*" leadership. As emphasized above, a characteristic feature of the IPCC process is the integration between the scientific and the political segment. We assume that this integration also will have implications for the performance of leadership in the process, and that examples of more "traditional" forms of *political* leadership will be found. An investigation of the functions of scientific leaders will therefore also focus on the relationship between scientific and political leaders in scientific processes. Second, does leadership performance in scientific processes *serve* the process as a whole, or should it be seen as an attempt to "*capture*" the process only to the benefit of the few? The question draws the attention to who's interests the leaders serve, and may help us to distinguish between "*epistemic communities*" as defined by Haas, and "*winning coalitions*" in the spirit of more "traditional" negotiation theory.

It should be noted that the study of actor behaviour in general and leadership in particular is a complicated one. It requires intimate knowledge of the process. This should therefore be regarded as an *attempt* at *exploring* the issue, in order to find some indications of the mechanisms at work.

"Scientific" versus "Political" Leadership

Underdal's definition of leadership presented above (fn. 2, p.7), emphasizes first, that leadership reflects an asymmetrical relationship of influence, and second, that it takes the character of one actor guiding and directing the behaviour of

others. Thus, influence is achieved through the actors' *capabilities* to guide others. In the context of multilateral negotiations leadership often takes the form of *entrepreneurial* leadership, with its main function in *facilitating* the development of integrative solutions without resorting to coercive means. Simply put, this implies that the primary task of the entrepreneur is to guide the other actors in the right direction in order to realize the integrative potential that actually is there already. Thus, leadership of this kind in a political process may be said to take the form of a "facilitator"; the leader helps the actors to overcome the barriers to success presented by e.g. complexity. Thus, an important function of the entrepreneur may be to dovetail the interests of the participating actors in order to develop solutions acceptable to all.

In the development of *scientific consensus*, leadership may also take the form of a "facilitator" in a situation characterized by complexity, but usually not in order to dovetail *interests*. Primarily, the participants of a scientific process are disagreeing on questions of *realities*; what are the cause - effect relationships characterizing particular issue areas and what are the implications? According to the norms and traditions guiding the production of ("hard") science, these disagreements may not be *negotiated* (we will return to this question below). Leadership in this context may, however, serve an important function in *facilitating communication* both between scientists, and between scientists and politicians.

By *facilitating communication* between *scientists* a leader may secure, to the extent possible, that the scientists actually are saying what the others believe them to be saying. The most severe communication problem between scientists, concerns their attitude to *uncertainty*. Scientists may agree on the main cause-effect relationships, but still disagree on the *implications* of this knowledge due to different attitudes to uncertainty; how much uncertainty that is acceptable in order to draw conclusions. An important function of a "scientific leader" in this respect, may be to reveal where there are real disagreements concerning cause and effect relationships, and where disagreements are superficial, "only" caused by more or less severe communication problems. The more malign, in terms of "immaturity" and "heterogeneity" the scientific problem structure is, the more important this form of leadership may be assumed to be.

Furthermore, a leader may serve an important function by *facilitating a convergence* between the different perceptions of uncertainty. Thus, Lunde indicates that examples may be found of leadership performances that have served the function of "forging consensus on controversial issues, and in doing so possibly served to *change perceptions of uncertainty* in the scientific community at large." (Lunde, 1991, p.148, my italics).

Communication problems do not only occur between scientists. An even more severe communication problem characterizes the relationship between scientists and lay-people, primarily *politicians* and *policy-makers* to whom time is a limited resource. Scientific information has to be communicated in a manner understandable to non-experts, and in a manner that does not require too much time-consuming studies. At the same time, the scientific "soundness" and credibility must be maintained. In this task, a leader may serve an important function. A person familiar with *both scientific and political norms* and

traditions may serve the role of "*intermediary*" between the two segments, improving their understanding of each other, and increasing the mutual benefit of the relationship.

As emphasized above, however, environmental issues confronting the international community, as the problems of global warming and ozone depletion, place science and scientists in an unfamiliar situation. Scientific advice is required at an area dominated by uncertainty, resulting in "soft" or "negotiated" science. In the *negotiations* of science, to a larger extent conducted by *political* actors, we may therefore find examples of actors performing the more "traditional" *political leadership* as we know it from political processes, facilitating the internal "communication" of politicians and policy-makers.

We will therefore most probably find *different forms* of leadership throughout the process, requiring different qualities or capabilities of the performer. Furthermore, one kind of leadership may be constructive in some situations, while destructive or without impact in other situations. This indicates that the study of leadership should be closely related to the different phases of the consensus-building process mentioned above.

Constructive Leadership or Destructive "Winning Coalitions"?

Our discussion so far has indicated that leadership serves the "collective" interests of the undertaking as a whole; instrumental in bringing about a scientific consensus and in communicating scientific advice to the political community. This interpretation of leadership may however be false. Leadership in a scientific process may be perceived as an attempt at exercising *illegitimate* influence in the interest of some particular group. Thus, leadership performed either by an individual or a group, may be perceived as an effort at "*capturing*" the consensus building process, and *imposing* a "consensus" on the remaining participants. Scientific consensus achieved in this manner, will most probably prove *dysfunctional* in order to develop a political consensus on the issue in question.

Our discussion concerning epistemic communities illustrates this distinction. As emphasized above, it is somewhat unclear how and why these groups are established in the first place. At page 10 we asked whether they should be regarded as the result of a deliberate effort at *developing* scientific consensus on a particular issue area, or whether the effort may be regarded as an example of "*networking*"; building a network, or a *coalition*, around an already existing common interest between the actors of the group. In the latter case, the group establishment will have more in common with a winning coalition than with an epistemic community as defined by Haas, and the leadership performed by such a group may prove to be destructive rather than constructive with regard to increasing the possibilities of success. Thus, in order to evaluate the impact of leadership performance, the nature of the leadership, the motivation and the interests of the group performing the leadership should be analyzed with critical eyes.

SUMMARY

This paper is a project outline to a more in-depth study of the IPCC process. In addition to sketching the design of the study, the paper has given some indications of the tendencies and relationships characteristic of the IPCC process. These indications are not meant to be regarded as final conclusions, and are not based on detailed empirical analysis of the existing material. The observed tendencies do, however, give support to our implicit assumption that the approach we have chosen for the study can contribute to new insight.

The primary focus of the study is the relationship between organizational and institutional setting, and the outcome of the process. More specifically, we assume that the formal setting of the process both directly and indirectly affects the possibility of success. Furthermore, we regard parts of the formal setting, the internal organizational setting and the institutional framework, as *social constructions*, and that they, as such, (at least in theory) may be deliberately changed. This implies that these factors hold an instrumental potential: With knowledge of the mechanisms at work in the process, they may to some extent be utilized by the participants in order to increase the possibilities of success. Finally, we have put emphasis to the relationship between the formal setting of the process and actor behaviour; the impact of the formal setting on actor behaviour in general, and on leadership performance in particular. Focus will primarily be directed towards the functions that a leader may serve, and the nature of the leadership.

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