IWRM/IWRAM: a new sanctioned discourse?

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Abstract

Water policy has been subject to a sequence of preferred and changing driving ideas for two centuries. The integrated water resources management (IWRM) approach has been in currency for over a decade. Hydrologically inspired river basin management approaches were introduced in the 1960s and had very limited impact on policy making because they focused narrowly on the water resource and hydraulic interventions. There is a danger that the recent IWRM approach will also not serve well the needs of water policy-makers unless it escapes the assumptions of those parts of the water managing profession who believe that the river basin is the fundamental system. It will also fail if it is not recognized by practitioners and policy-makers that sustainability is as much about the social and economic as about water in the environment. It is suggested that IWRM should be re-named integrated water resources allocation and management (IWRAM) in order to capture the unavoidable conflictual nature of water allocation and management in water scarce regions. IWRAM is a political process; integration is political and management is political.

Introduction

The purpose of this study is to show how water resource allocation and management policies evolve in contentious arenas. It will situate the integrated water management approach in a water policy narrative. The agents who operate in these policy arenas reflect special interests and concerns. Policy debates bring about hegemonic

convergence, a concept, which is similar to that of sanctioned discourse. Both terms are part of a political ecology approach to water policy making and help to show how environmental policy-making is made. (Hajer 1996) All policy making discourse is partial in that it is made by coalitions, which reflect those who can best construct and deliver the most persuasive arguments. The most persuasive can exclude the voices of those who do not construct their messages sufficiently well to gain access to the discourse. Policy outcomes are the result of elites making deals selectively with groups that cannot be gainsaid. For example, governments rarely confront large farming communities existing on low incomes. Confrontation, involving a public policy re-allocating water supplies from irrigation, is even more rare. In the case of water the dominant and fore-grounded coalition in many water short regions is between the farming (irrigating) community, the water professionals and national political leaderships. Policy arguments are driven by immediate interests, rather than by high-minded notions of long term collective action, based on social equity, economic efficiency or environmental consideration.

Policy is not made on the basis of rational science. Although well observed science can play a role if its messages are as effectively constructed as those of other participants in the policy-making process. Policy is made by agents and policy entrepreneurs operating in complex local discourses, usually at the national level, rather than in generic discourses informed by principles developed in international science.

The study will show that local discourses can be impacted by Northern ideas - albeit slowly. A sequence of international water resources management paradigms superseded the hydraulic mission of industrial modernity in the late 1970s in the plural North. Neither the North nor the South are homogeneous in terms of endowments or social capacity. It is not being implied that they are. There are some generic characteristics, which distinguish Northern and Southern political economies. In brief southern economies have fewer policy options because they are poor. They are less able to ameliorate scarcity by redistributing resources across a political economy.

The water sector in the North adopted principles of sustainable development during a protracted discursive struggle from the late 1950s to the mid-1970s. It will be shown that the three-phase water managing paradigm of late modernity was technologically,

economically and environmentally inspired. It has had three sub-phases, which are on-going.

The promotion of the new paradigm of late modernity became a global project in the post-Cold War 1990s. International agencies and Northern bi-lateral agencies assumed that the model would fit all circumstances. The river basin was a central organizing framework despite evidence that global trading processes were just as important as local hydrology in ameliorating serious local water circumstances. (Allan 2001) This was especially the case in the most water challenged regions of the Middle East and southern Africa. It will be argued here that the integrated water resources management (IWRM) approach can only be safely deployed if two conditions are also taken into account. First, IWRM must be seen as primarily a political process in terms of getting policy in place. (Dixit et al 2002) To this end it should be re-termed IWRAM – water resources *allocation* and management. Allocation and re-allocation are unavoidable in water policy and management. They are not silent and are always contentious and political. Secondly, the river basin concept must not limit the scope of IWRAM. Economies, whether they fit hydrological boundaries or not, cope with water resource deficits and challenges with remedies deriving from beyond immediate watershed(s). IWRAM must think beyond the watershed.

Why review IWRM/IWRAM now?

The last few years of the twentieth century witnessed an unprecedented level of international discourse involving the world's water users, managers and policy makers. They engaged in intense consultative activities. They reviewed the global water predicament and identified ways to secure regional water environments and the societies and economies, which depend on them. The preparatory process produced numerous reports for the Second World Water Forum in The Hague in March 2000 (WWC 2000, GWP 2000, World Water Commission 2000). During the consultations for the report writing attention was drawn to the fundamental political nature of the pre-Hague process (Allan 1999a). But the authors of the numerous reports were unable to escape their assumptions that water was a hydrological phenomenon rather than a multi-dimensional

resource enmeshed in nested political economies. There was talk of civil society, governance and stakeholders, even of political commitment. But the discourse ducked the challenge of recognising that innovative outsider scientific information as well as outsider principles of economy, equity and the environment are subordinate to local political milieux into which they would have to be introduced.

At The Hague the political reaction to advocating that water is an economic resource rather than a social resource was strongly contended. Water pricing instruments and privatisation were also very loudly contested from the first moments of the Forum.

The purpose here is to draw attention to the necessity of starting with the political contexts in which water resources are allocated and managed if an approach such as IWRM/IWRAM is proposed. It will include a narrative on the paradigms that have determined the way that water resources have been perceived and managed during the twentieth century in the North. For example, the paradigm that Nature could be controlled was one of the ideas that dominated both capitalist and socialist versions of industrial modernity during the first 75 years of the twentieth century.

Another paradigm, based on the notion that environmental resources such as water were being damaged rather than controlled by the impact of the alliance of science, engineering and national investment gained currency in the North and with Northern donors by the mid-1970s. This paradigm reflecting environmental concern has only achieved very limited purchase on water policy making in the South. In the 1990s a further set of principles gained currency. That water is an economic resource was very widely adopted by the Northern professional water community. This economically inspired paradigm has been resoundingly rejected in the South. Meanwhile, a paradigm has emerged in the last years of the 1990s – that of integrated water resource management (IWRM). IWRM requires a holistic approach and an unprecedented level of political cooperation.

Water users and policy makers operate in political systems, which determine or not whether new paradigms, such as integrated water resources management can be assimilated. The political systems make sense to those who live in them. They have a political rationale. It follows that new water resource management paradigms, such as

IWRM/IWRAM, can assimilated if the innovation of 'integration' is appreciated as a political process and not just as a technical, investment or information sharing process. It is recommended here that the term IWRM should be expanded to IWRAM. The 'A' is for allocation. Allocation is unavoidably a political process. Water professionals tend to ignore the allocative role of management. With allocation ignored management can be projected as a technical matter susceptible to modeling. In practice the political pressures associated with contentious allocation overwhelm the information provided by the technical professionals.

Integration is also a political process as all those who have attempted to take inter-disciplinary approaches know. Innovation is challenging in much less comprehensive fields than that faced by those bridging the comprehension of environmental, engineering, social, political, economic and legal professionals of the water sector.

Water policy will be transformed if it is politically feasible. Influencing political feasibility is an essential element of an effective water managing paradigm. The extent to which IWRAM can embrace the notion of political feasibility will determine whether it can play a useful role in water policy making. Such innovation will be achieved by taking the inclusive approach of what in this chapter is called the fifth paradigm. inescapably political process of IWRAM.

'New knowledge' and approaches to water and water management

The following section provides an account of the shifts in direction in water policy-making in the North in the past couple of centuries. These trends in the North are recounted not because they are more important than those in the South. The narrative is provided to help understand where and when in the North its recently adopted economic and environmental wisdom on water emerged. It will be shown that IWRM/IWRAM is an articulation of a recent convergence of thinking requiring technical, social and political expertise to be integrated to underpin the political process of water policy-making.

The political economies of the industrialised countries have been inspired for a century or more by the belief that nature, including water resources, could be controlled. Since

the late nineteenth century the entrepreneurs and state agencies involved in delivering water for economic and social purposes believed that Nature, including water, could, and should, be subject to the mastery of science and industry. This high phase of *industrial modernity* was possible because of the revolutions in science and industry in the early nineteenth century and the achievements of capitalist organisation in marshaling the resources of labour, the environment and capital.

Unsatisfactory outcomes of this unprecedented synergy had become evident by the mid-nineteenth century. In the 1840s Marx drew attention to the dangerous tendency of this capitalist inspired system to ignore the interests of the other contributors to the capitalist mission and especially the contribution of labour. In the event, capitalism and the polities in which it was embedded, addressed this 'first failure of capitalism'. The message of the philosophers and critics was heard. The extreme risks to political stability of the grotesque and rapidly expanding urban poverty of the second half of the nineteenth century in industrialising Europe and North America were avoided. Over the next century various forms of redistributive social democracy emerged to reshape the capitalist mode and confound, at least for the moment, the predictions of Marx. Capitalist interests were made aware of the social necessity of addressing the concerns of labour. Post-modernists might see a version of 'reflexiveness' in the way the ideologies – liberal, social democrat and even conservative – adjusted a century ago in the industrialising Northern polities.

The second fundamental problem, some would say the second failure of capitalism, resulting from the drive for progress, whether in the economies of Europe and North America or of the Former Soviet Union, became evident just over a century after the first. The negative pressures on environmental resources, especially on water resources, of progressive industrial modernity with its assumption that Nature could be controlled began to be evident by the 1950s. Classic analyses by environmentalists such as Rachel Carson (1965) drew attention to the carelessness of what others (Beck 1992 & 1995 and Giddens 1990) have identified as a century of industrial modernity, which damaged rather than controlled Nature.

Two decades of discourse later certainties had been replaced by uncertainty; environmentalist principles had entered Washington politics via President Jimmy Carter's

presidency – 1976-1979. (See Carter 1982 and Allan 1999a) Carter became a champion for water and for the environment. He challenged the institutions and political networks put in place by his predecessors to dam and control the wild waters of the United States. He was unsuccessful but he did accelerate widespread recognition that the approaches of supposedly progressive industrial modernity, "harnessing the forces of nature for the benefit of mankind", were full of risks and no longer viable. He emphasised also that they were not cost effective. By the mid-1970s - the progressive Nature controlling - ends 'had ceased to charm' (after Mill, J. S.) at least in the North. But note the mid-1970s was a very short time ago.

The recognition that the past mismanagement of water resources required new attitudes to be adopted by those at the commanding heights of the rich economies of the North is just one of many signals, that there has been a significant shift in approach to the use and husbanding of environmental resources. The lesson from the North, however, is that the two or three decades long environmental discourse, and especially the water discourse, did not start in the corridors of power in Washington. Nor did the initiative come from multi-national corporations; nor from the Corps of Engineers or the United States Bureau of Reclamation (USBR). Water gained a place on the agenda of those allocating national budgets relating to water only after the argument had been made by individuals and activists, mainly ecologists and scientists (and the hippies of the sixties who have come into power). Economists remind us that Ricardo valued the environment at the beginning of the nineteenth century, but they cannot explain their century and a half of neglect of the subject thereafter. Their recent unconvincing attempts to 'value' the environment was a response to the questioning by the green community of what the latter regards as an environmentally charmless outcome of industrial modernity. The economist's role was a reflexive one as has been that of engineers.

Who has sufficient wisdom to decide rationally for society what change is best? Should it be the rationale of the expert, the collective rationale of citizens or the whim of a patrimonial national leadership? The North has experienced a shift from the assumption that the expert knew best. This was the case until the 1970s. The approach has shifted to one which considers environmental, economic and social sustainability expressed in political processes to be a safer basis for policy-making. Delli Priscoli has recorded how the world changed for water policy experts and for water policy-makers in the late 1970s

in the United States. (Delli Priscolli 1978 & 1981). He captures the dilemma facing those in the water policy community in the United States in the late 1970s as follows:

> 'Actually, we know little of whether managing the social system or the natural system is more efficient to deliver benefits, to create growth opportunities and to reduce potential social stress.' Delli Priscoli 1978

By 1992 a suite of environmental issues had become global concerns; global warming, species diversity and water. Each had attracted activists and champions. In the event the environmentalists gained what for many was intuitively impossible. At the 1992 Rio UNCED Environment and Development conference priority was achieved for the issues of global warming and of biodiversity. Global warming is scientifically controversial, especially when it is used to suggest that there are associated more general climatic trends for example in rainfall levels. Biodiversity is a complex topic hardly understandable by non-specialists. Despite the unsteady scientific foundations of the climate change and biodiversity arguments they were the major issues at Rio. Even the unstable concept of desertification was constructed to more political effect than water at Rio. These unlikely causes squeezed out the predicament of the hydrosphere. Water was given relatively little attention at Rio, but the commendable preparations in Dublin in January 1992, resulted in a detailed chapter 18 on freshwater, the longest in Agenda 21. The lessons from the UNCED meeting in Rio appear to be that abstract issues can gain the attention of policy makers and their influential political leaders if they are cleverly and effectively constructed. Such a tendency fits the risk society theory of Beck (1999) on how individuals and communities in the North respond to risk after such emblematic shocks as Chernobyl. People stopped trusting progress.

> 'The discourse of risk begins where the unbroken trust in safety ('progress') ends and applies so long as the catastrophe has not (yet) occurred. The perception of threatening risks determines thought and action.' (Beck 1999:75)

The disaster of Aids and then of BSE and other food scares has further broken the trust that communities in the North had in science and the industries that could impact on public health. They became especially fearful that science and industry could neither control Nature nor be trusted to understand its potential. These events accelerated the

process of mind changing which environmentalists had laboured for three decades to achieve. With an awful lot of help from the globalising media Northern societies are beginning to force their governments to become more environmentally aware and industry to adopt precautionary principles. The risk theorists call the condition in which the North finds itself 'reflexive modernity'. Responses are being made to more and more risks as they are identified and awareness is quickly and widely diffused by the globalising media. The susceptibility of the risk-aware North to 'new knowledge' about water resource poverty and water resource stress is thus high. The globalising media instruments of awareness-raising have been to hand. However, evidence shows that this awareness alone does not lead to changes in attitude - pressures and incentives are needed.

The Vision process of 1998-2000 was the first major attempt to construct knowledge about global and local water since 1992, and the most serious attempt yet to include all interested stakeholders in a world-wide consultation process. Its goal was to provide the pressure to change attitudes and most important - fund - water policy priorities. The heightened awareness achieved at The Hague in 2000 was impressive. Its impact was revealed two years later in 2000 at Johannesburg at the second Environment and Development Conference. Water and making it available to poor communities was the prime issue. Other concerns such as climate and biodiversity were argued to be subordinate.

Shifting water management paradigms?

Shifts in perception reflecting awareness of water resource scarcity have influenced the discourse on water management. Awareness of scarcity and declining water quality have tended to increase the prominence and intensity of water policy-making. The assumptions of the professionals and scientists involved in policy-making sanction, that is limit the scope of, the debates in which such policy-making is conducted. Here we shall review the shifts in approach that have occurred. The driving ideas on which water policy has converged will be highlighted. It will be suggested that the recent IWRM/IWRAM approach could be which in its turn be sanctioned by the limiting assumptions of policy-makers.

As discussed above, it was the green movement, which proved to be the main agent of innovation with respect to paradigmatic shifts in water management policy after 1980. Figure 1 uses trends in levels of use of freshwater for agriculture as an indicator of the driving forces, which influenced water management policy since the late nineteenth century.

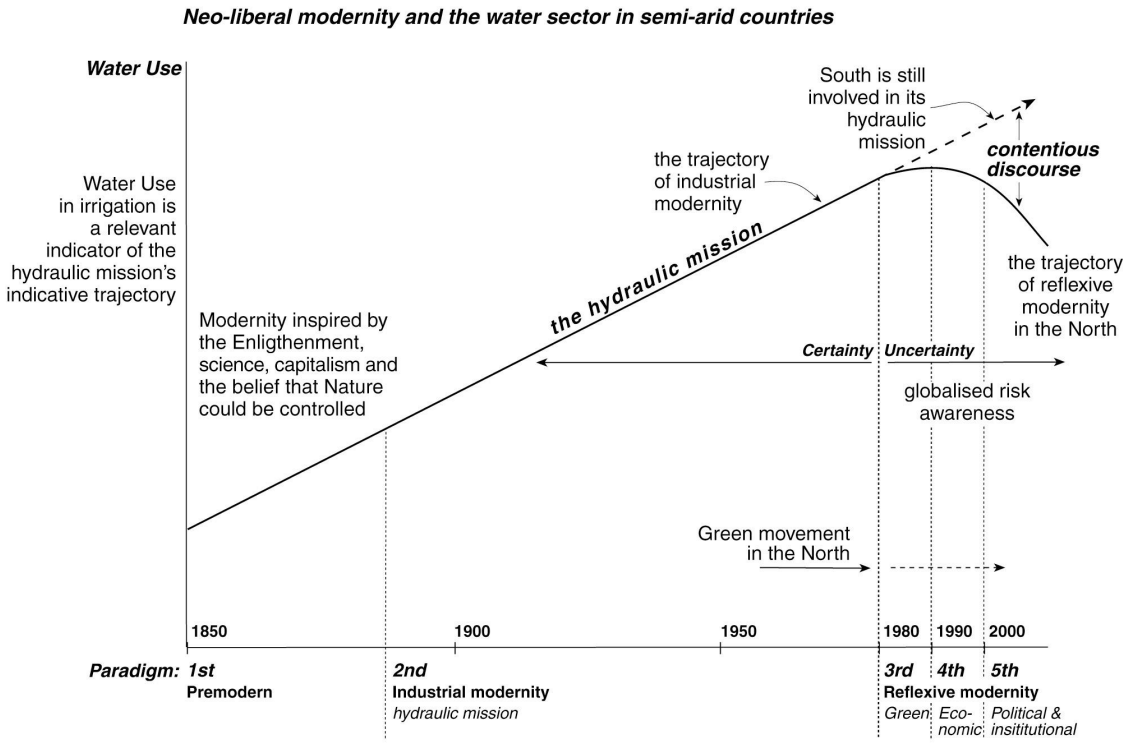


Figure One: The five water management paradigms

Five water management paradigms are identified. **First, the paradigm** associated with of *pre-modern communities* with limited technical or organisational capacity. The **second paradigm** is that of *industrial modernity*. In the water sector the ideas of the Enlightenment, engineering capacity, science and investment initiatives of the state and the private sector characterised industrial modernity. Industrial modernity was manifest as the hydraulic mission of the mid-twentieth century. This project seized both liberal western economies, especially the United States federal government, as well as the centrally planned economies of the Soviet Union. The hydraulic mission proved to be readily exportable to the South in the second half of the twentieth century.

According to social theory the ideas underpinning industrial modernity were challenged during the 1960s and the 1970s. The questioning led to reflexive responses and a phase, which has come to be known as 'reflexive modernity'. In the North in the water sector the reflexive response is evident in a three water management paradigms. (Beck 1990) This phase witnessed a reduction of water use in agriculture in a number of semi-arid industrialised economies – Australia, California, Arizona and Israel. This reflexive phase can be shown to have three sub-phases. The **third paradigm** is the change of water allocation and management priorities inspired by *the environmental awareness* of the green movement. These activists succeeded in persuading governments and voters in industrialised semi-arid regions to allocate water to the environment and reduce allocations to agriculture. Their campaigns started in the 1960s but it was not until the 1980s that evidence of the influence on policy became evident in water use figures.

The **fourth paradigm** was inspired by economists who had drawn the attention of water users in the North to the *economic value of water* and its importance as a scarce economic input. These ideas gained currency in the early 1990s. There has been an attempt to export them to the South via such agencies as the World Bank and through the energies of such institutions as UNCED, the World Water Council and the Global Water Partnership and the associated Global Water Fora in The Hague in March 2000 and in Kyoto in March 2003.

The environmental and economic phases are still in train. It is argued here that they are being supplemented by a new **fifth paradigm**, which is based on the notion that water allocation and management are political processes. This approach is especially relevant to IWRM/IWRAM. Environmental fundamentals such as the hydrological logic of the river basin and economic fundamentals relating to the value of water are central to the paradigm and to the implementation of *integrated water resource management - IWRM*.

But IWRM/IWRAM demands much more than the mere recognition of the environmental and economic value of water and the planning of engineering and economic interventions. IWRAM is an intensely political process because water users have interests and they do not want them to be diminished by interventions which contradict their immediate security. Prioritising water allocation with an eye on the economy in general, and prioritising investment to reduce environmental impacts, will conflict with the immediate concerns of

current water users. The fifth paradigm has brought forward approaches, which include participation, consultation and inclusive political institutions to enable the mediation of the conflicting interests of water users and the agencies which manage water.

The inclusive political process of the fifth paradigm requires that the interests of civil society, hierarchy (government), social movements (NGOs) and the private sector are included in the policy making discourse. (Thompson et al 1990)

Evolving perspectives on sustainability and their special relevance to integrated water resources allocation and management

It has been shown in the previous section that IWRAM can be situated in the most recent, socially inclusive and politically, aware phase of the water resource management narrative – that is the fifth paradigm. Another concept, sustainability, has been useful in emphasising the role of water in ensuring the reliable delivery environmental services. It was one of the notions used by green activists to raise the profile of the importance of the environment. But the notion proved to be impossible to operationalise in a narrow environmental sense. This was because the environment was conceptualised as being a separate focus of policy rather than one that was integral to society's and the economy's use of water in the political economy as a whole.

Figure 2 shows the way in which sustainability has been viewed in the second half of the 1990s. Sustainability is shown to have three dimensions rather than just one and by the environment. Voices reflecting the priorities associated with these three dimensions play a role in the political processes, which mediate the water using and water policy outcomes – that is the integrated water resources allocation and management - in a particular political economy. The strengths of the voices change according to the capacity of the different interests to construct and articulate their concerns and priorities. It will be shown in later how cultural theory throws light on the reasons why the paradigms have been sequenced as they have.

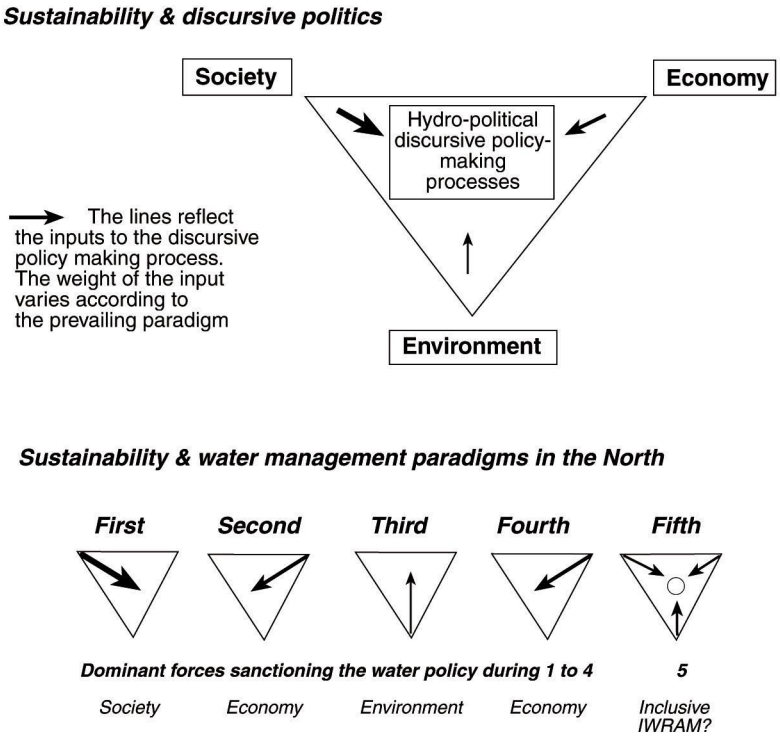


Figure 2 The concept of sustainability and the water sector; water management as a political process and determining perceptions of the diverse values of water in the North. The third, fourth and fifth paradigms have only been very partially adopted in the South.

For water to be managed to sustain the environment and environmental services water management policies have to prioritise interventions and resource allocation so that society and the economy, as well as the environment, are also sustainable. Ideally, this 'balance' is achieved, or not, via political processes of integrated water resource allocation and management.

It is possible to map the five water management paradigms on to the conceptualised space of the sustainability triangle and its hydropolitical core. The purpose of this mapping is to show where the arguments were coming from during the past two centuries in the North.

Referring to the sequence of five paradigms shown on Figure 1 it can be shown on the sustainability triangle (Figure 2) that the first pre-modern paradigm can be mapped on to the social corner which addresses social sustainability. The second paradigm of industrial modernity can be mapped on to the economic corner. The hydraulic managing initiatives of the 1930s in the United States and the former Soviet Union were inspired by the expectation of improved economic outcomes in the areas of energy production and agricultural productivity. The departure from certainty, which occurred in late modernity

in the late 1970s allowed an environmental voice into the core hydro-political discourse. The third paradigm was in the environment. The fourth went back to economic inspirations. The fifth, inclusive and integrated approach is located in the central political discourse. Arguably the mediating process should always have been recognised to have been central.

The fifth paradigm, and ideally the IWRAM approach, make it explicit that the interests of society, the economy and the environment should be simultaneously considered. There are many places in the South, however, where the priorities of society are still understandably preferred over arguments that water should be commodified or the environment considered. If the message of this chapter is persuasive the reason why such new knowledge is rejected and the nature and relevance of political processes will be better understood. The importance of such awareness is captured in the following prayer:

> Help us to know the things that should be changed,
> As well as the things that can be changed,
> And give us the wisdom to know the difference
> After the serenity prayer, Reinhold Niebuhr, c1940,

Contrasting water policy paradigms in the North and the South

The semi-arid plural North can be shown to have partially adopted all five water management paradigms. The professional community associated with the water sector can easily recognise the first four paradigms. The fifth paradigm is gaining currency – albeit slowly and sometimes partially as a result to the sanctioning which will be elaborated in the conclusion. Water users and politicians in the North, on the other hand, have been much slower to change their ways of perceiving water. Irrigating interests are impacted by economic and environmental principles.

In the plural South, by contrast, the professional community generally, and all water users and politicians, have resisted the adoption of the last three reflexive paradigms. Exceptions exist in the South at the local level where small communities manage their water via transparent institutions tested over time both socially and technically.

The South, where about five sixths of the world's population live, is still very much involved in its hydraulic mission – the second paradigm. It has much economic development ground to make up. Socio-economic development priorities are urgent; environmental priorities are recognized. But for the moment the voices articulating environmental priorities are less powerful in the policy discourse than those of society and the economy. The different water allocating and managing trajectories of the North and the South are conceptualized in Figure 1. The distance between the two trajectories in the top right of the diagram reflects the distance between the discursive processes in place in the North and the South.

The water policy discourses in the North and the South are different. Those 'outsiders' from the North who insist on preaching the environmental and economic values of water have little impact on the 'insider' Southern water management discourses.

Some important exceptions

The social theory used in the preceding sections to underpin the notion of water management paradigms cannot be used beyond the semi-arid realm. The experience of France in managing its water sector shows that as early as the mid-1960s it was possible to install an inclusive and a decentralised and democratic political arrangement and a regional management structure. (Roche 1999, Seine-Normandy Water Agency 1999 and 2000) France legislated into existence in 1966 regional Water Parliaments based on the geographical river basins of the country. These parliaments enabled the diverse interests, through representation in the regional water parliaments, to be taken into account. These structures reflect all the virtues of the fifth paradigm. The concerns of water users in agriculture and industry/services, of municipal authorities responsible for providing water services and related engineering, social and public health services. More recently the concerns of those responsible for environmental services have also been incorporated into the policy-making system.

These institutional developments anticipated those in the world more generally by over forty years. That the utility of the institutions was being questioned at the millennium by the central government of France, anxious to bring back to the centre the control of the expanding budgets of France's decentralised Water Agencies, is a predictable reflection of

the constant tension between the political centre and decentralised political institutions. (Water Academy 1999)

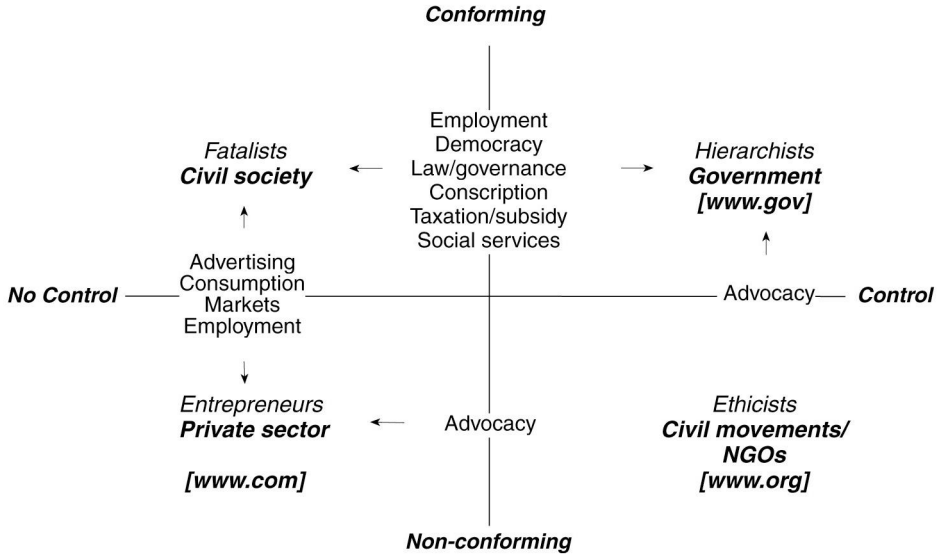
Who are the stakeholders in IWRM/IWRAM processes?

In the high profile contention, and sometimes conflict, which occurred world-wide and prominently in some Southern political economies in the late 1990s, the contending parties could easily recognise eachother. They had no basis for understanding where the contending parties were coming from. The purpose of the next section is to provide a widely respected framework from cultural theory to identify the parties and their motives. The framework has been shown to be very relevant in helping those participating in fundamental social and political processes to identify the driving principles and expectations in play. It has also been shown to be very useful for those attempting to analyse the immensely complex socio-political processes such as IWRM/IWRAM. (Allan 2001 pp 317-327)

Douglas showed that members of society identify with four 'ways of life'. The inclination to control or not and to conform or not determine where these four ways of life are located on a diagram conceptualizing cultural theory. Avoiding or seeking control, *and* conforming or not conforming, are the underlying tendencies.

Figure 3 locates the four ways of life. The diagram also shows indicate some of the processes which enable the individuals and groups in the four ways of life to relate to eachother. In an industrialised economy one of the most important relationships is via employment. Inaddiiton law, governance, taxation, conscription and subsidies enable civil society to relate to government. Civil sociey relates to the private sector via employment, consumption and advertising. Civil movements relate to and impact government, the private sector and to civil society through advocacy.

The four ways of life



Mapping the water management paradigms on to the four ways of life

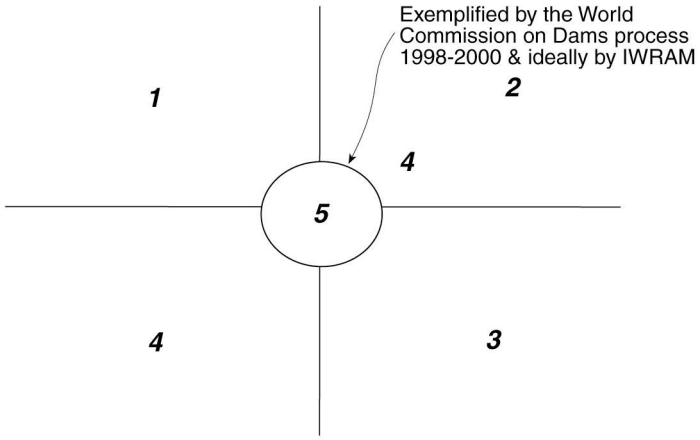


Figure Three: The four ways of life of the Mary Douglas cultural theory. (Douglas 1970, Thompson et al., 1990) And showing in the upper diagram how [1] some of the socio-economic processes through which the ways of life interact; and [2] the uncanny prediction of the internet server structure. And [3], in the lower diagram, how the sequence of water management paradigms can be mapped on to the ways of life categories.

The significance of the four ways of life analysis to such activities as IWRM/IWRAM is that it provides a form of check-list of who should be involved in a fifth paradigm or a IWRAM activity. Just as the five water management paradigms could be mapped on to the sustainability triangle – they can also be mapped roughly on to the four ways of life. The first pre-modern paradigm can be mapped in the civil society quadrant. The second paradigm of industrial modernity can be mapped on to government. The hydraulic mission pursued in the United States as well as in the former Soviet Union in the 1930-1980 period were government inspired and financed projects in both cases. The paradigms of late modernity were promoted in other ways of life. The third –

environmental – paradigm was successfully advocated by the late 1970s in the United states and other industrialized economies by green civil movement organisations and NGOs . The fourth water management paradigm was the result of an alliance between governments and the private sector. This alignment is common. Similar alliances are found in other economic areas – for example the military-industrial alliance. In agriculture similar alliances exist between governments and plant breeders and farm inputs manufacturers.

It is the location of the fifth paradigm that is most interesting. The fifth paradigm requires that all the stakeholders participate in the integrated monitoring, allocation and management of water resources. The ways of life analysis identifies the stakeholders. Figure 3 show how ideally they all come together enabling *integration* and effective *political discourse* through the participation of all the interested parties. The coming together for integration can be conceptualised by placing the fifth paradigm, IWRAM, activity at the centre of the ways of life diagram where they all intersect.

In the late 1990s the international initiative of the World Commission on Dams (World Commission on Dams 2001) was a classic example of the fifth paradigm process. The WCD process also adopted many of the principles of social, economic and environmental wisdom outlined at the beginning of this chapter which we have shown to be integral to the deployment of IWRM/IWRAM.

Why innovate, why reform? IWRM/IWRAM and transaction cost reduction

Recent analysis of water policy reform by economists (Saleth and Dinar 2000) has rediscovered the powerful idea of Coase (1937) that institutions are transaction cost reducing. New institutional economists have been developing the idea for over a decade with reference to both the North and the South.

Although policy reform may reduce transaction costs it may not be perceived in this way by either the policy makers or those whom a policy reform might impact. This is unfortunate for the innovator because it takes little observation and analysis to detect the transaction cost savings in legally defined water management systems. For

example the domestic water reticulation systems in cities across the world massively reduce the transaction costs of accessing safe water. The distribution of water to agriculture throughout the world in irrigation systems is also very successful indeed in reducing transaction costs. Although there may be substantial costs if the systems are inefficient. Would-be reformers at the millennium want to extend policy innovation by means of institutional innovation. They advocate legally defined water allocating and managing instruments at local, national and international/river basin levels. They aim to reduce even further the transactional costs of making water available to users. All this is intellectually worthy but usually not politically feasible.

Understanding the notion of reducing transaction costs is best achieved by considering the role of the familiar instrument of money. (Coase 1937 and 1960) The adoption of money to reflect mutually agreed values for diverse commodities and services required unprecedented levels of trust. Trust was essential in the socio-political domain. The progressive formal legitimising of the instrument was also essential via legal frameworks with regulatory capacities in the socio-economic domain. Money is a spectacular example of how legally contextualised instruments can reduce transaction costs**.** Imagine gaining access to commodities and services as diverse as food, transport services and information without trusted and legal monetary instruments.

In the water sector *new instruments* based on principles of water-use efficiency through the commodification of water are an element in innovative IWRM/IWRAM. Protecting the water resource will also be transaction cost reducing. But the nature and scale of the benefits of cost reduction are impossible to define and quantify at the level of the community and the nation. This inability to define and quantify future benefits is one of the most serious impediments to water policy reform and the implementation of such reform. Unfortunately it is not enough to cite the impressive actual and potential benefits of the current water systems and institutions because the benefits are intangible and difficult to value in quantitative terms. Potential beneficiaries will resist any attempt to argue that the current systems should be reformed to reflect economic and environmental values, which would lead to reductions in the quantity of water used by them or a increase in price of water paid

by them. The resistance is explained by the politics of the contention of existing interests and not by awareness of the benefits of potential innovation.

Water policy reform: a classic case of the political challenge of innovation

Water policy reforms are shaped by the discourses that precede their formulation. The outcomes of such discourse reflect the interests of the participants and the absence of the interests of any that might have been excluded. Some participants in the discourse might introduce new knowledge; others might contend old beliefs. Current politically correct procedures urge that no stakeholder be excluded if the consultative process is to be socially and politically safe. An ideal consultation process is one in which there is a potential for local approaches to be understood by those wanting to introduce innovations based on newly constructed knowledge.

Water policy reform, like all innovation is a political process. It has recognised phases. Those attempting to understand, and intervene in innovative processes must be aware of the cycle if they are to make any analytical progress, to understand the nature of a particular policy innovation or have a substantive impact on such innovation. The frustration of those recommending radical water policy reforms, such as IWRM/IWRAM, can be reduced. Policy innovators must recognize, that the benefits of the adoption of new socio-political approaches and new economic instruments are always retrospective rather than prospective for those stakeholders who have to adapt to an externally inspired innovation.

The unavoidable phases of innovation - KWHOE

If water policy reform innovators, such as those who advocate IWRM/IWRAM, are to have any impact on water using stakeholders they have to recognise that such stakeholders have to *know about* the proposed innovation. They next have to *want* the proposed innovation. When the innovation is wanted it will be possible for them to *have* the new system or institution. With the innovation in place it will then be possible to *operate* it, or *comply* with it if it is a regulatory instrument. Operation of the new system may not at first be effective. The final stage, therefore is to achieve

effectively operation of the system or achieve ***effective compliance***. Knowing about, wanting, having, operating and effectively operating *[KWHOE]* water reforming policy and practice can be conceptualised in a sentence but the process can take decades. (Allan 1999b)

The ***KWHOE*** process is relevant to the professionals involved in water policy reform in the North and the South. It is particularly relevant to the knowledge construction, information dissemination and general innovation central to developing the Vision and Framework for Action for global water.

- **Knowing** about the benefits of new [water reform] instruments which will reflect the environmental and economic values of water
- **Wanting** the new instruments which will reflect the environmental and economic values of water
- **Having** the new instruments which will reflect the environmental and economic values of water
- **Operating/complying with** the new instruments which will reflect the environmental and economic values of water
- **Effectively** o**perating/complying with** the new instruments which will reflect the environmental and economic values of water

IWRAM: a new sanctioned discourse?

The history of water management over the past two centuries has been shown to have been subject to a sequence of sanctioned discourses. A discourse is sanctioned or not by the extent to which the policy is the result of what social theorists call a hegemonic convergence. When coalitions come together they are partial in their selection of assumptions and information to feed into the policy-making discourse. Self-serving assumptions and information gets on to agendas, gets discussed and influences policy outcomes. Unwelcome information is relegated to appendices or ignored.

The five water management paradigms were sanctioned, or limited, in the scope of their consideration of relevant ideas through ignoring underlying fundamentals. The narrative can be summarized as follows:

Water management paradigm	**Inspiration**	**Sanctioned assumptions & sanctioned evidence/ information/approaches for water policy and reform**
Pre-modern		
Paradigm 1	Local secure provision	Domestic & livelihood water inviolable social resources
Industrial Modernity – in water management the late nineteenth century		
Paradigm 2	Hydraulic mission	**Nature can be controlled 'Certainty' that the interests of the state, its development agencies, the irrigators, the power generators, etc were engaged in essential and appropriate activities**
Late modernity		
Paradigm 3		
Late 1970s and 1980 is a relevant moment in the water sector in the North		
	Environmental security	Nature cannot be controlled 'Uncertainty' Water in the environment was essential in under-pinning environmental services. Water should be returned from irrigation to the environment. **Environmental considerations are prime.**
Paradigm 4		
Significant from about 1990		
	Economic efficiency	Water is an economic resource. Water has an economic value. Water should be used according to principles of allocative efficiency. **Economic principles are prime.**
Paradigm 5		
Significant from the late 1990s		
	Participatory, inclusive, integrated approach	Integration of professional discourse is a political processes. Water allocation and management is a political process.

The river basin is a fundamental hydrological unit.
But global economic systems are a more likely to bring amelioration in regions facing extreme water shortages.

There is a danger of the sanctioning of the IWRAM approach if ANY of the above are NOT included in the approach.

Note on the above tabulation:
The detail in bold and boxed identifies the nature of the partiality and the resulting sanctioning for the particular paradigm. In the case of the Fifth Paradigm the situation is evolving. It is not clear yet the extent to which the assumptions necessary to implement successfully the IWRAM approach are being adopted.

The above tabulation provides a summary of the shifts in approach to water resource allocation and management over the past two centuries. The sanctioning assumptions and idea are shown in bold in the boxes.

Each of the approaches has been subject to a only a partial consideration by policy-makers of the conditions which ideally should have been addressed if social, economic and environmental security were to be achieved in relation to water use. The first four approaches were sanctioned to the extent that they were non-comprehensive and especially because they de-emphasised the political nature of water allocation and management. The fifth can be subject to sanction if it does not recognize that first, that integration of professional discourse is a political processes. Secondly, that water allocation and management are political processes. Thirdly, that the river basin is a useful fundamental hydrological unit but global economic systems are more likely to bring amelioration in regions facing extreme water shortages.

Water management has been shown to be a political process inspired by constantly changing social priorities. Approaches to water management in semi-arid economies differ in the plural North from those in the plural South. Cultural, social, political and economic circumstances determine such differences. Hydro-political processes mediate the interests of the social and economic users of water and the interests of the environment given voice by environmental activists. Ideally sustainability is the outcome.

A major purpose of this study is to show that political contention associated with water policy making is dynamic and that in industrialised political economies in the semi-arid North five water management paradigms can be identified from pre-modernity to the present.

The plural South is very much engaged in its industrialising mode which involves the control of water resources to increase agricultural output and to generate power. The contention between newly informed Northern outsiders arguing for the inclusion of environmental and economic priorities into water policy anticipates by some decades the politically feasible circumstances which will facilitate the new approaches.

Figures

Figure 1 Five water management paradigms - 1850 – 2000

Figure 2 The concept of sustainability and the water sector; water management as a political process and determining perceptions of the diverse values of water in the North and the South

Figure 3 The four ways of life of the Mary Douglas cultural theory. (Douglas 10970, Thompson et al., 1990) And showing in the upper diagram how [1] some of the socio-economic processes through which the ways of life interact; and [2] the uncanny prediction of the internet server structure. And [3], in the lower diagram, how the sequence of water management paradigms can be mapped on to the ways of life categories.

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