THE GLOBAL ENVIRONMENTAL GOVERNANCE OF THE DUMPING OF WASTE DURING SHIPPING

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Introduction

The problem of the dumping of waste during shipping has been on the international agenda since the early 1970s. The first international environmental policy for shipping was developed in 1972 when the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter was agreed. This is remarkable because the first internationally shared concern for the environment was expressed during the United Nations Conference on the Human Environment in Stockholm in the same year. The dumping of waste during shipping can therefore be seen as one of the first examples of the globalization of environmental problems and concerns.

Since the 1970s, the scope of many environmental problems has become global. In addition, they are more and more perceived as being risks to human life instead of just 'technological problems'. This so-called environmental globalization is often considered as being interlinked with a process of economic and political globalization (Held and McGrew 2002). Economic globalization refers to the global spread of capitalism and industrial consumption and production. It suggests a growing international economic market with companies that are growing in scale as well. Multi-national companies (MNCs) are now regarded as one of the participants in international environmental governance. Alongside the trends of economic and environmental globalization, a system of globalizing politics has also gradually emerged: 'a new world political order emerged based on the United Nations and its core institutions and agencies' (Held, McGrew, Goldblatt, and Perraton 1999, p. 425).

The processes of globalization are fundamentally changing the way in which environmental problems are governed. The fact that transnational environmental policy seems to be the rule rather than the exception means changing roles for actors that are involved in international environmental politics. First of all, states no longer deal with only domestic actors in regulating environmental problems; they often go to international or regional arenas and cooperate with other states and actors. Second, new international actors such as international (intergovernmental) organisations, associations of national non-governmental organizations (NGOs), or MNCs are now part of the scene. Finally, national private actors (firms and NGOs) seem to have developed an extra way to shape international environmental politics. They not only shape international politics indirectly through the state, but they also bypass the state and participate directly in international politics.

The demand for new ways of governance – i.e. adapted to the consequences and characteristics of the processes of globalization - challenges all kind of actors: states, international organizations, firms, NGOs etc. However, it also challenges existing theories of policy making and implementation. And although a whole body of literature has evolved around the new concept of global governance and environmental governance, this literature seems to be unable to overcome its traditional concepts and approaches. Some authors therefore claim that new concepts and a different approach towards global environmental governance are needed to understand changes in the way actors participate in policy making and implementation (Hewson and Sinclair 1999; Rosenau 1999; Rosenau 2000).

The aim of this paper is therefore to search for a new approach to understand and analyze the fundamental changes in the global governance of environmental problems. I am looking for an approach that can define the roles that different kind of actors have within global environmental governance. This paper can be regarded as a state of the art of my search for and thinking about such an approach. During this search, I came across the work of James N. Rosenau. In this paper, I will use the typology of governance arrangements that has been developed by Rosenau to analyze the different roles that actors have in the global environmental governance of the dumping of waste during shipping. After that, I will review

the extent in which Rosenau's approach is able to show and understand the different roles of actors within global environmental governance.

Defining Governance

One author within the governance literature who has been searching for new concepts in the analysis of global governance is James N. Rosenau. He defines governance as 'spheres of authority at all levels of human activity – from the household to the demanding public to the international organization – that amount to systems of rule in which goals are pursued through the exercise of control' (1997, p. 145). His search for a different approach towards governance comes from the observation that International Relations (IR) theory, which is his own field of training, is unable to deal with the changes brought about by globalization: 'For those who move outside the mainstream and treat the acceleration of globalizing processes as the precursor of a new epoch – as I do – the problem with the subfield and its literature is that it is increasingly obsolete as a source of understanding either world politics or international governance' (Rosenau 2000, p. 168). This observation is partly acknowledged by Hewson and Sinclair. They claim that especially international regime theory 'generally avoids the term global governance and lacks, by implication, a concern with the overall significance of global change' (Hewson and Sinclair 1999, p. 13).

And indeed, if we look at IR theorists and how they approach governance, they seem to keep focusing their attention mostly on the role of the state in international politics. For example, Waltz, one of the leading authors within the neo-realist tradition, claims that the 'uneven distribution of capabilities continues to be the key to understanding international politics' (1999, p. 699) In addition, Gilpin (2001, p. 16) emphasizes that the distribution of power among states within the international system is the principal determinant of state behaviour. The same goes for liberal institutionalists such as Keohane and Young. They acknowledge the influence of non-state actors in the formation and change of regimes (Keohane 2000, p. 210; Young 1997, p. 6), but tend to study governance through statist lenses because they ultimately claim that states are the main creators and operators of regimes (Stokke 1997, p. 28).

Something that is related to this statist perspective is that most IR theorists use a narrow definition of governance. Gilpin views governance as being 'achieved through networks of public and private groups or institutions at national, regional and international levels' (Gilpin 2002, p. 240). He thus excludes governance forms in which either private or public actors are the main shapers of policies. Young defines a governance system as 'an institution that specializes in making collective choices on matters of common concern to the members of a distinct social group' (Young 1994, p. 26). In other words, he claims that institutions are at the heart of governance.

The argument in this paper is that globalization processes and the concept of global governance challenge these theories, and these narrow views on governance, because the state is no longer the only actor that is shaping and implementing international policies. If we want to research processes of globalization and the implications for the global governance of environmental problems, 'we need to abandon the long-standing and conventional approaches to IR that locate states at the analytical epicentre of our inquiries' (Rosenau 2000, p. 187). Researching international politics implies studying the interplay between: (1) the increasing transboundary nature of social processes induced by the process of globalization, (2) the increasingly global nature of (environmental) problems and the different actors and institutions that deal with these problems, and (3) the changing role of the state within global governance. Building a theoretical framework that is able to incorporate these three

interrelated trends requires the redefinition of conventional concepts and parameters. (Bruyninckx, Spaargaren, and Mol forthcoming; Mol, Spaargaren, Bruyninckx, Oosterveer, and Van den Burg 2003)

Therefore, in this paper, a broad definition of governance is used; governance is about all spheres of authority at all levels that exercise control in pursuing a certain goal. In research projects, one should be able to focus on all kinds of governance arrangements (spheres of authority), whether they have more hierarchical or horizontal features, or whether they include the state or not. Consequences of the processes of globalization for actors cannot be understood when one focuses on only one or two specific kinds of governance. Instead, one has to focus on different roles that actors have in the whole spectrum of global governance initiatives.

The same goes for the inclusion or exclusion of governance levels in researching environmental governance. I search for an analytical framework of *global* environmental governance, because the governance of global environmental problems increasingly incorporates global and transnational levels. However, this does not necessarily mean that all other governance levels are excluded in the governance of environmental problems; national and local levels do participate in and influence international environmental politics. They might even be the central levels in the governance of certain environmental problems.

The choice for a broad definition of governance does not mean that IR theory is necessarily in contradiction to the concept of global governance (as may be implied above). As just explained, it is not denied that state actors can be the main actors in the governance of certain problems or issues. However, it is argued that new forms of governance, with different constellations of actors and power, are (more) prominent within global governance.

New Concepts in the Analysis of Global Environmental Governance

The conclusion of the preceding section is that IR theories are no longer adequate to explain governance in a globalizing world. Instead, it is important to consider governance in broad terms. According to Rosenau, the challenge to IR theory is that 'authority in a globalized world is highly decentralized and exercised by a wide variety of collectivities' (2000, p. 182). Rosenau therefore conceptualizes governance in terms of 'rule systems'. The core of a rule system is the 'authority structure' that generates compliance of the actors and organizations that are 'ruled'. Authority can be established formally through legal enactments or formal documents. However, most of the authority in the non-hierarchical globalized world is informal and established through a process of bargaining. (Rosenau 2000)

According to Rosenau (1997), an authority structure is considered a rule system when a certain level of regularity is reached. Only patterns of formal and informal authority that show a recurrent pattern of compliance and success are regarded as a rule system. However, there are two problems with this claim. The first problem is that this requirement of regularity is inconsistent with the claim that most of the authority in global governance is informal and established through a bargaining process. One would expect that the locus and role of informal authority within global governance is often subject to change, because the outcome of the bargaining process differs over time. In this paper, this requirement of regularity is therefore put aside. Instead, the approach is that change in rule systems is a fundamental characteristic of global governance.

The second problem with this claim is the assumption of there being a direct link between authority and compliance. Rosenau argues that authority is vacuous if it does not evoke compliance. Furthermore, authority is stable when it produces compliance. (Rosenau 2000) Having authority means having the right to govern and having the ability to generate

compliance of those persons to which authority is issued. Compliance is therefore the key to determine the presence of a sphere of authority (Rosenau 2002).

However, the assumption that displays of authority generate compliance and that this is where research should focus is both an optimistic and a one sided approach. This approach to governance shows the desire to study steering processes that have an effect; to study what steering is about: reaching a certain goal. And this is very useful, because we can learn from studying effective governance. But, it does deny attempts of governance that do not have the desired effect or that do not generate compliance. And this would be just as useful to study, because we can learn from mistakes as well.

In addition, ineffective governance can evolve further and can be transformed over time into more effective governance. This argument corresponds with the claim that change is a fundamental characteristic of global environmental governance in the current globalizing world. An example of ineffective governance that has taken more than a decade to transform into more effective governance is found in the case of the environmental governance of shipping waste. When the governance through an international agreement did not work, the European Union decided to establish a specific directive to reach the desired goal. This directive was agreed upon twelve years after the original international agreement entered into force. And this had been overlooked if we would have followed Rosenau's approach.

I do not deny that compliance is an important aspect of governance and that governance is about achieving compliance and a certain goal. But, in the analysis of the global environmental governance of shipping waste, I will study more than compliance or successful governance; the focus lies on all kinds of attempts to govern problems.

Typology of Global Governance Arrangements

The use of a typology of global governance arrangements is not new. Most of the authors that use a governance typology, base it on the distinction between: hierarchical, network or co-, and self governance (see for example Kern 2004; Kooiman 2003). These types of governance are defined according to the role of the state. The state is either the main actor, one of the partners, or not included at all. However, as explained above, I want to go further than defining a typology based the role of the state. Instead, I will use the typology developed by Rosenau that is based on the concepts of 'rule systems' and 'authority structures'. With this typology, I will analyze the roles of different actors in the environmental governance of the dumping of waste during shipping.

Rosenau (2002) has developed a typology of governance arrangements along two dimensions: the structures and the processes that sustain authority flows. The structure dimension refers to formal, informal, or mixed (both formal and informal) displays of authority within a specific type of governance. The process dimension refers to whether these displays of authority are unidirectional – i.e. either vertical or horizontal flows of authority - or multidirectional – i.e. both vertical and horizontal flows of authority. Together these two dimensions make up six types of governance arrangements, see Table 2.

Table 1: *Six Types of Governance (Rosenau 2002, p. 81)*

		PROCESSES	
		Unidirectional (vertical or horizontal)	**Multidirectional** (vertical and horizontal)
STRUCTURES	**Formal**	Top-down governance	Network governance
	Informal	Bottom-up governance	Side-by-side governance
	Mixed, formal and informal	Market governance	Mobius-web governance

The three unidirectional governance arrangements are more familiar types of governance. Top-down governance knows a downward flow of authority that comes for example from national states and their bureaucracies. However, top-down governance can also be the main form of governance within agencies, for example within a corporation. Bottom-up governance is recognized by displays of informal authority from NGOs or advocacy groups towards governments. The governments then become the policy ratifiers. The last unidirectional type of governance, market governance, is characterized by horizontal informal authority flows within formal regulatory mechanisms. (Rosenau 2002)

The analysis of global governance becomes more complicated when authority flows either up and down, back and forth, or in a combination of these two. This is the case when formal authority flows between equal collectivities, such as between governments or between businesses. This happens in the network type of governance. Side-by-side governance means that actors (for example NGOs and state officials) cooperate in such a way that the distinction between formal and informal authorities is almost indistinguishable. The mobius-web governance is characterized by interactions across levels and different kind of actors. These interactions together constitute a hybrid structure and a web-like process that does not seem to have either a beginning or an end. (Rosenau 2002)

To recap, in this paper, governance is defined as spheres of authority that amount to systems of rules in which goals are pursued through the exercise of control. In the analysis of the type of governance that evolves around a certain issue, it is sometimes difficult to decide what falls inside a certain governance arrangement and what not. According to this definition of governance, a first delineation of a governance arrangement is the goal that is pursued. In this paper, the goal of the global environmental governance that is analyzed is the prevention and reduction of the dumping of waste during shipping. Actors that are involved in pursuing this goal and regulation that is focused on this goal therefore fall inside the governance arrangement. The second delineation of a governance arrangement would be the sphere of authority. In other words, the governance arrangements will end where there are no flows of formal or informal authority anymore.

The Dumping of Waste during Shipping in the North Sea area

The dumping of waste during shipping is an environmental problem that is global in its scope. However, in this paper the analysis of the global environmental governance of this activity will be limited to the North Sea area. Moreover, to analyze the role of the national or local level, we will focus on the Netherlands. The incorporation of both a regional and a national level will make it possible to analyze which authority flows characterize the global environmental governance of the dumping of waste during shipping.

That the dumping of shipping waste in the sea is a considerable environmental problem becomes clear after looking at the following figures. The Save the North Sea project estimates that every year more than 20,000 tonnes of marine litter is dumped in the North Sea.[1] In addition, it is estimated that 70% of this marine litter sinks to the bottom, 15% floats on the surface, and another 15% is washed up on coasts (Save the North Sea Project 2004).

The Marine Conservation Society in the United Kingdom carries out a Beach Litter Survey every year. In 2003, they collected 12,788 kg of marine litter on 135 km of beach. (Crump and Fanshawe 2004) According to the North Sea Foundation, who do comparable surveys in the Netherlands, 37% of litter found on the beach comes from the sea (Span 2002). This category 'from sea' comprises merchant shipping, fisheries, and offshore industry. Ten years of surveys and two years of detailed pilot projects in Germany confirm that the main sources of litter are these three maritime activities. (Van Franeker, Meijboom, and De Jong 2004)

Next to this evidence from waste on beaches, Alterra monitored marine litter by investigating the stomachs of fulmars in 2002 and 2003. They concluded in 2002 that 98% of the examined birds had plastics in their stomachs and 23% of the birds had ingested chemical-like substances. In 2003 these figures decreased some: 95% of the birds had plastic in their stomachs and 21% ingested chemicals. (Van Franeker, Meijboom, and De Jong 2004)

Finally, when seafarers were asked during a Marine Environment Awareness and Sustainable Development course whether they threw or had to throw 'real garbage' over board, 75% of the seafarers answered positively (Van Dessel 2005).[2]

The dumping of waste during shipping has both economic and ecological consequences. Three economic consequences are: the costs for beach clean up, the loss of income through the deterring of tourists, and increasing by-catch of marine litter during fishing resulting in time loss and damage to the fishing equipment. Ecological consequences of marine litter are difficult to estimate, although three consequences are directly related to marine litter. The first is the entanglement of seabirds and marine mammals in nets, plastic bags, lines, ropes, et cetera. The second is the ingestion of plastics and other types of waste that cause indirect mortality. Third, maritime ecosystems can be affected by changes in the quality of seawater as waste may contain toxins and heavy metals. Moreover, the accumulation of litter on the sea floor can result in lack of oxygen or light for spawning grounds, benthic organisms, and organisms that live beneath the beach surface.

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[1] The Save the North Sea project aims to contribute to a sustainable development in the North Sea region by changing the attitudes to marine litter among the target groups who use the North Sea for work or recreational purposes. It is a regional cooperation between: The Keep Sweden Tidy Foundation (the lead partner); Alterra-Texel Marine and Costal Zone Research in the Netherlands; Foundation for Environmental Education in Norway; Keep Scotland Beautiful; Local Authorities International Environmental Organisation in the United Kingdom; Skagen Education Center in Denmark; and the Swedish Environmental Protection Agency

[2] These Marine Environment Awareness and Sustainable Development courses are initiated and organized by the Prosea Foundation, the Netherlands

The figures presented above show that dumping shipping waste in the North Sea is still a problem, despite thirty-five years of transnational effort to reduce and prevent the dumping of waste during shipping.

Existing Regulations in the Global Environmental Governance of the Dumping of Waste during Shipping

The first international regulation for the dumping of shipping waste was the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (see Table 2 for an overview of the existing regulation). It entered into force in 1975. The International Maritime Organization, a specialized agency under the United Nations, is the secretariat of this convention. Currently the London Convention has eighty Parties. The Convention works with a black- and grey-list approach. The black-list contains substances of which dumping is prohibited; the grey-list contains substances of which dumping is only allowed under strict control and under certain conditions. In the early 1990s, this Convention was reviewed, which led to the adoption of the 1996 Protocol to the London Convention 1972.

But another step in the international regulation of the dumping of shipping waste was taken in the early 1970s as well. In 1973, the International Convention for the Prevention of Pollution from Ships was adopted. This Convention was modified in 1978 with the adoption of a Protocol (MARPOL 73/78). This convention also has IMO as its secretariat, has 165 Member states as its Parties and has given sixty-three NGOs consultative status. The Convention has been amended over the years and currently knows six Annexes which cover different types of pollution (respectively oil, noxious liquid substances by bulk, harmful substances in packaged form, sewage, garbage, and air pollution).

The difference between this London Convention 1972 and MARPOL 73/78 is that while the London Convention focuses on illegal dumping activities, MARPOL 73/78 focuses on pollution by operational practices on ships. The latter also regulates how ships should handle these kinds of waste and whether or where they are allowed to dump it in the sea. So, both Conventions focus on the dumping of shipping waste in the sea, although they each cover a different aspect of the problem.

Besides these two International Conventions, a regional agreement was established, again in the early 1970s (see Table 2). This was the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, which was negotiated in 1972. This Convention and the Paris Convention (which focuses on land based sources of maritime pollution) were revised in 1992 and were renamed the Convention for the Protection of the Marine Environment of the North-East Atlantic (hereafter OSPAR Convention). The secretariat of the OSPAR Convention is the OSPAR Commission. The OSPAR Convention currently has 16 Parties, most of which are European Union Member States. The European Union (EU) itself is also a Party to the Convention. In addition, seventeen governmental organizations, three Memoranda of Understanding, and twenty-nine NGOs have observer status.

However, although all these international and regional conventions, as well as political will seem to exist, it was argued above that the dumping of waste during shipping in the North Sea is still a problem. One of the last attempts to regulate this problem was the 2000/59/EC directive on port reception facilities for ship-generated waste and cargo residues. Article 1 of this directive shows that the directive has the aim 'to reduce discharges of ship-generated waste and cargo residues into the sea, especially illegal discharges, from ships using ports in the Community, by improving the availability and the use of port reception facilities' (European Commission 2000).

Carpenter and Macgill (2001) have compared this directive with the existing regulation, especially MARPOL 73/78. Their conclusion was that the requirements of this directive are largely similar to what is required under MARPOL 73/78. The one important difference is that the directive has a broader scope than MARPOL 73/78; contrary to MARPOL 73/78, the EU directive also applies to smaller ships and to all ports in the EU. In addition, they explain that in 1989 the EU claimed that compliance with international conventions should ensure safety at sea and there was no need for additional EU policy. This view changed considerably: in 1998 the predominant view was that the inadequacy of the port reception facilities resulted in illegal discharges at sea.

As is mostly the case with international and European agreements, the Member States have to transpose the agreement into national law. In the Netherlands (see Table 2), the Oslo Convention was transposed in the law to approve the convention on prevention of pollution of the sea because of the dumping by ships or aircraft in 1975. The London Convention was approved in 1977 through the law to approve the convention on the prevention of pollution of the sea by the dumping of waste and other matter. MARPOL 73/78 was transposed in 1983 when the law to prevent pollution by shipping was signed. Finally, the EU directive on port reception facilities was transposed through a modification of this law in 2004.

Table 2: *Overview of the Existing Regulation to Reduce and Prevent the Dumping of Waste in the Sea during Shipping*

Year	International Conventions	Regional regulation	Dutch national law
1972	London Convention	Oslo Convention	
1973	MARPOL 73		
1975			Law to approve convention on prevention of pollution of the sea because of the dumping by ships or aircraft (Oslo Convention)
1977			Law to approve convention on the prevention of pollution of the sea by the dumping of waste and other matter (London Convention)
1978	MARPOL 73/78		
1983			Law to prevent pollution by shipping (MARPOL 73/78)
1992		OSPAR Convention	
2000		EU directive on Port Reception Facilities	
2004			Modification of the law to prevent pollution by shipping (EU directive)

The Global Environmental Governance of the Dumping of Waste during Shipping: Formal and Informal Authorities

The existence of all these regulations shows that there is a system of rule that has the aim of reducing and preventing the dumping of waste during shipping. These regulations create formal authority that flows from the international, regional and national levels to the actors that are 'ruled'. In this case, there are two kinds of actors that are ruled. First, ports are ruled, because they are responsible for having reception facilities available. Second, ships' crews are ruled, because they have to deliver the waste to reception facilities instead of dumping it in the sea.

However, recent surveys and research have shown that the dumping of waste during shipping is still an environmental problem. Moreover, recent initiatives of all kinds of actors at the national, regional and international level indicate that the system of rule is not able to sufficiently control these ports and ships' crews. Important questions therefore are: is this lack of control the result of other (competing) authority flows? And which authority flows are now emerging as a result of the new initiatives?

At the international level the International Maritime Organization (IMO) displays formal authority, because it is the secretariat of both the London Convention and MARPOL 73/78. However, this formal authority is limited, because in terms of implementation IMO hardly has the instruments to display formal authority: IMO has no direct tasks in the implementation of both the London Convention and MARPOL 73/78 and it has no power to enforce regulation. The implementation of international law is in the hands of national governments.[3]

The main authority that IMO can exercise during the implementation of international agreements is informal authority. Bolt (Interview 2005) argues that IMO tries to express informal authority among others by 'shaming and blaming' states that have not implemented MARPOL 73/78 properly. However, this political pressure of IMO is not working very well.

At the regional level, both the EU and the OPSPAR Commission have developed regulations. The EU is able to exercise formal authority because of the Directive on Port Reception Facilities. The formal authority of the EU is directed at the Member States of the EU. Contrary to IMO, the European Commission (EC) does have an instrument to display formal authority with regard to implementation of regulations: the infringement procedure. The EC has already used this instrument in the implementation of the Port Reception Facilities Directive several times. For example, in October 2004, the European Commission decided to take Austria, the Netherlands and Finland to the Court of Justice for failing to communicate the national measures to transpose the Directive on Port Reception Facilities.[4] According to Van Putten (Interview 2005), the Netherlands, together with 14 other Member States, received a 'proof of default' from the EC in April 2005.

The EU will be able to display more authority through the study that the European Maritime Safety Agency (EMSA) is doing to identify best practices in the implementation of the Directive on Port Reception Facilities. With this study, the EMSA assists the Commission in carrying out Article 8.4 of the Directive: 'The Commission shall […] submit a report to the European Parliament and to the Council, evaluating the impact of the variety of cost recovery systems […] and waste flow patters. This report shall be drawn up in liaison with the

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[3] International Maritime Organization. (2002). 'Convention on the International Maritime Organization.' Retrieved 17-06-2005 from: www.imo.org/Conventions/mainframe.asp?topic_id=148
[4] European Commission. (2003). 'Press release: Maritime safety: the Commission takes five Member States to the Court of Justice.' Retrieved 22-06-2005 from: www.emsa.eu.int/end184d001.html

competent authorities of the Member States and representatives of the ports' (European Commission 2000).

One of the subjects of debate during the development of the Directive was the cost-recovery system. The North-West European states advocated an indirect system of cost-recovery; ships indirectly pay for the costs of waste reception and processing through the general port fees. The Southern European Member States already used a direct cost-recovery system themselves and wanted to keep this system. These debates lead to a political compromise: the cost-recovery system would for a substantial part be based on indirect cost-recovery. However, a big variety in cost-recovery systems between the European ports has emerged, because the term substantial was not defined properly. (Donkers 2005; Huisink 2005) For example, the port of Göteburg has a 100% indirect cost-recovery system, while the Netherlands has chosen for a system with 30% indirect and 70% direct cost-recovery. This variety means that there is no level playing field for ports. Moreover, there is no uniformity in the amount and kind of waste that ships' crews can discharg at the European ports without being charged for it; this differs for every port.

According to Van Putten (Interview 2005), the study of EMSA will be used to improve the Directive on Port Reception Facilities. One of the improvements will be the harmonization of cost-recovery systems used in the EU ports. The expectation is that the EC will advocate a 100% indirect cost-recovery system. If the EU succeeds in agreeing on a 100% indirect system, there will be much less room at the domestic level to develop a system that meets the interests of the ports. As we will see later, the Dutch ports will lose part of the informal and formal authority that they are able to display at this moment. In other words, the EU can strengthen its formal authority by developing stringent and well-defined regulations.

In addition, the EC is trying to expand its formal authority towards both the Member States and IMO. At the moment, the EC has observer status within MARPOL 73/78. The EC wants to become a Party to MARPOL 73/78, but the IMO convention does not allow that. Changing the IMO Convention is not a feasible option, because this would mean initiating a negotiation process that can take 30 years. The EC does not opt for representing all its Member States during IMO negotiations through a coordinated position either, because this requires long negotiations between the 25 Member States. Instead, the EC tries to initiate and adopt as much regulation that is in line with as possible. In this way, the EC expands its competence to negotiate within on behalf of its Member States. The Port Reception Facilities Directive is one example of regulation that is in line with IMO and that has increased EU's competence. However, the desire of the EC to adopt regulation in line with IMO regulation shows that IMO is displaying authority to the EC at the same time.

The second regional institution that develops regulation is the OSPAR Commission. This Commission oversees the development and the implementation of agreements made within OSPAR. In addition, the OSPAR Commission collaborates with the Member States in the monitoring and assessment of the state of the marine environment. Although this does not mean that the implementation of the OSPAR Convention is directly monitored or assessed, information gathered in these assessments might be used to evaluate the implementation and subsequently to revise or harmonize measures. According to Dotinga (2001, p. 6), 'the OSPAR Commission plays a central role in the implementation of the Convention, as it is through the programs and measures that are developed and reviewed by it and its subsidiary bodies that very specific action to be taken by the Parties are identified and prescribed.' In other words, by developing very specific action plans and by evaluating the effects of these measures on the marine environment, OSPAR displays formal authority towards its Parties to implement the required measures.

However, the North Sea Ministers Conferences (NSMCs) have also influenced the development and implementation of OSPAR regulation. NSMCs have been held in Bremen in

1984, in London in 1987, in The Hague in 1990, in Copenhagen in 1993, and in 2002 in Bergen. These NSMCs are ministerial conferences that focus on the protection of the North Sea and have the aim of providing a political impetus for the intensification of the work and implementation of existing international rules. Each conference ends with a Ministers' Declaration in which concerns are expressed and action is asked for.

Both Hey and Skjaerseth have shown that this political impetus has been a major drive in regulating maritime activities since the NSMC of 1987. Hey (2002, p. 336) argues that 'the North Sea Ministers Conferences became the political body that drove the work of the Oslo and Paris Commissions. This result was attained by incorporating into the North Sea Ministers Declarations concrete requests for action by the commissions and evaluating the actions taken at the next ministerial conference.'

At the same time, the OSPAR Commission could provide legally binding decisions. This resulted in an interactive decision-making process in which political and legal decision-making is combined. Skjaerseth (2000; 2003) argues that the NSMCs increased the aggregation of actors' interests and preferences and thus forged the Oslo Commission to reach more trade-offs. In other words, it sped up the work of existing institutions leading to comprehensive legally and politically binding commitments that required substantial behavioural change of the parties involved.

The interactive decision making process between the NSMCs and OSPAR not only affects the decision making itself, but it also increases the authority displayed towards the North Sea states in the implementation of the decisions reached under both the NSMCs and OSPAR. The informal authority of the NSMCs, which comes from the 'soft law' they formulate, is usually transformed into formal authority under OSPAR, because they develop the soft law into legally binding law. This authority is strengthened because of the evaluations that are both done by the NSMCs and under OSPAR through the monitoring and assessment of the marine environment.

Next to the authority that flows from NSMCs to North Sea states via OSPAR, informal authority also flows directly from the NSMCs to the states. The NSMC keeps track of whether North Sea states fulfill IMO regulation. This means that it is noticed when a state fails to implement an aspect of the regulations. The failing state is even asked to explain why it did not fulfill the regulation. This system ensures that countries take the effort to implement IMO regulation (Interview Bolt 2005). The NSMCs are thus able to display more informal authority in the implementation of IMO regulation than IMO itself.

The next NSMC will be held in 2006 in Sweden. The problem of the dumping of waste during shipping and the use and availability of port reception facilities will be on the agenda of this NSMC. Van Putten (Interview 2005) expects that the NSMC will, just like the EC, advocate a 100% indirect cost-recovery system for waste reception and processing. She also claims that this might accelerate the decision making process within the EU. This would mean that the NSMCs not only display informal authority towards OSPAR or the Member States, but also to the EU.

However, it can be argued that the authority of NSMCs is not only informal in nature, but also formal. The main participants of these Conferences are Ministers and the position of Ministers gives a formal dimension to the NSMCs. Thus, it can be argued that although the outcome of the NSMCs seems to be an indication of political will rather than formal rules, the fact that the participants of these Conferences are Ministers makes the NSMCs to have both formal and informal authority.

At the national level, the Dutch government has developed several laws and decisions to transpose the various agreements into national law. These laws form the basis of the formal authority of the Dutch government. However, the formal authority of the Dutch government is

challenged by the authority of especially ports, but also by the port reception facilities, ship owners and the North Sea Foundation. The North Sea Foundation is a Dutch non governmental organisation that focuses on the protection of the North Sea. There are several reasons why these actors are able to display authority.

The first reason is that these actors have been able to build informal authority. The extent in which they are able to display informal authority depends on a bargaining process. Huisink (Interview 2005), Van Well (Interview 2005) and Van Putten (Interview 2005) confirm that the Dutch government has given a lot of room to the ports, ship owners, and reception facility companies to shape the implementation of especially the European Directive on port reception facilities. According to Van Putten (Interview 2005), this was necessary to be able to start with the implementation of the Directive. Otherwise, the most important stakeholders (the ports, ship owners and reception facility companies) would not have come to an agreement. In other words, the Dutch government even wanted this bargaining process to take place, even though this reduced the authority that the government itself could exercise. In addition, the informal authority of ports is enhanced by the fact that the port of Rotterdam is the biggest port of Europe.

The second reason is that some of these actors have important tasks in the implementation of the regulations. This especially goes for ports, because they have to develop a waste management plan, develop the financial system for cost recovery, and provide the reception facilities (Interview Van Putten 2005) These tasks give ports the possibility to display formal authority in the implementation of especially the European Directive on Port Reception Facilities.

The last reason why ports, the reception facility companies and the North Sea Foundation display formal authority is because they participate in a formal procedure to decide whether the level of indirect cost-recovery should be adjusted or not. This procedure is called the 'transparent interest consideration'. The Minister of Transport and Water Management initiated this transparent interest consideration to implement a 100% indirect cost recovery system within five years (thus at the latest in 2009). During the negotiations for the European Directive on Port Reception Facilities, the Netherlands always advocated a 100% indirect cost-recovery system. However, during the actual implementation of the Directive a 30% indirect system was chosen instead. The main reason for this was that the cost-recovery system developed in Belgium threatened the competitiveness of the Dutch ports and a 100% indirect system would have put even more pressure on the competitiveness of the Dutch ports. (Van Kooten 2004; Interview Van Well 2005) But this left the Dutch government in a 'weird position', having always promoted a fully indirect cost recovery system and in the meantime implementing the opposite (Interview Van Well 2005).

Every year it is considered whether the level of indirectly recovered costs can be raised. Within this deliberation, three interests will be considered: the costs for ports, the costs for waste reception and processing companies, and the costs for the environment. These interests are reviewed by respectively the National Board of Ports, the Association of Waste Reception and Processing Companies, and the North Sea Foundation. These three positions, together with the outcome of the meeting in which all stakeholders are consulted, will be used by the Netherlands Ministry of Water Management to advice the Minister with regard to raising the level of indirect cost recovery. (Van Kooten 2004; Interview Van Well 2005) The advice of the first yearly consideration is expected to be formulated this autumn.

The lack of control by the Dutch government comes not solely from the authority of ports, ship owners and reception facility companies. The Transport and Water Management Inspectorate has direct formal authority, because it is allowed to verify the compliance of the ships' crews and their captains. The Inspectorate is required to inspect 25% of the incoming ships in Dutch ports. The Dutch ports together have 6000 incoming ships per year. This

means that the Inspectorate inspects 1500 ships a year. However, it is not selective enough in its inspections; it does not focus on ships that have not discharged their waste. The interim evaluation of the Inspectorate shows that of the 362 indications of lack of compliance that were given by port authorities or other inspection services, only 20 were inspected. (Inspectie Verkeer en Waterstaat Divisie Scheepvaart 2005).

The type of governance that characterizes the global environmental governance of the dumping of waste during shipping depends on the structure and the process of the authority flows. The structure can consist of formal, informal, or a combination of these authorities. The process of authority can be either unidirectional or multidirectional.

First, we can draw the conclusion that the global environmental governance of the dumping of shipping waste is characterized by both formal and informal authority flows. For example, especially the NSMCs and the Dutch ports display informal authority, and the EU and the Dutch government display formal authority. This means that the global environmental governance of the dumping of waste during shipping is either a market type of governance or a mobius-web type of governance.

Second, we draw the conclusion that the process of the global environmental governance of the dumping of shipping waste is multidirectional. Authority not only flows horizontally between actors at the national level, but it also flows vertically from the international and regional level to the national level. The global environmental governance of the dumping of shipping waste is therefore characterized by a mobius-web type of governance.

Analysing the role of actors in the global environmental governance of the dumping of waste during shipping

Within this mobius-web type of governance, states perform an important function in channelling transnational environmental policy down to the national level, where it needs to be implemented. However, the analysis also shows that states are constrained by both the authority of domestic actors, in this case especially ports, and the authority of the different transnational organisations.

The authority of ports is, on the one hand, a result of a decision of the Dutch government. The Dutch government decided to involve the ports, reception facility companies, ships' crews and the North Sea Foundation in the implementation of the European Directive on Port Reception Facilities. The Dutch government consulted these actors to determine how the Directive would be translated to the Dutch situation. In addition, they asked these actors to participate in the more formal procedure of the 'transparent interest consideration' (see above). On the other hand, the ports have been able to build authority through a bargaining process. One of the reasons behind this is that Rotterdam is the biggest port in Europe and thus also an important force in the Dutch economy.

The authority of the different transnational organisations is not only related to the policies that are established within the organization, but more importantly, to the way these organisations tie in with each other and with the states. We have seen that the NSMCs tie in with both the EU and the OSPAR Commission. They are therefore able to increase the authority that is displayed by the transnational organizations towards the North Sea states. In addition, the EU aims to strengthen the ties between IMO, the EU and the EU Member states. The EU therefore increases the authority flows between IMO and the EU, between the EU and the states and between IMO and the states.

This analysis of the role of actors within the global environmental governance of the dumping of waste during shipping follows from the analysis of the formal and informal authorities that actors have been displaying. The concepts of informal and formal authority were useful to give an indication about different sources of authority within governance. However, I argue that the approach of Rosenau is not yet 'sophisticated' enough to deal with differences in authority within global governance. Based on the analysis in this paper, I will give two arguments why Rosenau's distinction between formal and informal authority is not elaborated enough.

The first argument is related to Rosenau's definition of formal authority. He defines formal authority as being based on formal documents or rules. However, formal authority does not necessarily originate from laws or formal rules alone; it can also originate from positions that people or actors have. For example, the NSMCs seem to have a formal dimension in the authority they display, even though they have no policies or formal rules where the authority is based on. Rather this formal authority originates from the position that Ministers have.

The second argument is that sometimes formal and informal flows of authority seem to be interconnected or indistinguishable from each other. The analysis shows that the Dutch ports display both formal and informal authority. However, it is likely that their formal authority has strengthened the informal authority they display and the other way around. This means that the distinction between formal and informal authority does not fit well to the authority that ports display in the global environmental governance of the dumping of waste during shipping.

These examples also show that the lack of a more elaborate approach to identify different kinds of authority presents problems if one wants to research the roles that different kinds of actors have in global governance. The analysis shows that some actors display both formal and informal authority, while others rely on one type of authority only. However, this does not bring us to a more specific conceptualization of the roles of actors within global governance.

Conclusions

The aim of this paper was to search for a new approach in order to understand and analyze the roles that different kind of actors play within global environmental governance. Part of this search has been the application of the approach of Rosenau to my empirical findings in the governance of the dumping of waste during shipping. The resulting analysis shows that the global environmental governance of the dumping of waste during shipping has a complex authority structure.

There is no doubt that this analysis has not revealed all flows of informal and formal authority. For example, I did not analyse how authority flows within the organisations IMO, EU, OSPAR or the NSMCs. There is also a lack of analysis of how national private actors display authority in the implementation of regulations through transnational organizations. Or conversely, how IMO, the EU, the OSPAR Commission, or the NSMCs display authority directly to national private actors. Nevertheless, the analysis does show the importance of formal and informal authority flowing in multiple directions within the global environmental governance of the dumping of waste during shipping. The conclusion is therefore drawn that the global environmental governance of the dumping of waste by shipping is characterized by the mobius-web type of governance.

The analysis also shows the extent in which Rosenau's approach is able to identify the roles that different actors play in global governance. I agree with Rosenau that new concepts

and a different approach are needed to conceptualize and understand changing roles of actors within global governance. The concepts of rule systems, authority structures, formal, and informal authority are an important step into that direction. These concepts transcend the traditional distinctions between state, market, and civil society and between the international, regional, and national levels. They thus enable us to indicate changing boundaries between the state, market, and civil society and between different governance levels. However, these concepts need to be more defined to be able to develop this approach into an approach that can identify the roles of actors within global governance. This especially goes for the concepts formal and informal authority.

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