

Knowledge leads, policy follows? Two speeds of collaboration in river basin management

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Abstract

The 21st century began as a period of increasing water scarcity, conflicts over shared water resources and major flood disasters. This context keeps the establishment of effective basin management on the top of the global water agenda. Capacity development in the field is often modelled on the experience of existing river commissions, such as the International Commission for the Protection of the Rhine (ICPR), widely perceived as a reference for successful trust and knowledge-based collaboration. The relevance of knowledge in transboundary river basin management is uncontested, but its concrete function remains unclear. This pilot study investigates the influence of knowledge collaboration in internal working groups on ICPR development during the implementation of its milestone Rhine Action Programme, testing a phenomenological approach based on actor accounts. The results suggest that active stimulation of knowledge-based collaboration can lead to substantial influence on policy processes, but that the direction of such influence is ambiguous. Internal dynamics of the ICPR are likely to have assumed patterns of scale-dependent, cross-level interplay at the time. This has significant implications for capacity development, since such dynamics can both support and obstruct the development of effective resource management.

Keywords: Cross-level interplay; Institutional bargaining; Knowledge-based collaboration; Regime formation; Rhine commission; Transboundary river basin management; Trust

1. The hidden mechanisms of river basin management

The 21st century started as a period of increasing water scarcity, conflicts over shared water resources and major flood disasters in some of the most densely populated river basins in the world. This context keeps the establishment of effective transboundary river basin management (TRBM) on top of the global water agenda. Integrated management approaches have been propagated since the 1970s and

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organizations such as UN Water¹ or the Global Water Partnership and International Network of Basin Organizations² have issued manuals for capacity development in the field. Recommendations are often based on existing ‘best practices’; the International Commission for the Protection of the Rhine (ICPR) being one of the reference cases (Verweij, 1999; Lindemann, 2008; Mostert, 2009; UN-Water, 2013).

Yet, gaps remain in our understanding of TRBM. Manuals outline complex institutional structures for ‘formal basin organizations that have been set up by national laws or international treaties’ (Global Water Partnership, 2009: 10), because most example cases are such organizations. The mechanistic transfer of organizational designs reflects our limited knowledge of mechanisms underlying observed developments. The high number of case studies obscures the fact that broader conceptualization is just starting (Öjendal *et al.*, 2010; Wiering *et al.*, 2010). In current models, the European experience appears as an outlier (Allan & Mirumachi, 2010).

A pattern in the literature, prominent in the Rhine case, is the split of analyses into two categories (Bernauer, 2002). One stipulates the existence of basin institutions and investigates their impact on water pollution; another stipulates the contribution of TRBM activities to water quality and analyses regime formation. This decoupling of political and biophysical developments obscures the transient nature of basin management. Treating ‘the regime’ as a static black box is insufficient to capture cumbersome processes that span decades and involve hundreds of people. Such dynamics are better described as social phenomena, formed by collective activity in changing social realities. The shape of resulting organizations might be mostly incidental.

The development of TRBM frameworks from practice contributed to this pattern. Practitioners produced a substantial share of the literature, but systematic theory-based analysis of their accounts is mostly absent. In some cases, security issues make actors inaccessible for academic research (Earle *et al.*, 2010). In others, actors face academic questions too focused on specific aspects to capture the complexity of actual experiences. Their own analyses, however, frequently lack reflection on underlying assumptions and confrontation with tested theory (Bernauer, 2002), making case studies parochial and confirming that research based on personal experience is particularly vulnerable to selection bias (Geddes, 2009).

This study seeks to open the black box ‘ICPR’ and investigate mechanisms underlying its development. To address the gaps identified above, it will trace a well-known yet little understood aspect of TRBM, the role of knowledge, based on detailed actor accounts assessed against a broad theoretical framework. Designed as a pilot study, the paper tests the value of the method as much as it seeks new insights into TRBM.

2. A watershed at the Rhine

The Rhine is Western Europe’s economically most important river; it has been frontier and trade route for millennia. Its course of 1,320 km runs from Switzerland through Germany, France and the Netherlands, providing drinking water for 30 million people and connecting the centres of European industries since the 19th century. The catchment is shared by nine countries, making it one of only 19 international rivers with more than five parties. International collaboration on navigation was initiated in 1815; the Central Commission for Navigation on the Rhine is Europe’s oldest active organization. The Rhine

¹ See <http://www.un.org/waterforlifedecade/iwrm.shtml>.

² See <http://www.gwptoolbox.org>.

is also deeply connected to the local social psyche and is celebrated in works of literature that shaped the Romantic Movement.

Early industrialization along the Rhine and its tributaries caused high pollution; in 1901 the German Reichstag discussed the Rhine turning into a ‘sewer’ (Schulte-Wülwer-Leidig, 2008). An international treaty protecting economically valuable salmon fisheries, signed in 1886, could not prevent eradication of the fish’s population (Huisman, 2000). The Netherlands, downstream and suffering most of the economic damage, lobbied unsuccessfully during the early 20th century for international collaboration on water pollution. Only three years after World War II, Dutch water diplomacy re-engaged the main war opponent, but upstream countries remained uninterested until the Navigation Commission facilitated formation of the pollution regime. The ICPR was founded in 1950 and formalized with the 1963 Berne treaty. The treaty did not include emission goals or tributaries through which most pollutants arrived, but created a permanent ICPR secretariat (Mostert, 2009).

The evolution of the ICPR has been well analysed (Goppel, 1991; Bernauer & Moser, 1996; Dieperink, 1998; Verweij, 1999; Huisman, 2000; Frijters & Leentvaar, 2003; Lindemann, 2008). A major conflict over chloride and chemical pollution shaped relations between 1950 and the 1990s, and the related efforts to negotiate and implement formal treaties are considered largely unsuccessful. In 1986, a major environmental disaster changed public opinion and switched the regime from being ‘limited, uncooperative and sometimes outright hostile to being extensive, effective and friendly’ (Verweij, 1999: 453). The resulting Rhine Action Programme (RAP), adopted in 1987, is considered highly successful and established the ICPR as a model for collaborative TRBM. Ambitious goals for water quality were met until the late 1990s, even though the RAP was no more legally binding than previous, less successful agreements. Seemingly a contradiction to power- and interest-based political theory, the case focused attention on the role of knowledge, learning and trust in TRBM.

Research suggests that transboundary collaboration is driven by political will, with knowledge-oriented actors in a supporting role (Earle *et al.*, 2010). In contrast, case studies on the RAP suggest a very prominent role of knowledge (Verweij, 1999; Lindemann, 2008; Bozkir *et al.*, 2012), making it ‘the nucleus of modern water protection’ (ICPR, 2003: 8). In general, the relevance of scientific collaboration and information exchange to TRBM is uncontested, but its concrete function is unclear (NeWater, 2005; Mostert, 2009; Granit, 2010; Salamé & Van der Zaag, 2010). This raised two questions guiding this study. First, did knowledge significantly influence the political process during RAP implementation? Second, is there a scenario in which knowledge-based communities could lead the process? Although personal recollections that motivated this study also suggested that some ICPR knowledge groups were ‘ahead of the curve’ during the RAP implementation, a ‘zero hypothesis’ reflecting the current consensus would expect to find little evidence for knowledge leadership at the time.

3. Deconstructing the black box

Social phenomena are ‘events that take place as a result of the actors acting’ (Easton, 2010: 123). The ICPR manifests in long series of meetings and communication between actors, only occasionally resulting in physical reports or treaties. The outcome of collaboration is transient and determined by actors interpreting each other’s behaviour during interactions. For such a phenomenon, individual perceptions represent ‘real’ facts without which developments cannot be accurately assessed. Approaching a situation from the individual’s perspective creates some distance from structural and normative

explanations, but also reveals more facets of empirical outcomes. Methodically, the approach requires careful, open and thorough capturing of personal experiences through interviews, observation and personal texts, complemented by other forms of documentation to stimulate recollections or verify factual elements.

To open the black box ICPR, the necessary first step was to identify actors belonging to a ‘knowledge side’ and a ‘policy side’, respectively. ICPR actors interacted in five main settings: the Plenary with a rotating presidency; the usually bi-yearly ministers’ conferences; the strategic Coordination Committee; the Secretariat; and the expert working groups. The typical background of delegates in these groups served as a dividing criterion. Related research has shown that public servants often perceive themselves as technicians and brokers (knowledge side), while elected officials describe themselves primarily as advocates and partisans (policy side) (Haas, 1992).

The ICPR policy side was, therefore, represented by the ministers’ conference and the national diplomatic delegations to the Plenary, while the permanent working groups (WGs) and other expert groups represented the ICPR knowledge side. WGs consist mostly of experts from ministries, agencies and research institutions of the member countries, preparing reports and standards and resolving technical issues (ICPR, 2010). Developing the targets of the RAP alone involved around 150 experts (ICPR, 2003), a number that illustrates their potential influence. The affiliation of the remaining actors was less clear. The Coordination Committee (CC), a strategic group preparing decisions for the ministers’ conferences and plenary sessions, included diplomats with experience in international negotiations and high-level water experts from national ministries. It was, therefore, not possible to assign the CC members collectively to the knowledge or policy side, with members likely to have different perceptions of their role depending on their background. The same applies to non-governmental organization (NGO) representatives active in the ICPR since the mid-1990s and to the Secretariat staff that facilitated knowledge production but also acted as central advocate for the ‘constituent’ Rhine.

Personal experiences alone cannot reveal mechanisms explaining what caused particular events to occur. In phenomenological research, explanations are neither hypothesized and empirically tested, nor directly inducted from interviews. In the second step, an iterative process of *retroduction* is employed, considering multiple theoretical approaches to ‘triangulate’ mechanisms most likely explaining what happened (Easton, 2010).

TRBM is a sub-domain of international relations, the repeated interactions of political units for the purpose of conflict management under openness and uncertainty (Czempiel, 1996; Lindemann, 2008; Bernauer & Kalbhenn, 2010). The field has numerous theories to choose from and faces problems ‘to sort out the relative significance or weight of institutional drivers and other driving forces’ (Young, 2002a: 286). A framework for this study has to offer suggestions for triggers and drivers of regime change, for the influence of knowledge on international policy and for the influence of individual actors in regime formation. The last aspect is crucial for capacity development – the assumption of individual influence is the rationale behind professional management training. Three approaches are selected for the pilot study: first, ‘classic’ international relations schools; second, the epistemic community approach as a framework focused on knowledge in international collaboration; and third, institutional bargaining as a framework centred on actor dynamics in regime formation.

Classic schools of thought in this field are divided by fundamental assumptions, explaining international cooperation based on power structures (neo-realism), normative structures (regime theory), or process dynamics (constructivism), respectively. Neo-realism considers international collaboration as the outcome of zero-sum bargaining between sovereign actors erecting self-help systems in an

anarchic world. Inspired by the economic metaphor of an ‘invisible hand’, ‘the expectation is not that a balance, once achieved, will be maintained, but that a balance, once disrupted, will be restored in one way or another’ (Waltz, 1979: 128). Neo-realist consideration of the role of actors and knowledge is, however, limited to some general assumptions (Putnam, 1988; Young, 1989; Czempiel, 1996; Falkenmark & Jägerskog, 2010).

Regime theories focus on formal and informal ‘rules of the game’ in international cooperation (Hasenclever *et al.*, 1997; Keohane, 1998; NeWater, 2005). The dominant approach is neo-liberal institutionalism, inspired by classic micro-economic theory and assuming that regimes develop when actors share a common interest and can realize joint benefits by cooperating. In general, interest-based approaches are considered to have substantial explanatory power for international environmental regime formation (Sprinz *et al.*, 2002; Lindemann, 2008). As neo-realism, the approach takes a systemic view of observed events, largely independent of individual actors.

If classic international relations theories compare state action to human behaviour, constructivist institutionalism reflects on its social nature. The theory rejects the notion that state preferences are externally set, instead highlighting that repeated interactions shape practice and identities and alter interest structures. The approach recognizes that state actors can consciously decide on a new approach to interactions, their decisions determining the chances for collective responses to new threats (Wendt, 1992, 1995).

The epistemic community approach is not a theory, but a concept for analysing the role of a particular type of expert in international policy coordination. Such communities influence policy outcomes when decision makers ask for help on complex problems. They can contribute to policy innovation and diffusion and their influence is most clearly expressed in institutions they help create and shape (Adler & Haas, 1992; Haas, 1992). The last approach, institutional bargaining, is a comprehensive, actor-based analysis of environmental regime formation (Young, 1989, 2002b). The approach identifies defining characteristics of related international negotiations and success factors for regime formation, offering a way to analyse the relative contributions of the policy side and the knowledge side, respectively.

4. Capturing the experience

Phenomenological interviews capture subjective experience of a social phenomenon; how people remember, judge and feel about it. This pilot study reflected the experience of one member of the knowledge side, the chair of a permanent working group between 1987 and 2002 (hereafter working group chair, ‘WGC’). This view was contrasted with the perception of a secretariat officer (hereafter ‘SO’) who observed all policy and working groups during and beyond this time. The personal accounts are complemented by published statements and documents from the time. Findings are arranged in themes, reflecting how actors individually and collectively assign meaning to certain aspects, in this case the quality of the personal experience, the informal contribution of working groups to negotiations, the role of personal leadership and the importance of trust.

A striking observation from all recollections is the degree of personal identification with the assignment. Working with the ICPR at the time is remembered as very positive experience and contrasted with the ‘petty politics’ of other engagements. The ICPR President from 1991 to 1993 called it the ‘best job of my life’ (Caspari & Heyde, 2004: 49) and informal contacts continued beyond assignments. RAP implementation was perceived as a pioneering effort; today’s generally much higher level of

collaboration does not instil the same feeling. The source of the personal gratification – the collaboration – is linked to water quality improvements.

According to the WGC, efforts to build a collaborative atmosphere in the WG resulted in informal learning about negotiation styles and cultural factors. For example, the Dutch actors learned that Germans ‘negotiating every comma’ did not imply mistrust, while the Germans learned that the Dutch would handle written objectives flexibly when it served the desired results. Sharing these insights with the national delegations changed perspectives and expectations in the CC and Plenary, helping to avoid political conflicts. The informal knowledge was not gained through conscious reflection, but as a by-product of negotiating ‘terms for negotiation’ within the WG. The SO confirmed that all groups engaged in these negotiations for almost a year after receiving a new formal mandate.

Not all ICPR working groups achieved equal levels of collaboration; the group atmosphere was shaped by individual leadership decisions in the process. ICPR working groups faced few formal rules, so the WGC saw room for ‘protocol experiments’ that actively fostered collaboration. Strategic choices included changes in the negotiation language to empower small member states and seating arrangements that signalled neutrality of the chair *vis-à-vis* all delegations. Since the strategic level did not provide incentives for the working groups to deliver, any initiative depended on intrinsic motivation. Furthermore, only WG chairs attended CC meetings, received feedback on WG performance and directly observed political deliberations. So sufficient ‘political education’ of the chair was deemed essential to ensure group outputs were useful and responsive to policy-side needs.

The final theme investigated was the importance of active trust-building as a precondition for successful collaboration. WGC and SO agreed that the atmosphere improved significantly after 1987. At the beginning, interaction within the WGs reflected the positions at the political level; members hesitated to share information in the scientific discussion to avoid weakening political bargaining positions. Although trust and collaboration levels differed between WGs, trust-building efforts of some key actors had broader and lasting effects. When a question related to the historical chloride dispute re-emerged in the mid-1990s, the WGC felt unusual political pressure and urgency. But trust-based collaboration in the working group was fully established at this point and the WG delivered a consensus recommendation strong enough to overcome political concerns. The SO observes that today working groups, delegations and even the ministers’ conference openly discuss sensitive internal problems in ways that ‘would not have happened 25 years ago’. Overall, trust building and informal learning facilitated by motivated group leaders is judged as absolutely essential for successful collaboration. Although modern literature acknowledges the need for small steps in this regard (NeWater, 2005), the interviews pointed out that the importance, effort and, especially, the time needed for this process is seriously underestimated in current capacity development.

Regarding the central questions of this study, it was felt that there was often a time gap between a consensus reached in the working group and related agreements at the policy level. This does not prove that the knowledge side led the process. The WGC felt that the knowledge-side agreements influenced political outcomes because research outcomes and innovative solutions suggested by the WG helped frame the political discussion. It also activated outside groups, for example through the involvement of NGOs in the process. As a result, the ICPR knowledge side contributed to creating and maintaining a positive public perception of the measures taken to improve water quality in the Rhine and helped to legitimize decisions by a scientific consensus. The WGC’s recollections were generally confirmed by other actors, but some observations were identified as working group specific and did not apply to other groups within the ICPR at the time. The SO interview and published accounts also

indicated that personal conclusions about the role of knowledge and trust did not account for a number of systemic shifts, parallel developments and alternative explanations that will be elaborated in the following sections.

5. Five perspectives on regime dynamics

5.1. Neo-realism

In contrast to previous studies (Verweij, 1999; Lindemann, 2008), neo-realist analysis of the interviews finds a clear systemic explanation for the paradigm shift after 1986. The ‘worry condition’ that *Realpolitik* requires for state action played a ‘massive role’ according to the SO. The region was affected by highly visible environmental problems and two major international disasters within six months. A former Dutch delegation leader recalled that ‘acid rain, Chernobyl in May 1986 and then Sandoz – it was simply too much. The thing happened in Switzerland, a country that could not be cleaner. At this point it was clear that [...], it can happen everywhere, anytime’ (ICPR, 2010: 8). The reference to a perceived geographical safe zone identifies Sandoz as a security event. Public demonstrations and a ‘very negative’ press complete the triggers for neo-realist self-help. The prominent Sandoz disaster distracts, however, from the coinciding fundamental restructuring of European politics at the time. *Realpolitik* is necessary in unregulated competition of sovereign states. But European environmental policy received its first formal mandate with the Single European Act in 1987, when negotiations for the Maastricht treaty started. With formal EU sanction mechanisms available, the neo-realist anarchy condition no longer applied to most ICPR member countries. Lobbies famous for pressuring the ICPR shifted their focus to Brussels and between 1980 and 1988 10 private parties moved claims against polluters to European courts (Bernauer & Moser, 1996). The influence of the EU membership on the ICPR has been discussed before (Shmueli, 1999), but the systemic impact of the new structure is rarely acknowledged. Furthermore, Chernobyl triggered functional changes; the German ministry of the environment was established five weeks after the disaster and new technical capabilities reduced the economic cost of chloride pollution, liberating the Dutch government to invest in the RAP (Mostert, 2009).

Overall, neo-realist analysis suggests that the observed shift in ICPR practice was a phase of hegemonic balancing after systemic disruptions. A new power balance emerged probably around 1999/2000, reflected in the new Rhine Convention and the European Water Framework Directive (WFD). According to this logic, collaboration at the post-1986 ICPR profited from the fact that the organization was no longer a central arena for *Realpolitik*. Empowering the ICPR during this phase is no contradiction, as the loss of monopoly power over negotiations can make it easier for governments to entrust commissions with more substantive tasks (Bernauer, 2002). Regarding the central questions, neo-realism would expect the policy side to use expert groups as a resource; the SO confirmed that the European Commission was unusually active in the ICPR in the early 1990s, using it as an expert resource and platform to pre-negotiate directives with core EU members. Later, the EU withdrew again from the ICPR stage. Regarding individual actors, a shift of power-based politics towards European arenas would open more room for knowledge-side actors within the ICPR. For state actors, theory predicts a prominent role of individuals focused on strengthening their organizations, so it is noteworthy that the first, unremarkable, German environmental minister was quickly replaced by a successor who

immediately initiated the expansion and consolidation of European water policy, empowered other agencies in later positions and remains influential in global environmental policy to this day.

5.2. Neo-liberalism

According to the orthodox neo-liberal view, a regime is a framework that helps facilitate agreements (Hasenclever *et al.*, 1997). This function of the ICPR was prominent in both interviews. The WGC recalled that his first briefing involved the internal politics of the different delegations. New ICPR staff hired after 1986 included a secretary and translators, stressing the coordinating function for inputs by member states. The importance of political sensitivity and informal learning identified above implies that working groups can be seen as an investment, reducing transaction costs. Formally, the RAP is an agreement; the 1986 shift did not mark a regime change. The regime feature that facilitated the post-RAP phase was an element of the original 1963 Berne Treaty, the flexibility of member states to acknowledge ICPR competency in any agreed matter (Frijters & Leentvaar, 2003). For example, the structure of working groups changed with the ICPR agenda (Blatter, 1994; Dieperink, 2010), including establishment of the first working group on ecology (WG Ecology) after the Sandoz disaster. The ICPR regime itself changed only with the adoption of the Rhine Convention in 1999, which integrated the RAP, European law and the Helsinki Convention. It is likely that the maintenance cost of parallel agreements exceeded regime benefits at that point, an expected trigger for regime change in neo-liberalism (Hasenclever *et al.*, 1997).

Regarding the lead questions, analysis of institutionalization levels and interests provides insights into internal dynamics. The former is relevant to understanding member states' efforts to implement a non-binding 'gentlemen's agreement'. A high degree of institutionalization and trust, meaning that behaviour reflects established rules in and conforms to mutual expectations, would explain high commitment in the absence of formal enforcement mechanisms (Keohane, 1989; Klijn *et al.*, 2010a). The WGC interpreted the non-binding form of the RAP as an expression of trust, in line with this assumption. But only 10% of TRBM arrangements have some kind of enforcement mechanism (Bernauer & Kalbhenn, 2010), so a non-binding approach is the international norm, not an exception or evidence for such trust. ICPR history does not provide support for high levels of trust and institutionalization during RAP negotiations either. The ineffectiveness of non-binding agreements triggered the shift to binding treaties in the 1970s (Blatter, 1994), and allegedly the Germans refused even to meet the Dutch to discuss pollution control in the summer of 1986.

Without great trust and strong normative frames, neo-liberal theory would expect a strong influence of national interests in negotiation outcomes in a crisis situation, not far-reaching concessions. Germany's national interest in pollution control increased after Sandoz, but this alone would not explain an unprecedentedly ambitious agreement or big policy innovations in record time. On closer inspection, the RAP goals were neither. The protection of drinking water reflected European Directives on Surface Waters (75/440/EEC), Groundwater Pollution (80/86/EEC) and Drinking Water (80/778/EEC) that member states were already legally obliged to implement, as well as demands raised by drinking water companies since the 1970s (RIWA, 2010). The North Sea goal matched the 1984 North Sea Action Plan and was tightened only after a massive algae bloom in 1988 (Huisman, 2000). The most famous goal of the RAP, the reintroduction of the salmon, was a light version of the 1978 European Directive on fresh water quality to support fish life (78/659/EEC) and may have been selected for publicity reasons (RIWA, 2010). Overall, neither the form nor the content of the RAP indicate a move beyond

interest-based politics. Reports and interviews also indicated that state actors were not as committed as the ‘success story’ suggests. External actors, including a Sandoz company fund and the European Union, contributed millions of Euros to research, river restoration and pilot projects crucial to the ‘enormously expensive’ salmon programme (Blatter, 1994). WG members were sometimes unable to deliver results because promised resources were not made available. This is particularly noteworthy since CC delegates in some cases were the directors of working group members.

A very different picture emerges for the ICPR knowledge side itself, especially for actors that newly joined the ICPR after 1986. The interviews indicated that the RAP represented a normative frame for the Secretariat and for some working groups. Two primary goals of the RAP, the return of the salmon and reducing core pollutants by 50%, emerged as shared symbols and focused collective activities. The RAP gained characteristics of customary law for some Rhine-related programmes, since involved actors took it as a guide for national measures. Agencies are said to be imbued with the logic of the political decisions that created it (Cohen, 2012). In the case of the RAP, some knowledge-side actors joined a process created to ‘save the river’ (ICPR, 2003) and this became the guiding norm of what was acceptable.

5.3. *Constructivism*

Constructivist analysis offers insights into the role of learning on identities, crisis response and practice changes in international collaboration. The connection between member states’ identities and their response to events is easily illustrated. Switzerland behaved as a ‘clean’ and ‘upstream’ country until the Sandoz accident, Germany similarly switched from an ‘upstream’ to a ‘downstream’ identity, whereas France behaved as ‘upstream’ and strongly ‘sovereign’ throughout. The personal identification of some actors with the ICPR process has already been described; a former ICPR president summarized their collective identity by stating that nobody could be against cleaning up the Rhine (Caspari & Heyde, 2004).

At the policy level, enough collective identity existed in 1986 to trigger a collective response to the new threat. According to the SO, the first reaction to Sandoz was ‘we need more people’; the ICPR was a highly resilient organization, able to absorb enormous political pressure and massive changes without conflicts (Scheffer, 2009; Öjendal *et al.*, 2010). The working group structure was likely to be an important contributor to the adaptive capacity. It allowed the policy side to agree on broad, unspecific goals, while negotiation of potentially controversial details was delegated.

Regarding the contribution of knowledge to the post-1986 shift, constructivist institutionalism points out that new practice can be consciously introduced by a state actor. If a collective consensus on national identity breaks down, a state can engage in critical reflection and introduce a transformed approach to its international interaction with visible gestures. Based on the data available, such a transformation took place in Switzerland. An 1990 inventory of industrial sites with dangerous substances revealed unexpected exposure to threats in Switzerland, after which it switched its role in the ICPR ‘from Saulus to Paulus’ (Blatter, 1994: 29). For the other states, arguments before the European Court of Justice indicate no deeper shift in attitudes. Germany, France and the Netherlands faced proceedings for failure to implement European Water Directives both in the late 1980s (cases 252/85, 131/88 and 140/88) and around 2000 (cases 184/97, 152/98 and 130/01). France and Germany argued that emission standards should not be connected to the quality of the receiving water in both periods. Germany implicitly questioned even the precautionary principle in the later case.

For the knowledge side, a shift in attitudes was observed, but it was not based on active reflection and learning either. New actors spent little time investigating past practice when joining the ICPR. Previous actors described a long-term improvement in both collaboration and water quality starting in the 1970s (Huisman, 2000; RIWA, 2010). The WGC acknowledged previous developments, but the personal narrative focused on the evolution of the working group after 1987. The SO openly stated that the large-scale build-up of treatment capacity was ‘over’ before the RAP was adopted. But in 1987 there was no attempt to learn from the past successes or the ‘utter failure’ of the historic chloride conflict, because there was ‘no time’. Changes in knowledge-side practice seem, therefore, mostly an incidental by-product of new leaders joining the ICPR.

5.4. *Epistemic communities*

The ICPR and ‘the water community’ have been considered epistemic communities before (Dieperink, 1998; Lindemann, 2008; Öjendal *et al.*, 2010), but studies usually fail to confirm a shared political mission of experts. The SO observed that some working groups fought over technicalities more than the policy side; and technical professions challenged by political goals that were beyond their field of expertise faced harsh learning processes. So the assumption that ICPR WGs automatically formed epistemic communities has to be rejected. In fact, some WGs are likely to have included members of alternative epistemic communities, such as water engineers who were also engaged in a separate international commission for hydrology of the Rhine (Blatter, 1994; Partzsch & Ziegler, 2011).

The institutional analysis above suggested, nevertheless, that an epistemic community formed during RAP implementation. The SO recalled an unrepeated sense of mission in the CC at the time, so the community included at least some members of the strategic level in addition to the WG Ecology, the WG Water Quality and the Secretariat. It did not exist when the RAP was prepared. To demonstrate scientific objectivity of the RAP draft, the Dutch government hired an outside consultancy at the time, indicating that the ICPR knowledge apparatus lacked the ‘authoritative claim to policy-relevant knowledge’ in the perception of some actors relevant to RAP approval. In contrast, during the RAP implementation, the plenary and CC called on WGs independent of their individual mandate for support with politically sensitive questions.

Regarding the influence of the knowledge side, adoption of the RAP restricted influence of the epistemic community on policy innovation, but impacts on policy selection were likely to be significant. Neither the data nor the technical means needed to implement the RAP were available in 1987. The goals needed clarification by experts and outside pressure quickly withdrew as political attention shifted to the collapse of the Soviet Union. If ‘definition of alternatives is the supreme instrument of power’ (Schattschneider 1975 in Haas (1992: 16)), the knowledge side was much empowered under the RAP and very efficient in the task. A former chair of the Dutch delegation recalls the WG Water Quality producing fast agreements while the parallel European process seemed to go nowhere (RIWA, 2010). The epistemic community seems to have been very successful in shaping institutions as well. The post-RAP ICPR is named as a model for WFD procedures (ICPR, 2003) and flood control in several river basins adopted the Rhine process.

The speed and successful process design was, however, not matched by coherence with the paradigm shift to integrated water management taking place at the time. Water quantity was not considered in the RAP. A flood disaster in 1993 put it on the ICPR agenda, but integration into the formal agreements required a second disaster 13 months later. The ICPR did not include all basin countries until the

WFD mandated it. An ecological approach to water pollution was advocated in European environmental policy as early as 1977 (European Commission, 1977; Lanz & Scheuer, 2001), but the ICPR focused on substance concentrations until after Sandoz (Blatter, 1994; RIWA, 2010). The SO confirms that the ecological perspective only slowly permeated outside the WG Ecology. Integrated approaches diffused into European water policy through the 1994 Helsinki convention and the WFD development, not through the ICPR (Moellenkamp, 2007; Savenije & Van der Zaag, 2008; Molle, 2009). In fact, the interviews suggest that the ICPR epistemic community was reluctant to engage in the European policy discourse, which may have contributed to a mismatch with the WFD (Chave, 2001) and weakened ICPR relevance in the long term.

Similarly, little evidence suggested that the ICPR epistemic community successfully diffused best practice into national water policies. National experts from the Netherlands, Germany and France assembled extensive reports on Rhine pollution for the ICPR, but concurrent mandatory reporting for the EU was deemed at or below average (European Commission, 2003). The European Court of Justice found that the countries did not have sufficient national pollution control programmes. Even the collaborative spirit did not become common knowledge in participating countries (Wiering *et al.*, 2010).

5.5. Institutional bargaining

The general characteristics of the ICPR regime supported institutional bargaining. A unanimity rule was enshrined in the Berne Convention and integrative bargaining aiming for long-term relationships, mutually beneficial solutions and shared information was the norm. The broad goals of the RAP were in line with negotiations under the ‘veil of uncertainty’ and typical success factors including crises, personal leadership and salient solutions supported agreements.

Regarding the guiding questions of this study, it seems, however, no longer sufficient to investigate the respective contributions of the knowledge side and the policy side to successful regime development. The institutional, constructivist and epistemic community analysis all suggested that the knowledge side formed a separate regime within the ICPR at the time. The interviews imply that they also showed characteristics underpinning scale dependence in geographical or jurisdictional entities. The self-understanding of politicians and technocrats used to distinguish knowledge and policy side in this study pointed to differing sources of behaviour. Only WG chairs received feedback on deliverables, so WGs were likely to judge outcomes more by process legitimacy, while the policy side is likely to have assigned more importance to outcome legitimacy (Partzsch & Ziegler, 2011). Finally, the interviews described WG specific rules for compliance and behavioural transparency. WGs had no formal mechanism for intervention or sanction and members did not formally interact between quarterly meetings. Broken commitments were, therefore, only discovered in meetings and the WGC felt that delegations did expect the chair to act on such occasions, for example ‘negotiating’ compromise solutions in informal but ritualized consultations during coffee breaks. This implies that the internal dynamic of the ICPR may have gone beyond regular institutional bargaining and assumed the characteristics of vertical interplay (Young 2002a, 2006).

Observed dynamics resembling scale-dependent, cross-level interplay included working group equalizing capacities across national boundaries, collectively empowering their position *vis-à-vis* the policy side. Regarding the former, the working group internally compensated for the unfulfilled commitments of the policy side as local agencies of one country pre-financed the work of other members who lacked resources. Regarding the latter, information about internal conflicts in countries was shared within the

WG and tactically used. Some working groups collectively backed the WG results independent of tactical moves by policy-side actors from their respective home countries. The data available at this point are not sufficient to conclude confidently the formation of a scale-dependent sub-regime in the working groups; the observed behavioural pattern may have resulted from the presence of national scale-dependent regimes in the group, such as the German *Länder*. But the possibility makes further analysis highly relevant to the transferability of lessons learned to other regions. The dynamics of vertical interplay can facilitate constructive co-management outcomes, but also trigger destructive patterns like ‘duelling experts’ and even regime collapse under certain circumstances (Young, 2006).

6. Two speeds of collaboration: implications

6.1. Influence of knowledge-side actors

Despite limited data collection for this pilot study, an interesting picture emerges regarding the mechanisms through which knowledge-side actors influence TRBM. One key finding is that all five theoretical approaches chosen offered clear explanations for the observed events, highlighting different aspects without obvious contradictions. Common denominators between theories and schools of thought might, therefore, offer the best insights. One common aspect of all five approaches relates to processes of self-organization after systemic disruptions. Historically contingent structures are implied in the neo-realist ‘balance’ (Waltz, 1979), in institutional ‘robust organizations’ (Keohane, 1998), in constructivist ‘*de facto* structural parameters’ (Wendt, 1992), in epistemic ‘hegemonic discourses’ (Warner *et al.*, 2008) or in ‘routine patterns’ in institutional bargaining (Young, 1989). The dominant mechanism at play might therefore concern organizational path dependencies occurring because ‘a group of actors holding the same management paradigm will most likely reinforce their belief through their interaction’ (Pahl-Wostl *et al.*, 2010).

Sydow *et al.* (2011) describe the evolution of such ‘embedded action patterns’ in a characteristic three-phase process (Figure 1). In this model, the neo-realist findings correspond to available action options (distribution of the stars), institutionalism describes the shape of the range of options (the grey area) and constructivism contributes explanations for critical junctures and emergence of a path. Finally, institutional bargaining and the epistemic communities approach specify the shape and content of the resulting pattern. The interviews contained evidence for path dependency at different levels. Some practices preceded the RAP; according to the SO, new actors adopted established reporting practice in 1987 ‘because we knew how to do that’. Self-enforcing practices did, however, not extend to trust and collaboration. NGOs that joined the institutionalized working group in the mid-1990s adjusted their behaviour to the group’s *modus operandi*, but the SO observed that once highly collaborative working groups can revert later. This implies a difference between a continuously evolving formal regime practice embedded in treaties, agreements and state-actor behaviour and irregularly shifting informal rule sets of smaller actor groups who start fresh with every substantial inflow of new actors.

The model suggests that a strong knowledge side, empowered by forming an epistemic community, could significantly influence TRBM outcomes by defining the range of options and advocating preferred options for the resulting path. The importance of practice and routines means that political will alone might not suffice to override action patterns established by the knowledge side. Theoretically, the knowledge side might lead the process if it is able to establish a hegemonic discourse that

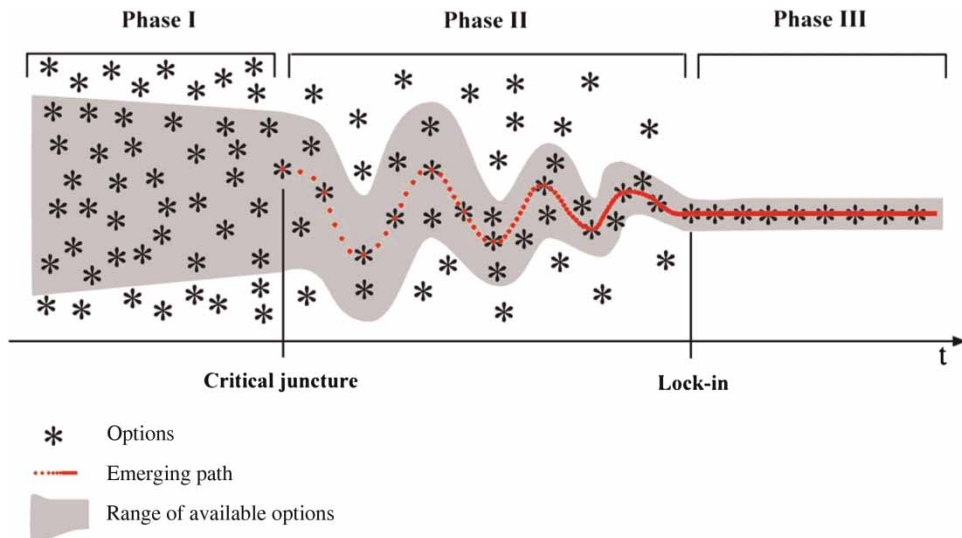


Fig. 1. Constitution of an organizational path (Sydow *et al.*, 2009: 692).

de-politicizes core decisions (Warner *et al.*, 2008). But the study also highlights the interdependency of policy processes, in this case the emergence of the European Union, of the international integrated water resources management (IWRM) paradigm and of new alliances after the collapse of the Soviet Union. Today, the ICPR is subject to European water legislation, which does not include provisions for autonomous river basin authorities (Lanz & Scheuer, 2001). So the influence of a strong knowledge side is probably always linked to the relative influence of the regime it leads in a wider political context.

6.2. New questions for capacity development

While the identified channels of influence mostly reflect the findings of the epistemic communities approach, the study adds a number of implications regarding the emergence of such groups and their role within a TRBM framework. The success factors for knowledge-side collaboration might be similar to those of international regime formation. The neo-realist analysis adds that crises should be seen as disruptions of power balances and that new structures, new capacities, or even targeted ‘knowledge bombs’ have disruptive potential just as do visible natural disasters. Constructivist analysis highlighted the effect of personnel changes in disrupting practice and suggests that insights from change management and reorganization might offer helpful clues to the capacities needed for long-term success.

The importance of leadership in technical subgroups for overall outcomes is especially interesting for capacity development. Individual choices by working group leaders created strong communities, meaning the mechanism could be targeted by capacity development measures. The idea of process managers discussed in TRBM literature (Kranz & Mostert, 2010) seems, therefore, right in principle. Network management research suggests, however, that process management is not the most important factor for improving either trust or outcomes (Klijn *et al.*, 2010b). Related research describes specific qualities of ‘human attractors’ in knowledge networks (Nousala *et al.*, 2011). The reported importance of intrinsic motivation and strategic choices, as well as the fact that new groups may start from a clean slate,

marks the role as a more entrepreneurial activity. TRBM might actually resemble corporate portfolio management (Hedley, 1977; Kotler *et al.*, 2010), in which established WGs like ‘cash-cows’ reliably churn out data, while new topics require active investments and trust-building like the ‘stars’ of a product pipeline.

The policy implications are very different and involve asking if the formation of knowledge regimes within basin organizations should be actively sought. The attitude of leaders in knowledge networks determines whether network outcomes will benefit an organization or only the knowledge group itself (Nousala *et al.*, 2011). Epistemic communities looking for compromises seem to be more successful than those trying to convince others of their point of view (Adler & Haas, 1992) and management strategies focused on connecting the right actors have the most important impact on outcomes (Klijn *et al.*, 2010b). The challenge of path dependency in organization is that the resulting macro-behaviour of the regime might not reflect the micro-motives of choices made to empower certain subgroups (Schelling, 1978). As one example, the constructivist analysis suggested that working groups were an important element of a collective response mechanism. If this applies, the technical productivity of a working group might be less important than the capacity to absorb change. Any manual providing blueprints for ‘effective’ practice to avoid year-long process negotiations might eliminate a crucially important part of the process.

The analysis of epistemic communities in particular delivered ambiguous results regarding the desirability of a strong and institutionalized knowledge side. An epistemic community after 1986 had a substantial influence on policy selection and institutional design, probably including WFD procedures. But it remains unclear if this contributed to improve TRBM or obstructed policy change. For example, integrated water management principles highlight the information needs of various stakeholder groups (NeWater, 2005). But under the WFD, central data collection and monitoring, as practised in the ICPR, is a dominant mechanism; the SO observed that communication with the public actually declined as reporting to the European level became a central function of the ICPR.

The institutional bargaining perspective suggests that the ICPR knowledge side might value process legitimacy over outcome legitimacy. A strong knowledge side would, therefore, support an assumption that cooperation is sensible, neutral and inevitably a public good (Allan & Mirumachi, 2010). Research shows that participants sometimes judge cooperation as successful even if measured impacts are questionable (Wiering *et al.*, 2010). Trust in groups increases the perceived quality of outcomes, especially in the assessment of actors in managerial positions (Klijn *et al.*, 2010a) – a group that is most likely to write guidelines and provide interviews for case studies. Collaboration implies an increased problem solving capacity, but a negotiated compromise might actually be a bad outcome (Sebenius, 1992; Young, 2006; Scheffer, 2009). Öjendal *et al.* (2010) argue for approaches that move away from cooperation for cooperation’s sake and focus on outcomes.

It is well documented that the water quality of the Rhine has improved substantially since the 1970s (European Commission, 2003). Research and data collection under the RAP made many improvements visible in prominent reports, which may have fostered a strong association of success in water quality improvements with the programme. RAP goals are based on the year 1985, but given the long processes of group formation described above, results achieved by 1990 might reflect the legacy of earlier programmes. In further research, a detailed chronology of activities based on actors’ accounts should be compared directly with water quality data in a joined timeline. If the RAP reported successes it did not create, lessons drawn from analysing the RAP will be likely to lead to disappointing results.

Studying the success of action plans and commissions modelled on the RAP and ICPR would be highly interesting in this regard.

7. Conclusions

This study explores the value of a phenomenological approach to analysing transboundary river basin management, in order to open the black box ‘regime’ and gain insights into underlying mechanisms.

The limited interviews and documents analysed for this pilot indicated different levels of institutionalization in ICPR subgroups at the same point in time. As institutionalization reduces transactions cost and facilitates agreements, this means that subgroups might move at different speeds relative to each other, a systemic dynamic able to influence overall outcomes. The existence, quality and institutionalization of subgroups within a river basin framework manifests fully only in personal perceptions of individual actors, providing support for the suggested approach.

The theoretical assessment of actor accounts suggests that internal dynamics of the ICPR moved beyond institutional bargaining after 1986 and assumed patterns similar to scale-dependent, cross-level interplay. Such a dynamic would have significant implications for practice guidelines and capacity development, since cross-level interplay can either contribute to the success of a regime or, in extreme cases, lead to the collapse of the process. Further research should include accounts from several subsystems of the ICPR, including all nationalities and actors involved before and after 1986. Furthermore, the differentiated institutional timeline should be complemented with time series analysis to gain a better understanding of the connections between actions of the subsystems and the observed impact on water quality.

Finally, the analysis confirmed that this ‘European experience’ in river basin management was exceptional – but it did not find evidence that the mechanics and dynamics were specifically or typically European and not transferable. The idea that the ICPR switched overnight from unsuccessful and hostile to effective and friendly seems a massive simplification. ‘Knowledge is bounded and conditioned by national and international power and security realities’ (Haas, 1992), in the case of the ICPR as much as in other contexts. The challenge of further research is to distinguish the exceptional context of the RAP, ranging from Chernobyl to establishment of the European Union, from institutional mechanics that determined the outcome. At the moment, analyses of the RAP too often assume that actors’ actions corresponded directly to their motivations. It recalls the classic warning of Waltz (1979) that ‘in international politics one frequently finds that rules inferred from the results of the interactions of states are prescribed to the actors and are said to be a condition of the system’s maintenance’ (p. 120). The ICPR has valuable lessons to teach about how trust and knowledge collaboration can be stimulated, but such lessons have to be matched with a better understanding of conditions needed to make such collaboration a driver of constructive TRBM.

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