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Centralisation, Polarisation and New Demands on Governance

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The Water Resources Policy Process in India: Centralisation, Polarisation and New Demands on Governance

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Abstract

This paper reviews the literature on the characteristics of the post-Independence water resources policy process in India, with an emphasis on the recent period when critiques of existing and demands for new or adapted governance structures have become increasingly forceful. It will be shown that the dynamics of the water resources policy process has been studied to a very limited extent, compared to, for example, the study of (economic) impacts of policies and local-level water management practices. The first point the paper makes is that in an era of institutional transformation in the water sector, analysis of the actual dynamics of policy processes is required. The paper will sketch the 'policy as process' and 'politics of policy' perspectives from which such analysis could be undertaken. The paper then moves on to discuss certain main characteristics of the water resources governance structure and policy process in India. A first main characteristic is that of centralisation and hierarchy, rooted in the post-Independence planned development approach, the inherited structure of the government administration, the specific nature of the civil engineering dominated water resources bureaucracy and other factors, which have reproduced themselves in new forms and shapes under competitive populism, but are facing severe dilemmas and problems in the age of liberalisation. A second characteristic of the Indian water resources policy process is the high degree of polarisation in the debate and the interaction between civil society and the state. The Narmada and interlinking of rivers issues are cases in point, but it is a much broader phenomenon. This points to the absence of (effective) institutions for mediating water resources conflicts, particularly at the intermediate level. Great hopes are put by some on the decentralisation through the Panchayat Raj institutions. The paper argues that the PRI system and 'localist' approaches in general will be unable to address some of the core problems and issues in the water sector. The paper concludes with a research agenda for strategic analysis of policy processes in the water sector from a political economy of public policy perspective.

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1. Introduction

When I left India at the end of my Ph.D. fieldwork in November 1992, having studied large-scale irrigation management for almost two years in the state of Karnataka, I couldn't see how 'irrigation reform' was going to happen and where it would come from. My impression was that of a sector with major problems in terms of efficiency, benefit distribution and sustainability, but with none of the main stakeholders showing any sign of interest in a change of the status quo. The Irrigation Department seemed to be stuck in its hierarchical and technocratic mode of operation. I had been desperately seeking dissident engineers, but hadn't found them. The irrigator community seemed to be solidly dominated by the 'economically and politically sound' as the local phrase went, that is, the larger farmers who appropriate the larger part of the water. Upsetting the balance of power that continuously reproduced inequity seemed suicidal for local politicians.

To my great pleasure I was proven wrong a few years later. Maybe I had been wrong and had misperceived the situation even in 1991-92, or maybe the times were changing due to the liberalisation policies pursued by the Indian government. Maybe both, or something else.[2] In any case we have now had about ten years of efforts at water sector reform in the broader context of overall economic and political reform. In the water sector[3], the irrigation sub-sector is of course not the only domain where changes have been occurring. The watershed development programme took off on a large scale, and there were other developments, like the intensifying critique of and activism in relation to the environmental and social effects of water resources 'development'. Not all, and perhaps only a very limited part, of this dynamics was directly related to the liberalisation thrust, but nevertheless that has been the broader process in which the beginnings of water sector transformation are set, and, arguably, by which they are increasingly influenced.[4] Something started moving, and some of this got incorporated in policy documents and policy initiatives. Saleth, in a recent IWMI paper, even sees some of these movements, like the adoption of national water policies and other government policy initiatives, as very significant and the beginning of an irreversible process, even when some of it is largely still of symbolic nature at present (Saleth, 2004).

This to me seems to be the optimistic view. I would agree that there is more dynamics in the water policy domain in the last decade than in the decade preceding that, but still, in a comparative perspective the actual reform of Indian public water resources policy and practice is still very modest indeed. In terms of irrigation reform, the Indian practice, even in 'frontline' states like Andhra Pradesh and Madhya Pradesh is nowhere near the scale of transformation that Mexico experienced from the early 1990s for instance.[5] Some would say the reforms in Andhra Pradesh and Madhya Pradesh have accomplished very little at all. In terms of public

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[2] 1992 was also the year that the Report of the Committee on Pricing of Irrigation Water was published. The Committee is usually referred to as the Vaidyanathan Committee, after its chairman. Many active in the sector consider this as a comprehensive and authoritative statement on the ills of the irrigation sector and their possible remedies. Whether or not, and how, this report triggered the new initiatives in the case of Karnataka is not clear.

[3] 'Water sector' is very loosely used here to indicate the collection of organisations involved in water resources 'development', governance, management and finance. The core of this network of organisations from a public policy perspective are the organisations involved in water resources 'development' as conventionally understood: the planning, design and construction of water infrastructure. As regards government organisations no coherence is implied – one of the issues actually is organisational and policy fragmentation.

[4] In times when change is easily attributed to globalisation it may be important to explicitly make the point that ideas for water sector policy reform originate from well before the early 1990s, also within the government. The latter is clear from the 1987 National Water Policy for instance.

[5] On Mexican irrigation reform see Kloezen 2002 and Rap 2004; its possible relevance for India is discussed in Shah, Scott and Buechler. 2004.

policy the National Water Policy's advocacy of an 'integrated approach' looks rather non-committal and weak as compared to, say, the European Union's Water Framework Directive.[6] In the sector most suitable or vulnerable (with the choice of phrase depending on one's position) to privatisation, urban water supply, actual movements toward privatisation of service provision or assets (by involving either foreign or domestic private sector parties) have been very limited as compared to some other places in the world[7], despite, or maybe because of, heated debate on the issue. It is probably a good thing that India has 'missed the hype' in this respect as transnational water companies seem to be rethinking their interest in the urban water supply business in developing countries (see Hall et al., 2004).[8]

However, it is not my objective to rank India on a global scale measuring the depth and scope of water sector reforms. Such comparison would, in fact, in some respects contradict the framework presented below. The issue I want to explore is a different one.

There is a paradox in the Indian condition with regard to water sector reform. India has been a functioning political democracy for more than 50 years and is rightly very proud of it. It has a free press and a rich intellectual culture, which means that there is a lot of debate and analysis of the predicaments related to water resources management, as there is to other things. There are a large number of civil society organisations, active from the local to the global level, doing work on water resources and other form of natural resources management. That is one side of the paradox. The other side is that despite this, there is very little movement as regards the redefinition of the mandates, roles and activities of the government water bureaucracy. This conglomerate of institutions has, both at Union and State level, been extremely resistant to change. Very few of the new demands on the sector have been internalised. I would say that so far the Indian hydrocracy has been largely successful in ignoring the societal demands for new and different approaches to water resources management and been able to keep itself to its main professional orientation, the planning, design and construction of water infrastructure – preferably large-scale. Also at the level of formulation of new public policy the changes have been very limited. Even at the symbolic and discursive level the faithfulness to the 'old paradigm' is very strong, and those who advocate the need for alternative approaches seem to be making very little headway within the domain of governance and policy. The dominant format seems issue-based agitation leading to certain (temporary) concessions of governments to demands of the pressure group. One could even suggest that the interlinking of rivers discussion of the past two years has put the water policy discourse firmly back into the realm of 'harnessing available resources'.

The Indian water bureaucracy is not alone in this defensiveness. It is a feature of many countries with large and powerful water bureaucracies responsible for irrigation and/or hydropower and/or flood control. Egypt and Pakistan are cases in point.[9] But in these cases there is perhaps less of a paradox. These are not nearly as open and democratic societies as India is. At the same time there are countries that do have dynamic reform processes ongoing. Post-apartheid South Africa is an example, Mexico was already mentioned, Indonesia has been moving towards substantial reforms in the water sector, as well as several other countries.

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[6] For critiques of India's most recent National Water Policy see Iyer (2003), Fouzdar (2003), Bandyopadhyay (forthcoming). Shah, Scott and Buechler (2004) identify the lack of an operational component as the main weakness of the National Water Policy, as does Iyer (2003).

[7] And also, domestically, less far reaching as compared to the electricity sector.

[8] This report is available at http://www.psiru.org/reports/2004-12-W-Asia.doc and gives a recent assessment of privatisation of urban water supply in the Asia-Pacific region. In summary it states that "The [multinational] companies are struggling with existing contracts, have policies to withdraw, and show no enthusiasm for expansion except in China." (p.3)

[9] For some analysis of this see contributions in Mollinga and Bolding (2004).

The paradox is only a paradox. Instead of a simple linking of the overall nature of the socio-political regime and the behaviour of a water resources bureaucracy, we need to ask the question what it is about the Indian socio-political context and processes of governance and administration that explains the particular defensiveness of the water bureaucracy against the internalising of new social, economic and environmental demands that are put on it. Or put differently, why is water sector reform such a hard nut to crack, even when we seem to have all the good reasons for reform with us on paper and in the public discourse? And, one could add, with also at hand almost universal recognition of the importance of water as a source of livelihood and socio-economic prosperity, and acknowledgement of its proper governance and management as essential for different types of sustainability and security.

I don't pretend to have a comprehensive answer to this question – this paper is part of a search for an answer. One response to the posing of the problem would be to argue that I am simply too impatient, that ten or fifteen years are a very short period for as large a country as India, and that I am projecting a non-existing problem. When that argument would hold water so to speak, I would gladly be convinced, and join the ranks of the hopeful who think we are on the right track, even if the pace of the movement is slow. However, I think such a response is somewhat escapist. Another response would be to argue that it is not worth worrying about the government policy and administrative framework and that change will come from steady expansion of bottom-up, grassroots activity. Again, this is somewhat escapist in my view. For the moment I would want to maintain that there is an important strategic question to be answered regarding how to push through some of the core requirements of water sector reform, and through what process a socio-political alignment or coalition could come about to achieve this. Because – we are a bit stuck, aren't we?[10]

2. Main Argument

This paper argues that there is a lack of knowledge on the Indian water sector policy (reform) process, and that production of such knowledge would be of strategic value for enhancing reform in the sector. It also suggests that there are three strategic issues that are of particular importance.

1) Understanding the rationale, resilience and dynamics of the water resources bureaucracy, particularly the core irrigation/hydropower/flood control part of it. Strategic question: what are sensible entry points and methods for enhancing internalisation of a more 'integrated approach' to water resources management by government water bureaucracies?

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[10] Interestingly, Anthony Bottrall, Programme Officer at the Ford Foundation New Delhi around 1990 in charge of water resources/irrigation, wrote the following about irrigation reform in 1992. "[T]here could be a possibility of [an irrigation reform] agenda being incorporated into – and thereby reinforcing – broader-based movements for democratic reform." (Bottrall 1992: 245) "Those currently opposed to the status quo, or with good reasons to oppose it, include finance ministries (concerned about ID's never-ending demands on public funds); politicians and their constituents in regions disadvantaged by present patterns of water development (either through direct damage, as in waterlogged areas, or through long neglect, as in tank areas); environmental action groups; local issue-based groups (such as opponents of state water policies in Maharashtra); and non-agricultural water users, including urban domestic and industrial users, who suffer from the absence of efficient methods of inter-sectoral water allocation." (ibid.: 244) That coalition has not materialised so far.

2) Investigating whether and how advocacy and agitation for alternative approaches to the planning and decision-making on water resources do or do not consolidate into institutional frameworks, particularly at the intermediate level. Strategic question: how can inclusive forms of water resources governance, management and finance practically be given shape, particularly at scale-levels above the local/village?

3) Understanding whether and how policies/interventions get captured and transformed at the local level by local interest groups, government officials and other actors. Strategic question: what are the opportunities for (new) forms of interaction with government agents and agencies that would enhance the efficiency, equity and sustainability aspects of water resources policy interventions, and the capacity for context specific technical and institutional innovation?

This argument is developed in the following steps.

I first briefly sketch the state of our knowledge on the dynamics of the Indian water resources sector – not in substantive terms summarising available empirical evidence, but in terms of the type of understanding that we have at hand.

Secondly, I show that the water sector is facing a new set of challenges that it will not be able to address effectively through the existing paradigm and institutional framework, and for which a local, village-focussed approach also falls short. In short, the argument is that because basins are closing and demand for water by different user groups are increasing, the allocation of water gains new prominence, while no effective institutions exist for the negotiation of such claims at the scales at which they occur. Here lies a concrete opportunity for devising new state-resource user interfaces.

As a third step I look at the broader issues involved. What is proposed is not just an exercise in social engineering to fill an institutional gap. The attempt is to propose pragmatic ways forward given a certain understanding of the socio-political context of the water sector reform process. In this section I look at the features of that socio-political context.

The next, fourth step is to explicate the analytical framework for the analysis of policy processes implicit in the earlier presentation.

In the concluding section I summarise the argument and outline a research agenda on water resources governance.

3. Existing Analysis of the Water Sector and Water Sector Reform

Before suggesting that we need new types of research to assist the water sector reform process, it makes sense to look at the type of analysis already available. I classify that in three categories.

1) Statements on desirable water policy

The texts under this heading present the contours or details of new or better policy that is felt to be needed, or suggest ways by which better implementation of existing policy can be achieved. A problem analysis of the current situation is often part of the presentation. Several types of documents are part of this category. A first one are government commissioned reports

like The Report of the Committee on Pricing of Irrigation Water (1992), and numerous other documents advising sensible things on specific elements of the water sector that would need to be altered. Another category is policy documents proper, like the National Water Policy documents or Acts. A more general category of texts are vision documents, manifestos/statements of different groups ort networks that state desirable principles and features of (better) water policy. NGOs also produce their own policy texts.[11] Yet another category are the loan and project documents that stipulate what institutional changes will be implemented as part of a certain set of activities. An example are the institutional conditionalities of the World Bank supported WRCPs (Water Resources Consolidation Projects) in different States. Together these documents and their presentation and discussion in the press, parliament, committees, workshops, and elsewhere could be said to constitute the 'formal', that is, government-connected water policy discourse, even when not all contributions may be primarily aimed at changing government policy.

2) Empirical studies on water resources management

India has a relatively rich literature on actual water management use and management at field/user/consumer level, and the impacts of that.[12] This literature consists of several sub-sets. One set is the academic literature published in journals like (most prominently) the Economic and Political Weekly[13] in India and a range of international journals. These studies are usually based on direct field research or secondary data, and tend to conclude with a set of policy recommendations. On several issues there are ongoing debates and exchanges for shorter or longer periods, and regularly such debates are published separately as edited collections. The angles from which this literature is written are the (agricultural) economics literature looking at 'impact' particularly, and a newer, often new institutional economics oriented, literature on the institutions and incentives that shape water resources management. The second literature is a sociology, political economy and social anthropology oriented body of work that has a focus on the social relations of water resources management, often taking the issue of unequal social power and its impacts as a core theme.[14] Part of this is also an academic literature on social conflicts and mobilisation in relation to water resources management, notably around dam conflicts/issues and a literature starting to report on experiences with Panchayat Raj institutions. Together this body of work constitutes the larger part of our database on actual water management practices in India.

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[11] See for example vision statements, outlines of strategies, evaluation documents, annual reports and publications on the websites of NGOs like WaterAid, WOTR in Maharashtra, Dhan Foundation in Tamil Nadu, and many others.

[12] 'Relative' is included in this formulation because it very much depends on what one takes as comparison or standard. Given India's population size it could be argued that there is not very much research, while some areas (both in the geographic and thematic senses) are definitely under-researched. Nevertheless, there is a large body of literature from which conceptual and policy ideas can be derived. The richness of Indian scholarship and scholarship on India is illustrated by its importance in development studies as a whole. This importance is also visible in water resources research.

[13] Other Indian journals that regularly publish on water resources issues on topics relevant to the theme of this paper (that is, on governance and policy) are the Indian Journal of Agricultural Economics and the Indian Journal of Public Administration. A regional journal that contains many good papers on Indian water resources issues is Water Nepal.

[14] In her review of the economics literature on irrigation published in 1990, Krishna Bharadwaj states that that literature lacks a 'social relations' focus (Bharadwaj, 1990). With the rise of NIE this is probably less true now than it was in the 1980s, but explicit discussion of the relations of social power is still rare in economics oriented papers.

3) A critical, oppositional discourse

This literature points out the problems and failures of the present water resources policies and institutions, as in environmental critiques, gender critiques, privatisation critiques, and others, and calls for a paradigm change in the sector, often in the context of a broader 'alternative development' perspective. The publications often have an advocacy or even agitational purpose, and are thus often very explicitly 'political'. Many academic researchers and policy actors might therefore feel they are not objective and contain insufficient evidence. However, they may simply have been written for different purposes than academic or policy discussions. This 'engaged' form of writing is also producing a body of serious, studious work that tries to combine academic rigour, political focus and initiatives for social transformation.[15] I would even be inclined to argue, though it is difficult to substantiate, that the more innovative research work on water resources policy and management increasingly tends to come from 'non-conventional sources', that is, not from universities and established research institutes.

Like all classifications this classification has its limitations. The presentation under the third category of the oppositional discourse already suggests there may be clear overlaps. Moreover, not everything fits in, and some research activities would explicitly try to combine the different foci. An example of the latter is the IWMI-Tata policy research programme based in Anand, Gujarat. It explicitly aims at the pursuit of practical policy initiatives in the water sector, with the help of and based on documented research, from a reasonably explicit standpoint about the direction of the transformation sought, and in collaboration with a wide variety of social actors, including NGOs and activists.

How research relates to policy varies. As this paper advocates doing more research on the policy process it is relevant to look at this variation in some detail. In a forthcoming paper I classify research in connection to irrigation policy in three categories: a) research for policy, that is, research on issues relevant to decision makers, b) research on the policy process, and c) research in policy (Mollinga, forthcoming). Each has a more reflexive/academic and a more action-oriented variant.

Research for policy

This is research analysing certain situations or phenomena and making policy recommendations about them. The reflexive variant is general academic research as referred to above under category b) above. The already mentioned IWMI-Tata policy research programme is an example of the more activist variant: pursuing innovative ideas, institutional designs and technologies, research them, and actively brief policy makers on this. The engagement with policy makers usually consists of discussions at workshops and seminars, membership of (government) committees, personal networking, publication and dissemination of results in policy-friendly forms, and the like. The more academically minded researchers in this category tend to, implicitly or explicitly, adopt a separation between research and politics, academia and policy. Researchers provide ideas, if need be options or scenarios; decision makers take decisions and make and implement policies The more activist/change minded tend to work on, implicit or explicit, understandings of the nature of the policy arena and how to act in it. By default or design this category of research – thus – tends to black-box the policy process.

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[15] Examples are some of the publications of CSE (Centre for Science and Environment) like the well-known Dying Wisdom collection on indigenous water resources technologies and institutions. Another is the Rethinking the Mosaic publication by a collaboration group of Indian and Nepalese scholars (Moench et al. 1999), and yet another D.K. Mishra's publications on floods in Bihar (see Mishra, 2002).

Research on policy processes

This is research that takes the policy process as its research object. Examples would be the investigation of the negotiations between development funding agencies and state governments and how these affect policy priorities, or at a more micro scale how political office bearers like MLAs (Members of the Legislative Assembly) influence policy implementation, or how an irrigation bureaucracy responds to pressure to reform, or how water users capture government policies and turn them to their own advantage, or how administrative procedures hamper flexible implementation, or how professional cultures bias implementers' perspectives. The list of examples is potentially endless. Again there is more reflexive, academic research possible (policy studies, institutional analysis), and more activist/advocacy oriented ways. The latter could be labelled as 'strategic analysis': research that informs strategic decision making by policy actors by providing understanding of the dynamics of policy processes and the trade-offs that are part of it. Policy actors are government officials at different levels, but also NGO staff, political parties, water users and users organizations. It is suggested in this paper that there is a scarcity of this type of research in the Indian water sector context.

Research in policy

In the third way that research relates to policy, the research becomes part of the policy process. The research activity is part of the policy process, and policy actors themselves are involved in it quite directly (while in the first two ways generally `independent researchers' are dominant in the implementation of the research). The more conventional mode of this research is research to get better implementation of a given programme, or research commissioned to develop a particular policy idea or project for a policy actor. This may be bound to individual projects (like in consultancy assignments), or to national policy (re)formulation, like in the work of committees drafting reports, Acts, or other forms of policy recommendation. The more interactive forms of this type of research would be those forms of research in which different stakeholders actively participate and interact. This could be through consultation, public hearings, public debate, but also through actual designing of and participation in the execution of the research, like in the concept of action research.[16]

Reviewing the literature on water resources, it is clear that 'research for policy' and the reflexive variant of 'research in policy' are the dominant forms. The types of research of the first classification are easily categorised under these headings. What we have only to a very limited extent is studies on the policy process itself. We don't know very much about what happens in the water policy domain: how new policies are articulated, how the hydrocracies precisely work, how policy elites and their networks operate, how lobby and agitation is dealt with by the government administration, how the negotiations between government and international donors takes place, and so forth. One could ask – where are the political scientists in the water sector; who is looking in detail, as a researcher, at the internal dynamics of India's domestic hydropolitics? [17,18]

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[16] In India 'action research' is generally loosely used for any research in the context of implementation, but it can also have a more political and interactive meaning in relation to emancipatory projects (for a discussion of the concept see for instance Noffke, 1994 and the editorial of the recently established journal Action Research (Brydon-Miller, Greenwood and Maguire (2003).

[17] Ramaswamy Iyer has done a great service to water policy studies with his recent book (Iyer, 2003) in which he describes, among other things, the history of certain administrative and policy processes in the water sector. It can very well be used as a basis for further enquiry into the dynamics of the India water resources policy process.

[18] Hydropolitics at the level of the South Asia region is reasonably well researched (see a.o. publications by Nepali scholars like Dixit and Gyawali, also see Crow (1995) and Iyer (2003)). These publications give interpretations of the

To give just one example, since Robert Wade's seminal paper on the system of political and administrative corruption published in 1982, there has been to my knowledge no additional substantive work on this topic in the water resources domain. And even for the less sensitive or 'sensational' topics, there is a scarcity of analysis. I know of no studies for example of the strategic configuration of interest groups or the dynamics of the state level network of 'senior' water resources 'experts' involved in policy making, that might or might not further irrigation reform in a state like Karnataka. And even if one would be able to find one or two relevant studies on such topics, there is no ongoing debate, no collective evolution of understanding.

To further illustrate this point it is worthwhile to look at the recent collection of papers from the IWMI-Tata policy research programme published in the 'Review of Agriculture' of the Economic and Political Weekly (Vol.39, No.31, 2004). In these 11 papers there is a lot of very interesting material on actual water management practices and their impact and experiments with new approaches, there are many critical observations on, if not outright condemnations of, the flaws of government policies and their implementation, there is a clear statement in the first paper that 'we are stuck' as regards water policy reform, with which this author very much agrees, as exhibited in the introduction. However, there is not a single analysis of the internal dynamics of the government organisations involved and strategic analysis of how they might be enrolled in a more constructive policy transformation process. There are series of statements on what good or better policy should involve and of examples that might be instructive, but no analysis of how exactly one might get from the present to that better future. If indeed 'we are stuck', more explicit reflection on the process of (policy) transformation might be a useful addition to the water policy research agenda.[19]

There is a paradox again here. At the anecdotal level and the level of day-to-day experience many people do have knowledge of the internal dynamics of policy processes and ideas on how to get from A to B, including academics. India is a country where substantial numbers of the academically active are involved in policy processes. Nevertheless, there is little systematic reflection on that involvement. Or is it because of that? I would repeat the question: where are the political scientists, public administration scholars and other disciplines looking at the internal institutional and organisational dynamics of the water sector?

One might ask what would be the use of such analysis of institutional and organisational dynamics? It's always dangerous to give Wade's paper on corruption as an example, because it suggests one is aiming for exposure, sensation and condemnation. That is, however, not the case. I believe we need such analysis to understand better the structural dynamics of the sector, which includes the systemic features of corruption and many other issues, to engage more effectively with the policy process, to further it, to move beyond oppositional for/against positions, and beyond preaching to the government what they should do but probably won't, and to establish more constructive engagement among the interest groups concerned.[20]

The most convincing argument in favour of such research, in this author's view, is that it tends to yield unexpected results. Such studies take us from general and grand schemes to the

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motives and strategies of the different national government. In the politics of water the study of hydropolitics is in general one of the better-researched levels. This may be because it is a very public phenomenon, involving parliamentary debates, discussions in the national press, formal meetings between delegations of different kinds, and the like. As it is about the relationships between nations it is also an acceptable topic for political scientists.

[19] The authors of these papers may well take a different view. This may have to do with the different ways in which 'process' is understood in different approaches to policy analysis. See the discussion of Grindle (1999) below for some elaboration.

[20] It may also be noted at this point that such research is well established in some parts of the world and actively mobilised by corporations and governments to do 'change management'.

practicalities of institutional transformation. Close study of policy processes tends to yield not only a more fine-grained understanding allowing for more 'contextual' designs of intervention, but also unimagined ideas for the transformation of policy and practice. Some examples can illustrate this.

One example from my own research is the study of main system management in the Tungabhadra Left Bank Canal and the picture this yielded of the management practices of the Irrigation Department bureaucracy. Given that Wade's research referred above had been done on the other side of the river and partly in the same system, though in a different State, I had imbibed a certain 'rent-seeking' bias in my a priori understanding of the irrigation bureaucracy. This was confirmed as far as the 'works' were concerned, but contradicted for water management (see Mollinga 2003 for a full account). The Irrigation Department had far less power in day-to-day water distribution in 1991-92 than in Wade's description of more than ten years earlier, in which the Irrigation Department could elicit bribe payments from 'water' by rumour mongering and other means. I found that institutional practices had emerged and been consolidated at all levels of the system amounting to different forms of rotational water distribution negotiated between the Irrigation Department and different irrigator groups. These negotiated patterns were a far cry from the officially planned water distribution schedule and instrumental in the reproduction of unequal distribution, but still a regularised pattern and no 'syndrome of anarchy'. Interestingly I found that such negotiation processes also took place within the Irrigation Department, between different divisions managing different sections of the main canal. This had produced an informal 'gauge table' regulating supply from division to division. It was informal in the sense that it diverged considerably from the official operational plan, but had much more practical value. The point is that the Irrigation Department officials exhibited much more agency in water management than the 'rent seeking' perspective allows for. This has also been shown in other cases like the Philippines (Oorthuizen 2003). The (incentive) structure of the Irrigation Department makes that such activity happens largely 'subterranean', but it does suggest that there are starting points for reforming main system management that are usually overlooked . It also suggests that there might be ways to enrol the bureaucracy in reform.

A rich example, though not situated in the water sector, of the unexpected results and new avenues for reform that grounded research on the actual dynamics of policy processes (an 'anthropology of the everyday state') might yield is illustrated by a two-part report on an investigation of the working of the local state in rural Bihar, Jharkand and West Bengal (Corbridge et al. 2003a, b). The research investigates the working of the Employment Assurance Scheme to understand the governance performance of these states, looking at four main functions of governance: developmental, empowermental, protective and disciplinary. The research documents the complexity and divergence of state action, the conflicts within and between different agencies of the state, and the challenges posed to these agencies by civil and political society groups. One finding is that under certain conditions district-level personnel acted to restrict opportunities for rent-seeking, a counter-intuitive finding in this context. The way state and civil/political society interact diversely in different places creates different opportunities and constraints for it to work as a developmental state enhancing 'pro-poor governance'. Despite an overall rather gloomy picture of the state's ability to refocus in this direction, the action research approach that the research followed[21] came up with a detailed list of concrete suggestions for change under five rubrics: encouraging political parties to increase the awareness and empowerment of the poor; changing the negative linkages between politicians and middlemen; bringing development issues to the top of the agenda; changing the

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[21] The report also has interesting things to say on the methodology of action research, which are not entered into here.

'I win – you lose' culture; and engaging local intermediaries more constructively (2003b:2568). Whatever the exact suggestions, the point in the context of this paper is that close study and engagement with the day-to-day practice of state governance and policy implementation may suggest concrete courses of action that more generalised accounts are likely to miss.

4. New Institutional Challenges to the Water Sector

When water sector reform is discussed at a sufficiently general or abstract level, there is nothing new in the present situation. For example, discussions on volumetric supply and pricing of water can be found in 19th century documents (see Stone, 1984). The recommendation to involve water users in management and to set up users organisation is at least as old as the report of the first Indian Irrigation Commission (1901-03). Basin level approaches to water management were tried in the 1950s. Water scarcity and drought seem to be eternal themes. And so forth.

However, when looked at in more detail there is a trajectory of transformation of issues and approaches to them. The scarcity of the 19th century was a rather different scarcity than today's; the water users to be involved in local organisations live in a very different society now than in the early 20th century; the basin approach of the 1950s aimed at different problems than the present advocates of river basin organisations have in mind. And so forth.

What is characteristic of water resources management of the early 21st century is the need for an 'integrated approach' as articulated in the present water policy discourse, particularly through the notion of IWRM (integrated water resources management). The idea of 'integration' has many sources and meanings, and some would argue that it has already lost its sharpness and usefulness before serious implementation of it has even started. Indeed, the notion seems to be a catch-all, bringing under one semantic roof things like coordination of sectoral water use and management organisations, forging new linkages between upstream and downstream water users, interdisciplinary analysis of water resources problems, incorporation of environment and human development concerns into water resources policy, and quite a few more. The notion of 'integration' also has a problematic history through the historical experience with 'integrated rural development 'programmes. Amendment is also ongoing. It has been convincingly argued that a focus on water only does not make much sense, and that at least there should be 'land and water' instead of water only. This logically leads to notions of integrated natural resources management or even more general ones, and analytical or policy sharpness evaporates accordingly. The Indian water technocrats have insisted on a notion of IWRDM, where the D stands for development, in the sense of planning, design and construction of water infrastructure (see above), and thus probably try to neutralise the notion's call for paradigmatic changes in approach.

IWRM is thus a truly 'loose concept' and a 'boundary concept'.[22] It signifies different things for different people and has been appropriated by a variety of actors for a variety of agendas after its ascendance to discursive prominence through the emerging global water policy discourse in the second half of the 1990s. Nevertheless, I would maintain that this doesn't make it vacuous or useless, but makes it a concept that creates a space for exchange and encounter. The empirical underpinning of the idea of 'integration' and its material 'solidity'

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[22] For the notion of 'loose concept' and their potential relevance for interdisciplinary research, see Löwy (1992). On the idea of boundary objects see Star and Griesemer (1989).

is that a real set of issues is emerging in the daily practice of water resources management that makes it necessary.

These issues are those that show that the dominant 'supply enhancement' approach to water resources management (the water resources 'development' agenda referred to above) is approaching its limits, if it hasn't already crossed them, as well as that approaches exclusively focussing on local-level solutions to water resources management problems have fundamental limitations. Through ongoing population growth, urbanisation and industrialisation competition over the quantity and quality of water available for different uses and users are increasing. There are many dimensions to this issue. When there are availability problems in terms of quantity and quality it is becoming increasingly difficult to find 'new sources' and to tap them without affecting other users. Basins are closing and water management is becoming more of a zero-sum game than it was in the past. A second aspect is that slowly the environment has developed a voice that is heard in the policy domain. Very slowly (far too slow in the eyes of many) the notion of 'environmental flow' is coming into the discourse as a sign of the policy legitimacy of ecological concerns and the livelihoods associated with such concerns.[23] The expansion of watershed development and other water conservation programmes implies a spatial redistribution of water, that when implemented on a sufficiently large scale will affect 'existing rights'. This is manifesting itself as increasing occurrence of upstream users/downstream users controversies at catchment or sub-basin level. Urbanisation is causing additional claims on water in the surrounding rural areas, creating new forms of competition.

Generally spoken, the development towards closure of basins, the proliferation of stronger demands from a variety of user groups, the spatial implications of changing water use practices, and other factors point to an increasing importance of the issue of allocation of water, that is, the definition of water rights or entitlements for different users, uses and areas.

Allocation of surface water at macro scale used to be done through allocations at river basin level to different irrigation and hydropower projects and some other uses. This procedure determines available flow at 75% dependability, and allocates water in bulks of TMCft (thousand million cubic feet). This is a very static allocation method. The problems with it are highly visible in the Cauvery case. In below average rainfall years in that basin the allocation of water between Karnataka and Tamil Nadu is increasingly problematic. What is needed is an allocation mechanism that is able to allocate water under conditions of scarcity in low rainfall years. This should not work on the basis of a block quantity allocation but should involve a sharing mechanism that can be used operationally in varying and evolving circumstances. It is to be hoped that the ongoing Tribunal process will deliver such a workable sharing procedure.[24]

Put more generally, what is required is a move to a system that provides rules and procedures for negotiating allocation and distribution of water among interest groups (in terms of quantity, quality and timing), rather than 'final' quantitative allocations. As long as there is uncommitted water in a river (and the ecological dimension is ignored) problems can be 'solved' through supply enhancement (additional allocations). In an increasing number of cases this is no longer possible, and this number of cases is certain to increase given urbanisation, economic growth and demographic growth. These problems are poignantly felt around large cities as these have a large, geographically concentrated demand for water, but they apply generally. Groundwater exploitation has never had a government controlled macro-level allocation

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[23] Still, the notion of 'not letting go a drop of water waste to the sea', which signifies an absolute neglect of environmental concerns, seems to be the more generally held idea.

[24] And, I would add, what is needed is not some 'formula' that can be mindlessly applied whenever the need arises, but an 'algorithm', a procedure for decision making that allows flexible responses to ever-changing conditions within a given (agreed) framework. For one thing, this would require a public information and database and sound river basin level hydrological modelling.

mechanism (or effective micro-ones for that matter), but over-extraction from aquifers poses the same problem of allocation and regulation as does over-extraction from rivers. In the drier parts of India, most groundwater use is in the 'dark zone', that is, exhibiting over-extraction or approaching that. In flood management the allocation and scale issue manifests itself in a different manner. The dominant post-Independence approach has been embankment, that is, controlling floods and confining the water to riverbeds and reservoirs. The alternative 'living with floods' approach recognises the limitations of such approaches and looks at the 'allocation' of water over different parts of a floodplain, and the related costs and benefits across space and groups of people. Flood management requires regional planning.

The negotiated allocation of water that is required is not just a water-game. Linked to water are livelihoods and other interests. The contestation of water is intensifying and new issues around which that contestation takes place are emerging.[25] The empirical assertion of this paper is that there is a lack of institutions and organisations at the medium or regional scale level that can effectively deal with these emerging issues and contestations. They cannot be addressed at local/village level only because many of them are about the relationship between localities/villages. The prescriptive, legalistic and administrative approach of the government agencies is also very unlikely to be able to address these issues. One reason for this is that the problems and their solutions are context specific and cannot be addressed with standardised packages, an approach inherent in the present style of government agencies. Secondly, there are no single, scientific, 'best solutions' for a given problem. The 'optimum' solution depends on the weighing of different interests and concerns. One can make rules and procedures for how this weighing and the related negotiation should taken place, and define boundary conditions, but one can not predict or prescribe the exact outcome of such processes. For such processes to be effective and to have sustainable outcomes the interaction process needs to produce some form of shared understanding and compromise. That is, both the content of the decisions taken and the process of decision-making are important.

In some respects there is nothing new in this insight that medium-scale level institutions are required. In 1980 Wade and Chambers argued for large-scale irrigation systems that participatory approaches focusing on the local (tertiary/village) level only were likely to be unsuccessful as long as water management at the main system level would not be addressed (Wade and Chambers, 1980). The operational plan for main system management of a canal irrigation system is an allocation decision. It defines entitlements for different areas (secondary canals and lower). When these entitlements are not realised, variable and/or uncertain, local level management becomes very difficult. The structure of this macro-micro dependency relation is very similar in multiple bore wells tapping a single aquifer, or multiple water conservation structures doing local water conservation in a catchment area, even when these different situations also have their specificities.

What is new is that such issues are proliferating. This is meant as an empirical statement of fact, rather than as a conceptual argument for complexity and interconnectedness.[26] Reality

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[25] I use the word contestation as a general term to refer to a variety of processes through which the allocation and distribution of water takes place. Contestation is meant to convey the inherently political character of water resources allocation and distribution. Through which institutions and organisations contestation is and should be taking place is the core question of a 'governance' perspective on water resources management. See below for more discussion in the section on the approach to policy analysis.

[26] The empirical evidence for this statement can be found by looking at the type of problems that are being reported from the field: the problematics of the Water Disputes Tribunals, the new issues in watershed development, the increased sectoral competition over water, the continuing problem of improving large-scale irrigation system management, the unsolved problem of the regulation of groundwater over-extraction, and the like.

makes that we have to take 'integration' seriously, even if some would prefer to use a different word.[27]

Before moving to the broader setting of this problematic, I note that this emphasis on medium/region scale and institutions required at that level by no means necessarily implies support for the idea of setting up river basin organisations and organise water resources management following hydrological boundaries. The issues of 'fit' (of administrative boundaries for water management with hydrological ones), of 'interplay' (of water management organisation with other domains of governance and management based on different units), and of 'scale' (what is an appropriate level and how do different levels connect) are complex, and a standardised approach is unlikely to be appropriate.[28]

5. The Boarder Context: Centralisation, Polarisation and Democracy

This is not the place to enter into a general and broad ranging discussion of the nature of Indian democracy and state governance, but water sector reform – obviously – happens in that context and is shaped by it.[29] The question 'what is specific about the Indian context and processes that can explain the tardiness of the water sector reform?' needs to be answered in this broader framework.[30] The point I want to focus on is the state-village dichotomy in the practice of thinking about the relations between the state political and administrative machinery and local communities, derived from Kaviraj's analysis of the modern Indian state (Kaviraj, 1996; 1997; 2001).

The western form of political democracy that India adopted after independence was an elite project implanted on Indian society 'from the top' and not a system whose design emerged out of local struggles.

> "The ingestion of these ideas and formulation of political practices in their terms also introduced a fatal flaw in the structure of Indian politics. As these concepts and advantages remained more readily apprehended by middle class elites, and largely unexplicated to the ordinary Indian voter, who was nonetheless given the ceremonial sovereignty of popular representative government, this meant that a problem of intelligibility of the political institutions of the state remained at the heart of the Indian democratic system. Democratic institutions in India did not have a historical preparation through a political discourse which debated, in the vernaculars and in terms which reached the ordinary Indian citizen, why the state structures of republican, democratic, secular authority were better than other competing forms. They remained, more crucially, unenlightened about the meaning and implication of the fundamental gesture of constitutional subjectivity, of their having given that form of government to themselves. (Kaviraj, 1997: 232-233)

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[27] I hope it is superfluous to remark that this does not mean that all the 'old' issues have ceased to be relevant. They, obviously, continue to be relevant but there is a new agenda to be added that, so it is suggested, opens new perspectives and opportunities for democratising water resources management.

[28] For an illuminating discussion of these issues in the European context and in the context of a federal state (Germany), see Moss (2003).

[29] I don't think, but this is speculative reasoning, that the vice versa applies very strongly. The overall dynamics of political democracy and the transformation is state governance and administration since the 1990s seem to be driven much more by broader and economic and social reform than by water sector reform. This indicates the declining importance of the water resources bureaucracy in the overall polity as compared to, say, the first two-three decades after independence.

[30] Sheer reference to general categories like the 'top-down', hierarchical and prescriptive characteristics of the state machinery do not suffice as they are unable to account for different dynamics of bureaucracies with similar characteristics in different contexts.

The political and administrative institutions of the state have, as a result of this, in some respect been treated by people in the same way as the colonial and pre-modern states were. The post-independence emancipation process and economic development allowed new groups to access state resources, using redistributive rhetoric. At a certain point non-elite social groups entered into politics, including

> "a new class of aggressive, politically ambitious and illiberal rich peasants. They wished, by virtue of their increasing prosperity, not to reform rural society and introduce new measures of equity, but to retain the traditional structure of irresponsible power of the landed elite and rightlessness of the poorer peasantry, and replace the old zamindars in the rural hierarchy. They looked at the concentration of resources in the agencies of the state with approval, since it was evident that they could exercise control over their disbursement through their influence over electoral politics." (ibid.: 238-239)

> "Typically, the supporters of policies of reverse discrimination in favour of lower castes are not concerned about more equitable distribution of educational opportunities or material necessities. For them, getting a share of bureaucratic control is vital. They do not want to destroy a system of inequality, but only demand their fair share in the privileges." (ibid.:246)

This reproduces a structure in which the state is exterior to the local social dynamics, and is seen as a whimsical tyrant with which one enters into relations of patronage but never considers as one's own, and of which one tries to control or influence parts for one's own benefit. This has historical roots in the way the pre-modern and colonial states operated, as Kaviraj eloquently shows.

A second point is that independent India decided to inherit British colonial administration. In the politically unstable situation after independence the new leadership found that a 'strong state' needed to be established, implying

> "a major recourse to the structures of army and bureaucracy the colonial administration had left behind. (...) The national state was an inheritor of two distinct and some ways, incompatible, legacies. It inherited the colonial state's systems of internal command and control, its administrative ethos, its laws and rules, and its three predominant characteristics to the popular mind: its marginality, its exteriority, and its persistent repressiveness against the lower strata of the people who, at least in constitutional formality, were made the repository of sovereignty. At the same time, it was the successor to a triumphant national movement whose principal objective was to contest the culture of that state. (...) Was the national movement a struggle to achieve an untrammelled version of the Western state, a purer form of Western political modernity than colonialism had permitted, or to reject the entire model [which was Gandhi's view]? (ibid.: 233, 234)

This was decided in favour of the first option, accompanied by a massive expansion of the bureaucracy.

> "The bureaucracy, though now manned by Indians, was still the unreconstructed bureaucracy of a colonial state: irresponsible, unresponsive, insufficiently used even to the rhetoric of serving the people, being habituated for so many decades to being their lords and masters. It was also eminently unsuited, in its original form, to performing modern welfare functions. (...) its lower orders translated these policies into unrecognisably travestic forms. (...) Local administration was inextricable from local power. (...) Long-term historical memories and time tested ways of dealing with power of the political authority took their revenge on the modern state, bending the straight lines of rationalist liberal politics through a cultural refraction of administrative meaning. (...). (ibid.: 234, 235).

What can be derived from this analysis[31] is that India's bureaucracies trend to be highly centralised in how their powers are defined and largely working on a 'command and control'

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[31] Given only a few short quotations makes this sound like a rather crude statement on the nature of Indian democracy and the state. This does not do justice to Kaviraj's rich and nuanced discussion, to which I refer for context and detail. The point I want to convey is that we need to mobilise such broader understanding of the state and democracy to make sense of water sector reform processes.

administrative style, that has, however, become embedded in a political system often described as competitive populism. This is not just a 'choice' for a particular institutional structure, but a phenomenon that has its roots in pre-modern, colonial and post-colonial history, in which the pre-modern state-village relation has been reincarnated in new forms, but retaining some basic characteristics. Kaviraj, for premodern states in India argues that

> "[p]ower at the level of the village community tended to be exercised through the paradoxical logic of the caste system. Its specific manner of allocating productive functions and rewards maintained a system of social repression without making specific individuals the agents of these relationships of disdain and resentment. The global human world, its essential principles of ordering, were not subject to individual or collective construction. (...) The political implication of this feature of caste society is important. Under this arrangement, it is impossible for the state to aspire to become the site of universality and sovereignty; the state could not claim a Durkheimian majesty by becoming the symbol of society as a whole, and a preserver of its form and continuity. That was lodged in a self-maintaining moral; order to which the state was normally subordinated. (...) [The state's] primary function was to police possible infringements, not to make rules affecting the fundamental order of social relations. (...) [T]he state, or the ruling power did not have any fundamental legislative authority in the modern sense, precisely because society did not function on the assumption of basic plasticity of the political and social world. (...) [T]he allocation of resources to various social groups on a permanent or stable basis, was beyond the recognised domain of authority of the traditional state (...). Empires, however large, powerful, ambitious, never aspired to overcome the marginality to the daily existence of the villager: and this was formally sanctified by the typical rent receiving relation between the empire and the village. (...) Thus, the precolonial type of political authority seems strikingly devoid of two features that social struggles of European modernity imparted to the modern state. It was not an authority for appeal against widespread structural injustice, oppressions, iniquities, irrationalities of social processes. (...) To apply the state/civil society distinction to traditional India therefore would be to invite a serious conceptual misunderstanding." (ibid.: 227, 228, 229, 230)

There is now a civil society in India, and a very active one as mentioned above, so there cannot be a simple argument of continuity. However, the (central) state-village dichotomy seems still to be very much part of the Indian polity. The networks of institutions that characterise for instance of western Europe's social democracy in addition to the institutions for political representation and decision-making have emerged only to a limited extent in the Indian context, not 'filling in' the institutional gap between 'state' and 'village'.[32]

In his discussion of the constitutional arrangements for water resources management Iyer (2003) confirms this point. He describes how the constitution defines governance at the Union and State levels but not below that, until the Panchayat Raj amendments. These jump to village/municipality level. He also discusses how the efforts at river basin organisations and the Water Disputes Tribunals are expressions of a centralistic approach.[33]

In terms of centralistic state organisation, the water resources bureaucracy is one such centralistically framed apparatus. Very few people would be surprised by or object to a description of this set of organisations as being hierarchical in structure and process, as working in a top-down fashion, and as tending towards centralisation of administrative power. A specific

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[32] This sounds rather evolutionary, but needs not to be understood so. Kaviraj also argues that the form of political democracy that India has embarked upon is there to stay having entrenched itself in the way it has. Practically speaking there are few other options than improving its functioning and expanding it. This can, of course, not be done by simple copying of other trajectories, if only because these have their own serious difficulties.

[33] There have been efforts in some States to establish intermediate level governance/planning institutions, for example at the district level. These generally seem to have been thwarted by a series of factors, including the unattractiveness of such intermediate structures to MLAs because they are seen to be competing power centres. There are several examples, also in the water sector, how MLA membership of such bodies 'neutralises' their governance capacity. The water users associations in Andhra Pradesh may be going this way also. The state-village dichotomy and the institutional gap is thus actively reproduced in some ways, and thus not a gap in the sense of empty space.

feature of this bureaucracy is that it is mainly populated by one single discipline, that of civil engineering. The water bureaucracy was a very powerful element of the Nehruvian development strategy, and engineers considered themselves literally as nation builders at that time, with M. Visvesvaraya as perhaps the most famous example (see his Memoirs of My Working Life). How the irrigation bureaucracy got integrated in the competitive populism of the 1970s and 1980s has been described in his now seminal paper on the system of political and administrative corruption (Wade, 1982). On the one hand this has generated collusion between politicians, bureaucrats and rural elites, with substantial material benefits to all, but on the other hand it has generated a lot of dissatisfaction and demotivation within the irrigation department, and an erosion of professional standards (see Mollinga, 2003 for a case study).

The authority of field-level water managers such as the staff of the irrigation department has been challenged and eroded by the aggressive lobby of rich peasants and their representatives, but the whole approach of the water resources bureaucracy has been challenged most fundamentally by the social movements around the negative environmental and social effects of the construction of large dams. This has led to extremely polarised positions, leading to a Supreme Court case to decide the issue in the case of Narmada/Sardar Sarovar. In some respects this is a replay of the choice between the Nehruvian and Gandhian development trajectories: the first very modernist, large-scale infrastructure oriented, the second advocating a local/village based approach to social and economic transformation.[34]

This confrontation has not led to a constructive outcome. The water resources bureaucracy has 'dug in' and become very defensive. In ideological/discourse terms, the winning of the court case regarding Narmada, the World Commission on Dams exercise and the Interlinking of Rivers scheme seem to have strengthened the technocratic paradigm in recent years A recent paper by Goel and Patel (2004) is a telling illustration of the centralisation, construction, supply enhancement, and nationalistic, orientation.. However, this is likely to be a temporary situation given that ground level processes are pushing the discourse in another direction.

The social movements seem to have 'dug in' equally with a very strong emphasis on the local/grassroots level of activity as the starting point for social transformation.[35] 'Big is beautiful' and 'small is beautiful' have become a true dichotomy in political practice. The commitment and emotion invested is enormous, by both polarities. Efforts to define a middle ground for negotiation and compromise, and innovative new options for water resources planning seem to go on deaf ears on both sides.[36]

It is not my intention to argue out the concrete merits of these cases, but to suggest that it may be warranted to interpret this deadlock as an instance of an old, persistent opposition or form in the Indian polity, that of a particular relationship between the state and the village, and, in a policy sense, as indicating a need for the establishment of new institutions to create a more constructive interface between 'state' and 'society'. Put somewhat dramatically, such conflicts offer the possibility (and define the necessity) to conceive in new ways the democratisation of water resources management in connection with a rethinking and reshaping of the forms and institutions of political democracy in general. This would involve an

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[34] Both sides may feel such a statement is far too simple and crude. However, my point is not about the details of the respective substantive concerns and arguments, which need to be take very seriously indeed, bur about the, by lack of a better phrase, 'underlying pattern' acted out in such conflicts.

[35] I discuss this issue in more detail in a paper called 'Sleeping with the enemy', published in Water Nepal.

[36] Exemplary is the alternative proposal published by Paranjpye and Joy (1995) which could have been a very good basis for a negotiated compromise, but did not catch the imagination of either of the parties, and didn't make it to the policy agenda. This again suggests that the dichotomy or gap is not just an oversight or a void, but is actively reproduced through the current dynamics of the system.

assessment of the limitations of Panchayat Raj institutions also. Though these are very important in some respects, they will be unable to address certain emerging issues in water resources management, and can, at best, be an element of the democratisation of water resources governance. They will not be able to address the regional dimension of water resources management, for which institutions between the 'state' and the 'village' are required.[37]

When this analysis is correct, the paradox I started with is no longer a paradox. It is now intelligible what some of the structural characteristics and limitations might be of water resources governance as an instance of Indian state governance in general. This is largely an argument by association: the state-village dichotomy has been a defining characteristic of Indian governance over time, in forms specific to certain historical epochs, and the water sector should be seen as an instance of this. Subsequently it needs to be shown how this dichotomy exactly operates – what are the mechanisms active in it? It has already been suggested that it is enshrined in the formal legal set up of water resources government and management. Similarly, it has been suggested that it is part of the water bureaucracy's disposition and organisational ethos. In a general sense it has been suggested that the gap is not a void but a space actively reproduced by different political actors. Also the community participation discourse and practice may have contributed to the reproduction of the divide. More difficult to catch is the idea that this 'thought structure' has gone into the very fabric of India's political democracy, and the caste system as an enabling condtion for the relative absence of vertical solidarities and the thwarting or non-emergence of intermediate institutions. My guess is that the water sector will provide ample evidence for further development and adjustment of this perspective when it would be researched from a 'politics of policy' perspective.

6. Analysing the Policy Progress

Following the argument above, I suggest that an important contribution that social science research could make to the democratisation of water resources governance and management is to analyse and interpret water sector reform more than is done at present as part of the overall problematic of the Indian state form and nature of political democracy. To make a practical contribution to that water sector reform I suggest focusing that analysis on the water resources policy process, as this is where the political contestation of water resources can both be studied and influenced. In this section I – therefore – outline an approach to analyse the water resources policy process. I present it as an answer to the following questions.

1) What kind of a process is water resources management?

2) What are the different kinds of 'politics' associated with water resources management?

3) How should we understand policy?

4) What are the main themes and approaches in the 'policy as process' literature?

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[37] The danger of this formulation is that the problem is reduced to one of geographical scales or levels. More is the matter, however. There is definitely a 'unit of governance' issue in a geographical sense, but this unit actually has many boundaries, including political, economic, socio-cultural, and others. A more proper image would be that of the 'problemshed' as the unit of analysis and intervention (rather than the simple geographical notion of 'watershed'). For an application of this insight see the USBR Decision Process Guide http://www.usbr.gov/pmts/guide/probshed.html .

5) What is the specific context of the Indian policy process, particularly that of the water sector?

For canal irrigation I have argued that water control (technical/physical, organisational/managerial and socio-economic and political control) should be understood as an instance of politically contested resource use (Mollinga, 2003). What this means is that for a comprehensive understanding of water-related processes the issue of social power needs to be explicitly addressed. This doesn't reduce water resources management to politics but simply makes it an inherent part of it. Daily life and the newspapers are full with evidence supporting this contention; academia has not internalised it into its analytical frameworks very widely so far.

The 'politics of water' is not a single thing, but can be subdivided into different types, or rather domains or arenas where it is played out. I distinguish the following four (see Mollinga, 2001).

1) The everyday politics of water resource management refers to the contested nature of the day-to-day use of water resources (see Kerkvliet, 2001 for the 'everyday politics' concept). Socio-political analysis at this level looks at the way the local social relations of power shape and are shaped by water resource use practices. This is a vast terrain, in which there are many case studies available from across the globe. The central issue in many of these studies is (in)equity and poverty, what it means, how it occurs, and what can be done to change/achieve it, and who has a say in the decision-making over water resources. Conceptually two - related - focus points are (1) the concept of hydraulic property, and property rights more generally, and (2) the understanding of collective action. Arguably, many 'localised' case studies fail to link their analysis sufficiently with the broader context of cultural, political economic dynamics, but this was truer ten years ago then it is now. There is a growing linkage of studies of local cases and processes with broader issues like 'environmental justice'.

2) The politics of policy on water resources is the level of water resources policy formulation and implementation within nation-states, usually with a central role of the state government (for the 'politics of policy' concept see Grindle, 1977 and her subsequent work; also see Long and Van der Ploeg, 1989). Many countries have overall and sector water policies, which imply investment programmes for infrastructure creation and maintenance, and the establishment of institutions for the management of the infrastructure and the resource. In a conventional approach the politics of this are thought to lie only at the level of policy formulation: politicians working within a parliamentary or other framework make decisions on policy priorities and programmes based on scientific advice of natural scientists (mostly hydrologists and technical engineers), after which the administration implements. In practice both formulation and implementation of water resource policies can be highly contested. Different interest groups attempt to influence both, through official legal-institutional and through other means. Policy is negotiated and re-negotiated at all levels, and often transformed on its way from formulation to implementation. The nature, intensity and effects of this process differ from case to case. This political struggle takes place within state apparatuses, but also in the interaction of state institutions with the groups directly and indirectly affected by the policies.[38] This field of inquiry could also be phrased as the investigation of actual governance practices regarding water resources, with themes like democratisation, decentralisation, transparency, privatisation, public good functions, institutional interplay and the like. Theories and empirical work on policy formulation, stakeholder supported decision-making, agenda setting and implementation

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[38] See Mollinga and Bolding (2004) for a series of papers on the politics of irrigation reform.

of environmental policies, and economic theories on policy implementation, with a particular focus on provision of services from public bureaucracies, would be useful approaches.

3) Hydropolitics is the level of inter-state politics regarding the allocation, distribution, control and quality of water resources (see Waterbury, 1979; Ohlsson, 1995; Turton and Henwood, 2003 for the 'hydropolitics' concept[39]). The state in hydropolitics is usually a national state, as in, for example, water resource issues between Egypt and Sudan, Mexico and the USA, or India, Nepal and Bangladesh. However, it can also refer, in a federal structure, to inter-state water resources issues within a nation state. An example is water allocation between upper and lower riparian states within countries like Germany, India and the USA. A water transfer between basins located in different states is another instance. In all these cases more than one political entity controls territory in a hydrological basin (or basins in case of inter-basin transfer), which for optimal use would require an integrated approach to resource management. The core issue at this level is how states do or do not reach agreement on sharing the development and use of the water resources they jointly depend on.

How conflicts can be avoided and cooperation achieved is the main focus of the hydropolitics literature. Most of the discussion concerns the substantive and strategic dimensions of negotiation and mediation. This not only regards water, but as in cases like the Middle East, also regional (and global) security issues. Possible research foci are: the role of institutions in settling conflicting issues and actual management of water resources; analysis of development paths of transboundary river basin organisation, their relation to national actors, the role of international actors, the benefits and costs of cooperation and their distribution, and others.

4) The global politics of water resources refers to the emerging set of organisations, agreements, declarations and the like, already referred to above, that jointly constitute a new sphere of a global policy discourse on water resources. The Rio and Dublin conferences in 1992 have been highly instrumental in generating this process (which on closer study would undoubtedly turn out to be the acceleration of an already ongoing process). The IWRM debate is a case in point: global agenda setting gets translated into national and sub-national policies through 'vision documents' and 'frameworks for action'. These translations are not simple 'operationalisations' but involve transformation, appropriation and redirection, the subject matter of the 'politics of policy' perspective. Water has also entered the WTO debates, particularly around the issue of privatisation. A large global civil society network around water resources issues has grown up in the past decade. The World Commission on Dams is another example of the emerging global politics of water. To my knowledge there is as yet no review of the emerging global politics of water, or an articulated approach to study this new discourse and arena.

This typology already indicates the understanding of policy that is adopted. It is seen as a process through which different interest groups (consciously and at least partly publicly) negotiate the modalities of societal governance and consolidate this into institutional and organisational arrangements, projects, programmes and procedures for, in this case, water resources management.[40] Policy has a functional, that is, purposive and strategic element,

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[39] The concept is evolving to areas outside the domain of inter-state water politics. Turton and Henwood propose to widen it to a "growing discipline in its own right" (p.245) focusing on "the study of the authoritative allocation of values in society with respect to water" (p.239) – basically, therefore, water governance or water and politics broadly understood.

[40] My focus is public policy/state policy here.

otherwise it would be difficult to call it policy[41], but it is not only functional or instrumental. It carries wider meanings also, as discussed above.

Mooij and de Vos (2003) in an introduction to a bibliography on policy process literature assess the Indian situation as follows.

> "Within India, the study of policy processes is not very well developed. This is so, despite the fact that many Indian social scientists are involved in policy relevant research and aim to contribute, through debate and research, to policy formulation and implementation. These debates are, however, almost entirely dominated by economists, and insights from other social sciences have hardly entered into them. There are very few political scientists, sociologists or anthropologists focusing on public policies. As a result, some aspects of policy studies are relatively well developed (such as measuring policy effects), but others much less. The issues and questions, for instance, of why policies are formulated and designed in particular ways in the first place, and the political shaping of policies 'on the ground', do not receive much attention." (Mooij and de Vos, 2003:5)

They go on to describe four themes that are important in the global literature on policy processes.

1) The critique of linear models of the policy process;

2) Actors interact and bargain with each other, and thereby produce a particular (albeit temporary) policy outcome;

3) Policy discourses;

4) The role of politicians and political parties in policy processes (which is of particular importance in the Indian context).

Arora (2002) seems to be in agreement with the assessment of Mooij and de Vos. About the discipline of political science she states that "[p]olitical scientists have been engrossed in the study of political institutions and processes, which resulted in a sheer neglect of the systematic study of public policy." (Arora, 2002: 46) She suggests three principles for the study of public policy processes.

1) It encompasses more than decision-making – policy spaces are more complex than that (she refers to policy evasion, symbolic policy, and the unaccounted/unanticipated consequences of policy);

2) Policy needs to be seen as an ongoing process;

3) A political economy perspective is required for holistic analysis that addresses complexity, including the question how globalisation affects the autonomy and capacity of national policy processes.

Elements specific to the Indian situation that need to be taken account of in analyses of Indian policy processes are the following five (ibid.:50 and subsequent discussion).

1) Extreme resource disparities;

2) Uneven representation in governance;

3) How knowledge power networks reproduce inequality in the policy process, f.i. by delegitimising local knowledge;

4) The context of policy discourse: the nationalist framework of the post-Independence period and the influence of global discourses more recently.

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[41] There are cases where policies are introduced without any expectation of implementation of stated objectives, but to serve other purposes.

5) The institutional relations: dominance of state institutions post-Independence and the swing to a state failure perspective with support of market mechanisms.

The accounts of Mooij and de Vos and of Arora would both probably fall in Grindle's category of 'comparative institutionalism', that is a sociological approach, rather than her second category of approaches: those based on economic rational choice frameworks. I summarise Grindle's discussion of the differences between these two clusters of frameworks in table 1 below. Grindle does the comparison on four points, phrased as questions.

Table 1: Rational choice and comparative sociological approaches to the analysis of policy processes

	Approaches based on economic frameworks (rational choice theory)	Comparative sociological approaches (comparative institutionalism)
Why and how are politicians interested in shaping policy change?	- Rational choice explanations of politicians behaviour in a 'political market' with votes as the currency and access to public resources as benefits - Capture of politicians by interest groups and rent seeking - 'Context' is a strategic decision making arena	- Strong emphasis on institutions and collectivities, rather than individual choice ('statecraft' as theme) - Larger role of contingency - Conflict over policy is the 'normal stuff' of politics; emphasis on social interaction in economic, social and policy arenas in relation to social power - 'Context' is a complex environment with history, shaping perspectives, references and values
How do political institutions affect the choices made by politicians?	- Institutions are strategic arenas for individual choice	- Institutions have histories, which shapes preferences, orientations, values, and strategies of collective actors
How are new institutions created or transformed?	- Intrigued by the creation of new institutions that constrain the power of politicians - The behaviour of reformist politicians: how long-term interest and short-term interest relate - Transaction costs in political life to explain change - Principal-agent problems; role of institutional designers	- Criticise apolitical explanations of institutional change; new institutions are the result of historically embedded conflicts about the distribution of power and benefits in society
What are the consequences of new rules of the game for economic and political interaction?	- Consequences generate new strategies for achieving first order preferences, towards a new equilibrium	- More dynamic approach: institutional change creates new sources of conflict, new claims for resources, new spaces for contestation

Source: based on Grindle (1999:3-11)

Grindle also observes that adherents of the two schools "have been outspokenly harsh about the other" (ibid.:11)

> "Those who favor the elegance and parsimony of economic models of political behavior accuse comparative institutionalists of avoiding rigorous theory and scientific methodology and of producing primarily descriptive studies. Those who work from within the sociological tradition retort that economic models produce political banalities and historically inaccurate analyses that ignore empirical evidence." (ibid.: 11)

Another site of polarisation, or so it seems.

Grindle is of the view that both schools are deficient in important ways. The 'political economy of public policy' perspective has been developed particularly, though not exclusively, with reference to European and North American policy processes. It carries several biases as a result, one being strong assumptions about societal groups actively contesting government policy and thus being involved in policy formulation. Grindle shows that developing countries may be characterised by state-centred policy processes, while these approaches are society-centred. In developing and transitional countries policy may be generated primarily in elite (government) circles. This is an element of Indian policy making also and contributes to the state-village dichotomy. Perhaps the paradox phrased at the beginning means that India has state-centric policy making despite a very active civil society. Also, according to Grindle, the institutional setting of developing and transitional countries may be very unstable, and institutional and policy evolution a different process as a result. This seems to apply less to the Indian situation. Another strong assumption is the sovereignty of the voter in electoral processes, which may not apply elsewhere. Such differences suggest a general point in terms of analytical approach: that the study of the process of policy needs to be contextualised historically and geographically. Grindle also identifies three factors that are in her view underexplained: leadership, the role of ideas, and successful policies.[42] She concludes her review and assessment with a call for more 'grounded' research on actual processes of institutional transformation while "seeking to stretch theoretical models: (ibid.:21).

This somewhat lengthy highlighting of themes and approaches in the policy as process literature means to illustrate that there is a lot to start from when undertaking such analysis in the water resources domain. The next step would be a review of the literature on Indian water resources policy and management with these frameworks in mind. A research agenda is outlined for this in the concluding section.

7. A Research Agenda for Water Sector Governance Reform

A premise I start from is that research on water resources governance should not only generate 'knowledge for understanding' but also 'knowledge for doing'. This is a major reason to promote research on policy processes in the water resources domain. If it is true that 'we are stuck' as regards water sector reform, it may perhaps pay off to focus more analytical attention on the institutional processes themselves. Grindle phrases this point as follows.

> "To be relevant in the real world, political economy theory ought to be useful in at least one of two ways. It ought to be able to model reality by reflecting dynamics of political interactions in the design and implementation of development policy and in the creation or transformation of institutions. If it can do this, it can inform the political strategies of those actively engaged in promoting policy and institutional change. Additionally or alternatively, theory ought to be able

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[42] Grindle makes no reference to the literature on policy discourses and policy narratives, which in my view have a lot to say on the power of ideas in policy processes. She does make the observation that "ideas may be important means through which international actors become players in domestic policy debates." (Grindle, 1999:17). This seems to be very applicable to the water resources domain, and is perhaps what the global politics of water is largely about.

> to predict the behavior of political agents in designing, adopting, and implementing policy change or predicting the political consequences of alternative policy and institutional choices. This is another way of informing the strategic choices that policy reformers make." (1999:12)

I have tried to show that this does not amount to a simple exercise in social engineering and institutional design to fill a perceived gap, but requires contextualisation of institutional dynamics in broader processes of social transformation, notably the process of democratisation. Without an understanding of the structure and dynamics of India's political democracy, and incorporation of such insights into reform strategies, it will, in the opinion of this author, be difficult to get 'unstuck'.

At the substantive level the thrust of the paper is that the water sector is facing challenges that can not be addressed in the current policy and political framework. Reform is not only to include a re-orientation of policy priorities and approaches, but also the restructuring of institutional frameworks away from the state-village dichotomy, which I have argued to be a central feature of the present predicament. New 'intermediate' or 'meso-level' institutions are required that allow a negotiated approach to water resources governance. Their absence is a constraint for reform, but the need for such institutions an opportunity for getting 'unstuck' and contribution to the 'deepening' of Indian democracy. At the level of scientific discourse a problem is that dichotomous thinking has also crept in. There is a large intellectual challenge in trying to overcome this. In this regard it is not enough 'to be aware' in the abstract, but solid research is needed to understand it better.

The rationale of focussing on the three issues and questions for the transformation of public policy and its organisational framework that were listed in section two should now be clearer. How to enrol the water bureaucracy (more constructively) in a reform process, how negotiated water resources planning and management can occur through institutions that bring together the different interest groups involved, and how to make progress with the often so poor implementation of public policy and achieve less skewed benefit distribution, seem to me three core issues for a trajectory of transformation that does not rely on state-directed development, or market-directed development or community directed development only, but acknowledges the need of institutional and organisational diversity adapted to the issues and contexts concerned.

Research alone can obviously not achieve institutional transformation, but research can contribute to the identification of opportunities and methodologies to engage in such exercises more effectively and/or identify the conditions of (im)possibility for certain initiatives or approaches for change. For this the simplified images of 'the state', 'the bureaucracy', 'the environmentalists', 'the civil engineers', 'the NGOs', 'the international funding agencies', and other black boxes that are so frequently used in the debate on water resources policy need to be unpacked. Such simplifications may be unavoidable in political struggles, but do not help in understanding when they are taken to be adequate descriptors not requiring further reflection.

I suggest the flowing concrete themes and questions for further research to push our understanding of the politics of Indian water resources policy.[43]

I – The rationale, resilience and dynamics of the water resources bureaucracy

1.1 What are the cultural characteristics of irrigation/water resources departments?

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[43] My argument should not be misunderstood as an implicit disqualification of other types of research on water resources reform processes. The only suggestion made is to complement existing research and perhaps re-orient some of that towards the strategic questions outlined in this paper.

1.2 How to understand the demise of field-level technical innovation capacity in the water resources administration?

1.3 How do rent-seeking and the professional bias towards construction shape the behaviour of water resources bureaucracies?

1.4 What would be implications of different forms of 'privatisation' of water resources bureaucracies?

1.5 Which professional challenges would an 'integrated perspective' offer to water resources bureaucracies?

II – Whether and how inclusive water resources governance is/can be consolidated into institutional frameworks, particularly at the intermediate/meso level

2.1   What can be learnt from examples of multi-stakeholder/participatory planning initiatives in the water resources sector?

2.2   Why did the Narmada/Sardar Sarovar conflict not generate more constructive interaction between state and civil society?

2.3 What can be learnt from experiments with intermediate/meso-scale units of water resources management like basin-level organisations?

2.4 What kind of state-water users/civil society policy interfaces have emerged in government water sector programmes, like watershed development, rural and urban drinking water supply and sanitation programmes, and participatory irrigation management programmes, and how have these translated in policy transformation/evolution? (What kind of processes of social and institutional learning are taking place in the water sector, and how do these affect new policy initiatives?)

2.5 What role have political office bearers played in the enhancement or obstruction of water sector reform?

2.6 How are the international water policy discourse and policy priorities being incorporated into national, State and local level policies and programmes, and what is the meaning of this?

III – Whether and how policies/interventions get captured and transformed at the local level by local interest groups, government officials and other actors

3.1   What can be learnt from case studies of successful outscaling and upscaling of 'grassroots' initiatives (like for instance in watershed development)? How does bottom-up institutional and technical innovation take place in such instances?

3.2   What are the dynamics of bureaucrat-local elite networks in implementation of water resources policies and programmes?

3.3   What is the importance of social and political mobilisation in countervailing policy capture by local elites?

3.4   What are the multiple agendas and meanings of water policy intervention?

References

Arora, Dolly (2002). 'Public Policy Analysis: Addressing the Contextual Challenges'. Indian Social Science Review Vol.4, No.1, pp.45-68.

Bandyopadhyay, Jayanta (forthcoming) 'Does the National Water Policy 2002 of India Represent a Conscious Paradigm Shift to a More Holistic Water Resource Management?' In: Peter P. Mollinga, Ajaya Dixit and Kusum Athukorala (eds.) IWRM in South Asia: Global Theory, Emerging Practice and Local Needs.

Bharadwaj, Krishna (1990). Irrigation in India. Alternative perspectives. Research in Economics: second survey. Monograph-3. Indian Council of Social Science Research, New Delhi.

Bottrall, Anthony (1992). Fits and misfits over time and space: technologies and institutions of water development for South Asian agriculture. Contemporary South Asia, Vol. 1, No. 2, pp. 227-247.

Brydon-Miller,Mary, Davydd Greenwood and Patricia Maguire (2003). 'Why Action Research?' Action Research Vol 1, No.1, 2003, pp.9-28 URL: http://www.augustana.ca/rdx/eng/documents/PAR/Why%20action%20research%20-%20brydon-miller,%20greenwood,%20maguire.pdf

Corbridge, Stuart, Glyn Williams, Manoj Srivastava and Rene Veron (2003a). 'Making Social Science Matter – I. How the Local State Works in Rural Bihar, Jharkand and West Bengal'. Economic and Political Weekly Vol .38, No.24, pp.2377-2389.

Corbridge, Stuart, Glyn Williams, Manoj Srivastava and Rene Veron (2003b). 'Making Social Science Matter – II. How the Rural Poor See the State in Rural Bihar, Jharkand and West Bengal'. Economic and Political Weekly Vol .38, No.24, pp.2561-2569.

Crow, Ben (with Alan Lindquist and David Wilson) (1995). Sharing the Ganges. The politics and technology of river development. Sage Publications, New Delhi.

Fouzdar, Dilip (2003). 'National Water Policy-2002 – System of Nature's water at the Receiving End'. Social Action.Vol.53, No.3, pp.256-269.

Goel, R.S. and V.B. Patel (2004). 'Governance and Institutional Mechanism for Integrated Water Resources Management' Indian Journal of Public Administration 50(1):174-189.

Grindle, Merilee Serrill (1977). Bureaucrats, politicians and peasants in Mexico. A case study in public policy. University of California Press, Berkeley.

Grindle, Merilee S. (1999). In Quest of the Political: The Political Economy of Development Policy Making. CID Working Paper No. 17. Center for International Development at Harvard University.

Gyawali, Dipak (1998). "Patna, Delhi and environmental activism: institutional forces behind water conflict in Bihar". Water Nepal Vol.6, No.1, pp.67-115.

Hall, David, Violeta Corral, Emanuele Lobina, and Robin de la Motte (2004). Water privatisation and restructuring in Asia-Pacific. Public Services International Research Unit (PSIRU), Business School, University of Greenwich.

Lyer, Ramaswamy R. (2003). Water. Perspectives, Issues, Concerns. Sage, New Delhi.

Kaviraj, Sudipta (1996). 'Dilemmas of democratic development in India'. In Adrian Leftwich (ed.) Democracy and Development. Polity Press, Cambridge, pp. 114-138.

Kaviraj, Sudipta (1997). 'The modern state in India'. In: Martin Doornbos and Sudipta Kaviraj (eds.) Dynamis of State Formation. India and Europe Compared. Indo-Dutch Studies on Development Alternatives 19. Sage, New Delhi, pp. 225-250.

Kaviraj, Sudipta (2001). 'The culture of representative democracy'. In: Niraja Gopal Jayal (ed.) Democracy in India. Themes in Politics Series. Oxford University Press, New Delhi, pp. 229-257.

Kerkvliet, Benedict J. Tria (1990).Everyday politics in the Philippines. Class and status relations in a Central Luzon village. University of California Press, Berkeley.

Kloezen, Wim (2002). Accounting for water, Institutional Viability and Impacts of Market-Oriented Irrigation Interventions in Central Mexico. Wageningen University (PhD thesis).

Long, Norman & J.D. van der Ploeg (1989). 'Demythologizing Planned Intervention: An Actor Perspective'. Sociologia Ruralis 29 (3/4): 226-249.

Löwy, Ilana (1992). 'The Strength of Loose Concepts – Boundary Concepts, Federative Experimental Strategies and Disciplinary Growth: The Case of Immunology.' History of Science 30, 4, 90: 371 –396.

Mishra, Dinesh Kumar (2002). Living with the Politics of Floods: The Mystery of Flood Control. People's Science Institute, Dehradun.

Moench, Marcus, Elizabeth Caspari and Ajaya Dixit (eds.) (1999). Rethinking the Mosaic. Investigations into Local Water Management. Kathmandu: Nepal Water Conservation Foundation and Boulder, Colorado: Institute for Social and Environmental Transition.

Mollinga, Peter P. (2001). 'Water and politics. Levels, rational choice and South Indian canal irrigation'. Futures Vol.33 No.8, pp.733-752.

Mollinga, Peter P. (2003). On the waterfront. Water distribution, technology and agrarian change on a South Indian canal irrigation system. Wageningen University Water Resources Series. Hyderabad, India: Orient Longman (orig. 1998).

Mollinga, Peter P. (2005). 'Sleeping with the Enemy. Dichotomies and polarization in Indian debates on the environmental effects of irrigation' Water Nepal.

Mollinga, Peter P. (forthcoming) 'Investigating Irrigation reform in India. Towards a water users research facility'. (Paper written for IWMI-SaciWATERs Water Policy Futures workshop 2002).

Mollinga, Peter P. and Alex Bolding (eds.) (2004). The politics of irrigation reform. Contested policy formulation and implementation in Asia, Africa and Latin America. Global Environmental Governance series. Ashgate.

Mooij, Jos and Veronika de Vos (2003). An Annotated Bibliography on Policy Processes, with Particular Emphasis on India. IDS Working Paper. IDS, Sussex.

Moss, Timothy (2003). Solving Problems of 'Fit' at the Expense of Problems of 'Interplay'? The Spatial Reorganisation of Water Management Following the EU Water Framework Directive In: Breit, Heiko; Engels, Anita; Moss, Timothy; Troja, Markus (eds.): How Institutions Change. Perspectives on Social Learning in Global and Local Environmental Contexts. Leske + Budrich, Opladen, pp.85-121.

Noffke, Susan (1994). 'Action Research: towards the next generation.' Educational Action Research. Volume 2, No.1. URL: http://www.triangle.co.uk/pdf/viewpdf.asp?j=ear&vol=2&issue=1&year=1994&article=ear-21sn&id=82.168.108.177

Ohlsson, L. (1995). Hydropolitics: conflicts over water as a development constraint. Zed Books, London.

Oorthuizen, Joost (2003). Water, Works and Wages. The Everyday Politics of Irrigation Management Reform in the Philippines. Wageningen University Water Resources Series. Orient Longman, Hyderabad.

Paranjape, Suhas and K.J. Joy (1995). Sustainable technology. Making the Sardar Sarovar project viable. A comprehensive proposal to modify the project for greater equity and ecological sustainability. Environment and Development Series. Centre for Environment Education, Ahmedabad.

Rap, Edwin (2004). The Success of a Policy Model. Irrigation Management Transfer in Mexico. Wageningen University (PhD thesis).

Report of the Committee on Pricing of Irrigation Water 1992/94. Government of India, Planning Commission, New Delhi, September 1992. Also in: Indian Journal of Agricultural Economics, Vol. 49, No. 1, 1994, pp. 107-133.

Saleth, Maria R. (2004). Strategic Analysis of Water Institutions in India. Application of a New Research Paradigm. Research Report 79. IWMI, Colombo.

Star, S.L. & Griesemer, J. R. (1989). 'Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39' Social Studies of Science, 19: 387-420.

Shah, Tushaar, Christopher Scott and Stephanie Buechler (2004). 'Water Sector Reforms in Mexico. Lessons for India's New Water Policy' Economic and Political Weekly Vol.39, No.4, pp.361-370.

Stone, Ian (1984) Canal irrigation in British India. Perspectives on technological change in a peasant economy. Cambridge South Asian Studies No.29. Cambridge University Press, Cambridge.

Turton, Anthony and Ronald Henwood (eds.) (2002). Hydropolitics in the Developing World. A Southern African Perspective. AWIRA, University of Pretoria; URL: www.internationalwaterlaw.org/Articles/hydropolitics_book.pdf

Visvesvaraya, M. (1951). Memoirs of my working life. Bangalore.

Wade, Robert (1982). 'The system of administrative and political corruption: canal irrigation in South India'. Journal of Development Studies, Vol. 18, No. 3, pp. 287-328.

Wade, Robert and Robert Chambers (1980). 'Managing the main system: canal irrigation's blind spot.' Economic and Political Weekly, Vol. 15, No. 39, pp. A107-112.

Waterbury, J. (1979). Hydropolitics of the Nile valley. Syracuse University Press, New York.

1   Evers, Hans-Dieter and Solvay Gerke (2005). Closing the Digital Divide: Southeast Asia's Path Towards a Knowledge Society.
2   Bhuiyan, Shajahan and Hans-Dieter Evers (2005). Social Capital and Sustainable Development: Theories and Concepts.
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5   Fuest, Veronika (2005). Policies, Practices and Outcomes of Demand-oriented Community Water Supply in Ghana: The National Community Water and Sanitation Programme 1994 – 2004.
6   Menkhoff, Thomas and Hans-Dieter Evers (2005). Strategic Groups in a Knowledge Society: Knowledge Elites as Drivers of Biotechnology Development in Singapore.
7   Mollinga, Peter P. (2005). The Water Resources Policy Process in India: Centralisation, Polarisation and New Demands on Governance.
8   Evers, Hans-Dieter (2005). Wissen ist Macht: Experten als Strategische Gruppe.
8a Evers, Hans-Dieter and Solvay Gerke (2005). Knowledge is Power: Experts as Strategic Group.
9   Fuest, Veronika (2005). Partnerschaft, Patronage oder Paternalismus? Eine empirische Analyse der Praxis universitärer Forschungskooperation mit Entwicklungsländern.
10 Laube, Wolfram (2005). Promise and Perils of Water Reform: Perspectives from Northern Ghana.
11 Mollinga, Peter P. (2004). Sleeping with the Enemy: Dichotomies and Polarisation in Indian Policy Debates on the Environmental and Social Effects of Irrigation.
12 Wall, Caleb (2006). Knowledge for Development: Local and External Knowledge in Development Research.
13 Laube, Wolfram and Eva Youkhana (2006). Cultural, Socio-Economic and Political Con-straints for Virtual Water Trade: Perspectives from the Volta Basin, West Africa.
14 Hornidge, Anna-Katharina (2006). Singapore: The Knowledge-Hub in the Straits of Malacca.
15 Evers, Hans-Dieter and Caleb Wall (2006). Knowledge Loss: Managing Local Knowledge in Rural Uzbekistan.
16 Youkhana, Eva, Lautze, J. and B. Barry (2006). Changing Interfaces in Volta Basin Water Management: Customary, National and Transboundary.
17 Evers, Hans-Dieter and Solvay Gerke (2006). The Strategic Importance of the Straits of Malacca for World Trade and Regional Development.
18 Hornidge, Anna-Katharina (2006). Defining Knowledge in Germany and Singapore: Do the Country-Specific Definitions of Knowledge Converge?
19 Mollinga, Peter M. (2007). Water Policy – Water Politics: Social Engineering and Strategic Action in Water Sector Reform.
20 Evers, Hans-Dieter and Anna-Katharina Hornidge (2007). Knowledge Hubs Along the Straits of Malacca.
21 Sultana, Nayeem (2007). Trans-National Identities, Modes of Networking and Integration in a Multi-Cultural Society. A Study of Migrant Bangladeshis in Peninsular Malaysia.
22 Yalcin, Resul and Peter M. Mollinga (2007). Institutional Transformation in Uzbekistan's Agricultural and Water Resources Administration: The Creation of a New Bureaucracy.
23 Menkhoff, T., Loh, P. H. M., Chua, S. B., Evers, H.-D. and Chay Yue Wah (2007). Riau Vegetables for Singapore Consumers: A Collaborative Knowledge-Transfer Project Across the Straits of Malacca.
24 Evers, Hans-Dieter and Solvay Gerke (2007). Social and Cultural Dimensions of Market Expansion.
25 Obeng, G. Y., Evers, H.-D., Akuffo, F. O., Braimah, I. and A. Brew-Hammond (2007). Solar PV Rural Electrification and Energy-Poverty Assessment in Ghana: A Principal Component Analysis.
26 Eguavoen, Irit; E. Youkhana (2008). Small Towns Face Big Challenge. The Management of Piped Systems after the Water Sector Reform in Ghana.
27 Evers, Hans-Dieter (2008). Knowledge Hubs and Knowledge Clusters: Designing a Knowledge Architecture for Development
28 Ampomah, Ben Y., Adjei, B. and E. Youkhana (2008). The Transboundary Water Resources Management Regime of the Volta Basin.
29 Saravanan.V.S.; McDonald, Geoffrey T. and Peter P. Mollinga (2008). Critical Review of Integrated Water Resources Management: Moving Beyond Polarised Discourse.
30 Laube, Wolfram; Awo, Martha and Benjamin Schraven (2008). Erratic Rains and Erratic Markets: Environmental change, economic globalisation and the expansion of shallow groundwater irrigation in West Africa.
31 Mollinga, Peter P. (2008). For a Political Sociology of Water Resources Management.
32 Hauck, Jennifer; Youkhana, Eva (2008). Histories of water and fisheries management in Northern Ghana.
33 Mollinga, Peter P. (2008). The Rational Organisation of Dissent. Boundary concepts, boundary objects and boundary settings in the interdisciplinary study of natural resources management.
34 Evers, Hans-Dieter; Gerke, Solvay (2009). Strategic Group Analysis.
35 Evers, Hans-Dieter; Benedikter, Simon (2009). Strategic Group Formation in the Mekong Delta - The Development of a Modern Hydraulic Society.
36 Obeng, George Yaw; Evers, Hans-Dieter (2009). Solar PV Rural Electrification and Energy-Poverty: A Review and Conceptual Framework With Reference to Ghana.
37 Scholtes, Fabian (2009). Analysing and explaining power in a capability perspective.
38 Eguavoen, Irit (2009). The Acquisition of Water Storage Facilities in the Abay River Basin, Ethiopia.
39 Hornidge, Anna-Katharina; Mehmood Ul Hassan; Mollinga, Peter P. (2009). 'Follow the Innovation' – A joint experimentation and learning approach to transdisciplinary innovation research.
40 Scholtes, Fabian (2009). How does moral knowledge matter in development practice, and how can it be researched?
41 Laube, Wolfram (2009). Creative Bureaucracy: Balancing power in irrigation administration in northern Ghana.
42 Laube, Wolfram (2009). Changing the Course of History? Implementing water reforms in Ghana and South Africa.

43   Scholtes, Fabian (2009). Status quo and prospects of smallholders in the Brazilian sugarcane and ethanol sector: Lessons for development and poverty reduction.

44   Evers, Hans-Dieter, Genschick, Sven, Schraven, Benjamin (2009). Constructing Epistemic Landscapes: Methods of GIS-Based Mapping.

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47   Huu, Pham Cong, Rhlers, Eckart, Saravanan, V. Subramanian (2009). Dyke System Planing: Theory and Practice in Can Tho City, Vietnam.

48   Evers, Hans-Dieter, Bauer, Tatjana (2009). Emerging Epistemic Landscapes: Knowledge Clusters in Ho Chi Minh City and the Mekong Delta.

49   Reis, Nadine; Mollinga, Peter P. (2009). Microcredit for Rural Water Supply and Sanitation in the Mekong Delta. Policy implementation between the needs for clean water and 'beautiful latrines'.

50   Gerke, Solvay; Ehlert, Judith (2009). Local Knowledge as Strategic Resource: Fishery in the Seasonal Floodplains of the Mekong Delta, Vietnam

51   Schraven, Benjamin; Eguavoen, Irit; Manske, Günther (2009). Doctoral degrees for capacity development: Results from a survey among African BiGS-DR alumni.

52   Nguyen, Loan (2010). Legal Framework of the Water Sector in Vietnam.

53   Nguyen, Loan (2010). Problems of Law Enforcement in Vietnam. The Case of Wastewater Management in Can Tho City.

54   Oberkircher, Lisa et al. (2010). Rethinking Water Management in Khorezm, Uzbekistan. Concepts and Recommendations.

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