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# Water and politics: levels, rational choice and South Indian canal irrigation

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## Abstract

The first part of the paper gives an overview of the “water and politics” literature, by distinguishing three levels: (1) official state and inter-state politics regarding water (or hydropolitics), (2) the politics of water resources policy (policy formulation and implementation as politically contested terrain), and (3) the everyday politics of water use (the day-to-day contestation of water resource use). The paper does not discuss the emerging level of the global politics of water. The second part of the paper discusses the dominance of the “new institutionalism” paradigm in debates on water resources management and politics. The appeal of the paradigm, despite the existence of fundamental critiques is analysed. Limitations of “new institutionalism” are located in limited concepts of human agency, the desire to universalise, absence of the concept of social power, and the problem of commensuration. Its appeal for policy makers lies in its suitability for designing standardised policy prescriptions, and its exclusion, or rephrasing, of the issues of power and politics. In the third part of the paper these considerations are illustrated through the discussion of a case: the Tungabhadra Left Bank Canal irrigation system in South India. In the fourth concluding section it is argued that there is not just a multitude of levels and diversity in approaches, but that there is a connection between “politics and method.” Research on water and politics might benefit from more explicit engagement with the question from which political standpoint that research is undertaken, and whether and how that is related to method, approach and policy recommendations. This is all the more necessary in an era with strong calls for institutional reform, to address the challenges of an increasingly problematic water future. © 2001 Elsevier Science Ltd. All rights reserved.

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At a general level, the statement that “water is politics” hardly needs any defence.

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The term *hydropolitics*, which unites both sides of the equation in a single word, has been coined to refer to inter-state political processes concerning the allocation and use of water flowing through international rivers and aquifers. The political dimensions of water resources development are abundantly clear and much discussed in cases like the Nile, Jordan and Tigris–Euphrates rivers, and also evident in many other basins in the world. However, this is not the only sense in which “water is politics”. This paper, as a first point, proposes a wider concept of politics, comprising not only official state (and inter-state) politics, but also the politics of water resources policy, and the notion of the everyday politics of water resource use.

The second point of the paper, and its sectoral focus, is shaped by the domain in which the author operates. He has done research on the political economy of water distribution in large-scale canal irrigation systems in South India, and is involved in discussions on canal irrigation reform in that country. In the world of South Asian canal irrigation “politics” is a word with negative connotations. It is associated with undesirable “interference” (of politicians) in activities that should be conducted in a “scientific” and “professional” manner (by engineers and planners). Instead of defining politics as a problematic phenomenon to be excluded from “rational” water resources management, this paper will argue that it is an inherent part of it.

The practical relevance of emphasising this point lies in its strategic implications. In South Asia, and elsewhere, reform of the irrigation sector and water resources sector more generally, is the talk of the day. Understanding the political dimensions of reform, or adopting a political perspective on reform, can help to develop better strategies for designing and implementing interventions. It also helps to understand better the role that different interest groups, including those who intervene, (can) play in the reform process. It may give substance to the often extremely vague notion of “stakeholder participation” in water resources planning and use.

At a third level of debate the question is raised whether it matters *how* we talk about water and politics. The discussion revolves around the problems related to rational choice perspectives, and argues that a more contextualised approach with a less narrow understanding of human agency is required. It questions universalist notions of rationality, and situates the water researcher and water practitioner as political actors themselves.

The structure of the paper is as follows. I start with a brief and selective overview of the literature on water and politics, using the three meanings of politics identified: hydro-politics, the politics of policy, and everyday politics (Section 1). Section 2 discusses a recurrent theme at all three levels: the usefulness of new institutionalist or rational choice approaches to the study of water and politics. The discussion focuses on the limitations of the concept of human agency employed by that framework, and the implications of that. In Section 3 I discuss the case I am most familiar with, South Indian canal irrigation, to illustrate the necessity of a broad concept of human agency in the study of political practices. I conclude the paper by drawing some conclusions on the politics of research on water and politics.

## 1. Water and politics

Politics is often primarily associated with official politics, that is state and party politics. In a dictionary definition, politics is “the art and science of directing and administering states and other political units.” (see [1, p. 877]). State governance is the substance of politics in this perspective. But politics also carries a broader meaning. In the same *lemma* in the dictionary quoted, politics is also defined as “the complex or aggregate of relationships of men in society, especially those relationships involving authority or power”, “any activity concerned with the acquisition of power” and “manoeuvres or factors leading up to or influencing (something)”.

Politics thus refers to the activities in a particular segment of society, the polity, and to a particular quality of social relationships in society at large. The analysis of politics in the second meaning involves looking at the process through which the social relations of power are constituted, negotiated, mediated, reproduced, transformed or otherwise shaped.

This understanding of politics implies that the subject “water and politics” includes more than the issue of the inter- and intra-state governance of water resources. It refers to the contestation of water resource planning and use in a much wider sense. I propose that there are three levels at which “water and politics” can be studied: at the level of hydropolitics, the level of the politics of water resources policy, and at the level of the everyday politics of water resource use.<sup>1</sup>

### 1.1. *Hydropolitics*<sup>2</sup>

The first level is the level of inter-state politics regarding the allocation, distribution, control and quality of water resources. 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 India and the USA. Water transfers between basins located in different states are 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.

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<sup>1</sup> A fourth level is emerging that could be called the global politics of water. It involves, for example, international discussions on water as took place at the International Conference on Water and the Environment (Dublin, 1992) and efforts to formulate international water law. The exercise organised by the World Water Council to formulate a World Water Vision concluded in March 2000 was another example.

<sup>2</sup> For usage of this term, see for example Waterbury [2] and Ohlsson [3].

The most general substantive literature is that on the interpretation of the conflicts at hand: what are they exactly about and how have negotiations so far been conducted.<sup>3</sup> A more specific issue is the guiding principle employed for allocation, that is, which water rights system is adopted for deciding allocation between states.<sup>4</sup> Another important issue is the weighing of pros and cons, that is, the evaluation of trade-offs. Part of this is the identification of win–win options, or more generally, producing a proper and mutually accepted database, identifying attractive resource-use options, and describing possible negative effects of non-agreement [6]. Analytical methods have been developed to evaluate different options and understand the implications of particular choices and strategies. There is a strong presence of game-theoretical approaches in this field [7].

The strategic issues refer to the characteristics of the negotiation and mediation procedures. At the most general level there is a lot of discussion on the “factors” that influence the success or failure of negotiations, often through a lessons-learned approach [8]. More specific issues include bargaining principles [9], whose steps or phases can or must be distinguished in the negotiation process.<sup>5</sup> Detailed “inside” accounts of negotiation processes seem to be rare however.

### *1.2. The politics of water resources policy<sup>6</sup>*

This second level is the level of water resources policy formulation and implementation within states, usually with a central role of the state government. Many countries have overall and sectoral 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, 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. At least the following themes can be identified in the literature on this subject.

The first and most general theme is that of the wider political significance or meaning of particular water resources programmes: what are the political reasons for governments and other agencies to invest in water resources development. Lynch

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<sup>3</sup> For example Shapland [4].

<sup>4</sup> For example Elmusa [5].

<sup>5</sup> For example Crow, in a detailed analysis of the negotiations between India and Bangladesh on the Ganges river, emphasises the importance of the timing of negotiation in relation to electoral cycles [10].

<sup>6</sup> The phrase politics of policy is derived from Grindle [11].

for example identifies building support and improving the likelihood of political stability as the main objectives of Peruvian governments to undertake small-scale irrigation projects in the Sierra region, rather than strictly economic motives [12].

A second, much publicised, theme is the popular resistance against government water policies, notably against dam construction [13]. This debate is generating a rich literature on public action and social movements in relation to water resources development.

A third theme is the internal dynamics of state apparatuses in the water sector. Though we have some strong statements on the nature of these institutions from a rent-seeking perspective [14], detailed studies of actual internal dynamics are very rare. A seminal paper is Wade's analysis of the system of administrative and political corruption in a South Indian state [15]. Analyses of the social construction of water resources policies are not often found. A Dutch example is the analysis of the public debate and decision-making on the closure of the Eastern Schelde estuary, where flood control and environmental concerns were negotiated [16]. An American example is the analysis of congressional decision-making on water projects [17]. Another subtheme is the explanation of the technocratic culture of many water resources bureaucracies, that is the dispositions of engineers.<sup>7</sup>

A related fourth theme is the dynamics of institutional reform processes. In the irrigation sector these started in the Philippines in the 1970s and 1980s [19] and are now ongoing in countries like Mexico, Turkey, Colombia, Pakistan, India, Egypt, Zimbabwe and others, with varying speeds and scope. Most publications in this field are highly prescriptive, present models for desired end stages and list policy recommendations [20]. Documentation of actual processes is virtually non-existent.

A last, fifth theme lies at the interface of the politics of policy and the everyday politics of water use. It is the analysis of the policy transformation process that takes place "on the ground" when policies are implemented, particularly how the lower level implementing staff deal with pressures exerted on them by their administrative bosses, water users and other actors, like politicians [21]. Another category of literature dealing with this interface is the evaluation of (donor assisted) development projects in the water sector. There is an overlap with the second theme, and the literature referred to below on the everyday politics of water use also often deals with the response to donor and government intervention projects.

### *1.3. The everyday politics of water use<sup>8</sup>*

The third level refers to the contested nature of the day-to-day use of the resource. Political analyses at this level look 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 it is difficult to make an inclusive classification of themes.

One core theme is the impact of water resources development on the social

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<sup>7</sup> On the USA see Espeland [18].

<sup>8</sup> The term everyday politics is taken from Kerkvliet [22].

relations of power in a community or region, and vice versa. A well-known debate is that on social differentiation in relation to the Green Revolution and the role of irrigation in it. This debate primarily refers to class differentiation. Also the impact on gender relations is increasingly well documented [23]. Another theme is detailed studies on the contested distribution of water, that is the practices through which access to water is constituted [24]. The central issue in all these studies is (in)equity, what that means, how it occurs, and what can be done to change/achieve it [25]. Conceptually two — related — focus points are (1) the concept of hydraulic property [26] and property rights more generally, and (2) the understanding of collective action [27]. Ostrom's new institutionalist framework is highly influential in debates on the governance of irrigation systems. It presents a formal framework for identifying the different types of rules that shape water management practices and a game-theoretical approach to the occurrence or non-occurrence of forms of collective action for water resource management. However, the influence of the work primarily derives from its translation into a set of guidelines for action, that is, "design principles" for "crafting self-governing irrigation systems" [28].

Another core theme is participation. Since the 1970s there have been persistent calls for an increase of user participation in irrigation water management to improve performance, in response to the problems in existing systems. The irrigation sector has been relatively late to incorporate the notion of participation, as compared to watershed development for example, and to discuss it in political terms [29]. However, such debate is now emerging.

A last theme is the recent revival of interest in irrigation as an instrument for poverty alleviation. The problems in irrigation systems that have been discussed since the 1970s and the resistance against dams have given irrigation a rather poor reputation in many circles. Though very few people would like to deny the existence of many problems in the sector, new arguments are being put forward about the positive role that irrigation might play in rural development that benefits the resource poor. This requires a move from "production thinking" to "livelihood thinking" [30] and bridging the conceptual and institutional gap between irrigation and rainfed agriculture/watershed development [31].

This selective overview shows that the subject area "water and politics" is a vast area. It also suggests that the field consists of a patchwork of debates that seem to have relatively few discursive connections. However, there is a recurring theme in the discussions in the different segments of the subject area which has to do with the overall approach to the analysis. This is discussed in the second section.

## **2. Dealing with the dominance of new institutionalism**

Moore states that "the biggest single debate within political science over the past two decades has been over the strengths and weaknesses, uses and limitations of the rational choice paradigm." [32]. The statement does not apply in full strength to the field of water and politics, but the paradigm has a strong and increasing influence. A considerable amount of debate on the approach to be adopted for analysing the

politics of water is conducted as a critique of the new institutionalist perspective.<sup>9</sup> There is on the one hand neo-institutional economics and game theory, based on methodological individualism and the concept of self-interested behaviour, and on the other hand there are approaches that start from a broader concept of human agency, contextualise and emphasise the importance of history, and look at the social construction of rationality, interests and identity. This opposition occurs in different forms, of which a few will be sketched in this section.

New institutionalism has entered discussion on water and politics in the following way. In hydro-politics, as a subsector of political science as conventionally understood, rational choice approaches have found widespread application, for example in the analysis of the Middle East water conflicts and the identification of possible solutions for them [34]. There is also a more general call for “rationalising” interstate bargaining on the basis of modelling the possible solutions or equilibria from new institutionalist or other “bargaining” perspectives [35].

At the level of the politics of policy new institutionalism enters forcefully through the rent-seeking analysis of water resources bureaucracies and through the debate on water markets and tradable water rights [14,36].

At the level of everyday politics the work of Ostrom on collective action [27,28] has been very influential for understanding the organisational dynamics of particularly farmer managed irrigation systems.

These models have a strong appeal, notwithstanding the existence of fundamental critiques of rational choice approaches. Moore summarises the limitations of rational choice approaches to the analysis of politics as follows:

1. Material self-interest is in many circumstances not the dominant or even a significant objective of political action. Politics has a high element of affectivity, expressiveness and identity....
2. It is often difficult for people to act rationally in pursuit of their self-interests because some public policy issues are so complex, and past experience so irrelevant, that they are unable to judge what policies would best serve their interests, material or otherwise.... At a deeper level, patterns of political affiliation create preferences rather than simply reflect them....
3. Concern for the welfare of the collectivity often dominates over issues of individual self-interest in shaping political attitudes and actions.
4. The rational choice paradigm has great difficulties in dealing with governments and states.... In practice, the rational choice paradigm copes much better with the

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<sup>9</sup> The terms new institutionalism and rational choice theory that I use in this paper refer to a family of approaches that is also referred to as the rational choice paradigm, the new political economy, neoclassical political economy, public choice theory and the economics of politics, with a set of sub-fields including “the new institutionalism” concerned to explain the origin of economic and social institutions...; ‘collective choice’ bearing on the conditions under which aggregates of individual agents will undertake joint action to generate public goods and services (...); and rent-seeking analysis [which] (...) deals specifically with the way in which people combine and compete to determine the way in which governments mobilize and redistribute material resources.” [33]. Game theory is an important tool in these approaches.



political pressures on states emanating from societies than it deals with the (quasi-) autonomous capacities of states to set political agendas and make policies [33, pp. 4–15].

In a book length analysis of the “pathologies of rational choice theory” Green and Shapiro want to

contend that much of the fanfare with which the rational choice approach has been heralded in political science must be seen as premature...in our view the case has yet to be made that these models have advanced our understanding of how politics works in the real world...the weaknesses of rational choice scholarship are rooted in the characteristic aspiration of rational choice theorists to come up with universal theories of politics.... Collectively, the methodological defects of rational choice theorizing...generate and reinforce a debilitating syndrome in which theories are elaborated and modified in order to save their universal characteristic, rather than by reference to the requirements of viable empirical testing. [37]

And so forth.<sup>10</sup>

Also in water and politics studies, critiques of the rational choice paradigm have been formulated. In an analysis of the Jordan River basin conflicts, Lowi states that

Essentially, our approach and conclusions run counter to rational and extended game-theoretic models of political behavior...the classical realist tradition, informed by history, culture and ideology, lies at the core of this study.... Concerns with regard to: (1) relative power resources — the means to achieve objectives and, (2) basic organizing principles — values and beliefs, factor into states’ decision-making and regional behaviour at least as much as do their material self-interests. [39].

A very detailed critique at the level of the politics of policy is provided by Espeland [18]. She discusses how rational choice models were used as tools to facilitate decision-making on the construction of the Orme dam in Arizona, USA. The construction was advocated by what she calls the Old Guard of civil engineers of the United States Bureau of Reclamation (USBR), and opposed by the Yavapai Indians who live in a reservation that was going to be largely submerged. The conflict evolved around the conduct of an environmental impact study that was executed by a New Guard of professionals in the USBR. For this study a model was designed by the latter group, based on rational choice decision-making models, in which different types of information could be integrated, and different values and preferences could be compared and weighed in a single framework. She evaluates as follows:

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<sup>10</sup> For a more positive but also critical evaluation of the new institutional economics contribution to development studies see Harriss et al. [38].



This heavily edited world [of rational choice models] can be helpful for its clarity and for the efficiency with which it simplifies what threatens to overwhelm us. In forcing us to define and defend our choices, in displaying our differences, it may help us confront what we otherwise might ignore.

But this form of rationality obscures as well as clarifies.... It requires that we value in a resolutely relative way; the commensuration it demands may violate, even obliterate, other social boundaries that help order our lives and define us. Commitments and preferences are not the same thing. Transforming one to the other can disrupt and distort or relationships to what we value, misrepresenting them and us.... The logic of this form can erase or diminish that which is hard to reconcile with instrumentality: thick, messy context, historical legacies, uncertainty, ambivalence, passion, morality, singularity, the constitutive and expressive salience of symbols. [18, pp. 223–224].

Cultural theory provides another counterpoint to rational choice theory that has been applied to water resources issues. Cultural theory is a theory about the socio-institutional styles which define people's, groups' and organisations' behaviour and strategic choices. Gyawali lists the following five styles of organising [40] (slightly edited and shortened quote).

1. *Hierarchy* which is characterised by unequal roles for unequal members, with an overriding concern for control (examples: the army, the bureaucracy, large corporations).
2. *Egalitarianism*, in which “communards” lack internal role differentiation and are held together by group loyalty and allegiance to an ethical issue (examples: social, environmental or religious campaigns).
3. *Individualism*, which gives rise to a libertarian, social context where all boundaries are provisional and subject to free negotiations. Networks are based on bargaining (example: the market and its businessmen).
4. *Fatalism*, which means that coping with everyday living as best as fate allows is seen as the only viable strategy (example: impoverished peasant farmers).
5. The *hermit*, who could, unlike the fatalist, exercise power but voluntarily withdraws from it.

Gyawali shows how in the debates and struggles around embankment works in the Ganges plain in North Bihar, India, the government irrigation department works from hierarchical premises, the social and environmental activists from egalitarian principles, while there are fatalist masses in the background, and individualist contractors are also part of the network.

The theoretical point against new institutionalism is that there are thus more, and non-compatible, repertoires for transactional human behaviour than the utility maximising one proposed by rational choice theory. Thompson enlarges the critique by showing that in many cases groups or organisations incorporate combinations of

these repertoires and adapt their usage over time in response to changing circumstances. This gives these “clumsy institutions” their resilience [41].

Another critique of the limited concept of human agency in new institutionalist approaches is provided by Mosse. He analyses irrigation from small reservoirs (called tanks) in South India, and finds strong contrasts in their organisational patterns. His first point is that “tank institutions function to distribute power and symbolic resources as well as water”, and secondly that “they do so in locally specific ways.” [42]

In some villages...tank common property remains part of a “public domain” expressing relations of...caste dominance and control. On others..., however, the tank is more often part of a contested public domain providing symbolic resources for individual and group political strategies.

The difference between the two areas is not simply that self-interested farmers are rationally constrained to follow rules in one local ecology but not in another.... If in the one type of village the dynamics of power still support public institutions of resources management, in the other type, the public domain is more often characterised by contest, competition and the secondary strategies used to win public opinion in the pursuit of individual interests.

Thus there are differences in the way that tank resources symbolize social relations, and these have to do with both history and ecology. [42, pp. 494–495].

Given such critiques the appeal of rational choice perspectives requires some explanation. Though individualist utility maximisation may not be the first and last of human rationality, it certainly is an important aspect of it. The force of the rational choice approach is partly related to the neatness with which it models this dimension of human behaviour.<sup>11</sup> Another important source of appeal is undoubtedly its affinity with neo-liberal development strategies advocating “less state, more market” recipes.<sup>12</sup> Though new institutionalists probably take neo-liberal positions with regard to development policy/strategy regularly, this is not a straightforward connection. Ostrom’s work for example explicitly sets out to develop a position that is not state or market, but looks at how, as a third option, institutions for collective action can emerge.

But there are more compelling reasons for the appeal of the approach. Moore,

<sup>11</sup> For example, Moore, despite reservations about several aspects of rent-seeking analysis, evaluates Repetto’s contribution to irrigation studies as follows. “Repetto has stepped in with an interpretation which appears to have the characteristics of good theory. It is efficient: it accounts for a wide range of phenomena on the basis of a few premises and assumptions. It is internally consistent, plausible and well supported with evidence. And it has no real competitor.” See Moore [33, pp. 240–241].

<sup>12</sup> Moore observes that “[t]he emergence of [rent seeking analysis] was partly an attempt to find a new line of formal, theoretical defence for a simplistic pro-market, anti-state doctrine when the original defence line began to look very weak.” See Moore [33, p. 230].

though focusing on anti-poverty programmes rather than water resources policy, provides the following insight:

[The rational choice] paradigm has a natural affinity to the policy discussions of international development organisations working in many countries. It is better suited to producing propositions that are partly true in relation to each [of] a diverse range of specific situations, rather than generating in-depth understanding of specific situations. [32, p. 16]

Moore's observation is supported by the strong preference for large scale standardised policy initiatives in the irrigation sector, and a strong predilection for what Ostrom has called "design principles" for building viable institutions: universally valid sets of factors, conditions or principles that can be applied to engineer a particular institutional transformation.<sup>13</sup> The paradigm suggests the possibility of applying instrumental rationality to institutional problems, and proposes a relatively limited set of design criteria for the purpose. Particularly in a sector like irrigation with a strong technocratic history, this can be expected to find high resonance.

New institutionalism achieves this generality by taking the preferences of individual actors as given. In Espeland's view this has important consequences. By taking preferences as given, rational choice theory

conceptual[ly] bracket[s] the intentionality that somehow causes behavior.... As many have pointed out this exogeneity has political consequences by formally removing the goals of action from the realm of debate and explanation. [18, p. 232].

The critique of the way rational choice theory conceptualises human agency thus has a substantive element in that it argues that rational choice theory inadequately models human behaviour and its driving forces. But a second and more "political" element is that in this way social relations of power are actually excluded from the analysis. Or perhaps it would be better to say that they are frozen or made static. New institutionalism thus prevents the investigation of "real politics" by the way it constructs its model of reality and rationality. Espeland continues to argue that:

...commensuration, in blurring distinctions of all sorts, can also be a means of exerting power and (...) a defense of distinctiveness, the ultimate form of which is an incommensurable, intrinsic value, can be a means of resisting control. [18, p. 236].

Rational choice theory is a power-full tool.

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<sup>13</sup> See Ostrom [27,28]. See also Meinzen-Dick et al. [43] and Vermillion [44].

### 3. The politics of water in South Indian canal irrigation

In this section the Tungabhadra Left Bank Canal irrigation system serves as a case to illustrate the point made in the previous section on the conceptualisation of human agency [45]. This 240,000 ha reservoir-fed irrigation system is located in the state of Karnataka, South India. As its name suggests, the system is located on the Tungabhadra River, a tributary of the Krishna River, which is one of India's main rivers.

#### 3.1. *Hydropolitics*

During the colonial period the Tungabhadra River was the frontier between the Madras Presidency, directly governed by the British Crown, and the Nizam's Dominions, a formally independent Princely state under the indirect governance system called paramountcy. This shared boundary river became a hydropolitical fact when in the 1860s the first plan was drawn up on the Madras side to construct a reservoir-fed irrigation system on this river. Drought and famine were regular occurrences in the region in the second half of the 19th century. This created pressure and lobby for the construction of a protective irrigation system that would bring water to a large area and large number of farmers, to avoid crop failure, reduce famine (relief costs) and maintain social stability.

Problems arose at the level of inter-state politics. The Madras Presidency needed the consent of the Nizam's Dominions to construct a reservoir because that reservoir would submerge land in the Dominions (part of which happened to be an important feudal estate). However, Madras Presidency did not want to give a 50% share of the water to the Dominions, while the Dominions refused to accept a lower share. On an on-and-off basis political manoeuvring on this issue continued for 80 years. Madras responded by denying the Dominions any development of irrigation on the river, arguing that it would harm water availability in downstream systems fully within Madras territory. The stalemate was clearly about much more than water. It was basically about imperial power that had to be maintained towards subordinate entities.

The bargain was, in principle, simple: equal sharing of river water as a condition for the construction of a joint project, a project that would be impossible without such an agreement. It was only towards the very end of the colonial period, in the 1940s, that agreement was finally reached, at a moment that the end of imperial power was in sight. It may be noticed that the engineers representing both sides—on both sides partly Indian—had already reached agreement on the contours of a common plan some 10 years earlier. The system's construction started just before Independence (which came in 1947), and in 1953 the Left Bank Canal was operational.

After Independence the hydropolitical factor became more complicated as there were several rearrangements of state boundaries. A new institution was created to jointly manage the headworks, now located in one state, to secure equitable water supply to the command area of the downstream state. The allocation of water between

states and over systems was negotiated through the Krishna Water Disputes Tribunal, an institution created under the Inter-State Water Disputes Act (1956). This Act provides for the central state to appoint a tribunal for adjudication of inter-state water disputes. Through a process that combines adjudication and bargaining a settlement was reached in the 1970s.<sup>14</sup> The award of the tribunal will be reviewed in, or more likely from, the year 2000, and a new round of hydro-politics is due.

In the meantime, the institution of the tribunal seems to have lost much of its strength and credibility. In the case of the Cauvery river further south the procedure has given way to direct negotiation between state governments, mediated by the central political leadership.<sup>15</sup> Preceding that, the issue had become the subject of populist politics in both states, with dramatic effects like politically engineered violence against minorities. Though in the Krishna Basin there is still more water to manoeuvre with in the upcoming negotiations, nobody can be fully confident about how the process will unroll.

This short summary of the system's hydro-political history is sufficient to suggest that an understanding of the behaviour of the individuals and groups involved cannot be based on the pursuit of (material) self interest alone. That undoubtedly plays an important role, but the political dispositions of states, their representatives and actors within it are not easily captured in this frame. Blackboxing imperial, technocratic and nationalist motivations into a given "preference" does not increase one's capacity for understanding in such situations.

At another level, the modelling of possible bargains from a rational choice perspective could possibly be a positive contribution to the resolution of existing and emerging conflicts in this region because it could contribute to more informed negotiation than the present process seems to drift towards.

### 3.2. *The politics of policy*

As in the discussion of the hydro-political dimension of the Tungabhadra system, the politics of policy regarding it can be divided in three phases: colonial, post-independence and recent.

The British colonial policy towards irrigation in India was highly ambiguous. In Stone's very quotable sentence:

...on a policy level it was simultaneously linked with famine prevention, revenue stability, the settling of unruly tribes, expansion of cultivation, extended

<sup>14</sup> The structure of the procedure is the presentation of cases to the Tribunal by each state and a final decision by the Tribunal, as in a court of law. A lot of bargaining was also part of the process. The reports provide interesting reading on the negotiation of things like the total available supply in the basin, and discharge formulas for certain measuring points on the river [46].

<sup>15</sup> As a not unimportant aside it may be mentioned that this has led to some very odd bargains in which sharing of water is done by allocating a quantity of water to one state (without specifying dependability) and an area to be irrigated to the other state (not acknowledging dependence of water consumption on the type of crop grown). I thank B.S. Bhavanishankar for discussion on this issue.

cultivation of cash crops, enhanced taxable capacity, improved cultivation practices, and political stability. [47].

Protective irrigation, of which the Tungabhadra scheme is an example, did emphasise famine prevention and the spread of water to poor, drought-prone areas, and food crop production, but very little of this type of irrigation was actually constructed in the colonial period. Systems focusing on more profitable crops that yielded higher returns on investment, but which were not located in the poorest and most famine stricken areas, generally prevailed in decision making.

After independence a state-dominated developmental policy discourse became prevalent and many more protective irrigation systems were constructed. The policy was highly technocratic in nature: an emphasis on infrastructure creation and a prescriptive style of policy making and management.<sup>16</sup> In the system of constituency based, populist democratic politics that evolved there was a strong policy logic supporting protective irrigation because it allowed politicians to spread resources to a large number of people, at least on paper.<sup>17</sup> This political conjuncture secured vast investment in the sector for a long period, but several cracks have started to appear in it. These cracks derive from the practice of large-scale canal irrigation.

As in the example of the USA referred to above, environmental concerns have put canal irrigation under severe criticism, as a result of the ecological and displacement issues related to dams, and the health, waterlogging and salinisation problems within the command areas. The second element of practice that generated a lot of debate is the unequal distribution of water, and more generally the under-performance of the systems. And the third element is the budgetary constraints (large investments, little revenue), resulting in decaying systems, combined with an image of the irrigation bureaucracy as being a rent-seeking bureaucracy.

The 1990s have seen the start of the third period announced above, which is a period of debates on irrigation reform, and some attempts to achieve it. Both in analysis and prescription new institutionalist perspectives have been influential. Nevertheless, unlike the USBR case discussed by Espeland, the critiques have not yet been internalised by the Indian irrigation bureaucracies; these have been relatively successful in neutralising reform efforts they have been made to implement. So far it has been impossible, in most cases, to foster sufficient power at the policy level to implement bureaucratic reform.

From this short account it is clear that individual and institutional self-interest play an important role in the development of irrigation policy, but that there is also a lot of ambiguity and diversity that new institutionalism would find difficult to deal with. The policy recommendations inspired by new institutionalism, focused on creating the right financial incentive structure, may be quite sensible. However, they

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<sup>16</sup> In South India the system of localisation was introduced by government to secure the spread of water over large areas by legally prescribing the cropping pattern for farmers with access to irrigation.

<sup>17</sup> The importance of protective irrigation as an element of populist resource broker politics can be derived from the emergence of the Karnataka State Farmers Movement from resistance against the introduction of “betterment levy”, a tax for farmers in irrigated command areas, in the 1970s.

remain somewhat vacuous because the approach has little to say about the *process* through which these might be achieved. Locally and regionally specific strategic analysis of political configurations would be required for this. For example, the relative absence of public action concerning canal irrigation reform would have to be explained, as well as—in some states—the effects of hydropolitical concerns on the state government commitment to management reform, the effect of agrarian relations on local organising capacity would have to be appreciated, and other elements of Espeland's "thick, messy context" would have to be addressed.

### 3.3. *Everyday politics*

In the Tungabhadra Left Bank Canal case very dynamic processes can be found at the level of day-to-day water management. This is where water resource distribution over farmers takes place. Given that in protective irrigation water is scarce by design, it is hardly surprising that this distribution is severely contested. The politics of this distribution are different at the different levels of the irrigation system: the outlet command area level, the distributary or secondary canal level, and the main canal level.

At outlet command area level the everyday politics are mainly that of the agrarian structure. We found highly unequal distribution of water in water scarce irrigation units, while there were user-made rules prescribing equitable time/acre distribution and absence of open conflict on the distribution. The solution of this paradox was located in the socio-economic dependence of tail end farmers receiving less water and head end farmers appropriating more water. The former took credit from and were employed as wage labourers by the latter, and the latter were also the representatives of the unit at higher levels in representation and agitation needed for securing overall water supply to the unit. Tailenders anticipated loss of struggles over water with their patrons by planting less water consuming crops. The supply-side equity rules only applied in periods of extreme scarcity when crops threatened to die; the main part of inequity was caused by the social construction of unequal demand.

These explicit and implicit transactions could be modelled in a game-theoretical framework relatively easily, but only in general terms. Detailed discussion of the case would show that there are important socio-cultural differences between settler farmers, hailing from a highly commoditised, intensive and entrepreneurial agricultural area, who migrated to the scheme after it was constructed, and local farmers, with a history of a feudal and mainly subsistence oriented socio-agricultural system.<sup>18</sup> This difference has influenced the history of the social differentiation as a result of irrigation, and that history in turn has influenced the dispositions and skills of the two groups.

At distributary/secondary canal level the everyday politics concerned the involvement of politicians in the mediation of conflicts in day-to-day water distribution. At

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<sup>18</sup> The irrigation system is located in the former Nizam's Dominions' territory, and the settlers came from the coastal areas of the former Madras Presidency.



the secondary canal level it was the leaders/representatives of the different units who were the direct contestants and these were not locked in direct relations of socio-economic dependence. As a result there was much open, day and night, conflict on water distribution over different units along the canal. Contrary to what the literature had suggested, we did not find that rent-seeking (bribing) was the dominant mechanism in the regulation of distribution. Negotiated rotation schedules had occurred that gave some stability to the distribution pattern, even when it was an unequal stability. The intensive contestations were not a sign, in this case, of chaos and anarchy, but a process of negotiation of the implementation of rotation rules. Local politicians, in their role as resource brokers played an important mediating role in these conflicts and the consolidation of the rules.

Another interesting finding was that different irrigation department canal-level officials adopted different styles of management for manoeuvring in the triangle of farmers, politicians and themselves. The four styles identified were: (1) management by force (mobilising all possible administrative and law and order instruments to enforce a distribution pattern), (2) management by bribe (delivering water to the highest bidder), (3) management by strategic manoeuvring (playing the resource broking game), and (4) management by default (disengaging from active involvement). These styles seemed to have at least as big a dependence on the personality of the officer concerned as the situation in which he had to work, and after the transfer of an officer a new person with a different style might come into a given situation.

At main canal level, everyday politics referred to the intra-institutional dynamics within the irrigation agency as a result of farmer pressure on that institution. Again in contrast to what rent-seeking qualifications of the irrigation bureaucracy suggest, we did find a process of institutional learning with regard to the procedures for water division over the different sectors of the main canal by the different divisions responsible for these sections. Rent-seeking practices were mainly located in construction activities and in a general sense created severe constraints on water management activities. However, a singular rent-seeking conception of the dispositions of irrigation department officials was clearly inadequate, also at this level.

This brief discussion of the politics of water distribution in this irrigation system shows that existing practices can only be understood when a broad concept of the driving forces of the behaviour of farmers, officials and other actors is adopted. Such an analysis is also able to identify entry points for institutional transformation that may otherwise go unnoticed.

#### **4. Conclusion**

The relationship between water and politics is a vast area of debate even when, like in this paper, the focus is primarily one of the main water subsectors, irrigation. The paper has segmented the water and politics debate into three levels, hydropolitics, the politics of policy, and the everyday politics of water resource use, with a fourth level, that of the global politics of water, emerging. At each level different

actors and different issues play a role, and different demands are made on analysis. This has resulted in a patchwork of approaches and debates that seem to be conducted in relative isolation.

Though this is not the main point of the paper, the South Indian case suggests that there may be important linkages between the levels: how, for example, through the mechanisms of a particular populist democratic polity, local politics reflects on the process of policy formulation, and hydropolitics influences policy priorities and strategies within states. There may therefore be some value in analysing the inter-relations of the different levels more than is done at present.

The paper has focused on a conceptual and methodological theme that cross-cuts the different levels. It has reported critical engagements with the new institutionalist approach that is increasingly influential in this field. The critiques reported focus on the deficiencies of the concept of human agency employed in rational choice approaches. The main argument of the paper is that this is not just a debate on relative strengths and weaknesses of different analytical methods, but that there is a relationship between politics and method.<sup>19</sup> There are politics to how we phrase our questions and design our methodologies. This issue is rarely addressed in the literature on water and politics, as elsewhere, but the intensity of the controversies around new institutionalist approaches suggests that it is important. This point is well captured in Bernal's evaluation of the research on the Gezira irrigation system in Sudan. She shows that most of that research has been biased and taken the perspective and/or priorities of the scheme management as its starting point, by taking a project focus, by relying on official data, and by adopting the evaluation studies model. She concludes that "[t]his example serves to remind us that we are not outside but part of the world we are studying and therefore we are *de facto* participants, not simply observers of the politics of development." [49]. Research on water and politics might benefit from more explicit engagement with the question from which political standpoint that research is undertaken, and whether and how that is related to method, approach and policy recommendations.

The world is in for a problematic water future. Though the imminence of crisis can be, and often is, exaggerated to serve particular political agendas, the increasing scarcity of fresh water resources, both in quantity and in quality, spells danger. Peace, the environment, food security and the quality of life will come under growing pressure.

The demand that this process creates on the polity is to establish institutions, at

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<sup>19</sup> Green and Shapiro accuse both practitioners and critics of rational choice theory to be insufficiently interested in empirical testing of the theory. "Most attacks focus on rational choice assumptions about human psychology and rationality or on what are taken to be rational choice theory's ideological ramifications." See Green and Shapiro [37, p. 5]. Though I fully subscribe to the importance of grounded debate, I attach more importance to reflection on assumptions than these authors. Both the subject and method of analysis need to be contextualised. Meanings, including those constituted in academic debate, are also causes of human behaviour [48]. More practically, reflection on assumptions underlying theories may help to improve understanding of the stakes and fierceness of debates, and help communication across paradigms.

different levels, through which increased scarcity and socio-political polarisation can be mediated, and new avenues for water resources management be defined. It is unlikely that existing institutional arrangements can address the challenges ahead adequately enough. There is a persistent call for reform from very different ideological quarters. A common theme across the ideological and political spectrum, though valued differently, is that of decentralisation or the devolution of powers of resource management to water users. A second common concern, though perhaps less broadly shared, is that of adequate water pricing. When policy formulation and implementation would be conducted in a less prescriptive and more process-oriented fashion, it should be possible to develop practical politics with constructive forms of contestation around these and other issues. If this does not happen, stark necessity will act as the mother of invention.

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