

A Framework for Analyzing Interplay between International Institutions

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Abstract

The phenomenon of institutional interplay between institutions for international cooperation in different issue areas, such as trade, environment or human rights, has become a growing concern for research on the effectiveness of international institutions. Over the past decade, the number of international agreements has been constantly rising. The increasing density of institutional arrangements has moved interactions between international institutions and their impact on effectiveness into the focus of analysis. This paper seeks to develop a framework for the analysis of institutional interplay. It applies the Institutional Analysis and Development (IAD) framework to the situation of interplay between international institutions, drawing on recent results in interplay research. The first section provides an overview over the phenomenon of institutional interplay and its consequences. Section two introduces the IAD framework and applies it to the situation of interplay. Sections three to five discuss how functional and political linkages between international agreements and the attributes of actors involved affect institutional interplay.

1. Interplay between International Institutions and its Consequences

The phenomenon of institutional interplay has become a growing concern for research on the effectiveness of international institutions. Over the past decade, the number of international agreements has been constantly rising, with several major new agreements being adopted every year. The increasing density of institutional arrangements has moved interactions between international agreements into the focus of analysis. Some authors even worry that “treaty congestion” may become one of the major problems of international environmental governance (Brown Weiss 1993: 679). The success of an institution depends not only on its own performance, but also on its interactions with other arrangements that have overlapping jurisdictions (Young et al. 1999: 49). Interaction can reinforce the effectiveness of the institutions involved or it can lead to disruptions in the achievement of internationally agreed objectives, diminishing or even offsetting gains from cooperation. In both cases, inter-institutional coordination is necessary; to consolidate rules and reduce conflict, or to exploit synergies in implementation.

For a long time, the analysis of international institutions has assumed that an institution exists in isolation from other institutions, and consequently no significant interferences exist (see for example Keohane 1984; Rittberger 1993). This simplification is useful when the purpose of analysis is to identify the endogenous attributes of an institution and to assess the match between institutional attributes and the characteristics of the particular problems they are intended to regulate. With the focus of analysis shifting from the formation and evolution of international regimes towards the analysis of their consequences and effectiveness, however, this assumption is no longer useful and new analytical approaches are needed that can account for the impact of institutional interaction on effectiveness. Recently, a number of research projects have started to conceptualize interplay between international institutions and to develop tools for systematic analysis (Oberthür and Gehring 2006; Stokke, 2001; Young et al 1999; Young 2002; Zelli 2005; Abbott and Snidal 2006). These projects have made significant contributions in developing typologies and conceptualizing research on interplay. Nevertheless, a comprehensive framework for the analysis of the causes and determinants of institutional interplay is yet to be developed. This paper undertakes a first step towards the development of such a framework. It applies the

Institutional Analysis and Development framework to the situation of interplay between international institutions, drawing on recent results in interplay research.

International Institutions

Generally defined, *Institutions* are systems of established and prevalent social rules that structure social interactions (Hodgeson 2006). *International institutions* are then sets of rules that govern the behavior of and interactions among international actors. They “stipulate ways in which states should cooperate and compete” (Simmons and Martin 2002: 194, citing Mearsheimer 1994/95). They enable and constrain international economic or political transactions and increase the predictability of the behavior of states and other actors who engage in international activities, such as transnational corporations or international NGOs.

This definition of an international institution differs from the often used concept of international *international regimes* as “implicit or explicit norms, rules, and decision-making procedures around which actors’ expectations converge in a given area of international relations” (Krasner 1983 /ft “: 2”). This broad definition is useful for the study of international regimes as issue-specific entities of international governance, but it has been subject to substantial criticism because of difficulties to distinguish between the four components of regimes (principles, norms, rules and decision-making procedures), and for its vagueness regarding the delimitation of regimes against other forms of international cooperation (Levy et al. 1995). The complexity of the definition makes it difficult to distinguish regimes on the one hand, and institutions and organizations on the other. In fact the analysis of regimes more often than not includes both aspects; rules as well as organizational structures for implementation, monitoring and control.

For the analysis of institutional interplay it is preferable to use definition of institutions in the narrow sense, because it allows clearly separating international institutions as sets of rules from organizational structures established for their implementation. “Whereas institutions are sets of rules of the game or codes of conduct defining social practices, organizations are material entities possessing offices, personnel, budgets, equipment, [...] and legal personality” (Young 1996 /ft “: 3-4”). Regimes thus comprise the rules, the structures established for their implementation, and actors within these structures who actively engage in supervising and monitoring implementation. In contrast to institutions who are not actors in their own right, organizations can be considered as actors in social practices, whose behavior is determined by

institutions.¹ Furthermore, the narrow definition clearly delineates institutions from behavioral outcomes. “Regularized patterns of behavior – frequently observed in international relations for reasons that have nothing to do with rules – are excluded” (Simmons and Martin 2002 /ft “: 194”). Regularized patterns of behavior may, nevertheless, be the consequence of tacit rules and understandings that are not laid out in formal treaties or other constitutional documents. Informal or implicit rules exist in international relations just as they do on any other level of social interaction. If a regularized pattern of behavior cannot be associated to formal rules, it may or may not be the consequence of informal rules and understandings. An observable pattern of behavior does not constitute an institution by itself; the rule, belief, habit or common understanding on which it is based does. International institutions defined in this way are thus one of the central elements of international regimes, but in contrast to the latter they do not include organizational structures nor any form of behavioral consequence.

Institutional Interplay

Institutional interplay, in its broadest sense, refers to the relationship of an institution to and interactions with one or more other institutions. In this sense, it is simply a consequence of the fact that institutions do not exist in isolation, but frequently overlap and influence each other in their operation. Interplay involves interactions occurring between institutional arrangements operating at different levels of social organization (vertical interplay), and between institutions at the same societal level (horizontal interplay) (Young 2002). The focus here is on horizontal interplay between international institutions. Generally speaking, the extent and significance of horizontal interplay is a function of the density of institutional arrangements operative in a society. As the number of distinct institutions located in a given social space rises, opportunities for interactions between and among individual arrangements increase exponentially (Young 2002: 111). Any system of rules interacts with a complex institutional environment consisting of

¹ Note that considering organizations as actors in social practices is a means of abstraction, not a definition. Organizations inevitably contain rules that structure interaction of actors within them. Organizations can also be interpreted as institutions with specific types of rules, such as criteria to establish their boundaries and to distinguish their members from nonmembers, or chains of command delineating responsibilities (Hodgeson 2006). The term ‘Biodiversity Regime,’ for example includes the rules that are laid out in the Convention on Biological Diversity (CBD) and subsequent decisions, as well as its organizational structures, such as the Convention’s Secretariat, its decision-making bodies, and mechanisms for implementation. For the purpose of analyzing institutional interaction, some of these are more adequately viewed as actors (e.g. the Convention Secretariat), whereas others are better understood as part of the rules that structure international interactions (e.g. the Rules of Procedure of the CBD’s Conference of the Parties).

rules, norms, principles and social practices at various levels of social organization. What can in fact be observed are the consequences of connected institutional complexes, where the effectiveness of the institution in focus is amplified or conditioned by the institutional context in which it is embedded (Underdal 2004: 33). So far, research on institutional interplay has cumulated around three issues: (1) the causes of interplay; (2) the types of interplay and the factors that determine which type of interplay emerges in a given context; and (3) the consequences of interplay for the effectiveness of institutions, including the challenge to clearly distinguish positive (synergistic) from negative (disruptive) effects (King 1997: 27).

In order to conceptualize and analyze different types of interplay scholars have developed a number of taxonomies of interplay and institutional relationships. Oran Young differentiates between international institutions that are (1) *embedded* in overarching principles, such as state sovereignty or the laws of treaty making; (2) *nested* into broader institutional frameworks that deal with the same general issue area, but are less detailed in terms of their application to specific problem; (3) *clustered* with arrangements of other issue areas to form a common, more generic framework that enhances the fit of independent institutions when problems have similar, though unrelated, structures; and (4) *overlapping* with arrangements that are created for different purposes but intersecting “on a de facto basis, producing substantial impacts on each other in the process.” (Young 1996: 3).

Abbott and Snidal compare the concept of nesting to the ‘Type I Governance’ category developed by Hooge and Marks. “Type I multi-level governance describes a system of hierarchically related general-purpose jurisdictions at a limited number of levels. (Hooghe and Marks 2003: 236). Institutions at the international level are not strictly nested across jurisdictional levels; however, there are often hierarchical relationships between institutional rules. An issue in international governance can be subordinated to a broader institution or some overarching set of rules.² Nesting between international institutions is often incomplete, involving only a partial hierarchy between rules on particular issues, with other rules of the two regimes neither in common nor in conflict (Abbott and Snidal 2006: 4).

According to Abbott and Snidal, institutional *overlap* is the consequence of growing institutional density, when rules in different issue areas contradict each other and the boundaries between

² Nesting according to Abbott and Snidal thus includes Young’s category of embeddedness

issues cannot be clearly demarcated (Abbott and Snidal 2006: 5, citing Raustiala and Victor 2004). In contrast to hierarchical nesting where such rule contradictions could be removed through top-down decision making, conflict between overlapping institutions must be solved through alternative ways. Abbott and Snidal propose a third category, *parallelism*, where governance efforts work in parallel, sometimes cooperatively and sometimes competitively, to achieve roughly the same ends in the same issue area.” Parallelism occurs within the same issue area, but there is no hierarchical structure relating different arrangements (Abbott and Snidal 2006: 5).

Interplay and Effectiveness

A number of other approaches differentiates types of institutional interplay according to its impact on the performance of the involved institutions in bringing about desired changes in the state of some target variable, such as emissions reduction or biodiversity conservation (Oberthür and Gehring 2006; Stokke 2000; Stokke 2001; Young et al. 1999). These approaches start from the notion that the focus on regime conflicts has prevented the development of a general framework that would capture the positive and negative consequences of interplay and allow a systematic analysis of its determinants. These authors qualify interaction as disruptive, if institutions and policy instruments designed for one objective undermine the effectiveness of those created for another objective within the same or a different policy field; it is synergistic, if one field supports the objectives of another (Oberthür and Gehring 2006).

Any change in the state of an institution’s target variable must be preceded by a change in the behavior of relevant actor groups. Analysts of regime effectiveness therefore draw a distinction between effects on human behavior (outcome level) and the ultimate effect on the state of an institution’s target variable (impact level) (Underdal 2004: 34). These two levels describe the *consequences* of international regimes; they are thus differentiated from the decision-making processes through which the rules and regulations of a regime are developed (output level). This leads to a differentiation of three levels of institutional interaction (Figure 1): interaction of rules and rule-making processes (output level); interaction of actor-group behavior (outcome level); and interaction of target variables (impact level) (Oberthür and Gehring 2006: 35-43).

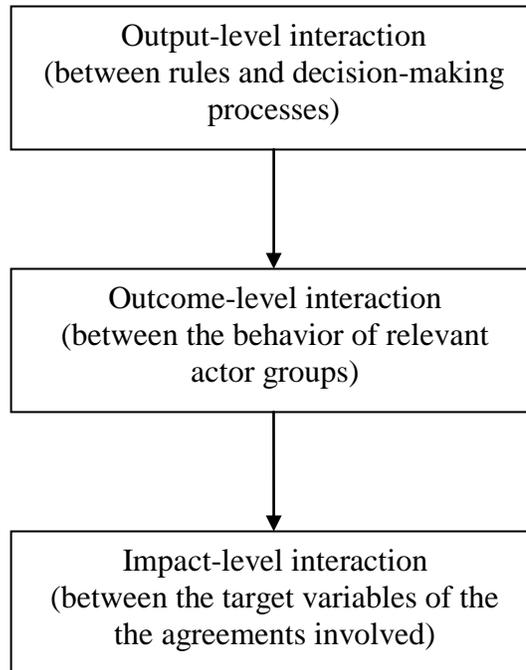


Figure 1 Different levels of institutional interaction (Oberthür and Gehring 2006)

The effect of institutional interaction can originate on any of these three levels. Disruption may be the consequence of incompatibilities among rules in the sense that the behavior prescribed by one institution is prohibited by another, making it impossible to achieve compliance with both sets of rules at the same time.

Second, influence on the state of target variables can arise through interactions at the behavioral level, if one institution triggers behavioral effects within its own domain that become relevant for another (Oberthür and Gehring 2006). All international institutions are designed to change the behavior of relevant actor groups in ways that are deemed necessary to achieve the institutions' objectives. Nevertheless, many of the changes in behavior aimed at by one institution have the potential to undermine the objectives of another. In these cases the change in behavior triggered by one institution is neither explicitly prohibited nor promoted by the other, but it does affect its target variable and its performance.

Third, interaction can also be due to direct influences between the institutions' target variables. In this case, the targets themselves are interdependent, leading to side effects and externalities. A desired increase in the target of A is associated with an undesired increase in B. Trade

liberalization, for example, leads to a (desired) increase in the volume of international trade in goods, while increases in transport lead to an (undesired) increase in the emission of greenhouse gases. Such side effects are rooted in the biogeophysical interdependence of the targets rather than in incentives for adverse behavior.

2. The Institutional Analysis and Development Framework

The Institutional Analysis and development Framework (IAD) has been developed by scholars associated to the Workshop in Political Theory and Public Policy Analysis as a general tool for the analysis of any kind of situation in which human beings repeatedly interact. It provides the most general set of variables that can be used to analyze relevant settings in an attempt to identify the universal elements that any relevant explanation needs to include. Rather than serving as a theory in its own right, the framework seeks to provide a ‘metatheoretical language’ that can be used to select and compare the theories needed to explore the aspects of rules and norms that guide human interaction, and their choice of strategies and behavior (Ostrom 1990 Ostrom et al. 1994; Ostrom 2005). The IAD framework has been applied in a broad number of settings, many of them concerning interactions in the management of local common pool resources, nevertheless it can be applied to study the rules and norms that guide human-physical world relationships in almost any setting. One can think of international institutions as rule structures that enable cooperation and collective action on problems that are of a transboundary or global nature (Keohane and Ostrom 1995). Many of today’s most urgent environmental problems have globally distributed effects, such as climate change, loss of biodiversity, or international fisheries management. Other institutions provide transboundary or global public goods in that they further the realization of gains from cooperation on issues such as free trade or the harmonization of legal systems to facilitate international transactions.

The IAD framework directs the attention of the analyst towards specific sets of variables that can serve to explain the emergence of particular patterns of interaction. At the core of the framework is the *action arena* in which participants interact with an action situation that is determined by exogenous variables, to produce outcomes that in turn affect the participants and the action situation (Ostrom 2005). Action arenas exist on any level of interaction, including household, community, national and international. Interplay between international institutions can generally be conceptualized as interactions between action arenas on the international level that produce

interdependent outcomes. Participants take decisions that are interdependent in the sense that the outcome in one arena may alter the outcome under another, or the way participants of another arena evaluate their own outcomes.

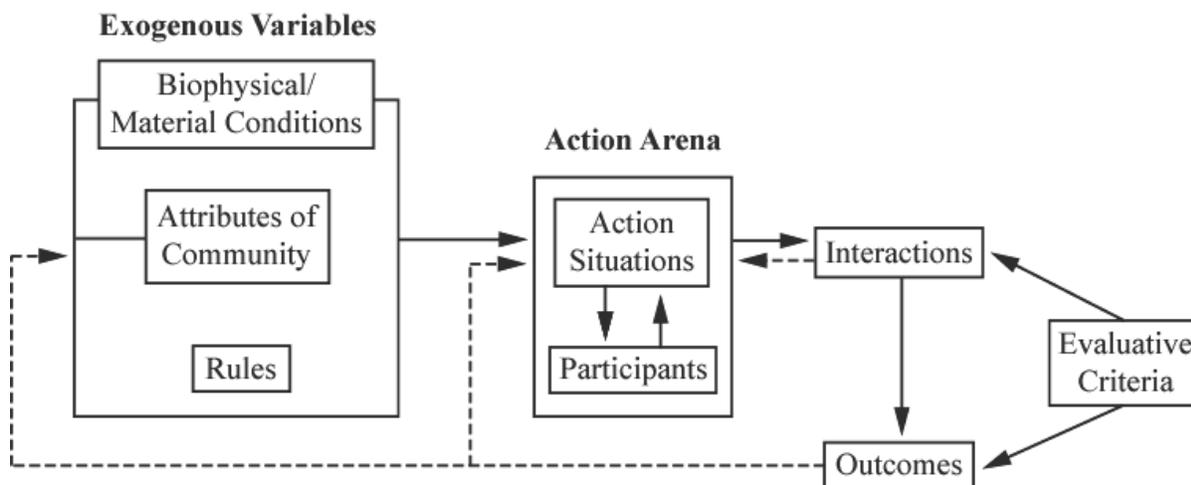


Figure 2: the Institutional Analysis and Development Framework (IAD) (Ostrom 2005)

Formal international institutions come into being through some form of negotiated international agreement between states, such as international conventions or treaties, or decisions adopted by their decision-making bodies. These documents define common objectives agreed to by the negotiating states and behavioral prescriptions and restrictions that are deemed necessary for their achievement. International forums for the negotiation of new agreements are often provided by existing international organizations, such as the UN and its specialized agencies, the World Trade Organization (WTO) or other bodies of international policy making. Decision making in these forums is itself subject to a set of rules. Some of these rules apply to all processes of international decision-making, such as the rules of international treaty making.³ Other rules are specific to the organization that serves as negotiation form. These include rules for participation of non-parties and non-state actors and procedures for conflict resolution and arbitration. Beyond that, actors in different international forums often share distinct ideas and normative orientations. In UN forums, negotiations are to a great extent influenced by the idea of international justice and equity, whereas under the WTO they are more driven by the objective of achieving welfare

³ The overarching principles and rules of international decision making are contained in the Vienna Convention on the Law of Treaties adopted 22 May 1969. United Nations, *Treaty Series*, vol. 1155, p.331.

gains through economic liberalization; actors at UNEP have in common that they attribute a high priority to sustainable management of natural resources and environmental conservation (see: Rosendal 1999).

These overarching rules and norms define the action situation in international politics and structure the process of international rule making. The outcomes of negotiations are themselves sets of rules that forbid, oblige, encourage or restrict future activities by the participating actors. They include *constitutional choices* that are laid out in international treaties, charters and interpretative decisions; *collective choices* in the form of policy prescriptions, such as work programs or rules and schedules for implementation; and *operational choices* regarding the management and supervision of international funds, programs, and general administrative tasks carried out by convention secretariats (Gibson et al. 2000: 234-235).

The principle difference between international institutions and those on other levels of interaction is the absence of a superior authority to enforce and monitor rules and the completion of contracts. This has led to the view that the international system is mostly anarchic and that cooperation will only be successful to the extent that contracts and rules are self-enforcing (Walz 1979). The possibility of breach of promise can impede cooperation even when cooperation would leave all better off. Nevertheless, states do realize common goals through tacit cooperation, formal bilateral and multilateral negotiation, and the creation of international regimes. While there have been many more instances of successful international cooperation than expected by the pessimistic view of international anarchy, there are also many cases in which cooperation broke down unexpectedly or failed to emerge in the first place. The central research efforts in this area have investigated the circumstances that favor the emergence of institutions for international cooperation, the strategies that states can adopt to foster the emergence of cooperation, and the factors that determine the robustness and stability of institutions for international cooperation (Oye 1986).

The IAD Framework and Interplay between International Institutions

Oran Young and other scholars of the Institutional Dimensions of Global Environmental Change Project (IDGEC) have developed a classification of linkages that can give rise to institutional interplay. They differentiate linkages between institutions that cut across levels of social organization (vertical linkages) from those among institutional arrangements operating at the

same level (horizontal linkages). On a second dimension, linkages are differentiated into *functional linkages*, where the operation of one institution directly influences the effectiveness of another through some substantive connection among the activities involved; and *political linkages*, which are subject to deliberate manipulation by actors concerned with particular problems. Functional linkages occur when the substantive problems that two or more institutions address are linked in biogeophysical or socioeconomic terms. Political linkages or the “politics of institutional design and management,” come into play when actors forge linkages between issues and institutions intentionally in the interests of pursuing individual or collective goals (Young et al 1999: 60-65; Young 2002).

	<i>Biogeophysical/socioeconomic inter-dependence (Functional Linkages)</i>	<i>Politics of Institutional Design and Management (Political Linkages)</i>
Horizontal	UN Conventions on Climate Change and Biodiversity Conservation	Joint funding mechanisms (e.g. Global Environment Facility)
Vertical	CBD – EU agro-environmental policies	Global forest regime - regional forest commissions

Table 1 Types of Institutional Interplay (based on: Young et al. 1999 and Young 2002)

Young et al. note that one of the important research challenges is the development of the conceptual links between the *natural* functional linkages and *designed* political linkages on the one hand, and between these linkages and the *types and consequences* of interplay that can be observed, on the other. “The existence of functional linkages may constitute a sufficient reason for forging political linkages, but their occurrence does not constitute a necessary condition for doing so. Actors may decide to link institutions for reasons of managerial efficiency that are not linked in functional terms.” (Young et al. 1999: 64-65).

The IAD framework draws attention to the role of resource attributes and the attributes of resource users. Resource attributes are at the basis of the biogeophysical interdependence that gives rise to functional interplay. The attributes of resource users can explain the behavior of actors in the design of international institutions and in efforts to manage interplay between existing institutions. Interplay is essentially a phenomenon of actor behavior; of those actors whose actions are relevant for realizing desired changes in an institutions target variable

(outcome and impact level performance), as well as the interests, perceptions and capabilities of those actors involved in the process of designing institutions through conscious choices about institutional arrangements (output level).

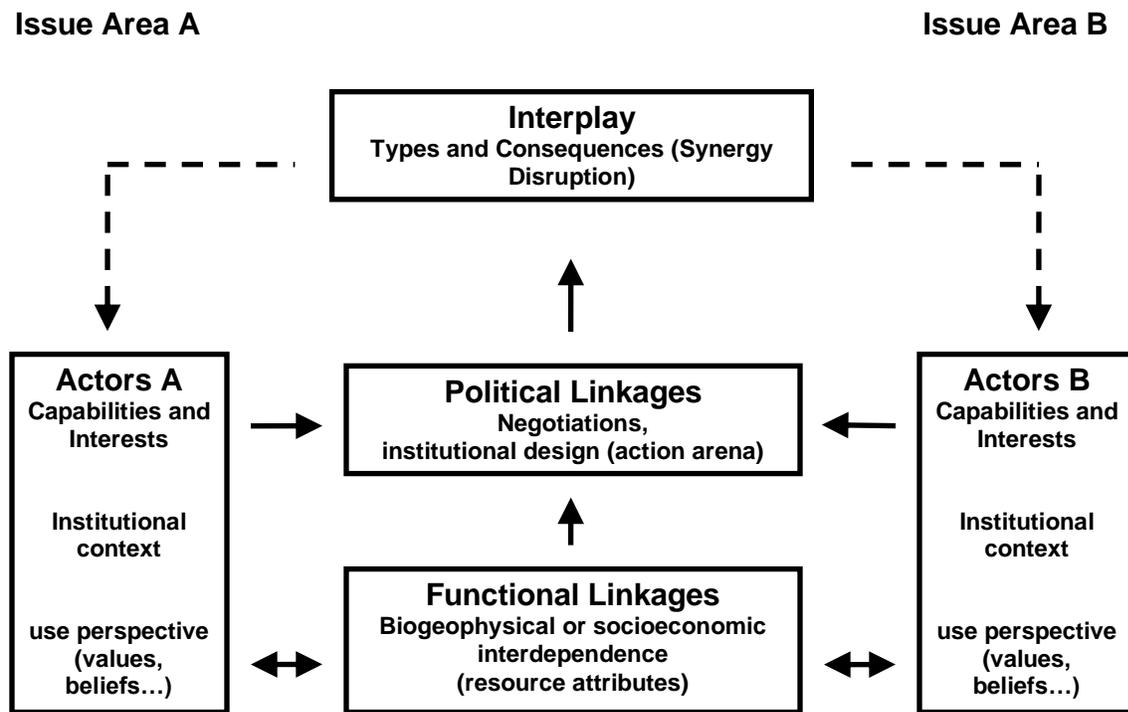


Figure 3 Analytical Framework on Interplay between international institutions in different issue areas (compiled by the author)

Actor attributes influence institutional interplay in two different ways. One of these links describes the interaction of actor groups with the resource or resource system at stake and the effect of their behavior on the target variables of international agreements; the second concerns the interests and negotiation capacities of those actors that determine the position taken by states and non-state actors during international negotiations. The first link, described as resource perspective, is located at the level of functional linkages. It captures interdependences that arise out of the attributes of the resources, such as exclusion problems, rivalry, multiple uses and many others. The second link, actors' interests and capacities, is located at the level of political linkages. It captures the interests of those actors who possess the necessary channels and action resources to influence political processes.

The scope, as well as the substantive content of international agreements, is the result of sometimes long and arduous processes of balancing interests through the addition and subtraction of issues to craft package deals that are acceptable for all participating actors (Young 2002, citing Sebenius 1983). Such linkages, which are created only for the sake of finding agreeable compromise, give rise to interplay between institutions far beyond the functional linkages underlying the problems addressed. In other cases the subtraction of issues, the deliberate exclusion of a part of the problem, leads to incomplete institutional arrangements in the sense that some elements the problem structure are outside of an agreement's jurisdictional scope.

International institutions on functionally linked issues are frequently negotiated in different arenas leading to different agreements. This leads to the question to which extent we must assume international negotiations to evolve independently of each other. As Oberthür and Gehring (Oberthür and Gehring 2006) note, negotiation analysis has shown that actors will adjust their preferences according to the delimitation of issue areas. Different sets of issues to be negotiated will lead to different constellations of interests (Sebenius 1983; Sebenius 1992). Interplay analysis must account for the possibility that identical groups of states negotiating agreements in different issue areas may sign agreements that have overlapping or to some extent even antagonistic objectives. Furthermore, decisions in different processes are taken by different individuals. A negotiator in one issue area may not be fully aware of the decisions taken in other processes nor their potential impacts on the effectiveness of the rules and principles they are elaborating. This means that even under conditions of identical membership, there may be agreements with contradicting rules and objectives.

3. Functional Linkages and Policy Interdependence

According to Young, functional linkages occur when substantive problems that two or more institutions address are linked in biogeophysical or socioeconomic terms. Young notes that these will in most cases have the character of positive or negative externalities. “[Functional linkages] often take the form of side effects or unintended byproducts of actions designed to achieve other ends” (Young 2002: 112). They are at the basis of institutional externalities that lead to mutual influences between institutions and impact on their effectiveness.

Paavola and Adger argue that institutional analysis is based on a concept of interdependence rather than externalities. In contrast to conventional economic analysis, which assumes that agents are independent, institutional economics acknowledges that the choice of one agent may influence the choice of another. Interdependent agents cannot simultaneously realize their interests in scarce environmental resources and their conflict must be resolved by defining (or re-defining) resource endowments (Paavola and Adger 2005: 355). Similarly, Young's concept of institutional externalities can be extended to one of interdependence among policy choices. Policy choices are interdependent when a choice regarding one objective influences the choice regarding another. Policy interdependence often spans geographical levels and requires governance responses at each level simultaneously. Environmental problems that are addressed by international agreements are often functionally linked on the global level. Climate change affects biodiversity loss; however the effect is not the same everywhere. The impact of rising global temperatures varies with climate zones, geographic conditions and landscape, and ecosystem characteristics. Such problem structures require a set of flexible measures provided by multiple and overlapping governance solutions and suggest that "magic bullets" do not exist (Paavola and Adger 2005: 364). Overlapping institutions are thus a necessity in order to address complex environmental problems. This implies that institutional interplay is a phenomenon that must be managed rather than avoided.

Policy interdependence exists between the objectives in many fields of international governance, such as trade, environment, security, human rights or development; or within the same policy field when different policy instruments are chosen without adequate coordination. International institutions that aim at the prevention of ozone depletion and climate change, for example, are interdependent because they seek to control an overlapping set of atmospheric gases that cause damage to the atmosphere. The Montreal Protocol promotes the use of hydrofluorocarbons (HFCs) as a substitute for chlorofluorocarbons (CFCs) because of the latter's high potential to deplete the ozone layer. HFCs however, are also part of the greenhouse gases whose emissions are to be controlled by the Kyoto Protocol for the reduction of greenhouse gas emissions because of their contribution to global warming. Actors under the Montreal Protocol have agreed to a total phase-out of all ozone depleting substances, including CFCs, with the understanding that HFCs would be available as substitutes. Inclusion of HFCs in the Kyoto Protocol could thus principally delay CFC phase-out and pose compliance problems under the Montreal Protocol.

While HFCs have been considered part of the solution under the Montreal Protocol, they are part of the problem under the Kyoto Protocol. The diverging role of these substances leads to problems of interdependence between the policy choices made under the Montreal Protocol, aiming at the fastest possible phase-out of CFCs, and those of the Kyoto Protocol, seeking to reduce the emission of greenhouse gases. (Oberthür 2001: 361-362).

Between private actors, problems of interdependence can be resolved by establishing private property rights over scarce resources and enabling actors to freely negotiate transfers of these rights. Pollution problems can be addressed in terms of emission rights (i.e. private rights to pollute), or in terms of ‘rights to clean air’ which can be ‘bought’ from the owner through compensation payments. According to the Coase Theorem (Coase 1960) this would, in the absence of transaction costs, lead to an allocation of endowments towards their highest valued uses, since the most efficient users would be willing to pay the highest price for acquiring the necessary property rights. Between private actors as well as between policy objectives the existence of interdependences may make it impossible to achieve efficient solutions. The different roles of HFCs regarding ozone depletion and climate change complicate the allocation of property rights through emission quotas. Transaction costs of establishing market-based mechanisms rise as interdependences between policy objectives become more complex and may reach a point at which it becomes impossible to solve environmental problems through the allocation of property rights alone, since these cannot adequately reflect the ambiguous roles of multiple resource uses with regard to different policy objectives.

Resource Attributes

Interdependence has two distinct sources: the attributes of the resource and the attributes of the resource users. Initially the discussion of resource attributes focused on problems of exclusion. Mancur Olson in his *Logic of Collective Action* argued that the characteristic of exclusion defined all public goods (Olson 1965). If the costs of exclusion are high, actors who do not contribute to the provision of a resource can free-ride of the efforts of others. One agent’s choice to ride free increases the costs of provisioning to others and decreases their willingness to participate in provisioning. Since then, a number of subtypes of collective action problems have been identified based on a second attribute: rivalry and non-rivalry of use. Rival use generates interdependence because two users cannot use the same unit of resource at the same time; use by

one agent precludes that by another. Non-rivalry enables several agents to use a resource, such as information, simultaneously. However, non-rivalry creates interdependence regarding whose preferences count because the quantity and quality of goods subject to joint consumption cannot be individually provided (Paavola and Adger 2005: 356). The analysis of public goods characterized by rivalry and non-rivalry of use has led to the identification of a number of subtypes of collective action problems. Public goods are only one class of goods which is affected by difficulties in exclusion and non-rivalry of use. Other categories of goods are common-pool resources and toll or club goods (Table 2). Each of these is associated with a specific problem of collective action and demands different types of governance structures for its solution.

	<i>Consumption is rival</i>	<i>Consumption is not rival</i>
Exclusion is feasible	Private goods (fossil fuels)	Toll/club goods (internet)
Exclusion is not feasible	Common pool resources (Atmosphere as CO2 sink)	Pure public goods (information/knowledge)

Table 2 Attributes and Types of Goods (Ostrom 2003; Paavola and Adger 2005)

There are many more attributes that influence the use of environmental resources and the type of collective action problem arising in association with problems of sustainable management. Mobility patterns of fish stocks, for instance, determine which states will be affected by interdependence in their fishing activities. Fishing activities in the international waters of the Barents Sea affect the efforts of coastal states who seek to manage fish stocks within their Exclusive Economic Zones (EEZs),⁴ because fish stocks migrate freely between international waters and areas under national jurisdiction. This leads to interdependence between bilateral or regional institutional arrangements, in which the countries of the Barents Sea coordinate activities in their EEZs, and international arrangements that regulate activities in the international waters of the Barents Sea (Stokke 2000). Next to the mobility of fish stocks, this particular problem is also caused by the specific shape of the Barents Sea. Its almost circular form leads to a relatively small ‘loophole’ of international waters surrounded by EEZs.

⁴ Exclusive Economic Zones (EEZs), the coastal zones under national jurisdiction by the coastal state, were established by the UN Convention on the Law of the Sea in 1994. EEZs expand to 200 miles off the coast. Beyond this line, state activity is only subject to international legislation.

A broad, practically infinite, range of resource attributes can lead to the emergence of interdependence. Each problem of international resource governance is shaped by a specific combination of a number of attributes that determine not only which actors are affected by a certain problem, but also which instruments are available for their solution. Because of this wealth of potentially relevant variables, international cooperation is often affected by a high degree of uncertainty about the ecologic model that underlies the transboundary or global aspects of an environmental problem. This uncertainty complicates negotiations for institutional arrangements, since negotiators are never sure whether the current available ecologic model captures all possible consequences (Helm 1998). Imperfect ecologic models lead to incomplete arrangements. This has an impact on the effectiveness of the institutional arrangement as well as on interplay with other arrangements, since the interdependences cannot be captured by a single set of rules.

Intergenerational Public Goods

The benefits of managing the global commons or providing global public goods are universal in that they extend to all countries and to all population groups. In addition, most environmental problems that are addressed at the global level involve costs or benefits that reach far into the future. Future generations will benefit from current action to curb global warming or to prevent the depletion of the ozone layer – or they will suffer the costs of inaction. The environmental movement has introduced the longer term perspective in global politics. Sustainable development has become an overarching objective that takes a strong influence on the discourse on international environmental cooperation.

Interdependence reasoning underlines the importance of social justice in environmental decision making, reminding that ecological impacts of decisions are distributed in space and in time, imposing losses both on present and future resource users (Paavola and Adger 2005: 357). Todd Sandler draws a distinction between *intragenerational* and *intergenerational* public goods. We are often faced with trade-offs between these two types of goods. Nuclear energy, for instance, can increase the availability of energy for present generations and reduce greenhouse gas emissions, but it creates nuclear waste that jeopardizes the health and security of future generations (Sandler 1999). Sandler develops a taxonomy of global public goods that includes intergenerational spills as additional dimension next to rivalry in use, difficulty of exclusion and

the distinction between regional and global public goods. Goods that provide benefits that are non-rival and non-excludable within and among generations are intergenerational pure public goods. If they burden future generations with costs we can speak of intergenerational bads (Sandler 1999: 20). The development of a cure for a disease – or more generally technological innovation and the creation of knowledge – provides benefits to future generations whose consumption is not affected by the level of consumption of the current generation. Similarly, the conservation of biodiversity and the maintenance of the global gene pool provide non-rival benefits to future generations. The protection of renewable resources from depletion, such as the conservation of fisheries, exemplifies a case in which intergenerational benefits are to some extent rival; availability for future consumption depends on the limitation of present harvesting rates. The spatial dimension of the public good determines the decision-making arena and its potential participants, for example, an international institution that addresses climate change or a regional body regulating the management of a river basin across riparian countries (Sandler 1999: 22).

	<i>Intragenerational effects</i>	<i>Intergenerational Effects</i>
Public Good	Security	Disease eradication, innovation
Common Pool Resource	Renewable energy	Ocean fisheries conservation

Table 3 Intra- and intergenerational global goods (compiled from Sandler 1999)

The intergenerational character of global public goods has important implications for strategic behavior, when countries with different time preferences cooperate on the provision of an intergenerational public good. If the public good provides benefits to current and future generations, backward-oriented countries who only take the benefits to their own present generation into account can free-ride on the efforts of forward-oriented countries who seek to increase the provision of the public good for the future. Intergenerational altruistic behavior by the forward-oriented country can induce the backward-oriented country to reduce its own provision of the public good, since current benefits will be provided jointly with future benefits by the altruistic country. This behavior results in burden shifting towards the forward-oriented country. The more disturbing implication is, however, that efforts by some countries to achieve

sustainable development, an intergenerational public good, may encourage other countries to reduce their efforts (Sandler 1999: 33-38).

A second consequence of the intergenerational character of public goods comes into play in the case of joint production. Consider an activity that produces two different types of effects, one of which is an intragenerational public benefit, while the other is an intergenerational negative externality that also affects future generations (as in the example of atomic energy). If cooperation emerges that furthers the interests of the current generation in the cooperating states, then cooperation-induced increased provision of the public activity adjusts for the current generations intragenerational benefits, while increasing the negative externalities for the future. With joint products, external effects concern countries, jointly produced outputs and generations. When negative externalities are present, agreements that attend to just one or two of these dimensions may worsen resource allocation relative to the situation with no agreement. (Sandler 1999: 38-40).

The intergenerational characteristics of a resource can lead to interdependence between institutional arrangements when countries seek to cooperate on different generational effects under different international arrangements. If the effects for the present generation and those for future generations are addressed by separated international decision-making bodies, the decisions taken by these bodies will have different implications for the allocation of benefits (or negative externalities) among generations. Consider the regulation of markets for fossil fuels and climate change. Institutional arrangements that ensure stable market transactions and physical flows of gas, oil and coal provide benefits to present generations, because they decrease the risk of energy shortages and lower transaction costs. This in turn reduces the relative costs of using fossil fuels as energy sources and thereby lowers incentives to use renewable energy sources. A higher relative consumption of fossil fuels increases emissions of greenhouse gases (GHGs) and furthers global warming, which places a burden on future generations. Efforts to ensure stable energy markets and to reduce GHG emissions are, however, addressed under different institutional arrangements. The climate convention seeks to commit countries to reduce their emissions and to cooperate in the development and implementation of climate-friendly technologies, while the International Energy Agency regulates international fossil fuel markets. If we consider the global atmosphere as a depleteable sink for GHGs, then the International Energy Agency allocates a higher share of the benefits of using this resource to current

generations, than does the UNFCCC. The allocative effects of cooperation on intergenerational benefits and burdens affect the distributive consideration of the actors negotiating the different arrangements. Representatives of countries in which a larger share of the population prefers higher allocations of benefits to the present generation will seek to ensure a stronger influence of the arrangement that favors the provision of current benefits and vice versa.

4. Political linkages

Oran Young has developed the concept of *political linkages* – connections that go beyond the functional linkages between institutions. Functional linkages provide opportunities for the creation of political linkages, both for increasing efficiency or for strategic exploitation, but their occurrence does not constitute a necessary condition for doing so. Actors may decide to create links between distinct institutions in order to increase managerial efficiency or for political expediency when there is no compelling functional reason for proceeding in this way (Young et al. 1999; Young 2002). Political linkages emerge during the formation (or reformation) of an institution or during its day to day operation. Oran Young differentiates three categories of political linkages: Formative links, operational links and links that are created for strategic reasons.

Formative Links - Framing

Framing refers to the way in which a problem is conceptualized. There are usually many ways in which international cooperation can be framed. A convention on biodiversity can have a narrow focus on maintaining the total number of species known, or it can embrace a multi-level approach to conserve genetic, species and ecosystem diversity. It can merely define targets to reduce the rate of biodiversity or it can have a broad scope that includes socioeconomic concerns related to environmental degradation. Young argues that framing decisions are determined by three factors. *Cognitive Fashions*, such as the belief that large scale environmental problems are best addressed at the global level, often arise from the extrapolation of recent experiences in other problem areas rather than in response to scientific evidence. *Organizational mandates* can influence or even dictate the manner in which issues are framed for negotiation. This is the case when an issue is negotiated in an arena whose mandate does not allow the consideration of the all aspects of a problem. Finally, the *interests of key actors* will have an impact on the scope of a

new agreement (Young 2002: 116 – 118). During the negotiation of the biodiversity convention, biodiversity-rich developing countries achieved a broadening of the convention's scope to include the objective of fair and equitable benefit sharing in exchange for accepting obligations for biodiversity conservation. Their key role as holders of a large proportion of the world's genetic resources allowed them to request commitments beyond the originally intended scope of the convention.

Arena Choice

The choice of arenas for the negotiation of new agreements can have far-reaching consequences for institutional interplay. Actors under existing arenas usually share common normative orientations and perceptions of the problems they are addressing. These meta-constitutional orientations influence the way in which actors perceive and address new problems, what priorities they will set, and which measures they deem appropriate as remedies. Negotiating agreements under the auspices of large specialized agencies allows drawing on existing expertise and establishing close links with other agreements of that agency. The FAO, for instance serves as organizational structure for negotiating forums, treaty secretariats, and meeting venue for a number of agreements and processes. This not only allows exploiting administrative economies of scale, it also greatly facilitates coordination between individual agreements.

The choice of arena can be regarded as conscious act by the actors involved, but it is not the result of efforts to design optimal arrangements. It is better understood as the outcome of organizational imperatives arising from framing decisions, and the calculations of actor interests (Young 2002: 120). It is also influenced by the political context of an issue at the time when a new process is established. Out of the three Rio Conventions,⁵ only the CBD was negotiated under the auspices of the UN Environment Programme. The Conventions on climate change and desertification were negotiated directly under the UN General Assembly. This shows that, at the time of their creation, climate change and desertification were regarded to be matters of high politics with a potential to impact on North-South relations, rather than exclusively environmental issues (Young 2002).

⁵ UN Framework Convention on Climate Change (UNFCCC), UN Convention to Combat Desertification (UNCCD) and UN Convention on Biological Diversity (CBD). Negotiations on these three conventions were initiated at the World Summit on Sustainable Development in Rio de Janeiro in 1992.

Bargaining over Content

The final scope and content of an agreement is determined through a process of institutional bargaining during negotiations. Generally, institutional bargaining is a mixed-motive process featuring a substantive component of what is often described as integrative or productive bargaining, as well as a significant element of distributive or positional bargaining (Young 2002: 123, citing Schelling 1960). The integrative component arises from the fact that information is imperfect. The participants do not know precisely what the gains from cooperation will be and to what extent they will benefit from it. In other words the shape of the welfare function is unknown and participants are uncertain about the effect of cooperation on their own position (Young 1994: 101-102).

If the shape of the welfare position is known on the other hand, participants will seek to achieve an outcome on this curve that is as favorable to their own interests as possible (Young 1996: 100). In these cases, their negotiation tactics will primarily be motivated by their distributional interests. Uncertainty can thus provide participants with incentives to design mutually beneficial agreements that they consider to be fair, regardless of their own position. Under these conditions, actors will frequently add and subtract issues for negotiation in order to create ‘package deals’ until all parties perceive it convincing to accept the terms of the final agreement. Adding issues in this way can lead to the endogenization of linkages, which may reduce the scope for interplay; however, Young argues that it rarely leads to institutional arrangements that cut across broad issue areas, since this would require the coordination of the activities of agencies in national governments that are not usually working together. Therefore, one cannot expect that the addition of issues will lead to meaningful reductions in the scope for interplay (Young 2002: 124). Raustiala and Victor note that the issue of agricultural genetic resource conservation cuts across the competencies of environmental, agricultural and trade ministries leading to different expressions of state interests in the various forums addressing the conservation and use of plant genetic resources for food and agriculture (Raustiala and Victor 2004: 299)

Operational Links

Operational linkages involve processes and efforts to operate arrangements on a day-to-day basis. These are the typical activities of implementation, including compliance procedures and the development and implementation of work programs to achieve commonly agreed objectives.

Often actors within different arrangements perceive it beneficial to create organizational structures that provide operational services to several institutions at a time (Young 2002: 126). Actors make use of a common structure to facilitate the operation and implementation of their agreements and to benefit from economies of scale. In general, operational linkages consist of institutionalized mechanisms of inter-institutional coordination.

Institutional Overlap and Conflict

If the influence between different institutional arrangements is unintended, one can speak of institutional overlap. Overlapping institutions are arrangements created for different purposes and largely without reference to one another intersecting “on a de facto basis, producing substantial impacts on each other” (Young 1996: 2). Their objectives are likely to be unrelated or even antagonistic, leading to disruption rather than synergy. The main difference between institutional overlap and operational linkages is that, besides the technical challenges they pose to those seeking to avoid or minimize mutual interference, they also generate more or less severe conflicts of interests among actors in the affected areas. Effective procedures for resolving or managing such conflicts can greatly reduce the interferences among the arrangements involved. However, such mechanisms are not yet in place for most of the arrangements affected by institutional overlap and repeated processes of ad hoc negotiation or continued deadlock often prevails in such situations (Young 2002: 130).

Fariborz Zelli develops a typology of conflicts that can occur between overlapping international regimes. Regime conflict is a functional overlap among two or more regimes, consisting in a significant contradiction of rules and/or rule-related behavior. Conflicts can be distinguished according to whether they merely exist on paper (latent conflicts) or lead to observable conflicting behavior among the members of the two regimes (manifest conflicts). A latent conflict is an overlap among international regimes in the form of a significant contradiction of rules but without being evident in contradicting behavior of actors. Analogously, a manifest conflict is an overlap that is evident in disputes among actors making reference to these regimes. Manifest conflicts can be further subdivided into direct and indirect conflicts. A direct manifest conflict is a dispute or behavioral contradiction among actors who are justifying their actions by explicitly referring to the colliding rules of different regimes, whereas an indirect manifest

conflict is a behavioral contradiction among actors whose activities have been (unintentionally) induced by otherwise non-colliding rules of different regimes (Zelli 2005: 5-8).

Strategic Uses of Interplay

Exploitation of institutional interplay for strategic purposes occurs when actors strive deliberately to take advantage of institutional overlaps to pursue their own agendas. Instead of seeking to resolve common problems or expand the benefits from cooperation, such actors will focus their activities on the exploitation of interactive decision making to promote their own ends. (Young 2002: 132)

Actors may feel that their interests are not adequately represented in a given arena and move to a different one where they have a stronger standing to negotiate an agreement that is more in line with their priorities and circumstances. This practice is often called ‘forum shopping’ because actors seek to select the forum most favorable for their interests (Raustiala and Victor 2004: 280). If governments are convinced that a different forum gives them more scope for their bargaining power, they will try to move negotiations on a specific issue to that forum, often resulting in a duplication of efforts to create international rules and regulations. Forum shopping has led to the proliferation of processes involved in developing international rules on intellectual property rights (IPR), including those relating to biotechnological innovations and genetic resources (Helfer 2004; Latif 2005; Sell 2003). These authors maintain that industrialized countries have chosen the WTO to push for intellectual property law because the existing forum WIPO was dominated by developing country interests. In the case of IPR relating to biodiversity, industrialized countries have pushed for regulation under the TRIPS agreement rather than under the CBD for the same reason (Rosendal 1999; Rosendal 2006).

Following the same logic, one can imagine actor groups pursuing strategies that seek to deliberately create rule conflicts in order to circumvent their obligations under an existing agreement. By putting into place contradicting rules at the international level, actors can gain legal backing for the violation of other agreements. This strategy would inevitably lead to direct manifest conflicts between actors under the two arrangements. In either case it is hard to determine whether states may have intentionally created overlapping rules in order to gain bargaining leverage, or if they have taken advantage of unintended overlaps.

5. Attributes of Resource Users

In contrast to resource attributes, which matter mainly at the level of functional linkages, the attributes of resource users affect both functional and political linkages. Functional linkages are affected by attributes that characterize an actor group's relationship with a resource or resource system, such as its dependence on the resource, patterns of interaction with the resource system or the values, knowledge and perspectives that different actor groups have about a resource. These attributes explain the attitude of actor groups towards cooperation and regulation beyond the community level, including their interest in the establishment of (or their resistance against) arrangements for international cooperation.

At the level of political linkages, attributes of resource users determine their role and influence in the design of institutions. The influence of the number of actors has received considerable attention in the study of collective action problems. When only a few agents are involved in the management of a resource, they can observe the behavior of others and maintain accountability for it. If user groups are large, it is more difficult to induce cooperation because the costs of monitoring conditional strategies rise as group size increases (Olson 1965; Oye 1986; Ostrom 1990). In the study of international cooperation it was long assumed that increasing the number of players magnifies the difficulty of cooperation (Keohane and Ostrom 1995: 6). Research on local common pool resources, however, has rarely found that the number of actors has a strong independent effect on the likelihood of cooperation (Ostrom 1990). A number of other elements of the problem setting change also as group size increases. The view that the number of actors alone complicates international cooperation may be too simplistic, since observed differences in behavior may be attributable to changes along other dimensions of the problem setting that occur jointly with increases in number (Snidal 1995).

Economic analyses of international environmental cooperation show that the number of actors in international cooperation can have an impact on the 'depth' of cooperation. In an N-player prisoners' dilemma, Scott Barrett finds that the full cooperative outcome can only be sustained by a self-enforcing treaty when N is small. For global problems (that is, problems for which N is large), the theory predicts that full cooperation can only be sustained by a self-enforcing treaty when the gains to cooperation are small (Barrett 1999: 538; Barrett 2003). Barrett concludes that cooperation on global environmental problems tends to be 'broad but shallow;' large numbers of

states participating in agreements with limited impact. Whereas on problems with regionally limited scope cooperation tends to be ‘narrow but deep,’ a small group of states achieving large benefits from cooperation. When interdependence generates trade-offs between a broad and a narrow agreement, the selective incentives to comply with the narrow agreement are stronger than to comply with the broad agreement. This situation often arises between global environmental agreements and regional trade agreements. Since the coming into force of the North American Free Trade Agreement, Mexico’s position has changed considerably in negotiations on an international agreement on access to genetic resources and the sharing of benefits from their use under the CBD. As member of the Latin American and Caribbean Group, Mexico used to favor a legally-binding agreement with broad scope, resulting in significant transfers of benefits to countries acting as suppliers of genetic resources. In the recent negotiations, however, Mexico’s position has been much more moderate, suggesting an agreement with narrow scope and leaving its position open on the agreements’ legal status, thus taking a position much closer to that of the US and Canada (IISD 2006; personal communication with Mexican delegate).

Next to the number of actors involved, research on collective action in environmental resource management has emphasized heterogeneity among actors with regard to broad range of attributes. Heterogeneity describes variation across actors on some significant attribute (Snidal 1995: 62). It is of relevance for environmental cooperation, because differences in interests, income levels, goals, and values translate into conflicting preferences with regard to environmental resources (Paavola and Adger 2005: 356). Similar to resource attributes, the category of actor attributes is not limited to fixed set of variables. It contains a large number of potentially relevant variables that varies with the context of the collective action problem at hand.

In analyses of international cooperation, actor heterogeneity is often considered only at the state level, leaving aside heterogeneity within states. Economic theories of global environmental cooperation (see for example: Barrett 1999; Barrett 2003; Carraro and Siniscalco 1998; Helm 1998; Helm 2000) treat states as rational, unitary actors with stable preferences. States are faced with a well specified payoff matrix and each state has only one utility function that it seeks to maximize. Similarly, interest-based strands of regime theory assume that states are unitary actors that respond to external incentives and have stable and broadly similar domestic preferences,

stable and broadly similar decision making procedures, and stable and broadly similar abilities to extract resources from their societies (Neumayer 2001). Keohane and Ostrom point towards three dimensions of heterogeneity that are particularly relevant for cooperation on global commons problems: heterogeneity of capabilities to influence the outcomes of negotiation processes, preferences over outcomes, and access to information and prevailing world views and beliefs (Keohane and Ostrom 1995). These approaches focus on the position of the state in the international system as explanatory element for the emergence of international cooperation.

One distinct feature of cooperation on global environmental problems is, however, that it affects a much larger range of actors than those at any other level of social organization. The impacts of international cooperation reach far beyond the level of state interests, affecting a broad range of actor groups in many different ways. Global environmental resources involve practically all inhabitants of the globe. These are organized in a system of nested, overlapping or hierarchical institutions from local to national levels. Organization at these levels is necessary to implement international agreements and it can support coordination, but it can also get in the way of finding solutions (Ostrom et al. 1999).

Actor groups within and across states are affected by global environmental problems in different ways. Some sectors, such as agriculture or tourism, will feel the impacts of climate change more than manufacturing industries. If measures are adopted to reduce the emissions of greenhouse gases, these will restrict the energy and transportation sectors more than the computer and software industries. Actor groups in different sectors of society have diverging interests in international environmental regulation and they will seek to influence international arrangements in a way that is most beneficial from their individual points of view. This means that heterogeneity matters beyond the state, particularly if actors in different sectors of society can choose between a several international forums to achieve their interests. Actors, interests and capabilities vary between different processes of international decision making. Environmental lobby groups will arguably have a stronger standing in domestic environmental agencies and international environmental forums, such as the CBD, than in those relating to international trade, such as trade ministries and the WTO. Ultimately, state interests are expressions of the interests of these actor groups and their ability to influence the position that a state will take in international arenas, however aggregation into a single function of state interests neglects that a state's position in different arenas is shaped by different constellations of domestic actors.

International non-state actors increasingly influence international negotiations in several ways. Environmental NGO's are not only monitoring the implementation of state commitments, they also effectively scrutinize the behavior of state delegates during negotiations. Delegates act as agents of domestic principals who must be satisfied with the agreements reached in the international arena. The participation of NGOs and other private actors in international negotiations allows these to intervene when they observe actions by delegates that are not in their interests or not in order with the delegates' mandates (Raustiala 1997: 729). Betsill and Corell argue that international non-state actors often act as transnational networks of actors with similar interest. They provide an alternative way for actor groups to influence international decision making that bypasses national decision-making and provides direct access to international forums (Betsill and Corell 2001). Non-state actors represent a broad variety of interests, including business, environment and other sectors of society. The access of non-state actors to international forums and their influence on decision-making processes varies across issue areas. Many NGOs that have a strong standing under the CBD are so far not admitted as observers at the WTO TRIPS Council whose decisions have a significant impact on the effectiveness of CBD provisions on the conservation and use of plant genetic resources. These differences in participation matter, if non-state actors are able to exert an influence on the decisions taken. Non-state actors can make proposals that are frequently endorsed by country delegations or they support the positions expressed by some countries, while opposing those expressed by others. The presence of NGOs can increase the prominence of specific items on the agenda and facilitate the adoption of decisions on the international level as well as domestic ratification (Raustiala 1997).

Political Linkages are affected by actor groups' capacities to influence decision making in international negotiations. This influence can be exerted through direct participation international arenas, for instance as representatives of international NGOs, or indirectly through lobbying domestic decision makers who determine their countries' negotiating positions. Actor attributes that determine influence include knowledge and access to information and the capabilities to transform these assets into influence over outcomes, such as communication skills, organization in horizontal networks, and internal decision making structures.

Actor capabilities are also determined by existing institutional structures such as rules for participation and representation in decision-making processes at different levels. The

institutional setup creates channels for representation and empowers some actors, while it discriminates others. At each level of governance institutional arrangements can alter the relationship among actor groups and their capabilities to influence decision-making at higher levels. These institutional layers operate like filters that enhance or diminish the representation of actor interests. They determine which actors participate in the design of international institutions.

Across countries, rules for actor participation vary considerably with differences in political and legal systems. Countries that have established decentralized decision-making mechanisms or domestic procedures for participation provide different opportunities to take influence than countries where decision-making is rather centralized. In many Latin American countries, for example, national biodiversity plans for the implementation of the CBD were developed through decentralized participatory processes. This resulted in a strong influence of indigenous and traditional communities and, in some cases, led to their permanent representation on their countries' delegations to the CBD. It is useful to conceptualize the influence of actor attributes at both levels of linkage, functional and political, in order to develop a complete account of the role of actor groups in institutional interplay.

6. Conclusion

The framework presented in this paper combines the analytical structure of the IAD framework with recent work on interplay between international institutions. The logic underlying the IAD framework directs attention to the exogenous factors underlying the functional and political linkages that give rise to institutional interplay. The framework is suggested as a basic structure for explorative research on the causes of institutional interplay and the factors determining which type of interplay emerges and what the consequences of interplay are. With some further elaboration it may be turned into a useful tool that can guide the selection of adequate theoretical approaches and the development of causal models for the analysis of instances of interplay.

The discussion shows, that one of the particular challenges of research on interplay will be an adequate conceptualization of heterogeneity among actors and their influence on international negotiations. Aggregated state-level conceptualizations of heterogeneity may allow the extension game theoretic concepts of international cooperation to cases of interplay; however, such

approaches bear the risk of overestimating the impact of international factors, such as differences in membership or the bargaining power of individual states. On the other hand, approaches that seek to develop a full account of heterogeneity within states risk becoming overly complex and delivering explanations that are highly specific to individual cases of interplay. The framework can help to identify the strengths and weaknesses of different approaches and serve as a structure to combine and compare the results from different efforts.

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