

AFRICA DIALOGUE

MONOGRAPH SERIES No.2



WATER WARS: ENDURING MYTH OR IMPENDING REALITY ?

Charting the Course of the Water Discourse
through the Fog of International Relations Theory

**Water Wars in Southern Africa:
Challenging Conventional Wisdom**

**Southern African Water Conflicts:
Are they Inevitable or Preventable?**

**Hydropolitical Hotspots in Southern Africa:
Will there be a Water War? The Case of the Kunene River**

**Institutional Evolution at Lake Chad: Traditional
Administration and Flexible Fisheries Management**

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ACCORD House • 2 Golf Course Drive • Mount Edgecombe • RSA
Private Bag X018 • Umlanga Rocks 4320 • South Africa

Tel +27 (31) 502 3908 Fax +27 (31) 502 4160
email info@accord.org.za Website <http://www.accord.org.za>



Water Wars: Enduring Myth or Impending Reality

Africa Dialogue Monograph Series No.2

Edited by Hussein Solomon and Anthony Turton

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Introduction

Hussein Solomon

Looking back on the latter half of the twentieth century, one can clearly discern that the politics of ideology largely determined the extent, magnitude and nature of conflicts. In this way, Cold War security specialists developed a plethora of terms: mutually assured destruction (MAD), flexible response, credible deterrence and the like, in order to come to terms with their conflict-ridden world. Despite the fact that such terminology was used in an all-encompassing manner, and that the titanic struggle between the USA and the USSR was waged on almost every continent, the truth is that from the perspective of the ordinary people in the South, this ideological struggle was rather abstract in relation to their daily struggle for survival. Put simply, the possibility of famine or communal violence for the peasant farmer in Kathmandu or Kampala was far more real than the threat of a global thermonuclear war. Thus, the strategic discourse of the twentieth century, though coached in global terms, really reflected the strategic concerns and imperatives of the dominant states in the global order.

With the fall of the Berlin Wall in November 1989, and the collapse of the Soviet Union, the security discourse rapidly changed and broadened. People, as opposed to states, were regarded as the primary referents of security. This necessitated broadening the security agenda to include non-military security threats, such as narco-trafficking, AIDS, and environmental degradation. This new security discourse has been labelled human security

and has been defined by the Bonn Declaration as '... an absence of threat to human life, lifestyle or culture'. This new, more inclusive definition of security was a better 'conceptual fit' to the stark realities faced by developing countries and their populations.

Of course, the changes in the theoretical discourse reflected the tectonic shifts in the post-Cold War global security landscape. Freed from the strait-jacket of global bipolarity, international politics is following a more turbulent trajectory. Nowhere is the saliency of this observation more clearly reflected than in the area of resource-based conflict. One such potential conflict area is scarce fresh water resources. That this is so, is hardly surprising. Within the context of the developing world, water availability determines the sustainability of economic development. According to Anthony Turton,¹ even in countries where the industrial sector is weak, water consumption in the agricultural sector can be as much as 80%. Thus, within the context of the South, water security does not simply translate into economic development, but also food security, and the very survival of states and their citizens. Under these circumstances, it is hardly surprising that the World Commission on the Environment and Development (WCED) has concluded that such resource conflicts '... are likely to increase as the resources become scarcer and competition over them increases.'² It has been estimated that more than 1.7 billion people, spread over 80 countries, are suffering water shortages. Evidence also suggest that such water shortages, and conflicts over water, will intensify during the coming years.

This, then, was the backdrop which saw the African Centre for the Constructive Resolution of Disputes (ACCORD), the African Water Issues Research Unit (AWIRU) at the Centre for International Political Studies, the University of Pretoria and Green Cross International jointly hosting a conference at the University of Pretoria on 24 February 2000. The theme of the conference was 'Water and Conflict in Southern Africa'. Papers from this conference found their way into a book entitled *Water for Peace in the Middle East and Southern Africa*. The book was published by Green Cross International and was distributed at the Second World Water Forum, which took place at The Hague on 20 March 2000.

Whilst this compilation also owes its origins to the 24 February conference, the editors decided to critically review the contributions and realised some shortcomings. The first of these related to the lack of a clear theoretical focus, and this resulted in us including a chapter by Professor Anton du Plessis, which firmly grounds the water and security nexus within the wider


debates of International Relations theory. Secondly, there was the realisation that, in large measure, the subject matter was approached ahistorically. We believe Richard Meissner's excellent study on the hydropolitics of the Kunene River does very well in correcting this point. The Kunene River is shared by Namibia and Angola, and his discussion falls within the context of the evolving international relations between these two countries. It was also felt that whilst the focus is on Southern Africa, it is imperative to learn how our brothers and sisters in other parts of the continent are coping with the same problem. Hence, the inclusion of Marie-Thérèse Sarch's paper on Lake Chad, which we felt would lend a comparative perspective to the study. Finally, an urgent need was expressed for a structured framework for future research within a regional context. This is discussed in Anthony Turton's concluding chapter.

On behalf of ACCORD, I would like to thank Dr. Bertrand Charrier and Fiona Curtin of Green Cross International for the financial assistance, without which both the conference and this publication would not have been possible. I would also like to take this opportunity to thank my co-editor, Anthony Turton, whose vision and drive made this project possible.

Notes

- 1 Turton, A., 1999. Water and Conflict in an African Context. *Conflict Trends*, No.5, December 1999, South Africa: ACCORD.
- 2 Hudson, H., 1996. Resource Based Conflict: Water (in)security and its Strategic Implications, in Solomon, H., (ed), *Sink or Swim? Water Resource Security and State Co-operation*, ISS Monograph Series No.6, Halfway House, South Africa: Institute for Defence Studies.





Charting the Course of the Water Discourse through the Fog of International Relations Theory

Anton du Plessis

Introduction

Apart from being part of life, water is as old as life itself. Through the ages humankind has always demonstrated an acute awareness of the significance of water. However, in a world preoccupied with traditional security concerns of a 'high-politics' nature, water has, on rare occasions, become the focal point of international relations. The ending of the Cold War, however, introduced a sea change by precipitating the (re)emergence of the so-called water discourse as a distinct and highly topical field of practical and scholarly concern. The fluid (and often turbulent and opaque) nature of water vividly depicts the way in which it is currently being addressed as a common 'issue-field', at the level of technocratic problem-solving, political rhetoric and academic discourse. Furthermore, since it is impossible to limit the ramifications of water (more specifically water scarcity) to a particular functional domain, the discourse extends to issues of economics, development, the environment, security and human rights. Consequently, based on perceptions of

water as a global common and a shared concern, and resulting from the interdependence of and interactions between international actors, water complexes (and the complexities of water) have become an integral part of contemporary world politics.

Given the topical and salient nature of water as a scarce resource in southern and South Africa, it is not surprising that the past decade has seen a deluge of conferences, publications, research projects and even research institutions on water, all of which add substance to the discourse. Apart from the technocratic studies and projects of an applied hydrological nature, contributions have also emerged from the social and political sciences, and the discipline of international relations in particular. Influenced by foreign scholars such as Glieck (1993), Ohlsson (1995), Homer-Dixon (1994, 1996), Okidi (1997), Percival (1997), Percival and Homer-Dixon (1998), Allan (1999) and Fleming (1999), local contributions include those undertaken by Hudson (1996), Solomon (1996), Van Wyk (1998), Meissner (1999) and Turton (1999). These studies are mainly concerned with environmental security, resource security, water (in)security, water scarcity, water conflict and water cooperation, as well as the management of these issues at a policy level.

Apart from clarifying concepts and (axiomatically) subscribing to particular theoretical tenets regarding water resources as an environmental, developmental or security concern, the above do not self-consciously represent a distinct type of international relations theorising. Nor do they explicitly contextualise the water discourse in a particular theoretical mode, and they do not purposively construct a theory of water politics within the broader ambit of any specified paradigm or theoretical framework of international relations. Apart from Turton (1999), who comes close to the latter in a predominantly positivist context, the most notable exception is the critique levelled against the current water discourse by Swatuk and Vale (2000), which represents a post-positivist, reflectivist mode of theorising.

Does this state of affairs imply that the local water discourse is, for the most part, devoid of theoretical substance, or that it does not represent a particular type of theorising? No. On the contrary, the water discourse is steeped in theory, albeit implicit or subliminal. However, owing to several factors, it sheds little light on theory as such. On the one hand, most participants and stakeholders who enter from beyond the political field are unfamiliar with the broad contours of international relations theory. Therefore, they tend to be importers of non-political theoretical constructs (a beneficial, interdisciplinary practice not to be frowned upon). After all,

they are neither scholars, nor theorists of international relations. On the other hand, some scholars and analysts within the discipline are similarly unfamiliar with international theory, or tend to address issues in an atheoretical or deliberately non-theoretical context. Hence, they declare no specific theoretical position and often fail to produce analyses with distinctive international relations features. Those who do provide a theoretical framework – either explicitly or implicitly – often do so with scant concern for the theoretical positions they occupy or, to paraphrase Boucher (1998:6), justify their theory in terms of its practical relevance, in keeping with the intensely practical nature of the subject matter under discussion. After all, water is the issue of immediate or practical concern, not international relations theory — or so it appears.

Does this mean that the current water discourse is at sea when it comes to theory? Obviously not. However, what has to be borne in mind is that the superficial, shared concern with water at the operational level, as evidenced by its manifestation as a non-common interest in pursuit of uncommon security, has a divisive effect that transcends practice and penetrates the already divided realm of international relations theory. Consequently, the passage from practice to theory is not as smooth as may appear at first glance, and this has far-reaching implications. Two arguments suffice. Firstly, it is often contended that the aim of the social sciences is merely to systematise and formalise knowledge of the world (Ringmar 1997:284). From a positivist position, theoretical explanations will be true to the extent that they accurately reflect empirical reality. However, since the meaning of facts is not a factual question but a (meta)theoretical one, theory gains in epistemological and ontological significance. Hence, the notion that 'there is nothing so practical as a good theory', attains new meaning (Neufeld 1994:12). Secondly, since fields of study concerning commonly agreed upon subject matter are politically constructed, the limitations of particular theoretical constructs which focus on the specified field should be carefully assessed (Cox & Sjolander 1994:4-5).

Superficially, the water discourse appears to navigate an uncertain course through international relations theory, and also seems unsure about (dis)embarkation points and direction-finding beacons. Closer inspection, however, reveals that the theoretical (dis)course can be charted by, firstly, indicating the presence of theory in the water discourse; secondly, providing an overview of the development of international relations theory; thirdly, contextualising theory in the water discourse within the framework of



contending international relations theories; and finally, commenting on future challenges and prospects. As such, this account serves two purposes. On the one hand, it describes the theoretical landscape of international relations within which the water discourse is situated as a sub-field. Hence, the overview of international relations theories. On the other hand, it examines the theoretical course of the water discourse through, and its impact on, this landscape. Hence, the discussion of the theoretical dimensions of the water discourse. It is contended that similar to most scientific undertakings in the discipline, the water discourse is predominantly embedded in and representative of mainstream theorising of a positivist, explanatory and problem-solving nature. Since competing conceptions are, with few exceptions, mostly underdeveloped, marginalised or even silenced, there is a need and opportunity for conciliatory, extra-paradigmatic theorising and bridge-building.

Theoretical focuses in the water discourse

This section provides a brief overview of the focuses of theory in the water discourse as contextualised by this publication, inasmuch as they relate to international relations theory. As a specific sector is concerned – namely the water discourse – it is obvious that international relations theory as such, or any explicit attempt to construct such a theory, is singularly absent. What is at issue, are theoretical pointers in the water discourse and their relevance to international relations theory. It is not the intention of this section to provide examples of theory in the form of specific references and excerpts, or to analyse such examples. Rather, the main focuses of theory are indicated. These, and the manner in which they are dealt with, will then be related to international relations theory.

Firstly, as a natural resource, water (and the water discourse) involves the environment. Apart from the fact that all beings and social relations are fundamentally embedded in ecological relationships, environmental issues are at the centre of many of the world's most pressing problems. The concept of ecology, with its focus on the environment, and related ideas that humanity could collectively do large-scale damage to natural systems, dates back to the nineteenth century. However, the latter part of the twentieth century did see the (re)emergence of ecocentrism and ecocentric issues. As a result, green politics or ecopolitics has emerged as a significant political force in many countries. In this respect a distinction should be made between

environmentalism and green politics. Environmentalism accepts the framework of the existing political, social, economic and normative structures of world politics, and seeks to ameliorate environmental problems within those structures. Green politics regard these structures as the main origins of the environmental crisis, and contend that they need to be challenged and transcended (Paterson 1996:252). It is evident that transnational environmental problems are currently occupying higher priority positions on agendas worldwide, and they also focus public attention on assessing responsibility and attribution.

Secondly, by definition this emphasis on the global ecology also involves development, although this focus is less explicit. Global ecology writers present a powerful set of arguments as to how development is inherently anti-ecological, because they show how development in practice undermines sustainable practices. It takes control over resources from those living sustainably in order to organise commodity production. It also empowers experts with knowledge based on instrumental reason, and increases inequality, which produces social conflicts (Paterson 1996:266). The major concern lies not only with the need for and the importance placed on development, but also with the fact that a particular paradigm of development could trench the power of the already powerful.

Thirdly, the water discourse is concerned with, and inextricably linked to, the concept of security. This concern extends to environmental security in general, and to water security in particular. This latter focus, and its collateral theoretical conceptualisations, are forced upon the scene by specifically linking the water discourse – in this publication – to the war/peace and conflict/cooperation problematic, and by considering water to be a potential source or cause of (violent) conflict. This idea, although not new, has become more widespread since the end of the Cold War. The result is the emergence of a new strategic imperative expressed by the term 'environmental security'. This addresses the environmental factors behind potentially violent conflicts, and the impact of global environmental degradation on the well-being of societies and economies (Porter 1998:215). This development is, in part, the result of the 'new' security paradigm that has broadened and deepened the security agenda by including non-military ('low-politics') threats, as well as non-state, security stakeholders at all levels of society. Hence, it is also linked to the notion of common security, which has as its foundation common interests that, at a minimum, requires a shared interest in survival (Butfoy 1997:126). Irrespective of the fact that post-1989 security



has acquired a wider meaning than protection from military threat, its broader conceptualisation has paradoxically contributed to the securitisation and militarisation of water as a traditional non-military concern. Consequently, socio-cultural factors have been overlooked, and even suppressed.

The arguments about global dangers are understood in very different terms by the south, which is often regarded as a main source of these 'new threats' (Dalby 1998:183). Part of this concern is due to the debate about environmental security, which also involves sustainable development as a formulation that can allow injustice and environmental degradation to continue as part of the ideologically refurbished processes of development, as well as the processes of enclosure and displacement that divide up and control space. Thus viewed from the south, the 'discourses of danger' that structure the environmental security literature are often seen as attempts to reassert domination of southern societies, albeit in the name of protecting the planet (Dalby 1998:183-185). Also linked to this is the politics of securitisation, which is seen as an attempt to take the politics out of water, but has perhaps ultimately benefited the security of international actors more than that of the intended local beneficiaries. Warner (1999a/b) argues that a repoliticising and desecuritising process will be necessary in order for progress to be made. However, in the words of Butfoy (1997:130), although this line of thinking 'requires the repeated debunking of the more overheated Realist claims ... it is important not to throw the baby out with the bathwater: ... the competitive and self-interested aspects of international politics are not to evaporate' (Butfoy 1997:130). Consequently, what is required is the gradual reconstruction of the strategic environment in a manner which will facilitate less malign forms of policy.

Fourthly, as the logical extension of (in)security, the relationship between environmental change, scarce natural resources and conflict becomes the focus of attention. This is also not a new issue, although its 'discovery' by political scientists, as well as the concern with political violence, is of more recent origin (Porter 1998:217; Smil 1998:212). Prominent in this regard is the notion that scarcities of critical environmental resources (e.g. water) are powerfully contributing to mass violence in key areas of the world. More specifically, it is contended that resource depletion, resource degradation and resource scarcity (induced by issues of supply and demand, as well as structural scarcity) contribute to mass violence (e.g. Homer-Dixon 1998:204-211). Apart from a concern for the sources and causes of conflict and violence, this emphasis extends to the preconditions for, and the processes of, peace.

Hence, it also involves conflict termination, containment, management and resolution, as well as strategic approaches to peace. The water discourse, in as much as it involves conflict, thus focuses on a continuum ranging between war and peace, violence and non-violence, and conflict and cooperation or collaboration (e.g. Buckles & Rusnak 1999:1-9).

Fifthly, the water discourse also includes normative dimensions because it involves issues of value, such as settled norms (e.g. sovereignty) and nascent norms (e.g. intervention and political space), ethical concerns (e.g. the distribution of and access to scarce resources), and human rights (e.g. individual and collective rights). Sixthly, international law is involved as a basis for order, justice, cooperation and governance. Finally, geopolitics and geopolitical realities are also involved. The geopolitics of water, and environmental governance and decision-making concerning water, are rapidly changing as the geographical implications of environmental problems and the water discourse exceed local and national concerns (Mofson 1994:167,174). In addition, the geopolitical agenda and process also become highly politicised. Against the background of these pointers, attention is forthwith directed at the nature and scope of international relations theory.

The fog of International Relations theory

International Relations (IR), as a separate discipline, dates from the end of World War I, when a Chair of International Relations was established at the University of Wales in 1919. Apart from the fact that the autonomous status of IR has always been contested, and that it has never been universally accepted or secure – the field of study being regarded as a mere sub-discipline of Political Science, or as an interdisciplinary endeavour – and apart from the fact that its subject matter has undergone spectacular transformation over time – the last decade being no exception – IR has been cast as a discipline that is divided and dividing, a discipline of theoretical disagreement, and a discipline in a state of disarray. This situation is attributed to the divisive effect of numerous competing theoretical approaches which provide for a choice of conceptual frameworks. It is also attributed to the fact that IR has accumulated a huge intellectual balance of trade deficit *vis-à-vis* other disciplines, since it is a major importer of ideas and its scholars seldom lead or influence public debate. Consequently, IR scholars speak in many voices. They regularly propose or introduce 'new' approaches to the subject and they



engage in 'great debates' (Burchill 1996:3; Holsti 1985:1; Kubálková, Onuf & Kowert 1998:3-5). Familiarity with the resultant range of IR theories has become an essential prerequisite to understand the modern world, bearing in mind that these divergent theories enshroud issue-areas in a proverbial 'fog'.

Is it possible to account for these theoretical divisions and charter the course of the water discourse through international relations theory? A genealogical perspective that analyses both descent and emergence, provides some direction. It accounts for theory as a historical manifestation of a series of conflicting interpretations, whose unity and identity are the products of a victory in this conflict; it calls into question the picture that the discipline draws of itself and the self-image that dominates successive theoretical debates; it reflects the political and theoretical agenda, as well as the normative concerns each categorisation produces; and it indicates which accounts, voices and 'reality' are dominant (or marginalised and silent) (Smith 1995:6-7, 30-31).

The first great debate (1920s-1940s) – that being between idealism and realism – had an ontological preoccupation with the subject of international relations (what is it that we know?) and suggested a theory 'of being' based on the (altruistic and egotistical) nature of humankind. The second great debate (1950s-1960s) – that being between traditionalism and behaviouralism – centred on methodological considerations (how should we go about the business of knowing?) and presented a theory 'of doing' based on the nature of the ('classical' and 'scientific') method (Cox & Sjolander 1994:4; Wæver 1996:150).

The third great debate (1970s-1980s) – the so-called inter-paradigm debate between the contending perspectives of realism, liberalism (liberal-pluralism) and radicalism (Marxist and neo-Marxist structuralism/globalism) – preoccupied itself with epistemology (how do we know that we know?) and suggested a theory 'of knowing', which involved the introduction of alternative conceptions of the international system in response to the dominance of realism. Although incommensurable in the sense that they did not speak the same languages, these contending perspectives were tolerant of one another (albeit a repressive tolerance). The third debate culminated in a 'decline' of Marxist variants of radicalism (considering the presumed ideological 'triumph' of liberal democracy and capitalism). More specifically, however, it resulted in realism becoming neo-realism and liberalism becoming neo-liberal institutionalism. This produced a neo-neo-synthesis (rational-institutionalism) owing to the fact that both underwent anti-metaphysical,

theoretical minimalism – making them increasingly compatible – and also because they shared a common research programme, conception of science and fundamental premises (Cox & Sjolander 1994:4; Wæver 1996:150-163). The third debate opened two broad avenues: firstly, a return to more traditional research projects and research agendas that had defined international relations scholarship since its inception; and secondly, a critical turn, with scholars preoccupied by the more fundamental implications of the meta-theoretical distinctions of the third debate, engaging themselves in a re-examination of its basic assumptions (Cox & Sjolander 1994:4; Porter 1994:125).

The fourth great debate or postpositivist debate (1990s) is between the rationalism of the neo-realist/neo-liberal synthesis (inclusive of the sub-debate between neo-realists and neo-liberalists concerning 'relative and absolute gains') and reflectivism (Cox & Sjolander 1994:4; Huysmans 1997:338; Wæver 1996:164-165; Wæver 1997:19). The defining element of this debate is incommensurability. Rationalists and reflectivists tend not to talk to one another very much since they do not share a common language (Smith 1997:184). Furthermore, among rationalists and reflectivists, there is an absence of repressive tolerance in the form of a similar self-understanding of the relationship among positions. There is also a reciprocal lack of recognition with regard to legitimate parallel enterprises, since these are believed to be linked to contending social agendas and political projects. Rationalists and reflectivists see each other as harmful, and at times, almost 'evil'. According to reflectivists, the mainstream is co-responsible for upholding a repressive order. This intolerance is enhanced by the fact that the discipline has defined neo-realism as 'the dominant position', emphasising its 'totalising and monological theories', as well as the influential position neo-realists occupy among the 'gatekeepers' of the discipline (Wæver 1997:22,26).

However, the discipline tends to organise itself through 'a constant oscillation between grand debates and periods in-between where the previous contestants meet' (Wæver 1996:175). The 1990s witnessed the emergence of such an 'interregnum' or 'after the fourth debate' scheme. Recent developments are indicative of the de-radicalisation of reflectivism, representing a move away from self-marginalising guerrilla approaches, and the rephilosophisation of rationalism, representing a move towards constitutive principles (Wæver 1997:22-25). The result is an 'increasing marginalisation of extreme rationalists approaches (formal rational choice) and anti-IR approaches (deconstructivists), as well as the emergence of a middle ground where neo-institutionalists from the rational side meet the constructivists from the



reflectivist side' (Wæver 1997:23). The attempted *rapprochement*, namely constructivism, 'sits precisely at the intersection ... (because) ... it deals with the same features of world politics as are central to both the neo-realist and neo-liberal components of rationalism, and yet it is centrally concerned with both the meanings actors give to their actions and the identity of these actors, each of which is a central theme of *reflectivist* approaches' (Smith 1997:183). As such, it offers a *via media* or middle path representing a synthesis between rationalism and reflectivism (Kubáľková, Onuf & Kowert 1998:3-4; Smith 1997:188).

The water discourse charts its present course through the theoretical landscape of both the fourth debate and the 'after the fourth debate' scheme. The metaphor 'swimming upstream' or 'swimming downstream' (Swatuk & Vale 2000), with its emphasis on conflicting approaches, situates the discourse in the domain of the fourth debate. Taken to its logical conclusion, the movement in opposite directions along the rationalist/reflectivist axis, with or against the prevailing current, is most likely to terminate in a stalemate where the debate is 'dammed up' by (or 'damned' to) the 'increasing boredom' of extreme incommensurabilities. Or, as a zero-sum outcome, it is likely to terminate in a situation where the 'upstream swimmer' succumbs to the force of the dominant (downstream) current, or (less likely) where the 'downstream swimmer' is drawn under by contraflow turbulence. As an alternative, a non-zero-sum metaphor is introduced that advances the discourse to the 'after the fourth debate' domain. In keeping with the river image, 'mainstream' and 'tributary' are used as metaphors to respectively indicate the dominant and marginal discourses. Irrespective of their relative strengths or the course each takes, both navigate through the foggy landscape of international relations theory to replenish a common issue-field characterised by water scarcity. In addition, provision is made for 'conduit' construction that merges the main and tributary flows and that may, as a *rapprochement*, open up a middle ground.

Mainstream rationalism

The 'main stream' of contemporary theorising comprises what is commonly known as mainstream, rationalist theories of international relations. These are 'scientific' or positivist formulations that offer rational, explanatory accounts of international relations, locking IR into a particular point on a

broad spectrum of philosophical possibilities. Positivism sees the world as existing objectively and claims that the subject and object must be strictly separated in order to theorise properly. Since it assumes that images in the human mind can represent reality through observation, it also assumes that theorists can stand apart from the world in order to 'see' it clearly and formulate statements that correspond to the world as it truly is. In summary, positivism, as explanatory theory, thus adopts a rationalist position, sees the world as something external to the theories of it, and sees the task of theory as having to report on this world. Rationalist theories are therefore also foundational, as they represent an epistemological position which assumes that all claims about some feature of the world can be judged true or false (Burchill 1996:2; Devetak 1996:147; Kubáľková, Onuf & Kowert 1998:3,13; Porter 1994:121; Smith 1997:167-169). Furthermore, being predominantly positivist, foundational and explanatory, rationalist theory also corresponds to what Cox (1981:128-129; 1996:88) calls problem-solving theory: theory that takes the world as it finds it, including the prevailing social and power relationships and institutions, and uses them as the framework for action.

Both neo-realism and neo-liberalism are rationalist theories. They are based on rational choice theory, and take the identities and interests of actors as 'given'. However, they deem processes such as those of institutions – and not the identities and interests of actors – as being able to affect behaviour. The neo-realist/neo-liberal debate or neo-neo-synthesis whereby the long-standing confrontation between realism and liberalism merge to form the central core of the discipline, similarly represents a rationalist enterprise. It ignores major features of a globalised political world system, and agrees that the state is the primary actor in world politics. It sees cooperation and conflict as the focus, and seems unconcerned with morality, but agrees that actors are rational, value maximisers (Smith 1997:169-171,184).

Realism/neo-realism refers to privileging strategic interaction and the distribution of global (and regional) power above other considerations. Both explain the inevitability of conflict and competition between states by highlighting the insecure and anarchical nature of the international environment. The nation state is regarded as a permanent fixture in the international system, limiting the prospects for alternative expressions of political community. Anarchy is the systemic structure that shapes and influences the behaviour of states, hence the main emphasis is on statism, survival and self-help. However, it is, assumed that there can be cooperation under anarchy, and that states can cushion international anarchy by constructing elementary



rules and institutions for their coexistence (Burchill 1996:90; Dunne 1997b: 109-123). Paradoxically, having shaped realism with a positivist zeal, the radicals of an earlier generation suddenly find themselves described as reactionary disciplinary guardians (Kubáľková, Onuf & Kowert 1998:17). Liberal institutionalism has the positive benefits of transnational cooperation at its core. Neo-liberal institutionalists take the state as a legitimate representation of society for granted; accept the structural conditions of anarchy without excluding the possibility of cooperation between states, as the existence (and proliferation) of regimes demonstrates; accepts the increasing process of integration; and believe that absolute gains (rather than relative gains) can be realised from cooperation between states (Dunne 1997a:147-163).

By considering the unit-level actors involved, it is obvious from all the contributions that a state-centric perspective dominates, and that the state is considered to be the traditional or prevailing entity, with the inclusion of individuals and collectivities representing the state (e.g. government representatives, state departments and inter-governmental organisations). An interesting departure is the raising of water and the environment to unit-levels of investigation (e.g. Chonguïça 2000), but this conceptualisation eventually fails to escape its state-centric foundations. Sovereignty and territorial integrity, as collaterals, also receive attention. Pluralism is not excluded, since non-state actors – ranging from transnational non-governmental organisations to sub-national groups and communities – are specifically emphasised as key stakeholders in the water discourse. However, most contributions tend to 'speak' from the vantage-point of state actors, and none explicitly represent the alternative non-state viewpoint. The geopolitical references that are used (explicitly in Ashton 2000 and implicitly in most other contributions, of which Leestemaker 2000 is a good example) also fail to escape their state-centric foundations inasmuch as the paradigm of contemporary critical geopolitics (human/environment-focussed) is never expressly discussed. Chonguïça, Leestemaker, Nunde and Mulendema (2000) do, however, provide some indication of an awareness of the areas of critical geopolitics, but do not enter this domain. Although the classical realist 'billiard-ball' image is not projected, what remains is the 'cobweb' or transnational network of relations indicative of pluralism in conditions of complex interdependence. Although not explicitly indicated, most contributions eventually subscribe to the neo-realist notion of an anarchical or 'governless' international system, in which state behaviour is not only the product of state attributes themselves, but also of the structure of the international system within which these

interactions take place. However, it is believed that, in a neo-liberal institutionalist fashion, cooperation and collaboration is possible under conditions of anarchy, thereby changing 'water wars' into 'water peace' through 'water regimes'.

In considering the *problematic* endangering peace, stability and progress, the emphasis is of course on 'water wars', on the threat water-related contingencies pose to security, and on water insecurity. In the description of 'water wars', and as a manifestation of system dysfunction, the notion of interstate war based on necessity is commonly used as a point of departure (e.g. Chonguïça 2000; Meissner 2000; Turton 2000). However, all these contributions extend the notion well beyond interstate interaction. This is particularly true of Turton (2000), who presents an overview that also contains social-historical, structural and virtual conceptualisations, thus departing from the conventional wisdom, but without making a quantum leap. This conceptualisation of 'war' as a manifestation of water-induced conflict ties in with the notion of security, which also provides ample evidence of, and a sensitivity towards, the 'new' security paradigm which extends traditional state-centric and military security to common or human security (e.g. Chonguïça 2000; Meissner 2000; Turton 2000). A charge that these conceptualisations involve a militarisation of water would be unwarranted and unjustified. However, a securitisation of water takes place by implication, thus drawing in the military. The Homer-Dixon thesis is subscribed to in respect of the causal relationship between water scarcity and societal violence. What is advocated as a solution or management alternative is a combination of the enhancement of adaptive capacity-building (eventually requiring water complexes or regimes) and lateral expansion (Turton 2000). The centrality of the state as a unit-level still underpins these options. Turton (2000) does, however, depart significantly from a state-centric focus, inasmuch as society is elevated to a primary unit-level in respect of the development of second-order responses to water insecurity. However, this stretches the parameters of the prevailing paradigm, without tearing it or moving beyond it.

In respect of the cooperative or collaborative responses to water-related (in)security and water-induced conflict, neo-liberal institutionalism comes strongly to the fore. Underpinning this, is the notion (either explicit or implicit) of regime development, which is based on stakeholder decision-making and has a distinct legalistic-institutional foundation, which runs like a thread through most contributions. In this respect, 'good governance' – again emphasising the centrality of the state, but also adding liberal-democratic and



capitalistic values as collateral – is also introduced in the equation (e.g. Mochebelele 2000). However, it is obvious that the key participants in this respect are mostly collectivities representing the state as a political entity, as well as technical specialists in the water field. Research institutions and interest groups are gaining more prominence and are strengthening their foothold, but the nature and extent of their 'establishment' links or 'established' links are, of course, a contentious and debatable issue.

From the point of view that these contributions also involve a 'scientific' endeavour, none critically reflect on subject, object or method. Although no self-identification is evident in this respect, the contributions exemplify a positivist and explanatory approach to the 'science' focussing on the water discourse. Although 'insiders' to the water discourse are involved, the prevailing approach is to distance the subject from the object, and to describe, explain and predict as 'objectively' as possible from the outside. The empirical referent is the real world 'out there'. Furthermore, the approach is a problem-solving one, in the sense of both the narrow technical and broader social sciences. Hence, in most respects, the contributions represent mainstream theorising of a rationalist, positivist nature within the neo-realist/neo-liberal institutionalist paradigm.

Tributary reflectivism

The 'tributaries' of contemporary theorising comprise what is known as reflectivist theories of international relations. Reflectivist theories – also referred to as reflexivists, in order to indicate their self-reflective nature (Wæver 1997:20) – emerged in the 1990s as a set of post-positivist theories that include normative theory, feminist theory, critical theory, postmodernism and historical sociology (Smith 1997:168). As critical conceptions, they reflect on the origins and conditions of different perspectives, and view theory as irreducibly related to social and political life (Devetak 1996:145). This critical disposition is based on the assumption that '(t)heory is always *for* someone and *for* some purpose', and that there is 'no such thing as theory in itself, divorced from a standpoint in time and space' (Cox 1996:87). In effect, theory rationalises, reifies and legitimises the existing order. Consequently, they question the presumed apolitical nature of positivist theorising, and are concerned with the concealed perspectives, the social and political purposes of knowledge, the cognitive interests and assumptions of the observer, and the

way in which key actors construct their images of the world (Burchill 1996:1-2).

Although the areas of work constituting the set of post-positivist theories do not add up to one theory of reflectivism (Smith 1997:172), commonalities do exist. The metatheoretical stance of reflexivity (reflectivism), as international relations theory, involves three core elements: a self-awareness regarding the underlying premises of 'own' theorising; the recognition of the inherently politico-normative dimension of paradigms and the normal science traditions they generate; and that reasoned judgements can be made about the merits of contending paradigms in the absence of objective standards (Neufeld 1994:13). How theory is approached is the central question, and the central dichotomy is one between post-positivist and positivist positions. Thus, a distinction is made between those for whom knowledge is socially constructed (and theory is therefore inherently reflexive), and those for whom it is not (Cox & Sjolander 1994:5).

However, reflectivist theories are united more by what they reject, than by what they accept (Smith 1997:172). As post-positivist theories, they are classified as constitutive (not explanatory), since they see theory as constitutive of reality, and are concerned with the importance of human reflection on the nature and character of world politics. In other words, they think theories help construct the world. Theories that are held become self-confirming, because the very concepts used to think about the world help to make that world what it is (Burchill 1996:15; Smith 1997:167). They are anti-foundational (not foundational), since they represent an epistemological position which assumes that claims about some feature of the world cannot be judged true or false, because there are no neutral grounds on which to do so (Smith 1997:167-169). They are critical (not problem-solving), since they note that social structures are intersubjective. In other words, these structures are socially constructed, and they are therefore interested in how hegemonous social structures can be transcended and overcome (Smith 1997:177). They are post-modern (reject modernity), since they demonstrate an incredulity towards meta-narratives by focussing on 'power-knowledge' relationships and textual strategies, which include deconstruction (Smith 1997:182).

Reflectivism seriously questions the theoretical inadequacies of state-centric realist and neo-realist conceptions of the war and peace *problematique*, neo-liberal institutional approaches to cooperation in anarchy, as well as the positivist assumptions that have dominated the study of international relations. However, the critique extends well beyond the theoretical assumptions and research agenda of the neo-neo-synthesis. Its major concern is with the



prevailing order constituted by these conceptions. Inverting the truism that knowledge is power, reflectivists contend that power produces knowledge. Based on the interdependence of power relations and a constituted field of knowledge, and the fact that, at the same time, knowledge presupposes and constitutes power relations (Devetak 1996:181 – quoting Foucault), '(r)ationality is seen as an ideological construction that is a form of power ... (which) operates by constituting self-disciplined individuals who monitor their own conduct by ensuring conformity, and by (establishing) boundaries that are used to silence and "exclude" others who are labelled insane, primitive, criminal, terrorist or the like' (Porter 1994:108). Consequently, the need is expressed to reconceptualise the discipline, abandon the positivist tenet of truth and accept the centrality of the political or normative content of international relations theory (Cox & Sjolander 1994:5-6).

It is obvious that none of the contributions represent the tributary reflectivist alternative(s), either explicitly or implicitly. At times, some do depart from the dominant paradigm and scientific approach, as evidenced by cursory references to normative and ethical issues, social history and a superficial questioning of state dominance. The water discourse as represented, never critically questions either its ontological, epistemological or methodological assumptions. Neither is the substance and direction of the discourse itself, critically or reflectively questioned. Hence, from a reflectivist point of view, the issue is not so much the presence of reflectivist modalities, but their absence. In this respect, the critical, reflectivist discourse is, to a significant extent, marginalised and at times even silent.

The extent of this reality, and the attribution of its causes, are vociferously dealt with by Swatuk and Vale (2000). In fact, they are 'swimming upstream' in relation to the current course of the water discourse, as they criticise the water capture effect of the Homer-Dixon thesis; deconstruct the discourse by identifying major problems associated with it and its resultant policy programmes (which by turn is racist, modernist, statist, capitalist, liberalist, technicist/militarist, exclusive and supportive of the *status quo*); and propose a strategy for subverting this discourse as a prerequisite for reconstructing it (the need for a change in thinking, language, focus and practice). The essence of this is twofold. On the one hand, it is contended (implicitly) that the water domain is predominantly a product of the theoretical tenets and contents of the prevailing water discourse itself, and that consequently, 'water theory' is in fact a constitutive of the reality it purports to explain. On the other hand, it is contended (explicitly) that the discursive

elite – comprising those persons who are in a dominant position within bureaucratic entities, and who can determine the nature, form and content of the prevailing water discourse (also known as the sanctioned discourse) – act as 'guardians' or 'gatekeepers' in order to dominate, legitimise and sanction the prevailing discourse, thereby leading to the creation of a dominant paradigm for the water discourse, within which the 'normal' science of water is conducted. Consequently, the critique matches, to a significant extent, the tenets of critical reflectivism in a post-positivist mode.

This is neither the time nor the place to respond to these arguments, assess their validity, or compare and judge the relative merits of the contending positions. It is, in any case, up to the 'accused' who operates within the framework of mainstream rationalism to respond (which will hopefully be done in due course). What is evident is that 'space' and opportunities exist for opening up the water discourse, thereby making the alleged 'silent voices' more voluble. In this respect, the ethics of water politics, its gendered nature, the genealogy of its self-image, its social history, its textual deconstruction and the history of its knowledge, provide ample scope for a new research agenda that could extend to and include the tributary, reflectivist course. In part, this challenge should be taken up by the reflectivists themselves, since very little that has been done in this respect, has come to public notice. Hence, the reflectivist challenge should not merely be ignored, but should be seen as an opportunity to cross-fertilise the water discourse.

Conduit construction?

In order to move beyond futile, 'debate-masquerading' posturing, constructivism attempts to make sense of social relations by explaining the construction of the socio-political world by human practice. As such, it shares with reflectionists, many of the premises and attacks on the mainstream, but 'rejects the "slash-and-burn" extremism of some post-modern thinkers who leave nothing behind them, nowhere to stand, nothing even for themselves to say' (Kubalková, Onuf & Kowert 1998:20). According to Wæver (1997:24-25), this can be based on the mainstream social constructivism of Wendt (1987), or on the traditional approach – which includes quasi-philosophical and historical reflection – of the so-called English School.

Wendt is of particular relevance. His basic view was that the 'actor-structure' problem arises from a belief that human beings are purposeful



actors, whose actions reproduce and transform society. He also maintains that society is made up of social relationships which structure the interaction between human beings (Wendt 1987:337-338). Since the world is pre-organised – and pre-structured – it shapes and moulds actors. However, actors are also international agents who act in this world, and who recreate or transform the structures it contains (Ringmar 1997:271). Hence, Wendt introduces a number of radical reformulations. He focuses not on structures or agents, but on the interrelationship between them; he theorises not about material facts and eternal imperatives, but about practices and processes, and about the social creation of meaning; and he puts the neo-realist picture into motion by historicising it, and moving it closer to actions, thought and human life (Ringmar 1997:285). Although Wendt sees states as 'given' in world politics, his key claim is that international anarchy is not fixed, and does not automatically involve the self-interested state behaviour that rationalists see as built into the system. Anarchy could take on several different forms because the selfish interests and identities assumed by rationalists are, in fact, the product of the interaction – they did not exist prior to it (Smith 1997:186-187). Thus, constructivist theories do not take interests and identities as 'given'. They focus on how intersubjective practices between actors result in identities and interests being formed during the processes of interaction, rather than being formed prior to the interaction (Smith 1997:185). In this respect and according to Wendt (1992:393-394,395): 'We are what we are by how we interact, rather than being what we are regardless of how we interact' and '(a)narchy is what states make of it'.

Elements of a constructivist approach are most notable in the contributions of Turton and Leestemaker (2000), but the current water discourse has not entered the 'past the fourth debate' scheme. However, the inclusion of this compromise or *rapprochement* primarily serves the purpose of indicating the need for a middle-ground. The major problem with the fourth debate is its destructive and debilitating nature. Like most previous incommensurable debates within IR, it terminates in a ('victory-less') stalemate where participants can only pursue 'point-scoring' in minor skirmishes. The question should rather be whether or not a collaborative enterprise is necessary, sufficient and possible? At least constructivism provides an alternative in line with current trends, which also includes or provides for marginalised concerns (despite the fact that the major critique is that constructivism is still dominated by a 'new' version of the neo-neo enterprise). If not a collaborative *rapprochement*, what other alternatives exist apart from conceding defeat/

accepting victory, or enduring the stalemate until a new debate appears on the horizon which will hopefully cast the water discourse in a new mould? However, considering the salience and topical nature of the water discourse, it is too serious a matter to underplay. Hence the need for participants and stakeholders in the water discourse to take up the challenge and chart a new course.

Conclusion

Perhaps, to quote Burchill (1996:23-24), 'we should not ask too much of theory', provided that it still caters for understanding, explaining and prediction. It should remain consistent, coherent and adequate in scope, and have a capacity for critical self-reflection and intellectual engagement with contending theories. Admittedly, the preceding discussion said more about international relations theory, than it did about the theoretical content and context of the water discourse. An understanding of the latter, however, requires more than a mere cursory overview of the former. Hence the emphasis on international relations theories. Two additional factors have to be borne in mind. On the one hand, purposive and self-conscious attempts at theory construction within the discipline are the exception, rather than the rule. Expecting a major contribution from the water discourse, which in fact seeks solutions to practical problems, would be asking too much. This does not mean that the water discourse is unrelated or irrelevant to international relations theory. On the contrary, as a 'theatre of operations' it forms part of and exemplifies the 'war(s) of theory'. On the other hand, theory manifests in different orders at different levels, and has a layered appearance. As a different order and level of theory, which is more remote from meta- and mainstream theorising – and more immediate to practice – the theoretical content and context of the water discourse is not always self-evident or self-explanatory. It has to be uncovered and explained. Therefore, suffice it to summarise the course of theory in the water discourse as follows.

Firstly, at the macro-level of contending approaches, perspectives or paradigms of international relations, the academic participants or stakeholders in the water discourse seldom explicitly or self-consciously subscribe to a particular theoretical position. Neither do they consciously attempt to construct a theory of water politics within the ambit of a particular paradigm. More by default than by design, they take cognisance of theory at this level,



and implicitly accommodate the fundamental tenets and assumptions of mainstream or (with high exception) marginalised theories. In addition to this, their critics are likely to identify their theoretical position(s), and in the process, label participants as exponents of a particular (ideological) position. In this respect, the major contributions to theorising fall within the ambit of the mainstream theories labelled positivist and rationalist. The neo-realist (with emphasis on hegemonous, regime-driven cooperation under conditions of presumed anarchy) and neo-liberal (with emphasis on liberal institutionalism) positions obviously dominate. Although representative of marginalised tributaries, voices advocating more space for a post-positivist and reflectivist critique are being heard, although they are least voluble at present.

Secondly, at the meso-level of partial theories on (environmental) security, (sustainable) development and (holistic) ecopolitics, the theoretical underpinnings of the water discourse are more developed, explicit and sophisticated. Owing to the fact that these partial theories are mainly extensions of existing sectoral debates, and although they admittedly contain elements of 'new' post-Cold War thinking, the water discourse follows and reflects existing theoretical courses, rather than mapping out and constructing new theoretical routes. As such – and this constitutes a major point of criticism – they are susceptible to and remain entrapped by the language and assumptions of the neo-realism/neo-liberalism synthesis, and reflect variations of predominantly state-centred cooperation in pursuit of common security and sustainable development, under conditions of both anarchy and complex interdependence. In addition, their alleged politicisation, militarisation and support of an agenda that maintains the *status quo*, makes them even more susceptible and vulnerable to criticism.

Thirdly, at the micro-level, and with reference to the causal relationship between resource scarcity as an independent variable and (sustainable) development, (in)security and (violent) conflict as dependent variables, theoretical justification is provided to describe, explain and predict cause and effect. This justification is based mostly on related theories, or on purpose-built theoretical constructs of an eclectic nature. Although this approach is not to be faulted, hypothesis-testing theories require an awareness of the broader theoretical context within which they are situated, and which they introduce to the discourse.

Finally, it is advocated that participants in the water discourse should exhibit a greater sensitivity towards and explicitly involve themselves more in theorising, irrespective of the level of theory (i.e. contending theoretical

positions, partial theory, or hypotheses-testing theory) and the order of theory (i.e. theorising about theory, theory about the international relations context of water, or ideas and thoughts on how to manage the water issue). In addition, participants should also be more aware of the ideological and/or political context of the water discourse, and of its 'excess theoretical baggage', as well as their contribution to it. This is particularly important when considering the contentious and value-laden context of the water discourse at the sub-national, national and regional levels. In addition, let's not forget the fact that it stands at the nexus of theory and practice.

Since the above represents a continuation of the positivist/post-positivist or rationalist/reflectivist dichotomy – which unfortunately contributes little to intersubjective communication or consensus regarding the management of practical concerns – two challenges are posed to break the existing impasse. Firstly, the pursuance of a theoretical compromise or cross-field *rapprochement*. A possible solution may be found in a constructivist approach, which links the main and subsidiary courses of the water discourse, thus channelling the course of theory into a single stream. Apart from being consistent with the current constructivist approach which attempts to bridge the rationalist-reflectivist gap – thus reducing the 'boundaries of boredom and negativity' associated with the overemphasis of formal rational choice by extreme rationalists, as well as the deconstructivism by radical reflectivists – the water discourse already exhibits several features of constructivism. Although the viability and success of the constructivist endeavour remains, at the most, unproven, or are at least questionable, it provides an alternative course for the water discourse. Secondly, assuming that the *status quo* of the dominant-marginalised position continues, there exists a need, on the one hand, to create space for the predominantly silent voices of ethical, gendered and critical debates; and, on the other hand, to also recognise the actual contributions of pragmatic problem-solving approaches to the management of real-time water issues.

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Water Wars in Southern Africa: Challenging Conventional Wisdom¹

Anthony Turton

"The Ethiopians hold it for a fact that Egypt is "trying to monopolise" the Nile and cite the Aswan Dam, the Tochkan Canal, and the Peace Canal as examples of how Egypt step-by-step claims a larger amount of the Nile water; claims that may be used as evidence of an "acquired right" in future negotiations. This is the classic upstream-downstream dilemma, unsatisfactorily managed by international law, which has given rise to fears of *water wars*' (Ohlsson & Lundqvist 2000).

Introduction

Africa is dominated by transboundary waters, due largely to the scramble for Africa during colonial times, when European powers arbitrarily drew borders on the continent, showing little regard for the natural, geographic or ethnic realities that existed. The Charter of the Organisation of African Unity (OAU) originally recognised all borders that existed at the time of its founding, thereby locking in one of the elements of potential political instability. Africa contains about 80 international river and lake basins. No less than 21 of these



river basins have catchments greater than 100,000 square kilometers, some of which are shared by more than ten states. The major issue confronting the management of these basins is access to, and control over, water resource use (Hirji & Grey 1998:78).

During a Stockholm meeting in August 1995, Ismail Serageldin, the then World Bank Vice President for Environmentally Sustainable Development, confidently declared that 'wars of the next century will be over water' (Homer-Dixon 1996:362). This paper will argue that no justice was done to Africa when that statement was made. That statement has often been repeated in the media, thereby allowing a knowledge construct to develop, based on teleological arguments and unsubstantiated facts, and which has ultimately undermined investor confidence. Who, in their right mind, will make direct foreign investment in southern Africa if northern-based conventional wisdom suggests that in the twenty-first century, Africa will slide into a messy series of water wars in direct response to rising levels of water scarcity? This paper will try and shed some light on this subject.

What is a water war?

There is a fundamental, epistemological problem regarding the notion of a water war. In order to obtain some degree of conceptual clarity on this issue, it is necessary to establish distinct definitions of a water war as a point of departure.

Firstly, the desire for access to water can be seen as being the direct cause of war. In this case, water scarcity is both a necessary and sufficient condition for going to war. For the purposes of this paper, this will be defined as a true water war.

Secondly, water, and especially hydraulic installations such as dams, pipelines and water treatment plants, can be seen as becoming targets of war. In this case, water scarcity is neither a necessary, nor a sufficient condition for going to war. A war in this category is thus caused by something quite unrelated to water scarcity. However, during the progress of such a war, the belligerents may select hydraulic installations as being legitimate targets. For the purposes of this paper, this is not regarded as being a true water war and can be called a conventional war, with water as a tactical component.

Thirdly, waterways that form part of contested international boundaries, can become the focal point of war. In this case, water scarcity is neither a

necessary, nor a sufficient condition for going to war. However, because the war is apparently fought in and around waterways, it appears to be a water war. Under these conditions, the root causes of war are totally unrelated to water, but water issues may become politicised as a result of the larger belligerence, and may consequently take on the appearance of a water-related conflict. For the purposes of this paper, this is not regarded as a true water war. Instead, it will be called a quasi water war, because the war is merely being fought in a theatre that is dominated by an aquatic environment.

During the course of this paper, literature will be reviewed that will enable the reader to place the facts into either one of these three categories.

Linkages between water and conflict

The three water war scenarios noted above presuppose violent conflict. Gleick (1998) notes that there are four major links between water and conflict, each with a different degree of violence or potential violence.

Firstly, water has been used as a military and political goal. This is most relevant to a Cold War/Realpolitik framework where water, like other natural resources, can be the defining factor in terms of the wealth and power of a state (Gleick 1998:108). In this regard, there are four variables that are important. These are (1) the degree of water scarcity; (2) the extent to which the supply is shared by two or more groups; (3) the relative power of those groups; and (4) the ease of access to alternative sources of water (Gleick 1998:108).

Secondly, water has been used as an instrument or tool of conflict. There is a long history of this, with the earliest records dating back to an ancient Sumerian myth from 5,000 years ago, paralleling the biblical account of the great flood (Gleick 1998:109). Two modern accounts of this exist (Gleick 1998:109-110). In 1986, North Korea announced plans to build a major dam on the Han River, upstream of Seoul. This project was justified by providing for hydroelectricity, but it could also be used as a weapon to destroy Seoul, should it be breached. During the Gulf War, the Allied coalition against Iraq considered the possibility of using the Ataturk Dam on the Euphrates River to shut off the flow of water to Iraq.

Thirdly, water and hydraulic installations have been used as targets of war (Gleick 1998:110). There are many documented cases of this dating back to ancient Babylon. In modern times the 'dam busters', under the command of 'Bomber' Harris, provide an excellent example. In contemporary southern



Africa, the damage to Gové Dam in Angola is also an example.

Fourthly, inequities in water distribution, use and development can result in tensions and conflict (Gleick 1998:111), both within a country and between countries in an international river basin.

One need only consult any standard textbook on foreign policy or international politics that has been published in the post-Second World War era to become convinced that guaranteed control over, and access to, strategic raw materials is essential to national security. Yet, on closer analysis, a conflict ordinarily described as a 'resource war', has usually been triggered by other factors (Lipschutz 1989:2).

Conventional wisdom's on water and conflict

In order to achieve a meaningful insight into the problem, it is necessary to understand what discourses on water and conflict exist. A recent overview of the literature reveals that at least five – and possibly more – different discourses can be found in one form or another. These discourses will be presented below, roughly in the chronological order in which they were developed. It must be noted that some discourses contain elements of others, and a clear-cut distinction is sometimes difficult to make. This is because elements of some earlier, relatively crude discourse, later found their way into the more sophisticated discourses that were developed.

The Malthusian Discourse

Malthusian-type discourse posits a linear relationship between population growth and water scarcity. Classic examples of this form of discourse include the now famous Club of Rome's *'Limits to Growth'* and The Ecologist Magazine's *'Blueprint for Survival'* (Eckersley 1997:11-12). Selby (1998) calls this discourse an ecological one, based on the notion of the 'finite carrying capacity' of the planet. As estimated by Postel et al (1996), humans now appropriate approximately a quarter of all evapotranspiration over land, and more than a half of the surface flows available. This is what Ohlsson and Lundqvist (2000) refer to as 'the numbers game — a story of shrinking per capita-allotments'. Arguably one of the important writers on this topic was Malin Falkenmark (1986), who first developed the so-called 'water scarcity indicators' that were based on the central notion of a 'water barrier'. This led to the publishing of what has now become a classic index of water scarcity

(Falkenmark 1989), which is often used by other authors. Central to this thesis is the argument that as populations grow, so water scarcity increases, leading ultimately to a water war. It was this type of linear thinking, based on the teleological arguments inherent in the linkage of water scarcity to violent conflict, which led authors, such as Starr (1991), to conclude that water wars were more or less inevitable in the twenty-first century.

The Virtual Water Discourse

This grew partly in response to the crude Malthusian Discourse referred to above. Whereas the Malthusian Discourse predicted water wars with some confidence, the Virtual Water Discourse explained why there was an almost total lack of evidence of any water war in areas that are known to be highly water stressed (Allan 1999:15-19). Developed by Tony Allan, the main concept is that of 'Virtual Water'. Allan noted that it takes approximately 1,000 tons of water (one cubic metre of water is the same as one ton) to produce one ton of wheat (Allan 1996a). Therefore, if a country is facing a debilitating water deficit, the government can balance the water budget by importing wheat, instead of mobilising additional water. Thus, for every ton of wheat that is imported into a country or region, it is the same as importing 1,000 tons of water in a 'virtual' sense, with the added bonus of being ecologically benign and politically friendly. Allan (1996b) notes that 'as much water enters the Middle East region as "Virtual Water" in the form of subsidised grain purchases than flows down the Nile annually'. It is this importation of water – embedded in grain and therefore available at highly subsidised rates – that has prevented the type of water war that was so confidently predicted by Starr (1991) from actually happening (Allan 1996c).

The Structural Inequality Discourse

Structural inequality results when unequal access to, and control over, water resources within a given country occurs over time. This is particularly relevant in societies where a water deficit occurs, and where access to water can give certain social groupings a major advantage in political and economic terms. This has led Thomas Homer-Dixon (1994a) to develop the concept of 'resource capture' and 'ecological marginalisation'. Selby (1998) calls this a political discourse, and notes that people are seen as being the victims of a political economy. In this discourse, conflict is inherent within society, as inequalities are contested and positions of hydropolitical privilege are entrenched and protected. Richard Sexton (1992) was focussing on similar



issues when he expanded the concept of scarcity to include the economic use of water, thereby highlighting the adverse effects of deliberate policies designed to favour agricultural export (Warner 2000). Turton (2000a) has shown that hydraulic pipelines become a significant instrument of political control under such conditions, as was the case in apartheid South Africa, where structural scarcity was managed to the almost exclusive advantage of the white minority. Within this paradigm, hydraulic engineers are discursive elites, and their skills of dominating and controlling nature leads inescapably to the domination of some people over others (Warner & Turton 2000).

A component of this discourse is induced scarcity. A specific category of this induced scarcity is the depletion of the resource base as a result of pollution (Ohlsson & Lundqvist 2000). Approximately all of the projected population increase over the next few decades is expected to move to the already overloaded cities. Figures are staggering: about 80% of two billion people (Ohlsson & Lundqvist 2000). Currently, some 90% of all wastewater in developing countries is returned to river systems untreated. This is what Jan Lundqvist (1998) has called 'hydrocide'. The significance of this is that developing countries with vibrant economic growth and a strong modernisation development policy, are caught in a serious dilemma. Strong and sustained economic growth is ecologically unsustainable, yet following environmentally friendly policies could result in political suicide and major economic hardship. Consequently, economic sustainability and ecological sustainability are two distinctly separate concepts (Turton 2000b). There are three ramifications of hydrocide (Ohlsson & Lundqvist 2000). Firstly, increased levels of water pollution will affect morbidity and mortality in developing countries. Secondly, the loss of aquatic ecosystems and their resultant biomass production capacity will impact heavily on developing countries, and most notably in marginalised areas. Thirdly, there will be an increased cost as the need to import uncontaminated water over longer distances, and the need to treat contaminated water, will increase. This will lead to developing countries hitting a new form of trade barrier as a result of 'green labeling' in some industrialised states. What the hydrocide concept shows, is that water scarcity should not only be thought of in terms of volumes of water, but also in terms of the quality of water, with the latter arguably being a bigger threat to society because of its direct threat to ecological functioning.

This more sophisticated (but still relatively crude) discourse focuses on water scarcity, positing a more complex causal link to violent conflict.

Elements of this were subsequently included in the more sophisticated, environmental scarcity discourse presented below.

The Environmental Scarcity Discourse

This is a relatively sophisticated discourse, having developed over a period of time, and having been supported by a substantial body of research. It grew from the cruder Structural Inequality Discourse that was presented above. The key author in this regard is undoubtedly Thomas Homer-Dixon, who has published widely on the subject. This discourse has a strong environmental or ecological dimension to it, therefore a number of other authors can also be categorised under this broader heading. Homer-Dixon (1996) summarises this discourse by building the following argument. Research has shown that there are three major sources of environmental scarcity (Homer-Dixon 1996:360). Firstly, there is supply-sided scarcity. The depletion and pollution of resources reduce the total available volume. This can be thought of as reducing the size of the total pie available. Clearly upstream abstraction and polluted return flows fall under this category, leaving less water available for downstream riparians. Secondly, there is demand-induced scarcity. Changes in consumptive behavior and a rapidly growing population can cause demand to exceed supply. This can be thought of as resulting in a smaller piece of the pie. Thirdly, there is structural scarcity (or the severe imbalance in distribution of wealth and power), which results in some groups receiving disproportionately large slices of the resource pie, while leaving others with progressively smaller slices. This imbalance is reflected in institutions that act in a gate-keeping manner, making control over institutions the key to control over resource distribution. It is important to note that, in reality, these three scarcities do interact.

One result of this interaction is resource capture, where powerful groups in society seize control over the resource base and use it to their exclusive advantage. Water in apartheid South Africa is a classic example (Turton 2000a), as is the Israeli control over groundwater aquifers in the occupied West Bank (Homer-Dixon 1996:360). The result of this is ecological marginalisation, as people who have had their resource base captured, are forced to move to increasingly precarious locations. Cases of this are legion.

Significantly, severe environmental scarcity can reduce local food production, aggravate the poverty of marginal groups, enrich a corrupt elite and eventually undermine the moral legitimacy of the state. South Africa is a classic example of this, where it has been shown that there are two distinct



phases of this process (Turton & Ohlsson 1999). The first phase, identified as coinciding roughly with the transition from water abundance to a condition of water scarcity, results in the birth of a hydrosocial contract (Warner & Turton 2000), with resource capture as a critical component. This results in structural scarcity and ecological marginalisation, because these elements have been allowed to become the major driving forces of hydropolitical interaction. At the same time, the legitimacy of the state is undermined to such an extent that water demand management cannot be introduced effectively (Turton, 2000a). The second phase, identified as coinciding roughly with the transition of water scarcity to a condition of water deficit, results in the birth of a new social conscience and the expansion of the hydropolitical elite base. In South Africa, this coincided with the transition to democracy, and is evidenced by the strong desire to redistribute the balance of hydropolitical privilege in a more equitable manner (Warner & Turton 2000).

Homer-Dixon (1996) maintains that some major wars in during the last century were motivated by the desire to seize non-renewable resources, such as fossil fuels. However, there is no evidence that this has been the case for renewable resources, such as cropland, forests, fisheries and water. There are two explanations for this (Homer-Dixon 1996:362). Firstly, modern states cannot easily convert such resources into power. Secondly, countries that are highly dependent on renewable natural resources tend to be poor, lacking the capacity to convert the desire to increase their resource base into an actual attempt in the form of armed aggression. The incentives and means of launching resource wars are likely to be lower for renewables than for non-renewables, with the possible exception of water. Those who argue that water wars are possible, say that both rich and poor countries need adequate water supplies equally. Homer-Dixon (1996:362) concludes that wars between upstream and downstream riparian states are likely to occur within a narrow set of circumstances. Firstly, the downstream riparian must be highly dependent on the water for its national survival. Secondly, the upstream riparian must have the ability to restrict the flow of the river. Thirdly, there must be a history of antagonism between the two states. Fourthly, the downstream riparian must be militarily superior than the upstream riparian. There are only a few river basins where these conditions hold true, with the most notable example being the Nile. Nowhere in southern Africa is this the case at present.

Homer-Dixon (1996:363) notes that while there is no real evidence that environmental scarcity is behind existing armed conflicts, one can expect

that this will change in future as environmental pressures become acute. Relevant to this future scenario is what Homer-Dixon refers to as 'pivotal states'. These states are central to international stability within a regional context, and include South Africa, Mexico, India, Pakistan and China. Existing conflict patterns in these states show that infrastructure is overtaxed due to population migration factors. However, this migration element is complex, with both environmental-push and population-pull factors at work. The essential element being the fact that marginalised communities are forced to migrate and settle on contested land, thereby bringing these incoming communities into conflict with people who are already eking out a tenuous existence. Elements of this can be found in southern Africa. Migrations away from the Kalahari towards the panhandle of the Okavango Delta (Turton 1999a), and migration towards Windhoek in Namibia, are two examples. Shack dwellers in places like Alexandra are also examples, where incoming migrants are forced to live on the flood plain of the Jukseei River. Other examples can be found in the lower Incomati River Basin in Mozambique, where subsistence agriculture is under threat due to the increased use of water upstream.

The specific case of South Africa was studied in some detail as part of Homer-Dixon's project. Details of the findings are found in Percival and Homer-Dixon (1998), and can be briefly summarised as follows. Environmental scarcity threatens the delicate give-and-take relationship between state and society, with violence being a manifestation of troubled relations between these two main components. Structural scarcity was one of the main elements of the political economy of apartheid, resulting in a high level of institutionalisation to protect the unequal distribution of environmental resources which had been mobilised for the white minority via a systematic process of resource capture. Consequently, there was a coincidence of both demand-induced scarcity in the former Bantustans, and supply-induced scarcity as the result of soil erosion, water depletion and fuelwood scarcity. Environmental scarcity reduced rural incomes and helped push many black South Africans into urban slums. The local authorities in these urban areas were collaborators of the apartheid state and were thus largely unresponsive to the needs of the expanding community, causing the polarisation of society and the weakening of the state's institutional base. Group division then became the basis of politics in South Africa. Environmental scarcity increased the salience of group boundaries, allowing warlords to gain control, which further fragmented society. Inkatha came to dominate informal



settlements during the early transition to democracy. Domination was achieved by striking political deals with warlords and manipulating conservative group identities evident in recently mobile migrant communities (Percival & Homer-Dixon 1998:293). The conclusion of this study was that while environmental scarcity heightened black grievances, the role of environmental scarcity was complex, contributing fundamentally to the social instability that was evidence of the pre-democratic South Africa.

Significantly, while environmental scarcity has been a determining factor in every case studied by Homer-Dixon's (1996:360) team, environmental scarcity is never a determining factor on its own (Homer-Dixon 1996:361). It is always found in conjunction with other factors which are usually the major causes of conflict. As such, environmental scarcity can aggravate existing conflict and make it more acute.

The Social Scarcity Discourse

While the above discourses have focussed on natural resource scarcity as a source of conflict, the recent work by Leif Ohlsson (1998, 1999) made a quantum leap in our understanding of the dynamics of resource scarcity. Ohlsson constructed his argument by showing that as water scarcity increases, so to does the need for social adaptation to the consequences of this scarcity. For example, as deserts have encroached, lifestyles have been forced to change and social patterns have had to shift. Ohlsson suggests that just as there can either be a scarcity or abundance of natural resources, so to can there either be a scarcity or abundance of social resources. To this end, Ohlsson notes the need to distinguish between a natural resource (what he calls a first-order resource) and a social resource (what he refers to as a second-order resource). Consequently, it is possible for a social entity – that is being confronted by an increasing level of first-order resource scarcity (water) – to adapt to these conditions, provided that a high level of second-order resources (social adaptive capacity) are available. This has enabled Turton and Ohlsson (1999) to develop a set of key concepts by using a matrix consisting of different combinations of a first and second-order resources. This explains why a country such as Israel has managed to defy the debilitating effects of what Falkenmark (1986, 1989) originally defined as the 'water barrier'. To this end, water scarcity (a strictly first-order definition) is distinctly different from 'Water Poverty', which is a combination of both first and second-order resources. 'Water Poverty' is therefore defined as the existence of both a first and second-order resource scarcity simultaneously

(Turton & Ohlsson 1999). 'Structurally Induced Relative Water Abundance' (SIRWA) is the condition that exists as a combination of both a first-order resource scarcity and a second-order resource abundance (Turton & Ohlsson 1999). The latter condition is what best describes Israel, and what possibly describes South Africa, Botswana and Namibia.

The key to the existence of a second-order resource is found in what Homer-Dixon (1994b) refers to as 'ingenuity'. In his original work on the subject, Homer-Dixon noted that what made developed states stable, was the level of ingenuity they could amass. Conversely, the reason why developing countries often failed, lies in the fact that they are faced with increasingly complex problems on the one hand, and a rapidly dwindling capital base with which to solve these problems, on the other hand. Capital in this context can best be understood as being a combination of financial resources, natural resources, institutional resources and intellectual resources, all working together in some degree of harmony. In developed countries, this harmonious interaction allows problems to be solved, thereby enabling economic and technological progress to be made. In developing countries, the lack of harmony between – or in many cases, the total absence of key components of this overall resource base – results in the absence of ingenuity, with the resultant economic and social decay that is evident in large parts of the developing world. Developing countries that are facing increasing levels of environmental scarcity, will thus have to develop an active strategy aimed at becoming more innovative, if they wish to maintain their well-being in the face of rising first-order natural resource scarcity.

In reality, the supply of ingenuity will be constrained by a number of factors (Homer-Dixon 1996:365), including the brain drain from poor states, limited access to capital, incompetent bureaucracies, corrupt legal systems and weak states. In addition to this, markets in developing countries are inadequate, property rights are unclear, and prices for water and other commodities do not adjust adequately to reflect the rising levels of scarcity. Consequently, responses from both the state and entrepreneurs are slow and inadequate (Homer-Dixon 1996:365). This has led Homer-Dixon to conclude rather somberly that,

'In South Africa, scarcity-driven migrations into urban areas and the resulting conflicts over urban environmental resources (such as land and water) encourage communities to segment along lines of ethnicity or residential status. This segmentation shreds networks of trust and debilitates local institutions. Powerful warlords, linked



to the Inkatha Freedom Party or the African National Congress, have taken advantage of these dislocations to manipulate group divisions within communities, often producing violence and further institutional breakdown. ... Societies like these may face a widening "ingenuity gap" as their requirement for ingenuity to deal with scarcity rises, while their supply of ingenuity stagnates or drops. A persistent and serious ingenuity gap boosts dissatisfaction and undermines regime legitimacy and coercive power, increasing the likelihood of widespread and chronic civil violence. Violence further erodes the society's capacity to supply ingenuity, especially by causing human and financial capital to flee. Countries with a critical ingenuity gap therefore risk entering a downward and self-reinforcing spiral of crisis and decay. ... Rather than speaking of limits, it is better to say that some societies are locked into a "race" between a rising requirement for ingenuity and their capacity to supply it' (Homer-Dixon 1996:365).

Thus, what Homer-Dixon (1996) is essentially saying is that in the coming decades, one can expect to see a bifurcation of the world into two types of society. Firstly, those societies that can adjust to population growth and natural resource scarcity, and thereby avoid turmoil through the successful development of what Turton and Ohlsson (1999) have defined as 'Structurally Induced Relative Water Abundance'. Secondly, those societies which cannot mobilise the necessary ingenuity, and thereby fall prey to a black hole of acute conflict and unparalleled violence as a manifestation of what Turton and Ohlsson (1999) have defined as 'Water Poverty'. This is represented schematically in Figure 1 as originally conceived by the author (Turton 1999c).

A distinct component of this Social Scarcity Discourse is the Virtual Water Discourse noted above. In this regard, Ohlsson and Turton (1999), and Ohlsson and Lundqvist (2000) suggest that 'Virtual Water' is a component of what has now become known as 'The Triple Squeeze' or 'The Turning of the Screw'. As water scarcity increases, the result will be a series of bottlenecks, primarily of a social nature. Each of these bottlenecks can be likened to a spiral, oscillating between an alternate scarcity of first-order resources (water) and second-order resources (social adaptive capacity). In this discourse, it is posited that not all states will be able to mobilise sufficient second-order resources with which to cope, in support of Homer-Dixon's ingenuity thesis.

At the first squeeze, water changes from being an open-access resource,

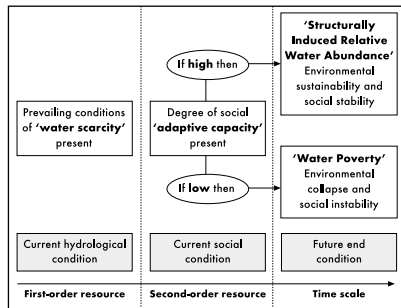


Figure 1. Schematic representation showing the hypothesised two-end conditions that are likely to occur when combining both a first-order and second-order resource in the definition of key variables (Turton 1999c)

into a socially managed good. This has been identified as being the first transition (Turton & Ohlsson 1999) and the birth of the hydrosocial contract between the state and society (Warner & Turton 2000). At this transition, water is changed from being a free good – sometimes referred to as a 'gift from God' – in certain cultures (Lichtenthaler & Turton 1999), into an economic good with a price tag and all the ensuing problems of relative scarcity and distribution. At this stage, human perceptions of water are still centered around the notion that it should be free, even if it now costs something to mobilise. In addition, access to it may even have human rights implications (Ohlsson & Lundqvist 2000). This is the birth of the hydraulic mission of society (Reisner 1993), focussing on supply-sided solutions, with the major management content being engineering in nature.

At the second squeeze, the new economic character of water gives rise to competition for this social good. Examples of this are competition between

cities and rural areas for access to the resource base. Large cities, with their stronger economic base, can capture resources far more effectively than smaller rural communities. The city of Los Angeles is a classic example, with its progressive capturing of water from as far afield as the Colorado River (Reisner 1993). Plans were even developed to make rivers flow backwards, in defiance of nature, in order that water, from as far afield as Canada and Alaska, could be appropriated by Los Angeles (Reisner 1993). Johannesburg is an excellent South African example where major hydraulic works, such as the Lesotho Highlands Water Project and the proposed Thukela Water Transfer Scheme, perform much the same function in sustaining the industrial heartland of the country. One of the results of this second squeeze is the emergence of a social conscience in the form of environmentalism, as water scarcity moves into water deficit (Turton & Ohlsson 1999; Warner & Turton 2000). This, in turn, gives rise to early notions of water demand management, with the overall management function shifting from the pure engineering desire to the need to appropriate more water, and embrace elements of end-use efficiency (Ohlsson & Turton 1999) or intra-sectoral allocative efficiency (Turton 1999b).

At the third squeeze, it becomes evident that engineering solutions are no longer viable on their own, and that the only way to effectively balance the water budget is to introduce a policy of 'intersectoral allocative efficiency' – taking water away from agriculture, where it has a low economic return, and allocating it to industrial and domestic use where it creates far more jobs – and use 'Virtual Water' as a component of this adaptive strategy (Turton & Ohlsson 1999). This causes a fundamental restructuring of society, as people move from rural areas to urban environments and away from agriculture to industry. This social restructuring requires considerable planning and control by government, and also requires a high level of what Ohlsson (1998, 1999) calls social adaptive capacity, or what Homer-Dixon (1994b, 1996) refers to as ingenuity.

Why water wars are unlikely

There are few serious scholars active in the hydropolitical field today, who support the early water war arguments. There are three developments that have caused scholars to change their earlier views on the subject. These are as follows:

The concept of lateral pressure

The concept of lateral pressure is central to many analyses of water and conflict. Choucri and North (1975), together with Ashley (1980), developed the theory of lateral pressure when they examined some of the factors leading to war between great powers. Gustafsson (1985:133-135) summarised the work of these authors into the following brief notes. Lateral pressure refers to the process of foreign expansion of any activity. Included under this heading of 'lateral pressure' are actions such as selling wheat, buying oil, investing capital, increasing the labour force or moving troops. Three specific aspects of this process must be distinguished (Gustafsson 1985). Firstly, the disposition to extend activities beyond national borders. Secondly, the particular activities that result from the disposition to act. Thirdly, the impact that these activities have on people and the environment in other countries.

The origin of lateral pressure is explained by the increasing demand for resources, markets and living space due to a growing population, 'techno-economic' activity and military aspirations. A direct relationship exists between the level of advancement of a society's technological base, and the variety and quantity of natural resources needed to sustain it. In order for a natural, resource-scarce social entity to actively try and sustain itself from outside its own borders, that social entity must have the means to do so. In other words, demands and capabilities generate lateral pressure together (Gustafsson 1985:133). However, in order for this lateral pressure to manifest, it is necessary for a combination of these demands and capabilities to exceed a certain threshold. As such, lateral pressure refers to the unilateral process that originates from domestic growth. In the manifestation of lateral pressure, a society becomes involved in a bilateral process involving three general patterns (Gustafsson 1985:133). Firstly, a stronger society's lateral pressure generates expanding activities, thereby penetrating a weaker society. In this pattern, the weaker society adapts to the situation. Thus, no violent conflict ensues. Secondly, a society that is predisposed to lateral pressure cannot express it due to the obstacles posed by a stronger society. In this pattern, the weaker society will be held in check and no conflict will emerge. Thirdly, two or more expanding societies, which have roughly equivalent specialised capabilities, collide when their aspirations for expansion are directed at the same geographic area. In this case, the most likely result is violent conflict, with the degree of violence being dependent on the degree of competition between the two parties.

Choucri and North (1975) found that a good indicator of lateral pressure



ORGANSKI	GUSTAFSSON
Weak and satisfied states	These states are either satisfied with the existing order, or they lack the resources to change the status quo. The conflict potential is low in this group.
Weak and dissatisfied states	These states are usually very dissatisfied with the existing international order, but they lack the resources needed to change it. The conflict potential is low in this group, but dissatisfaction will continue to cause disharmony.
Strong and dissatisfied states	These states are dissatisfied with the existing order and actively strive to create a new international system. Conflict potential is high in this group.

Table 1. Schematic Rendition of Organski's State Typology and Gustafsson's Theory of Power Transformation (developed from Gustafsson 1985:134)

is domestic growth, as measured by population density and national income per capita. They also identified strong linkages between military expenditure, domestic growth and national expansion; and alliance formation and international interactions with an increasingly high propensity towards violent confrontation (Gustafsson 1985:134). Large military expenditures and aggressive alliance formation often evoke violent reactions from rival powers, and an arms race ensues, driven by an action-reaction response. At any moment in time, a given social entity may find itself embroiled in any one of a number of these bilateral relationships, often differing radically from each other.

Gustafsson (1985:135) notes that social units which generate lateral pressure can be found at three distinct levels – individual human beings, states and interstate systems (regimes) – with the latter two being most important due to their multilateral nature. At the multilateral level of analysis, Ashley (1980) applies classic balance of power theory. However, Gustafsson (1985:134) suggests a more fruitful approach being the development of a theory of power transformation. In this regard, Gustafsson (1985:135) cites similarities in bilateral interactions with Organski's state typology. Gustafsson (1985) develops this argument as presented in Table 1.

Gustafsson (1985:135) concurs with Ashley (1980) that lateral pressure 'represents a generic, timeless social process, potentially evidenced by all

living systems at all levels, of which processes Marxists call "imperialism" represent a specific, historically dependent form'. Gustafsson (1985:135) notes, however, that the generality of the theory may also hide its weaknesses, and he supports the call by Choucri and North (1975) that research is needed to determine the ways in which economic factors influence the expansion of national activities, and the resultant conflict of national interests.

Gustafsson (1985:141-142) concluded, after applying the concept of lateral pressure to the Middle East, that:

'The Euphrates River conflict is a good example of a resource conflict over fresh water with other economic, as well as political factors, involved. In these kinds of conflicts one cannot accurately say which factor is foremost at any given time; whether it is a dispute over fresh water resources which is spilling over to political conflicts, or *vice versa*; or whether some other economic factors and disputes are causing the sharpening of water conflict as well, or again *vice versa*'.

Development of the concept of second-order resources

The development of increasingly sophisticated discourses on water-related conflict have shown a distinct tendency. A direct linear linkage between water scarcity and conflict dominated the earlier discourse. This teleological argument is grossly oversimplified and results in a false conclusion. The reason for this lies in the emphasis on water as a first-order resource in the earlier discourses. Ohlsson (1998, 1999) has enabled a quantum leap in our understanding of water-related conflict by highlighting the pivotal role that second-order resources play as conflict mitigators. This shift in focus away from water scarcity, towards the social mechanisms that are needed to compensate for increasing levels of water scarcity, has allowed for a more sophisticated understanding of the problem. Turton and Ohlsson (1999) developed a series of concepts by using different combinations of first and second-order resources. Two of these concepts are crucial to the understanding of water-related conflict.

'Water Poverty' is defined as the simultaneous existence of both a first-order resource (water) scarcity and a second-order resource (social adaptive capacity) scarcity within a given social entity (Turton & Ohlsson 1999). Consequently, the debilitating effects of water scarcity are compounded under such conditions by the absence of adaptive mechanisms within society, ultimately leading to social decay (Figure 1). Owing to the fact that this



condition is likely to result in high levels of intra-state conflict, policy-makers in semi-arid regions need to develop a set of policy instruments aimed at developing the social capacity needed to cope with increasing levels of water scarcity before the debilitating effects occur.

This logically leads onto the second important concept. As SIRWA is defined as the existence of a first-order resource (water) scarcity and a second-order resource (social adaptive capacity) abundance within a given social entity simultaneously (Turton & Ohlsson 1999), the potentially debilitating effects of water scarcity can be effectively countered when a high level of social adaptive capacity can be mobilised (Figure 1). Due to the fact that the earlier indices (such as Falkenmark's Water Scarcity Index) were focussed exclusively on first-order resource scarcity, they tended to sound the water war alarm bells (Ohlsson & Lundqvist 2000). This also explains why a state, such as Israel, can survive 'beyond the water barrier' (to use Falkenmark's terminology). The emphasis on the importance of second-order resources has now enabled Ohlsson (1999:250-260) to develop a far more sophisticated Social Water Scarcity Indicator (SWSI). With Ohlsson's (1999) SWSI, some of the anomalies that existed in Falkenmark's Water Scarcity Indicator (WSI) are corrected. The development of subsequent indices have tended to highlight the role of ingenuity and other social resources – such as adaptive capacity – as the main concern, thereby focussing on conflict resolution instead.

Homer-Dixon's (1996) concept of ingenuity is nothing more than the empirical manifestation of Ohlsson's concept of social adaptive capacity. Consequently, a social entity with a high level of second-order resources will be in a position to develop the necessary ingenuity needed to avoid falling into the black hole of first-order resource scarcity. As a result, second-order resource scarcity seems to be the defining variable in the water war equation. Allan's concept of 'Virtual Water' as a coping strategy, also fits under this heading. Japan has long ceased to grow its own food. Instead, it uses its water in a far more efficient manner by diverting it to industrial and domestic use, thereby enabling it to generate sufficient foreign currency to buy its food on the open market. However, this policy needs a higher level of second-order resources to succeed, as a state with a strongly nationalistic population may resist the dependency that a 'Virtual Water' coping strategy brings, opting instead for national self-sufficiency in food, and the resultant water deficit that this policy option inherently entails.

Larger body of empirical research

The development of more sophisticated concepts, models and theories have resulted in an expanding body of empirical research. One of the most notable examples of this is the work that was done by Wolf (1997) in which he concludes that,

'... (more than) 3,600 water-related treaties have been negotiated, dealing with all manner of water management. ... Our findings should not be taken to mean that there is no conflict over water – as we all know, there is lots – only that it does not happen at the international level. In fact, our findings suggest that the likelihood of violence increases as the scale decreases. [...] rather than being causal, environmental degradation leads to *internal* political instability, which *in turn* can provide an environment conducive to acute conflict. This interpretation allows a less disingenuous argument which has the advantage of being backed up by data' (Wolf 1997 as cited by Ohlsson & Lundqvist 2000).

Regarding the use of water as a weapon in war, in which the aquatic environment is modified sufficiently enough to harm an enemy during conflict, Plant (1995:81) remains skeptical. He notes that such techniques are either undeveloped, incapable of being used or of dubious utility. While Iran did try to divert river water to flood Iraqi defense positions during the 1980-1988 war; and while the USA did try to use cloud-seeding in Indo-china between 1966-1972 in an attempt to stop the flow of logistical support along the Ho Chi Minh Trail; both of these met with failure (Plant 1995:81). The present reality is that the water weapon is restricted to attacks on hydraulic installations.

In fact, research has shown that attacks on enemy hydraulic installations are common in times of war (Zemmali 1995:73). For example, in 596 BC, Nebuchadnezzar captured Tyre after the aqueduct supplying water to the city was breached. In modern times, dykes and dams were not spared by American soldiers during both the Korean and Vietnam Wars. At the Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts, the Vietnamese delegate recalled that 661 sections of dyke had been either damaged or destroyed during the war (Zemmali 1995:74).

Kent (1999:109) notes that empirical research has shown that while water has been used as a weapon over time, evidence of water's 'potential as a *casus belli* is less directly evident. The relationship between [water and war]



... is part of a far more complex set of factors that *reflect the ways that societies structure themselves* and allocate their resources' (emphasis added). In fact, increasing evidence points to the fact that water is, at best, an indirect source of conflict, and global trends suggest that demands on water are increasing at the same time as conventional structures of governance undergo profound transitions. As a result, the emphasis clearly lies on social adaptive capacity or second-order resources.

This larger body of research has also developed a better understanding of the concept of lateral pressure. This has prompted Homer-Dixon (1999:12) to say that whilst the concept of lateral pressure has indeed helped to explain many past wars, more recent research on environmental scarcity and conflict has shown that a number of anomalies are evident within this concept. The most notable shortcoming being the failure to make a clear conceptual distinction between renewable and non-renewable resources. Work conducted in a number of global settings by Homer-Dixon's team, has revealed that while there is a large body of evidence showing that non-renewable resources (such as fossil fuels) have had a major contribution to war, 'it is hard to find clear historical or contemporary examples of major wars motivated by scarcities of renewables' (Homer-Dixon 1999:12). Two explanations are offered in support of this fact. Firstly, states cannot readily convert croplands, forests and seized waterways into increased state power. Secondly, countries with economies that are highly dependent on renewable resources tend to be poor, lacking in the capability of converting this lateral pressure into armed aggression.

Consequently, it can be argued that Kent's (1999:112) conclusion is reasonable and worthy of support when he said,

'If water throughout ancient as well as modern history has been used as a weapon, there is less evidence that water has been or will be a direct cause of war or violent conflict. Even the water of the Nile River, frequently regarded as an all-too-obvious *casus belli*, has never been a source of conflict. ... Water stress is not a sufficient condition for conflict over resources' (Kent 1999:112).

It thus seems safe to conclude, that of the three sets of epistemological conditions noted at the start of this paper, water scarcity (or the desire to alleviate such scarcity) as both a necessary and sufficient condition for war, is not supported by any historic evidence. There are no such things as 'water wars'. However, an overwhelming degree of evidence exists in support of the other

two epistemological categories. In almost every war, hydraulic installations become targets, and in some cases waterways forming borders of disputed territories are the focus of war. However, these are quasi water wars. In short, water scarcity, as a direct cause of war, is highly unlikely. The crucial element in this equation is the existence of social adaptive capacity, or second-order resources, as these are the actual determinants of the propensity for acute conflict.

What can we expect instead?

Having noted that a true water war (where water scarcity is both a necessary and sufficient condition for violent conflict) is in fact highly unlikely and is certainly unsupported by any empirical evidence, we can focus our attention on what can be expected instead.

The work that has been done by Ohlsson and Lundqvist (2000) points, instead, to the existence of second-order conflicts where water is diverted from agriculture to industry, and from rural areas to large cities. In this regard, the critical issue is about sustaining livelihoods, which is distinctly separate from just procuring food. To create sufficient new jobs in urban areas to compensate for the stagnating number of jobs that agriculture can sustain, is an enormous challenge. This is the adaptive phase (Turton 1999b) that is missing from almost all of the existing literature on water demand management, showing just how far we are from having an adequate scientific grasp of the problem at the conceptual level. It is during this adaptive phase that social resources will be taxed to their utmost, with the adequate supply of ingenuity being severely hampered by social conflict (Ohlsson & Lundqvist 2000). Bringing the adaptive capacity of society into the equation, thus means transcending the trap of absolute scarcity — at least for those social entities that are capable of mobilising sufficient intellectual and social capital with enough to generate effective coping strategies. Second-order resources are thus far more critical than first-order resources on their own.

Evidence does exist that water scarcity can undermine a state's moral authority and capacity to govern, which in turn can tear a society apart (Kent 1999:110). This is the danger of 'Water Poverty', showing just how important it is to understand this concept better. The sensationalism of a water war scenario distracts the public's attention from the real results of water scarcity, such as reduced food production, aggravated disease and poverty, large-scale human



migrations and weakened states, devoid of the capacity to govern effectively (Homer-Dixon 1999:13). Consequently, the inability of governments to reconcile contending interests at the intra-state level will be a far more serious source of conflict than water scarcity (Kent 1999:111).

Some statistics showing the impact of water scarcity on economic growth within southern Africa are illuminating, and offer insight into how first-order resources influence wider socio-economic activities. World Bank data shows that during the droughts of the late 1980s and early 1990s, the economic impact was substantial. In Zimbabwe for example, the stock market declined by 62% (performing worst of 54 world stock markets), agricultural production fell by 40% (maize fell by a staggering 75%) and the GDP declined by 11% during the 1991/92 drought (Hirji & Grey 1989:83). Power generation fell by 15% due to the low levels of Kariba Dam and the Kafue River. A massive food relief program was needed to support 50% of the population, at a time that coincided with entry into a structural adjustment programme (Hirji & Grey 1998:84). During the same drought, South African agricultural production fell by 27%, with a net negative effect of R1.2 billion on the current account of the balance of payments, resulting in the direct loss of 49,000 jobs in the agricultural sector, and a further 20,000 jobs in the formal sector (Hirji & Grey 1998:83). In Namibia, the 1991-93 drought caused a 70% reduction in cereal production. Overall drought relief programmes in southern Africa for 1991-92 are estimated to have cost more than US\$2 billion — in a region where per capita incomes declined by an average of 1.1% annually throughout the decade 1982-92 (Hirji & Grey 1998:84).

Against this rather gloomy background, it becomes instructive to note the extent to which 'Virtual Water' trade has already become a viable coping strategy within southern Africa (Turton 1999c), even without it having been recognised as such by formal government policy. Figure 2 shows a distinct trend in 'Virtual Water' trading patterns within SADC. An increase in this trade is likely to become a crucial element in the prevention of water wars in southern Africa.

These facts give support to the conceptual model that is being developed by Turton and Ohlsson (1999). This model shows that under conditions of 'Water Poverty', social decay and the resultant disintegration of states is highly likely. Such states will probably lack the ability to project their power aspirations beyond their own borders, so internal violence can be anticipated instead. Under such conditions, highly repressive regimes can pursue active strategies of resource capture in order to sustain their political support base.

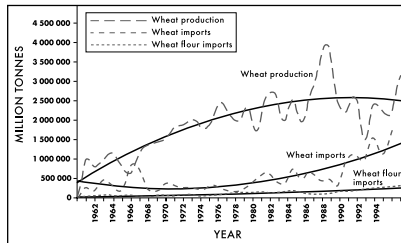


Figure 2. 'Virtual Water' trading patterns for Southern Africa (after Jobson 1999)

Source: FAO Data, 1998.

Note: Southern African Region: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe

Such corrupt practices will further entrench inequality and result in chronic structural scarcity. One symptom of this social pathology will be environmental refugees, especially evident in times of drought.

Projecting this into a southern African scenario, it is conceivable to anticipate a regional drought affecting a number of countries, some of which are better able to cope than others. With the onset of a major drought — and in partial response to increased levels of state repression needed to sustain the resource capture policies in these hypothetical states that are founded on 'Water Poverty' — one can anticipate a series of outward migrations of environmental or resource-scarcity refugees. This is likely to be the result of the combination of mass poverty, a history of civil war and the existence of the critical threshold of 0.07 ha/person, beyond which subsistence agriculture becomes impossible to sustain. These refugees will target centres of perceived abundance. The latter will be suffering under the effects of the drought themselves, and will suddenly be confronted by the prospect of being inundated by masses of starving people. Consequently, a domino effect is



likely to occur, with a non-linear response beyond a given threshold. As a result, the receiving state will be confronted not only by its own drought-induced problems, but also by a series of exogenous factors, such as migration. The image of mass starvation and violent political repression will further serve to alienate foreign investors, introducing yet another negative factor into the overall equation.

Thus for Turton and Ohlsson (1999), 'Water Poverty' is the critical condition to avoid at the regional (SADC) level. Active measures should be initiated to assist with capacity building across international borders, in a joint attempt at creating SIRWA. Where international water resources are concerned, knowledge is power (Hirji & Grey 1989:89). Without knowledge, riparian states are extremely nervous about threats to their sovereignty, whether real or imagined, especially when another riparian state is deemed to have better information and 'decision support' systems. Under such conditions, dependency can result from the absence of adaptive capacity, which in turn becomes a stumbling block to peace initiatives. If 'Water Poverty' is the norm, then social decay and political disintegration can be anticipated at the sub-national level, resulting in an expanding black hole of internal conflict, rather than an aggressive expansionist state. However, if SIRWA can be achieved, then the debilitating effects of 'Water Poverty' will be effectively overcome and social stability can be expected. This will not be without disruption, however, because the social effects of a migrating rural population will impact heavily on a government, demanding a high level of resource allocation, both physically and intellectually. Furthermore, the social impact will exacerbate the problem during the latter stages of the water demand management phase.

Homer-Dixon's concept of ingenuity, and Ohlsson's concept of social adaptive capacity, are therefore crucial factors in the equation of water and war. If these are evident, then true water wars are highly unlikely to occur in the future, but they do not happen on their own. Governments need to play a leading role in nurturing and developing the second-order resources that are already found in society, and drought management has to be transformed from the existing crisis-induced response (Hirji & Grey 1989:83), to a more strategic, proactive approach, involving adequate data-sharing between states, as well as the development of competent 'decision support' platforms housed within functioning institutional settings. A healthy and active civil society is also important, as it can fill the gap between the individual and the state, and assist with the creation of capacity. Consequently, it is sobering to

note that within southern Africa, hardly any of these components exist (at present) in quantities sufficient to face the future with total confidence.

Conclusion

This paper has shown that epistemological clarity is needed in an analysis of water wars. As such, water as the cause of war is a very narrowly defined condition, with limited empirical evidence of its existence over time. Water as a weapon of, or target during war, is strongly supported by historic evidence. These are conventional wars, with water as a tactical component. Waterways as borders or components of disputed territories are also supported by history, but these are only quasi water wars. As a result, there is no evidence of true water wars existing, and the loose usage of terminology can lead an untrained person into mistaking a quasi water war for a genuine water war. Constructed knowledge, based on first-order indicators and readily propagated by the media, is thus counterproductive and can undermine investor confidence in the entire southern African region. However, this does not mean that conflict over water scarcity is unlikely to occur. On the contrary, while water wars are unlikely to occur, social decay and political instability can well be expected to rise as water scarcity reaches debilitating proportions. In this regard, a clear conceptual distinction needs to be made. On the one hand, 'Water Poverty' is a highly debilitating condition, where the absence of social capital will mean that the effects of water scarcity cannot be overcome. This condition will, in all probability, result in social instability, internal unrest, migration-induced conflict and *coups d'état*. On the other hand, SIRWA is a condition that is known to exist in certain societies that are confronted with water scarcity, but which have the social capital needed to make the necessary adaptations proactively. Rational government policy should thus be developed to address this condition, stimulating the ingenuity and institutional capacity needed to effectively manage water scarcity. Preliminary indications are that water scarce countries such as South Africa, Botswana and possibly Namibia, have the necessary ingenuity with which to adapt, provided that a concerted effort is made by government to enable this. Water scarce countries like Mozambique, Zimbabwe and Malawi seem to be less well endowed as the result of economic stagnation, large population growth, the debilitating knock-on effects of civil war and, in some cases, the results of upstream riparian activities. In this regard, a helping hand should be



extended to these countries, because drought and water scarcity respect no national borders, and the existence of islands of relative wealth and abundance, afloat a sea of poverty and resource scarcity, will inevitably result in endemic political tensions. The joint management of international river basins, including functioning institutions and adequate data sharing at the SADC level, is therefore imperative if water is to be allowed to play its rightful role as an instrument of peace. The active development of multidisciplinary scientific capabilities is also important.

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Notes

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Southern African Water Conflicts: Are they Inevitable or Preventable?

Peter Ashton

Abstract

The rhetorical question posed in the title to this paper reflects the concern felt by large numbers of individuals and institutions in southern Africa. In the past, several different types of conflicts and disputes have occurred in or near to water; there is little doubt that many of these conflicts will continue to occur in the future. However, despite the escalating demands and pressures that continue to be placed on our finite water resources, it is highly unlikely that full-scale military conflict – a so-called ‘water war’ – will ever occur in southern Africa.

The role of water in virtually all of the water-related conflicts that have occurred in southern Africa, has been secondary to considerations of territorial sovereignty. In most cases, these disputes have been driven by perceptions that the territorial integrity or sovereignty of one country, is compromised or threatened by the claims of a neighbouring territory. Many of the international boundaries in southern Africa are aligned with rivers and water courses; the locations of these boundaries are the legacies of surveys and treaties conducted by earlier colonial powers. However, because rivers

are dynamic systems that frequently change their courses in response to flood events, we can anticipate future disputes over the precise locations of international boundaries when rivers change their shape and configuration.

We can also anticipate that almost all future disputes or conflicts involving water, or concerned with some aspect of water, will tend to be local in scale. These conflicts will be amenable to institutional and government intervention, and the rights and responsibilities of individuals are well protected in national legislation. At the international scale of a water-based conflict or dispute between two or more countries, some principles of international law provide a solid foundation for negotiation and arbitration. However, it is clearly in the interests of individuals and societies that appropriate national and international institutions should jointly develop management plans for shared river basins, and also derive workable protocols that can be used to prevent water-based conflicts in the region.

Introduction

In recent years there has been a rapid worldwide increase in public awareness of the fact that the world's fresh water supplies are a scarce and limited resource which is extraordinarily vulnerable to human activities (Falkenmark 1989; Biswas 1993; Glicek 1993; Homer-Dixon & Percival 1996; Delli Priscoli 1998). This awareness is coupled with the growing realisation that it is becoming increasingly difficult, and expensive, to provide sufficient supplies of wholesome water to meet the growing needs of communities and countries. These tensions are accentuated by widespread population growth, as well as increased rates of urbanisation and industrialisation (van Wyk 1998). As a result, there has been a dramatic increase in the level of competition for water between different water use sectors. Whilst it appears clear that the basic reasons for increasing water shortages are well understood by all participants, much of the debate is still coloured by strong national concerns over sovereignty and territorial integrity issues (*Business Report* 1998). As a result, the potential for 'water-based conflicts' to occur will continue to remain high, and tensions will be increase – possibly to critical levels – when such countries experience extreme climatic events, such as droughts (Hudson 1996; Glicek 1998).

It is understandable that the potential for conflict over water is likely to be most acute in those regions where water is scarcest. Where conditions of

water scarcity happen to coincide with economic, ideological or other differences between countries, we can anticipate that tensions can rapidly reach crisis levels. Indeed, many small- and large-scale conflicts have been based on, or accentuated by, situations related to access to water in the arid regions of the world (Falkenmark 1994). However, there is also a rapidly growing public awareness that water interdependence is already, or will soon become, a fact of life in many countries. Consequently, there is a growing drive towards cooperative development of water resources in certain areas (Delli Priscoli 1998). It has been estimated that about 40% of the world's population live in approximately 200 shared river basins; five or more riparian countries share 13 of the world's major river basins. Whilst these situations provide ideal incentives for riparian countries to jointly develop collaborative actions to safeguard water supplies, such situations can also become the sites for escalating tensions between such countries (Rosegrant 1995; 1997; Wolf 1996).

Southern Africa is largely an arid to semi-arid region, where the basins of most of the larger perennial rivers are shared by between three to eight countries (SARDC 1994). Supplies of fresh water are finite and the existing demands for water in some parts of the region are fast approaching the limits of conventional technologies (SADC-ELMS 1996). Demands for additional supplies of fresh water will need to be met through the use of unconventional technologies, the exploitation of new or novel sources of fresh water, or through the long distance transfer of ever-larger quantities of water from regions that have ample supplies (Conley 1995, 1996). In the future, concerted attention will also have to be paid to reducing the demand for water, and to increasing the efficiency with which water is used (Hudson 1996).

Against this current background of rising demands for water, and the finite supplies that are available, it is important to remember that the national boundaries of all southern African countries seldom follow even a portion of the 'natural' boundary of river catchments (Pallett 1997; Fisch 1999). This last element represents part of the legacy of earlier colonial administrations, where the national boundaries of most countries appear to have been delimited or drawn up in an apparently arbitrary fashion (von Moltke 1977; Prescott 1979; Hangula 1993). Consequently, the extent to which the larger river systems are shared by more than one country has often resulted in intense rivalry between countries, as each strives to derive maximum benefits from the available water resources. Typically, 'downstream' countries are more vulnerable than their 'upstream' neighbours in such situations, and therefore derive the least benefit. This situation has been accentuated in



those situations where the downstream countries may be economically 'poorer' or politically and militarily 'weaker' than their upstream neighbours (van Wyk 1998).

Recent political developments in southern Africa have been accompanied by a wider, regional acceptance of the need for all countries to work together, to develop and implement joint strategies and protocols for the protection and management of regional water resources (SADC-ELMS 1996; Republic of South Africa 1998). However, whilst these welcome developments must be supported and promoted throughout the region, there remain several small- and large-scale issues that have already led to some form of conflict, or hold the potential to do so (Hangula 1993). In these situations, it would appear that despite the best intentions of politicians and water resource managers, some form of 'water-based conflict' is either inevitable or 'unstoppable'. Consequently, it is crucially important that water resource managers examine these situations closely to determine whether or not these conflicts are indeed inevitable, or if they are amenable to some form of preventive intervention.

The concept of 'water conflicts'

It is perhaps not surprising that the English words 'river' and 'rival' are derived from the same Latin root, *rivalis* — he who uses the same stream (Biswas 1993; Ohlsson 1995a). This is also reflected in the conscious realisation that various degrees of disagreement or conflict between individuals, communities and countries have arisen from, or are related to, competition for access to water (Ohlsson 1995b). Such animosities are ancient in origin and continue to the present day. Historical examples from Biblical times tell of how irrigation-based civilisations were vulnerable to invading armies; later, Crusader forces were defeated by Saladin, who denied them access to water. In more recent conflicts, desalination plants and irrigation water distribution systems were systematically targeted in the Gulf War (Delli Priscoli 1998).

Much of the recent debate around existing water conflicts, and perceptions of possible future conflicts, has been phrased in highly dramatised terms of 'water wars' or 'water crises', or other similar doomsday prophesies (Delli Priscoli 1998). Unfortunately, a considerable proportion of the debate has centred on existing or impending problems, whilst very little attention is paid to finding solutions to these problems. On a more positive note, however,

the resulting increase in public consciousness of the importance of water issues is to be welcomed. Nevertheless, it is also true that many of the emotively worded appeals or pronouncements often cause public fear or a pervasive sense of pessimism; the undertones of the debate are disturbing. In many cases, critics create the perception that government departments and water resource managers have either 'ignored the signs' (clearly visible to these knowledgeable and far-sighted individuals) or, worse, concealed them. Such critics sometimes also suggest that these officials have 'only just woken up' and realised that there may be a water-related problem in their area of jurisdiction. Such indictments of past actions or motivations, based on current knowledge, do not encourage constructive dialogue, nor do they promote or support a concerted search for effective solutions (Delli Priscoli 1998).

As already mentioned, water-related conflicts of varying degrees of intensity and spatial scale have existed for millennia; many of the contributing reasons or causes for these conflicts continue today and, undoubtedly, will continue to exist in the future. How we deal with these situations — and we will have to deal with them — will depend largely on the ways in which we interact with our neighbours, and the ways in which we, jointly, harness information and knowledge to derive appropriate, mutually-beneficial solutions. The responsibilities we face are enormous; a pervading sense of pessimism will not help us to achieve success. We simply cannot afford to sit back, wait, and do nothing, in the fatalistic anticipation that some improbable 'better option' will show itself. The scale and urgency of many of the water-related problems we face today demand that we implement proactive approaches now; any further delay will exacerbate these problems.

Our combined awareness of the social, economic, political and ecological causes and implications of these conflicts has improved gradually with time, as more and more information has become available. Globally, we are now in an ideal position to share our knowledge and understanding of these problems, and search for effective, long-lasting solutions. It is important to remember that the English word 'crisis', derived from the Greek root *krisis*, refers more to decision — a time of opportunity and decisive action — rather than a disaster. Consequently, the word crisis should rather be seen in the form of a 'wake up' call for decision and action (Delli Priscoli 1998). It is this form of the concept that should be the basis for our understanding and management of 'water crises' or 'water conflicts'.

In its simplest and broadest sense, the term 'water conflict' has been used to describe any disagreement or dispute over or about water, where



social, economic, legal, political or military intervention has been needed, or will be required, to resolve the problem. Clearly, this broad definition spans a wide continuum of possible circumstances and situations. The simplest example of these might involve the relatively low-intensity dispute over stock watering rights between two adjacent landowners. A structured process of problem-solving could easily resolve such a situation. At the other extreme, a typical example could consist of a relatively high-intensity interaction between two countries, both of whom dispute the 'rights' of the other to a particular proportion of the flow in a shared river basin. Here, failure to reach mutual agreement could result in military intervention, and may even require the involvement of an independent arbitrator. In both types of examples, geographical variations on the theme could also further complicate matters.

We have seen some of the elements of the broad range of possible types of conflicts that can be associated with, or driven by, water. It is important to understand that water is in fact 'incidental' in many of these conflicts and is not the primary cause, objective or 'driver' of the conflict. Perhaps this can best be explained by a series of three simple examples where the 'level' of conflict over water escalates from a situation where water is incidental to the conflict, up to a point where water is either the primary 'weapon of war', or the primary target of the conflict.

The first example would include a situation where a water course forms the national boundary between two countries. If a conflict occurs over territorial sovereignty, and this happens to result in military action in and around the 'border' waterway, this situation can be considered to be a water-related conflict, but not a 'water war'. In the second example, water supply infrastructure and hydraulic installations have often been considered as legitimate targets for aggressive action during conflict between two countries. Here, again, water is not the primary reason for the conflict, though the damage to water infrastructure may be used as a means to inflict hardship on an opponent. For our final example, we can define a 'water war' as one that is fought with the sole or primary purpose of gaining access to water, or where water forms the central weapon of offence in the arsenal of an aggressor. There is ample supporting evidence (e.g. Kirmani 1990; Khroda 1996; Wolf 1996; Pallett 1997; Turton 1999; 2000) that, despite the dire predictions of many authors (e.g. Homer-Dixon & Percival 1996; Hudson 1996), 'true' water wars appear to have occurred very rarely, if at all. Therefore, for our purposes, the broader term 'water conflict' is used to cover the wide range of water-related conflicts that have already been recorded; unfortunately, we also

should be in no doubt that many of these 'lesser' conflicts will continue to occur in the future.

Importantly, the term 'water conflict' is not meant to cover a situation of conflict that, by chance, happens to occur at or near a water source. As Delli Priscoli (1998) has noted, several people happened to 'have been killed around the water hole'. In reality, however, there seems to be a general reluctance to do this, since such incidents of interpersonal violence can rapidly escalate into a national or international issue. Somehow, a shared realisation of the fundamental value and importance of water in such situations of conflict, forces us to elevate ourselves from familiar interpersonal adversarial positions, into positions where our stance is based more on our awareness of, or is related to, the life-giving properties and values of water. In effect, this realisation seems to be based on an awareness that everyone suffers when water is used to make war.

The enormous volume of information available to us at the present time, provides us with a remarkable degree of understanding of the primary causes of water conflicts. Similarly, we are now far more aware of the options and actions that are available to prevent conflicts from happening, as well as how to resolve them peaceably once they have been initiated. To achieve this goal of preventing or resolving water conflicts in southern Africa, it is important that we first examine our understanding of the basic causes of water conflict.

Some causes of water conflicts

Water has long been recognised as critical for human health and well-being; social and economic development cannot take place without adequate supplies of wholesome fresh water (Falkenmark 1989; Delli Priscoli 1996). In the arid and semi-arid regions of southern Africa, fresh water supplies are widely seen as the one resource that has the greatest potential to retard or halt national development programmes (Falkenmark 1989; SARDC 1994; Conley 1995; Mutembwa 1996; Pallett 1997; Heyns et al 1998).

Water is a classical case of a 'fugitive' resource that moves naturally from one area to another, and is transformed rapidly from one state to another. In addition, whilst water is widely seen as a 'renewable resource', reality dictates that there is only a finite quantity of water available in the sub-continent (Conley 1995; 1996; Heyns et al 1998).

Water is also extraordinarily vulnerable to human activities. Both



ground water and surface waters are easily polluted when effluent is discharged; sometimes the adverse effects of such incidents can persist for decades. In turn, this can adversely affect both the integrity of the receiving (aquatic) system, as well as the degree to which other water users might make use of the water. Against this background, it is almost impossible to define the ownership of water, and water is now universally recognised as a 'common good' that should not be 'privately owned'. This principle forms the basis of newly promulgated national water resource management approaches in South Africa, which focus on all aspects of the water cycle within the geographical bounds of a river basin or catchment area (Asmal 1998; Republic of South Africa 1998).

The realisation that water is a critically important resource is not new; indeed, our increasing awareness of the strategic importance of water fuelled most of the water resource development activities of the last century. This has also driven attempts to 'trap' water, so as to provide assured supplies during seasons when water is not easily available. This increased awareness has also led to the transfer of water from areas of ample supply, to areas where water is in short supply (Ashton & Manley 1999). However, the current reality of southern Africa is one of expanding populations, with its accompanying escalation in urbanisation and industrialisation, as well as rapidly increasing demands for water to redress past iniquities. Given this set of circumstances, we cannot continue as we have done in the past and irresponsibly exploit the finite quantities of fresh water that are available in the region. Instead, we need to re-examine the ways in which we derive value from our use of water. Then we need to implement policies and practices that will ensure our use of water resources is equitable and sustainable. This philosophy is directly analogous to equating effective water resource management with good governance (Asmal 1998).

In its widest sense, water is a critical component of the national prosperity of a country. This is because water is inextricably woven into irrigation and food production processes, as well as the provision of energy and, occasionally, to transportation systems (van Wyk 1998). Access to adequate water supplies is usually seen as a 'life or death' issue; any threat to disrupt or prevent access to essential water supplies becomes an emotionally charged and volatile topic of intense debate (*Pretoria News* 1998; 1999a; 1999b). In extreme cases, the confrontation between competing parties can escalate to overt violence (in the case of individuals or communities), or to military confrontation and, more rarely, to armed conflict, in the case of countries

(Falkenmark 1994; Homer-Dixon & Percival 1996).

At a strategic level, five key geographical and geo-political characteristics influence the ease with which water can become a source of strategic rivalry or confrontation between neighbouring states. The first four of these have previously been stated by Glieck (1998); the fifth is added here as an important determinant in Africa:

- The degree of water scarcity that already exists in the region;
- The extent to which a water supply is shared by one or more states/regions;
- The relative power relationships that exist between water-sharing states;
- The availability and accessibility of alternative water sources; and
- The degree to which a particular country's international boundaries are aligned with, or located along, shared river systems.

The outcome of this situation is then framed within the context of the strategic goals and objectives that each country has set for itself. In particular, two closely interrelated aspects are important here:

- First, the degree of attention or effort that each country is willing to focus on actions designed to maintain its territorial integrity or national sovereignty, and the circumstances and costs that it is prepared to bear to achieve this aim; and
- Secondly, the political, social and economic lengths to which each country is prepared to go to achieve a state of national 'resource security' in terms of achieving national self-sufficiency of water, food and energy supplies, rather than developing a more pragmatic, regional, and shared perspective with its neighbours.

We are all keenly aware that a river knows no boundaries; whatever happens to a river at one point will be transported, transformed and expressed along its entire length, until it reaches the ocean. Where human activities divert or interrupt the flow of water, or cause degradation in water quality, the consequences are always attenuated, translated and transmitted downstream. As very few rivers – other than relatively small systems – are contained within the borders of a single country or state, access to wholesome supplies of water increasingly becomes a source of potential conflict whenever a river crosses an international boundary. This issue becomes particularly acute in southern Africa, where water resources are unevenly distributed, and where a



single river system may traverse or form several international borders (Pallett 1996; *Business Report* 1998; Heyns et al 1998). The potential for conflict in such situations is brought sharply into focus in the case of a country that obtains the major proportion of its fresh water supplies from outside its national borders. Botswana, for example, obtains 94% of its fresh water from neighbouring states; this undoubtedly contributes to Botswana's sense of vulnerability (SARDC 1994).

This type of situation is further compounded by large seasonal variations in flow, as well as periodic droughts and floods. In some cases, the uneven spatial distribution of water supplies has also promoted international trade in water; Lesotho is a case in point, earning valuable foreign exchange from the water it sells to South Africa. However, in the context of 'water trading', it is important to realise that there appears to be no shared understanding or agreement as to the value of water; it is usually treated as a 'migrant' resource with a variable value (van Wyk, 1998). The absence of an agreed system for valuing water also contributes to potential conflicts between neighbouring states. The value of water may also vary with its availability. During floods, for example, the unit value of abundant water supplies is considerably less than an equivalent unit of water that is available during a drought.

An additional complicating factor arises when a river system forms the boundary between neighbouring states. Seasonal changes in flow can alter the shape and position of a river channel within a river valley; this can result in year-to-year changes in the 'apparent' geographical position of a boundary. Where specific human activities are associated with the 'original' river channel (for example, traditional grazing rights on islands or the dredging of riverine mineral deposits), any alteration in the position of the river and its associated international boundary can lead to conflict.

To this 'international' dimension of the potential causes of water conflict, we can also add a wide variety of more local, inter- and intra-community conflicts over water that can occur within the boundaries of a single community or country. Perhaps the most frequently encountered of these smaller-scale conflicts relates to water quality problems that result from upstream activities. Problems of access to water during critical periods is another important example of a smaller-scale conflict. In addition, members of the public have expressed a growing need to be involved in decisions regarding water-related issues which may affect their lives and livelihoods (van Wyk 1998; *Pretoria News* 1999a). Failure to provide opportunities for appropriate levels of public

participation has led to several instances where the general public have openly expressed their dissatisfaction and, in extreme cases, rejected proposals for water infrastructure projects. Such cases can also be considered as 'water-related' conflicts.

The issues of scale

In the earlier descriptions of the varied causes of water-related conflict in southern Africa, we briefly touched on the issues of spatial and temporal scales. It is important to note that these (spatial and temporal) scales of water conflict can exert enormous influence on decision-makers who are searching for appropriate solutions (*Pretoria News* 1998, 1999b). Consequently, it is appropriate that we should consider them here, so that their importance can be properly contextualised in the debate surrounding the potential for water-based conflicts in southern Africa.

Clearly, scale issues should play an important role in the decisions taken by water resource managers and politicians. For example, a local-scale conflict between two adjacent landowners over access to water, would require far less strategic (government-level) intervention than another water access problem that may be confounded by a territorial dispute over the precise location of an international boundary. Nevertheless, it is important to remember that smaller, 'local-scale' conflict situations can develop very rapidly and require appropriately rapid responses. In contrast, most larger-scale, or 'international', conflicts tend to develop more gradually; and responses to these situations should also be appropriate to the scale of the problem confronted.

In terms of geographical scale, we can recognise four separate classes:

- Intra-community, where conflict over some aspect of water occurs between members of the same community;
- Inter-community, representing a slightly larger scale, where all or most of the individuals within each community presents a united front in their dispute or conflict with a neighbouring community;
- Inter-provincial, where groups of communities or local authorities within a single province or regional authority dispute the rights of a neighbouring provincial authority (in the same country) to water that is not located within the geographical area of jurisdiction (e.g. typical of inter-basin water transfers, where 'donor' catchments are



seldom compensated adequately, and 'recipient' catchments reap almost all of the benefits); and

- International, where one country may contest some, or all, of the rights to use water from an aquatic system that it shares with one or more of its neighbours. Typical examples of this type would include so-called riparian rights to rivers that are located on international boundaries, or the situation where a river crosses an international boundary and gives rise to disputes between 'upstream' and 'downstream' countries.

In addition to these strictly spatial scales, geo-political considerations can add a further dimension of conflict to those related to the spatial scales outlined above. Here, typical examples would include:

- Conflicts that arise between 'upstream' and 'downstream' countries as a result of specific activities or demands of one or both of the countries concerned;
- Conflicts that arise when countries dispute the precise location of the international boundaries that separate them and which also coincide with, or are aligned to, rivers or other aquatic systems; and
- Conflicts caused by the natural or artificial 'alteration' of river courses that constitute or demarcate international boundaries between two countries.

The scale of activities carried out by the individual countries concerned, often accentuates these problems of 'geographical' and 'geo-political' scale. For example, if an 'upstream' country operates a large impoundment, this will affect the timing, frequency, duration and quantity of water flow, as well as the corresponding silt loads and water quality that are received by the 'downstream' country. Similarly, effluents discharged by an 'upstream' country can have marked adverse consequences for water users in the 'downstream' country. In addition, natural, flood-induced flows can change the position or shape of a river channel, thereby 'altering' the theoretical position of an international boundary; this can 'benefit' one country, whilst adversely affecting its neighbour.

In order to fully appreciate the complexities that characterise actual and potential water conflicts in southern Africa – as opposed to those that may or may not occur elsewhere in the world – it is essential that we review some of the main geographical and geo-political realities of the region. This will

provide us with an overview of the major driving forces that shape national and regional water resource management policies, as well as the social, economic and political responses that are directed towards specific water conflict situations.

Geographical and geo-political realities

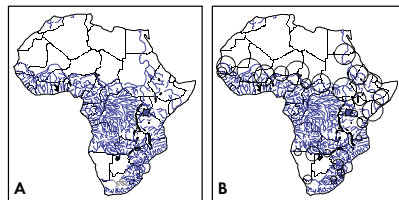


Figure 1. Diagrammatic maps comparing (A) the distribution of larger perennial rivers and lakes in Africa, with (B) the locations of actual or potential water-related conflicts. It is noticeable that rivers form the international boundaries between several African countries

We have already noted that water is unevenly distributed across southern Africa; this is expressed in both spatial and temporal (seasonal and inter-annual) terms. The primary driving forces for this are the steep East-West and North-South gradients in rainfall and evaporation (Falkenmark 1989; Conley 1995). This unequal distribution of rainfall and associated runoff is, in turn, reflected in a striking absence of perennial rivers and lakes in some parts of the sub-continent (Figure 1A). Namibia and Botswana are particularly poorly endowed with perennial rivers. Both countries have to rely almost entirely on the unpredictable supplies of water contained in many small, episodic and ephemeral rivers that flow only after rainfalls. The other alternative is to rely on

perennial rivers that rise outside their borders (Pallett 1986; Heyns et al 1998).

The areas where water-related conflicts have already occurred in Africa – or where local tensions are high and could lead to future conflicts – is shown in Figure 1B. There is a remarkable correspondence between the sites of actual or potential water conflict, and the absence or scarcity of perennial rivers or lakes in Africa. In this discussion, our attention will be focussed on southern Africa.

The so-called colonial 'scramble for Africa' which took place during the last half of the nineteenth century and early twentieth century (Packenham 1991), added yet another dimension to the potential causes of water-related conflicts. In particular, the failure of boundary surveyors to clearly define the exact locations of international borders located along river systems, has resulted in considerable confusion (Hangula 1993; Fisch 1999). This situation was further aggravated by the terms and conditions of border treaties and agreements drawn up by colonial powers as a means of partitioning the African continent, and resolving or satisfying their competing territorial claims. In particular, the Berlin Treaty, drawn up on 1 July 1890, redefined some of the geo-political boundaries between German colonies in southern and eastern Africa, and their neighbouring Portuguese, English and South African counterparts. As a result, the Treaty has left a legacy of problems for successive administrations (Hangula 1993).

With the exception of the Sedudu/Kasikili Island dispute which was recently settled in the International Court of Justice (ICJ 1999), this confusing situation continues to the present day along Namibia's north-eastern Caprivi border with Botswana, involving the Chobe River, as well as the adjacent section of its border with Zambia, involving the Zambezi River (Figure 3; Hangula 1993; Fisch 1999). On attaining independence in 1990, Namibia adopted the principles laid down in Article iii, paragraph 3, of the Charter of the Organisation of African Unity (OAU), which was signed by Heads of States and Governments in 1964. All (OAU) member states pledged to recognise and respect the national boundaries defined by earlier colonial administrations (Hangula 1993). Despite this ratification, border disputes continue to persist in the Caprivi region of Namibia (Hangula 1993; Fisch 1999). The judgement handed down by the International Court of Justice found that Sedudu/Kasikili Island forms part of the sovereign territory of Botswana (ICJ 1999).

A related issue, also involving Namibia, concerns the relocated, 'new' position of the international boundary between South Africa and Namibia,

along the lower Orange River. Here, the original agreement drawn up by Britain and Germany during the nineteenth century, confirmed that the entire lower reaches of the Orange River belonged to South Africa. Subsequently, and in conformance with generally accepted international practice for borders located along rivers, South Africa agreed to 'relocate' this border to the *Thalweg* (the centre of the deepest portion of the river channel). Whilst this move resolved Namibia's problems of access to the Orange River, the action resulted in several unanticipated disputes around alluvial mining rights, grazing rights and offshore fishing rights. These contentious issues, though not strictly 'water conflicts', have arisen as a result of water conflict and remain unresolved to date. Some of their implications are described briefly in the next section of this paper.

The guiding legal principles that underlay the choice of the *Thalweg* as the position of an international boundary, are firmly accepted in international law (ILC 1994; ILA 1996). Nevertheless, it is important to recognise the fact that rivers are dynamic, 'living' systems which continually change the shape and location of their channels over time. Thus, it is inevitable that the precise geographic position of the *Thalweg* will also change with time. This important feature of rivers carries with it the seeds of potential future conflicts between countries where their mutual border is defined solely by the position of the *Thalweg*. A closely related issue is one where the *Thalweg* has not been included in the definition of the border and, instead, the border is merely described as 'the centre of the main river channel'. In such situations, the potential for conflict between countries is greatly enhanced by each natural change that the river undergoes.

Some southern African examples of water-related conflicts

Against the background descriptions and information provided above, it is appropriate that we review a few southern African examples of actual water-related conflicts that have occurred, or potential water conflicts that could soon occur. The few details available for each of the three examples given below have been gleaned from very scanty published information and personal experience in each area. Whilst the information available for each example is clearly incomplete, it does provide us with sufficient insight into the scale and complexities of the respective problems. Specific solutions to each of these three problems will only be attained if all the parties concerned



demonstrate a great deal of tact and diplomacy, as well as a high level of mutual understanding and patience.

Water abstraction from the Okavango River (Angola, Namibia and Botswana)

The Namibian Department of Water Affairs has faced considerable public pressure to relieve the water shortages caused by recent droughts in Namibia. One potential option involved abstraction of some 17 Mm³ of water per year from the Okavango River at Rundu, and its transfer via a 260 km pipeline to the head of the Eastern National Water Carrier (ENWC) at the town of Grootfontein (Heyns 1995; Heyns et al 1998). The general location of the proposed pipeline, and its position relative to the catchment of the Okavango River and Okavango Delta, are shown in Figure 2. A total of three countries comprise the catchment of the Okavango Delta: Angola, Namibia and Botswana. Zimbabwe is part of the subsidiary Nata River system which flows into the Makgadikgadi Pans, and is not considered to form part of the Okavango Delta catchment; consequently, Zimbabwe should not be involved in discussions concerning actions or activities that may affect the Okavango Delta (Figure 2).

The international border between Namibia and Angola is located along the Okavango River, over the deepest portion of the river channel (the *Thalweg*). Thus, both Namibia and Angola maintain that they have a 'riparian right' to abstract water from this section of the Okavango River. However, the proposed water abstraction scheme has raised concern in both Namibia and Botswana. Both countries believe that the scheme could have adverse consequences for the Okavango Delta in Botswana. As a result, it was important to all the countries concerned that the potential environmental impacts of the proposed water abstraction scheme be assessed (Ashton 1999).

Detailed hydrological evaluations of the proposed water abstraction scheme have shown that the scheme represents a reduction of approximately 0.32% in the mean annual flow of the Okavango River at Rundu. The abstraction will also represent 0.17% of the mean annual flow at Mukwe, downstream of the Cuito River confluence. Both quantities are very small when compared with the average annual volume of water that flows down the Okavango River each year (10,000 Mm³ per year; Ashton & Manley 1999). The adverse effects of the scheme would be insignificant along the Okavango River in Namibia, whilst outflows from the lower end of the Okavango Delta to the Thamalakane River in Botswana would be reduced by some

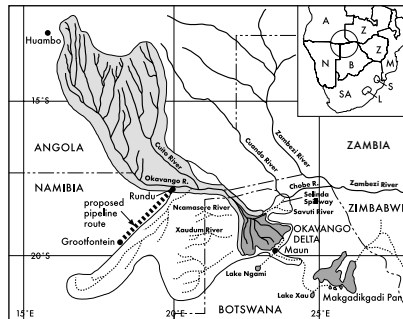


Figure 2. Sketch map of the Okavango River catchment. Detailing the locations of principal rivers and neighbouring countries in relation to the Okavango Delta. The proposed route of the water abstraction pipeline in Namibia is also shown. The shaded portion of the catchment represents the zone which provides surface run-off; the area indicated by the unshaded portion of the catchment appears not to have provided surface run-off in living memory. The subsidiary, seasonal Nata River system flowing into the Makgadikgadi Pans from Zimbabwe is located to the east of the Okavango Delta. (Redrawn from Ashton & Manley 1999)

1.44 Mm³/year (11%). Additional studies have shown that these effects could be reduced by some 10-13% if water abstraction was confined to a six-month period during the falling limb of the hydrograph, instead of continuous (year-round) withdrawal (Ashton & Manley 1999).

Hydrological simulations have shown that the maximum likely loss of inundated area in the Okavango Delta would amount to approximately 7 km²



out of a total area of about 8,000 km². This potential loss in inundated area would be concentrated in the lower reaches of the seasonal swamps grasslands, specifically in the lower reaches of the Boro, Gomoti, Santantadibe and Thoage channels. However, these effects would be expressed as a shoreline effect, with the loss in area spread out along the shoreline and islands, and would not be restricted to a specific area. This anticipated loss in inundated area is unlikely to have measurable impacts on environmental components in any specific area (Ashton & Manley 1999).

In both Namibia and Botswana, the initial public perceptions of the proposed water transfer project were strongly negative (Ashton 1999). The proposed water abstraction was seen as having the potential to adversely affect the tourism industry along the Okavango River in Namibia, and in the Okavango Delta in Botswana, with a possible loss of income for local residents. However, the environmental assessment study found no 'fatal flaws' that would prevent the water abstraction scheme from proceeding. Whilst the anticipated effects are more likely to be seen in the Okavango Delta in Botswana – rather than along the Okavango River in Namibia – the anticipated ecological implications of the scheme were small in spatial extent, and would not be perceptible against the natural year-to-year variability in inundation of the Okavango Delta or outflows to the Thamalakane River (Ashton & Manley 1999).

The overall outcome of the 'technical' evaluations of the anticipated scale, as well as the severity of possible impacts, clearly indicates that the impacts would be very small and, in most areas, would not be measurable by conventional measurement techniques. However, it was also clear to the study team that the public perceptions were shaped by personal opinions, and that there was a relatively widespread rejection of the technical findings (or a refusal to 'believe the facts') which were presented to the public. Therefore, if a decision is finally taken to proceed with the proposed water abstraction scheme, the public are likely to attribute to the project any and all adverse situations or circumstances that may arise, whether these may be caused by the project or by some other set of circumstances, such as global climate change. Clearly, if this project, or any other water abstraction project, does indeed proceed, the governments of each of the basin countries (Angola, Namibia and Botswana) will have to openly demonstrate their support for the project.

Disputed ownership of Sedudu/Kasikili Island in the Chobe River (Namibia and Botswana)

The ownership of Sedudu/Kasikili Island in the Chobe River has been the

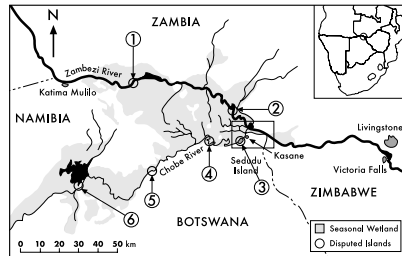


Figure 3. Sketch map of the Eastern Caprivi region of Namibia with the neighbouring territories of Zambia, Zimbabwe and Botswana. The general area of Sedudu/Kasikili Island in relation to the extensive wetland areas is shown. Numbered arrows indicate the locations of the six islands whose ownership is disputed: 1 = Mantungu; 2 = Impalila; 3 = Sedudu/Kasikili; 4 = Kavula; 5 = Lumbo; 6 = Muntungobuswa. The inset box outlines the area around Sedudu/Kasikili Island that is shown in Figure 4

subject of a formal dispute between the governments of Namibia and Botswana since 1996, when both governments agreed to submit their claims for sovereignty of the island to the International Court of Justice (ICJ) in The Hague (ICJ 1999). Prior to this formalisation of the dispute, the 'ownership' of Sedudu/Kasikili Island had been disputed by local residents in Namibia and Botswana, as well as preceding colonial governments. Dispute over the island's ownership dates back to the Berlin Treaty of 1 July 1890 (Hangula 1993; Fisch 1999). A brief outline of the grounds for the dispute has been drawn from the official press communiqué, which announced the International Court of Justice's decision to recognise the territorial claims of Botswana (ICJ 1999). Two sketch maps show the geographical position of Sedudu/Kasikili Island, as well as the locations of other islands whose



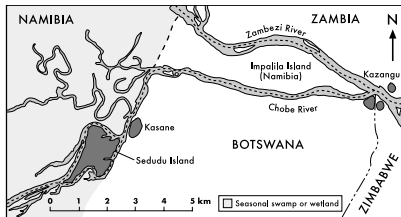


Figure 4. Expanded view of a portion of Figure 3, showing the position of Sedudu/Kasikili Island in relation to the Chobe and Zambezi rivers, as well as the locations of the 'northern' and 'southern' channels of the Chobe River flowing around Sedudu/Kasikili Island

ownership is also disputed (Figure 3). Some details of the local terrain and the positions of river channels surrounding Sedudu/Kasikili Island also feature (Figure 4).

The island known as 'Sedudu' in Botswana and 'Kasikili' in Namibia, is approximately 3.5 km² in area and is located in the Chobe River (Figure 4). The Chobe River divides around the island, flowing to the north and south, and the island is flooded to varying depths for between three and four months each year (usually beginning in March), following seasonal rains (ICJ 1999).

On 29 May 1996, both Namibia and Botswana jointly submitted their cases for territorial sovereignty of Sedudu/Kasikili Island to the ICJ, asking the Court for a ruling based on the principles of International Law (ICJ 1999) and the Anglo-German Berlin Treaty of 1890.

The historical origins of the dispute are contained in the Berlin Treaty of 1890, when the eastern boundaries of the Caprivi Strip were defined in very vague terms as 'the middle of the main channel' of the Chobe River. The Treaty was instituted to separate the spheres of influence of Germany and Great Britain. In the opinion of the ICJ, therefore, the dispute centred on the precise location of the 'main channel'. Botswana contended that this is the

channel running to the north of the island, whilst Namibia contended that the channel to the south of the island was the main channel (Figure 4). Since the terms of the Berlin Treaty did not define the location of the channel, the Court proceeded to determine which of the two channels could properly be considered to be the 'main channel' (ICJ 1999).

In order to achieve this, the ICJ considered both the dimensions (depth and width) of the two channels and the relative volumes of water flowing within these two channels, as well as the bed profile configuration and the navigability of each channel. The Court considered submissions made by both parties, as well as information obtained from *in situ* surveys during different periods of seasonal flow. Against the background of the object and purpose of the Berlin Treaty, as well as the subsequent practices of the parties to the Treaty, the Court found that neither of the two countries had reached any prior agreement as to the interpretation of the Treaty, nor had they reached agreement regarding the application of its provisions (ICJ 1999).

In reaching its verdict, the Court also considered Namibian claims that local Namibian residents from the Caprivi area had periodically occupied Sedudu/Kasikili Island since the beginning of the twentieth century. The Court considered that this occupation could not be seen to reflect the functional act of a state authority, even though Namibia regarded this 'occupation' as a basis for claims of 'historical occupation' of the island. The Court also found that this so-called 'occupation' of the island by Namibian residents, was undertaken with the full knowledge and acceptance of the Botswana authorities and its predecessors (ICJ 1999).

The final Court ruling was given in favour of Botswana, with the ICJ indicating that the northern channel around Sedudu/Kasikili Island would henceforth be considered as the 'main' channel of the Chobe River. Accordingly, the formal boundary between Namibia and Botswana would henceforth be located in the northern channel of the Chobe River. Botswana and Namibia have agreed that craft from both countries will be allowed unimpeded navigation in both the northern and southern channels around Sedudu/Kasikili Island (ICJ 1999).

The ICJ ruling is very welcome after a relatively long period of protracted debate and intermittent threats of military action, including formal military occupation of the island by the Botswana Defence Force. The Sedudu/Kasikili Island dispute provides an excellent example of a water-based conflict situation that reached a high level of tension, preventing resolution of the problem by the disputing parties, thus requiring an



independent third party (the ICJ) to be called in to arbitrate the dispute. However, it is important for us to note that, like all other rivers, the Chobe River is a dynamic system where the shape and position of its channels will change over time. Natural processes of sediment deposition and erosion will continue to occur, each depending on the flow patterns in the river. Consequently, it is inevitable that the Chobe River will continue to gradually alter the position and configuration of its main channel in the future. Future changes in the position or shape of the main channel could possibly become a source of future dispute between the two countries.

In this example, the primary dispute between the two countries is one of territorial sovereignty, rather than one of access to water or water-dependent resources. However, water is the physical driving force for changes to the aquatic system that forms the territorial boundary. Unless these two countries jointly develop a formal protocol to address this type of situation, similar cases of 'water-related conflict' are expected to occur in future.

There are still five islands in the Caprivi sector whose territorial sovereignty or 'ownership' is contested; three of these islands are in the Chobe River and two are in the Zambezi River (Figure 3). Without wishing to pre-empt any options that may be considered by the countries concerned, we can anticipate that the legal principles upon which any decision will be based are likely to follow the same principles and logic used to resolve the dispute over Sedudu/Kasikili Island.

Disputed territorial and other ancillary (water-related) rights along the lower Orange River (Namibia and South Africa)

The dispute between Namibia and South Africa over the lower reaches of the Orange River (Figure 5) has many similar elements to the Sedudu/Kasikili Island dispute between Namibia and Botswana. Once again, the primary issue is territorial sovereignty linked to the precise position of an international boundary, together with the historical 'trajectory' that the boundary dispute has followed.

However, there are several additional problems that centre on access to, or ownership of, resources derived from the Orange River. These are further confounded by the fact that the position of the marine offshore territorial boundary between Namibia and South Africa is dependent on the precise position of the land-based boundary at the river mouth. The Orange River undergoes regular flow cycles, where the river mouth first tends to silt up during low flows, and is then later opened when floods arrive. In the process,

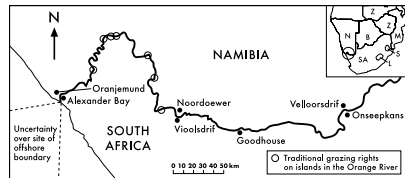


Figure 5. Sketch map showing the lower reaches of the Orange River that forms Namibia's southern boundary with South Africa, together with the locations of towns and the Atlantic Ocean coastline. Circles indicate the approximate positions of islands in the Orange River, where grazing rights are now contested. The scale of uncertainty around the precise location of the offshore (marine) boundary between Namibia and South Africa is also shown

the precise location of the river mouth can change by up to two kilometres in response to the timing or size of both large and small flood events. Clearly, such a situation can pose enormous problems for officials tasked with demarcating national boundaries. Deciding the positions of prospecting leases for the exploitation of offshore minerals such as oil, gas and diamonds, can also be hampered, as well as delimiting the catch areas of commercial fisheries.

Additional complicating factors are provided by the presence of important mineral deposits in the present bed of the river and in alluvial terraces marking earlier positions of the river bed, together with the traditional use of islands in the river as grazing grounds for stock owned by local residents. Since the discovery of diamonds at around the beginning of the twentieth century, large quantities of diamonds have been recovered from mining leases located on alluvial deposits in the present bed of the Orange River, as well as on gravel terraces marking former positions of the riverbed. This situation was considered to be 'manageable' because the boundary between Namibia and South Africa had been set by earlier colonial administrations as the high water mark on the north (Namibian) bank of the Orange River. In effect,



therefore, the entire Orange River formed part of the territory of South Africa.

The lower reaches of the Orange River flow through a region that is predominantly desert or semi-desert, and form a 535 km long linear oasis that also demarcates the boundary between Namibia and South Africa (Figure 5). Very few residents occupy the extremely arid country to the north and south of the Orange River. Those who do manage to live in this relatively inhospitable area are predominantly nomadic pastoralists, who rely heavily on seasonal grazing areas along the riverbanks and on islands located in the river. Expanding mining activities and the development of associated infrastructure in this region have led to dramatic changes in the lifestyles of local residents.

The original colonial powers (Germany and Great Britain) were never able to reach agreement as to the precise location of the territorial boundary between the two countries (Hangula 1993). Great Britain insisted that the boundary should be formed by the 'high water level of the north (Namibian) bank', whilst Germany (naturally) preferred the boundary to be located 'in the centre of the main river channel'. This boundary dispute persisted for decades, despite repeated attempts by both of the original colonial powers and, by the South African Government since 1910, to reach an agreement (Hangula 1993). Local residents on both sides of the river continued to exercise traditional grazing rights and South African miners continued to exploit alluvial diamond deposits in the riverbed. It was only in 1991, shortly after Namibian independence, that South Africa agreed to alter the position of the boundary from the north bank to the centre of the main river channel, to a position overlying the *Thalweg*. Both governments appointed teams of specialists to define the precise position of the boundary line along the river bed (Hangula 1993).

This decision follows the general principles of International Law which govern the position of international boundaries located along river systems. Furthermore, the decision has allowed Namibia to claim its fair share of the resources (water, minerals, land) provided by, or linked to, the Orange River. However, the decision has also resulted in considerable confusion as to the validity of existing alluvial mining leases in the bed of the river, and has denied some local (South African) residents the right to graze their livestock on islands that now form part of Namibian territory. These facets of the dispute will need to be resolved fairly and speedily if the problem is not to become a lingering administrative nightmare. Similarly, it will be essential for the governments of both countries to reach consensus as to the geographical position of the Orange River mouth, so that a mutually acceptable position for

the offshore marine boundary can be demarcated. The rational exploitation of important offshore deposits of oil, gas and diamonds, as well as the important pelagic and benthic fishing grounds, will depend on the successful outcome of these negotiations.

In this example, the primary dispute between the two countries is again one of territorial sovereignty, though it also includes aspects that concern access to water, or resources located within or next to a waterway. Yet again, water is a physical driving force for change (particularly regarding the mouth of the Orange River). This change influences the position of the territorial boundary. Both countries must now jointly develop a formal protocol to address this specific situation, so as to prevent prolonging the present uncertainties.

Are water conflicts inevitable ?

In the preceding discussion we have seen the degree of influence exerted by current geographical and geo-political realities – together with prevailing social and economic trends – in providing conditions that promote water-based conflicts in southern Africa. We have also seen how natural patterns of change in aquatic systems can lead to conflict, or can accentuate existing conflict situations. We should now seek answers to the question: 'Are all or some of these potential water conflicts inevitable?'

Given the evidence presented earlier, the simplest direct answer is an unequivocal 'Yes'. However, this answer depends on several factors which will be expanded on in the next section of this paper. Simply put, and without being pessimistic, water conflicts are inevitable if we continue to do nothing to prevent them from occurring. Whilst this response may appear to be rather simplistic, one must remember the fact that the finite fresh water resources available in the sub-continent cannot continue indefinitely to support the escalating demands that we make of them. Competition for the available water supplies will continue to increase to a point where radical interventions are required. In addition, water conflicts linked to the positions of international borders will still occur in those places where the countries concerned have not yet reached joint agreements.

Whilst water is very unlikely to be the direct *casus belli* of a war in southern Africa (van Wyk 1998; Turton 2000), it is very likely that water will become a contributing factor to regional instability, as demands for water



approach the limits of the available supplies. Inevitably, water conflicts will first occur in those areas where water is in shortest supply; these will then tend to spread further afield, as more and more of the scarce water resources are used directly or transferred further afield to meet rising demands.

In all likelihood, any adverse effects associated with possible global climate changes, such as decreased rainfalls or increased temperatures, will exacerbate the situation. In this context, it is important to understand that these remarks refer principally to the 'minor', smaller-scale forms of water-based conflicts, where few individuals or relatively small spatial areas are involved. In the case of more 'extreme' forms of conflict – such as interpersonal disputes resulting in the death of individuals, or where military intervention escalates to the point where war is declared between two competing countries – they are unlikely to occur as a direct or indirect result of water. If war was declared in such circumstances, water would probably remain a contributing or subsidiary issue, rather than the main cause or 'driving force' of the war. Nevertheless, each country in southern Africa remains concerned about issues of territorial sovereignty and resource security. This is reflected in the recent return of water to state control, as opposed to ownership by individuals (Asmal 1998; Republic of South Africa 1998). However, whilst this trend may reflect the growing strength of individual national governments, the same cannot be said for regional institutional structures. For example, the SADC was unable to resolve the Sedudu/Kasikili Island dispute between Namibia and Botswana, despite specific provisions for dispute resolution contained within the SADC Protocol on Shared River Systems (SADC 1995; van Wyk 1998).

In the light of these observations, we now need to consider some of the potential preventive approaches available to us, so we can properly formulate and implement suitable policies, strategies and actions to avoid the prospect of water-based conflicts, and their consequences, in southern Africa.

Possible preventive measures

We are all aware of the old adage that 'prevention is better than cure'. This common sense statement provides us with a perfect outline of the goals and objectives that should direct our actions when we seek to deal with the complex issues of water-related conflicts. However, despite its apparent simplicity, it seems that this ideal often eludes us in practice. A large part of

the reason for this lies in the diverse, and often contradictory, ways in which we attach value to water, and the ways in which we strive to derive both individual and collective benefit from our use of the resource. Too often our objectives have a short-term focus aimed at meeting objectives and solving problems today, rather than a longer-term goal focussing on the sustainable and equitable use of our water resources.

Clearly, if our demands for water outstrip our ability to manage water as a focus for cooperation and the achievement of common goals, we run the risk of entering an ever-tightening spiral of poverty — the social, economic and environmental consequences of which will threaten the fabric of society. In contrast, if we are able to attain an equitable balance between the demands we make for the services and goods that we derive from the use of water, and our ability to exercise our custodianship of water, we will be able to achieve a far more harmonious and sustainable situation. The second of the two visions outlined above, is clearly one that should have a far greater appeal to wider society. However, in order for us to achieve this, all our policies and actions concerning water must be guided by the values of sustainability, equity, mutual cooperation, and the attainment of optimal benefit for society (Asmal 1998).

Within this philosophical framework based on the concepts of sustainability, we can now briefly outline four of the most appropriate approaches for preventing water conflicts and, in those situations where conflicts have already occurred, approaches that can help to resolve these conflicts before they escalate to unmanageable levels.

Water resource management on a whole-catchment basis

Modern approaches to water resource management recognise that water resources can only be managed effectively and efficiently when the entire river basin or catchment forms the basic management unit. Furthermore, because surface water and ground water are inextricably interlinked, they must be considered and managed together as a single resource. These principles form the foundation for integrated catchment management (ICM), and are rapidly gaining wider acceptance throughout the world (Ashton & MacKay 1996).

Most southern African countries have recognised the fundamental importance of catchment management, and have already drawn up policies, implemented the required legislation, and initiated a series of actions designed to achieve this objective (Asmal 1998). Whilst it will still take some time for the full benefits of these activities to be realised, a promising start



has been made. The cases of water resource management in river basins which are shared by more than one country, and the issue of water transfers between river basins within the same country or between neighbouring countries, still require additional attention.

The thorny issue of river basins shared by more than one country has been central to many water-related conflicts which have occurred in southern Africa. Part of the problem relates to the existence of different political, economic, and social structures within each country; another component of the problem relates to differences in the legal and legislative systems of different countries. Importantly, a critical aspect of the problem also relates to the relative economic and political 'strengths' of each state. Nevertheless, it is inevitable that all countries which share a single river basin will have to jointly decide on appropriate management goals, as well as an equitable basis for allocating water to meet the needs of each riparian state. Clearly, it will then be the responsibility of the individual riparian states to communicate the conditions of such an agreement to all their citizens and water resource managers. If this can be achieved at an early stage, then the joint agreement will provide considerable assistance in preventing or avoiding water-related conflicts. Failure to achieve this will prolong any existing conflicts, and will create conditions that could favour or promote the water 'rights' of one country over another.

In its ideal form, catchment management provides both a guiding philosophy and a practical framework for action which, in turn, promotes cooperative decision-making and responsible management of water resources. A basic tenet of catchment management is the principle that all water users within a catchment must take responsibility for determining the short-, medium- and long-term objectives of water resource management, whilst ensuring that water allocation is both equitable and fair (Asmal 1998).

Consequently, water transfers and linkages within a catchment and, where necessary, between neighbouring catchments, are guided by the decisions made by all stakeholders (Basson et al 1997). Clearly, this represents an ideal that may not yet be attainable because of a variety of problems. Perhaps the most important of these are: ineffective or non-existent water legislation, inappropriate institutional structures, a lack of suitable information and thus an absence of empowerment amongst stakeholders, and finally, a lack of understanding of available participatory approaches for obtaining consensus and resolving disputes. Each of these aspects hold opportunities that can help us prevent or resolve water conflicts. They are described briefly below.

Legal and legislative principles

Each southern African country has legislative frameworks and laws which guide and control the development and management of society. Many of these policies and laws have been inherited from previous colonial administrations, where a form of centralised command and control of key resources (such as water) was of great importance. For the purposes of our discussion, the most important items of legislation in each country are the laws relating to the protection, development, control, use, and management of water resources. Many of these southern African 'water laws' have been modified from their original (colonial) form and now share several common features. Particularly important are those aspects of these laws that recognise water as a common good, denote each state as having a custodial responsibility for water, and replace previous situations of water 'ownership' by individuals with a common 'right to the fair and equitable use of water'.

Whilst some of the principles contained within these legal systems represent a dramatic departure from previous water law, they now provide a far more equitable basis for water allocation and management (e.g. Asmal 1998; Republic of South Africa 1998). Therefore, when the laws are applied effectively by designated officials and agents of the respective governments, the national water legislation within each southern African country provides individuals and communities with an appropriate legal framework within which to seek suitable options to prevent water-related conflicts and disputes.

However, at the international level, matters are somewhat less straightforward. International water law is organised around a core, comprising four main doctrines that attempt to define and delineate the rights of river basin states to use water from a shared river system (Pallett 1997; van Wyk 1998). These principles and laws have evolved at different times and reflect responses to the suites of different claims which have been received from riparian states. Each of the four doctrines reflect different historical and judicial approaches to solving the problems experienced by riparian states (ILA 1966; ILC 1994; van Wyk 1998), and also reflect an important change in emphasis from the rights to ownership of water, to one which strives to ensure that the interests of all parties are met equitably. The four main doctrines of international water law are briefly outlined below.

- *The doctrine of absolute territorial sovereignty*

Also known as the Harmon Doctrine, this consideration maintains that the portion of the water which flows through the sovereign territory of a riparian state is subject to the exclusive sovereignty of that riparian



state. Application of this doctrine within a shared river basin empowers an 'upstream' country to use or modify all of the river flows that originate in, or flow through, its territory, without consideration of the needs or rights of 'downstream' countries. Clearly, the principles of this doctrine must be regarded as being inappropriate, and they certainly do not reflect the realities of international law or whole catchment management.

- *The doctrine of absolute territorial integrity*

The principles of this doctrine instruct riparian states not to interfere with any portion of the natural flow of a river which passes through their territory, if such interference is likely to impact adversely on the flows of water to a 'downstream' country. In addition, 'upstream' countries are not to interfere with any prior use that the 'downstream' country may have made of such flows. This doctrine has particular relevance to those cases where a 'downstream' country relies heavily on flows originating in an 'upstream' country. A classical example of the application of this doctrine is reflected in the demands that Egypt makes of Ethiopia: that Ethiopia should not undertake any water development or use that would reduce flows in the lower Nile River (Smith & Al-Rawahy 1990). If applied, the principles of this doctrine confer an enormous advantage on 'downstream' countries which have already 'developed' their water use. However, the same application will simultaneously cripple 'upstream' developments.

- *The doctrine of limited territorial sovereignty*

The principles of this doctrine assert that the water of an international river cannot be exclusively appropriated by one riparian country; rather, all riparian states must be allowed a reasonable and equitable level of utilisation of an international river. In practice, the application of these principles are considered to be contentious (van Wyk 1998), since the principles of 'equitable apportionment' have been vaguely formulated and no guidance is given as to determining the hierarchy of water users in a shared river.

- *The doctrine of community interest*

The principles of this doctrine attempt to remedy drawbacks that have occurred within the doctrine of limited territorial sovereignty. This is done through expanding the issue of community interest and by

improving the definition of equitable utilisation. This doctrine represents a more balanced approach which seeks to contribute to the joint development of riparian countries within a shared basin. This is achieved through equitable division and sharing of benefits. At the same time the management of water within that basin is also improved.

An unfortunate characteristic of international water law is that it lacks the compulsory jurisdiction and enforcement that normally characterise domestic legal systems. Rather, it relies on its acceptance by the affected states, as well as the world community. The non-navigational use of river systems (e.g. for domestic and industrial consumption), has focused considerable attention on the need for cooperative sharing of water resources throughout the SADC countries (Pallett 1997). This was further emphasised during recent meetings of the SADC Ministers (Heyns 1995).

The basis of modern international water law has developed over many decades, and the most notable achievement was the establishment of the Helsinki Rules on the uses of international rivers (ILA 1996). The principles embodied in these Rules have been expanded into a set of 33 Draft Articles, which assist each basin state in negotiating a reasonable and equitable share of the available water resources (ILC 1994). The Helsinki Rules concentrate on the water rights and obligations of states located within a shared river basin, and contain important principles apply:

- Each basin state, within its own territory, is entitled to a reasonable and equitable share in the beneficial uses of water within an international drainage basin;
- The interests of each basin state should be satisfied, without causing substantial injury to another basin state;
- One basin state may not deny another state the reasonable use of water in an international drainage basin for the purpose of reserving the water for itself; and
- An existing reasonable use may also continue, unless it can be shown that it needs to be changed or stopped to accommodate a more beneficial and urgent use.

The Draft Articles drawn up by the International Law Commission promote the concepts of prior consultation between basin states, and the mutual sharing of data and information in reaching consensus (ILC 1994). An interesting aspect of these Draft Articles is that, in the event of two states



coming into conflict, the obligation not to cause harm to another state prevails over the concept of equitable use, which is stated in the Helsinki Rules. This is based on the argument that the use of water by one state cannot be equitable if it causes harm to another state (ILC 1994).

The Draft Articles further advocate that all states sharing an international river basin should jointly form a river basin management authority or organisation which can equally represent the interests of each state (ILC 1994). This approach has been adopted with great success elsewhere in southern Africa (Pallett 1997), and is the basis for the OKACOM agreement between Angola, Botswana and Namibia (OKACOM 1994).

Development of appropriate institutional structures

At an international level, extensive cooperation exists between southern African states which share international river basins. This has usually taken the form of river basin commissions or Joint Permanent Technical Commissions, where the interests and concerns of each state are presented and debated before decisions are taken. However, whilst these formal commissions and committees are to be welcomed, full regional cooperation and coordination are still inadequate (van Wyk 1998).

In 1995, all but three of the SADC Heads of State signed the SADC Protocol on Shared Watercourse Systems (Heyns 1995). One more country has ratified the protocol, leaving only Mozambique and Zambia. This is an important development, and signifies widespread heightened awareness of the critical importance of water resources to the entire southern African region. The SADC Protocol was followed by a November 1995 meeting of the SADC Ministers responsible for Water Affairs. A new SADC Water Sector was established at the meeting. All of these developments are to be welcomed and it is anticipated that SADC will eventually become a strong regional force in the prevention of water conflicts.

At a national level, catchment management approaches require the formation of institutional structures which can promote the empowerment of participants and allow meaningful participation by all stakeholders. Whilst many of these structures are still in their infancy and have not yet begun to function properly, we can anticipate that they will provide an essential process for defusing conflict situations and preventing water conflicts.

Development of participatory, consensus-seeking approaches

A central component of conflict prevention is a need for the prior development

of suitable participatory processes designed to seek consensus and agreement. In the case of water conflicts, it is important for institutions and countries to have a mutual framework of criteria and agreements to provide the basis for decisions. This also requires widespread agreement on the sharing of information and data, rather than each participant retaining (hoarding) the information it considers to be important (Turton 1999). In turn, this openness will help all participants to understand the sets of rules and constraints within which they need to work, and will also facilitate the joint development of alternative options or solutions to a particular problem or concern. This ability to generate new options is one of the most important keys to successful negotiations (Delli Priscoli 1998).

We are all aware of how important it is for participants in a dispute to reach consensus or agreement wherever possible. However, sometimes this is not possible, since the differences between the parties concerned may remain too far apart to be bridged by a single solution, or a combination of solutions. Whilst this type of situation may be driven by economic or ideological standpoints, rather than differences of opinion over water, the end result is the same: failure to reach joint agreement. In such situations, conflicts can be prevented if an agreed process for independent arbitration to cover this eventuality, has already been selected. Possible solutions in the case of disputes between two or more countries include the International Court of Justice at The Hague, as in the case of the Sedudu/Kasikili Island dispute (ICJ 1999).

Inevitably, individual countries which share the same river basin will have to continue to coexist and use their shared water resources in the future (Ashton & MacKay 1996). It is therefore extremely important for these countries to ensure that suitable institutional structures and administrative processes are in place. This will help them maintain cordial relations with one another, and will also prevent the need to use the rather dissatisfying option of an independent third party or arbitrator to resolve their water conflicts.

Participatory decision-making processes that seek to reach consensus are equally important at the level of individuals and communities. Here, it is also important to ensure that all participants fully understand their roles and responsibilities, and that they are sufficiently empowered to exercise their responsibilities through the provision of information. Ultimately, each person or community has to 'own' and implement the solution that has been derived from their joint deliberations and interactions. This is only possible when each individual also 'owns' the process used to derive these solutions.



Concluding Remarks

In this overview, we have examined some of the factors that cause or promote water conflicts, and we have reviewed a few examples of existing water-related conflicts in southern Africa. Based on the available evidence, we have seen that water conflicts in southern Africa are inevitable, unless we can take appropriate preventive actions. The opinion behind this assertion is fuelled by the continual increase in demands for water, which has a resource base that cannot support indefinitely.

Some of the preventive measures mentioned above have been briefly outlined. These centre primarily on processes of joint decision-making, within suitable institutional and legislative frameworks. It is important to note that the possible options for conflict prevention are generic in nature, but these will have to be customised to make them site-specific, to suit the individual needs of the communities and countries involved.

The issue of the scale of actual or potential conflict is important, as well as the specific circumstances that have given rise to the problem. For example, a river boundary that coincides with, or forms, the international boundary between two countries, has the real potential of becoming a cause of conflict whenever the river changes its position. Similarly, it is clear that 'downstream' countries and communities will always be more vulnerable than 'upstream' countries. In turn, the degree of vulnerability felt by a 'downstream' individual, community or country would be determined by perceptions of the relative economic, social and military strengths of the different parties.

All of the larger-scale southern African examples of water conflict share the characteristic that water may have contributed to the conflict, (for example through the erosive action of a river changing the position of its channel), though it has not been the primary focus for the conflict. Some of the examples also comprise situations where access to other resources (e.g. oil, gas, minerals, grazing land) is compromised by the proximity of these resources to a national boundary whose precise position is disputed. The relatively smaller-scale situations of water-related conflict consist mainly of intra-community and inter-community disputes over access to water, or to services associated with water. These disputes occur usually within a small geographical area and seldom escalate to involve communities from neighbouring countries. Whilst these small-scale conflicts are very real to those involved, and often result in the death of individuals or their livestock, they are not considered to be true water wars in the widely accepted sense of a

military conflict between two or more countries. Their smaller scale makes them more amenable to resolution by peaceful, negotiated means, and the resulting solutions tend to persist because each individual is involved in the resolution process.

We can also conclude that 'true' water wars comprise only those extreme cases where the primary focus is to secure access to water, or where water is the primary offensive weapon. Despite the dire predictions of many authors, the available evidence suggests very strongly that it is highly unlikely that 'true' water wars will ever occur in southern Africa. However, this is no reason for complacency on our part. We all share the responsibility of ensuring that water wars never occur in southern Africa, or elsewhere. We now need to jointly identify those so-called 'hot spots' where water conflicts could arise in future. Then we need to develop joint strategies to defuse these situations. Military confrontation between Namibia and Botswana has already occurred in the case of Sedudu/Kasikili Island; we must ensure that this situation is not repeated.

This responsibility requires each of us to promote the principles of equity and sustainability in all our dealings with water users and water resource managers throughout the southern African region. Similarly, we should seek new ways to influence the relevant water management institutions and authorities to focus their efforts on those longer-term policies, plans and actions which will prevent water conflicts, rather than retaining only a short-term focus and then trying to resolve conflicts after they have occurred. Failure to achieve this is likely to result in an increased number of water-related disputes, with the strong likelihood that their intensity may escalate progressively over time to intolerable levels of conflict between communities and, even worse, between countries.

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Hydropolitical Hotspots in Southern Africa: Will there be a Water War? The Case of the Kunene River

Richard Meissner

'Whiskey is for drinking but water is for fighting over.'

Mark Twain

Introduction

During the 1980s and 1990s, much was written and said about the impending water wars which are expected in semi-arid and arid regions across the globe during the twenty-first century. The hype about this type of conflict has been instilled in the minds of hydropoliticalists, and has been made popular by Boutros Boutros-Ghali's statement that: 'The next war in the Middle East will not be over politics but over water'. This led to an escalation of research projects regarding conflict over water resources in the Middle East. Thomas Naff and Ruth Matson (1984), and John Cooley (1984) did the first pioneering studies on the subject of water as a source of conflict and cooperation. Cooley (1984), a news correspondent by profession, looked specifically at the connection between water and conflict. Subsequent studies and articles



followed. These studies focused explicitly on the Middle East as a semi-arid and arid region, and one of political importance to the international community.

The Middle East was not the only region being scrutinised by academics and water resource planners as a future water war hotspot. Southern Africa also came under the magnifying glass as a region where potential water wars could be a reality in the not so distant future. At a 1998 Johannesburg conference on southern Africa in the next millennium, Aziz Pahad, the South African Deputy Minister of Foreign Affairs, identified water security in southern Africa as one of the main issues and concerns in the region (Pahad 1998:42). Pahad (1998:43) warned of water scarcities, and the likelihood of conflict as a result of it. The phrase 'water war' is on everybody's lips, it seems. However, what is meant by a water war? Is it a violent conflict over scarce water resources, or is it a situation where water is used as a weapon of war? Two variables are at work here: water as a direct cause of conflict, and water being used as a weapon during a conflict. This ambiguity has the potential to cause confusion, and the term 'water war' should be clearly defined if we want to adequately address the issue of water wars in southern Africa. A water war is a violent conflict which is directly caused by the incompatible sharing and/or allocation of water resources between states or non-state entities, at both the national and international level.

This paper will look at the likelihood of water wars occurring in southern Africa by analysing the hydropolitics of the Kunene River. The river is shared by Namibia and Angola, and our analysis will fall within the context of international relations between these two countries. If one wants to test the hypothesis of a water war between states in a semi-arid region, one should study the interaction of these actors with regard to shared water resources. The paper will also present some solutions, should a water conflict arise in the basin. This paper consists of three parts. The first section deals with political interaction between actors in an international river basin. In the second part, the physical characteristics of the Kunene River will be outlined. The final part looks at the dynamics of water politics in the Kunene River basin. Water or hydropolitics is defined as the systematic examination of the interaction between states, non-state actors and individuals – within the national and international domain – with regard to the authoritative allocation and/or use of international and national water resources such as rivers, aquifers, lakes, glaciers and wetlands.

International political interaction

In international politics, three patterns of interaction can be identified between actors. Firstly, politics may be characterised by competitive interactions. In such a situation, the achievement of goals by one actor is incompatible with the attainment of goals by other actors. The action that can arise from this may vary from a breakdown in communication to outright military confrontation. Secondly, politics may be a reflection of cooperative contact, in which goal achievement is facilitated or promoted by the complementary actions of different political actors. This is usually reflected in collaborative agreements between states and non-state entities. Finally, and most realistically, politics may follow a mix of both cooperative and competitive interactions, in which actors pursue multiple goals, some of which are incompatible and thus give rise to contention, while others are compatible and are sought through complementary endeavours (Puchala 1971:5). In a similar vein, Soroos (1986:6) contends that 'world politics is a rich and perplexing mixture of trends and counter-trends'. What this means is that, for any given period of time, conflict and military confrontation can occur alongside cooperation and accommodation (Soroos 1986:6). This is true not only for world politics, but also for the interaction between states in a river basin. The three patterns of interaction that occur within a riparian context – with the third model being the most important – will always be discernible within the dynamics of any river basin.

By analysing the dynamics of the hydropolitical game in a river basin, one is able to measure, over a period of time, the nature and degree of conflict and cooperation within a riparian context. The nature and degree of conflict and cooperation over water varies constantly and is not the same at any given point in time. The sharing of the Orange River by South Africa and Lesotho, for example, caused a great deal of conflict before 1986. The degree of cooperation today is greater than before and may increase further in the immediate future (Meissner 1999). However, there is a flip side to the coin. The overall international relations between states sharing the waters of a river basin, often offer an indication of the nature and degree of interaction within the riparian context itself. If state A does not maintain a very good relationship with state B, then it generally follows that their relationship will be found wanting when it comes to the sharing of water resources. Therefore, it follows that in analysing the hydropolitics of a given river – in this case the Kunene River – one should also look at the nature of the relationship between

bordering states with regard to shared water resources.

As noted above, there are three types of interaction between states in the international political arena. There are also three schools of thought on the issue of water wars: there are those who say that water will one day lead to violent conflict; there are those who say that water will, only on occasion, lead to conflict between states; and there are those who say that water could lead to greater cooperation within and between states. Those who argue that a water war will, in all likelihood occur in semi-arid and arid regions, base their statements on the assumption that water scarcities, the improvement of living standards coupled with population growth, and global climatic changes will contribute to tensions and violent conflict between states (Gleick 1995:84). This is the main realist argument by observers writing on the subject of water wars. However, this is not universally accepted. It is easy to exaggerate the importance of natural resources as an object of conflict. A dispute over natural resources seems so frequent, that it can become tempting to regard the competitive demand for water as the single most important cause of conflict and war. This seems to be the case with water resources throughout the world. A dispute or military conflict which involves resources is not necessarily a struggle over resources (Brock 1991:409-410). Water resource depletion is seldom, if ever, the only cause of major conflict within or among states (Holst 1989:125). Interstate conflicts can be caused by a great variety of factors, including ethnic antagonism, ideology, border disputes, expansionist aspirations by states, religion and so on. Therefore, water can be part of the conflict, but not the overriding motive for starting a war. Further, there exists the possibility of cooperation over water as a means to strengthen the overall international relations between nations sharing this resource (Brock 1991:413) Gleick is in concert with this when he says that not all water disputes will lead to war, 'indeed most lead to negotiations, discussions, and non-violent solutions'. Analysing the water politics of the Kunene River will show that water has never led to violent conflict, and the likelihood that it will, will never occur. An analysis of the hydropolitics will shed some light on the kind of interaction that has historically occurred in the Kunene basin, and which continues to takes place.

Before tackling the dynamics of hydropolitics in the Kunene River basin, however, it is important that we first look at the physical characteristics of the river basin, as well as the countries sharing it. This is important because many intervening variables – like the geographic, climatological and hydrological characteristics of a riparian system and river basin – can

themselves have an influence on water resource scarcity, producing either an acute conflict or a cooperative relationship (Elhance 1999:6). The physical characteristics of a river basin and the countries sharing it, also explain the relationship between *Homo sapiens* and the way they utilise their environment. Every political community occupies a geographical area which has a unique combination of location, size, shape, climate and natural resources. These variables influence the behaviour of states. Human activity is affected by the uneven distribution of human and non-human resources in the system (Dougherty & Pfalzgraff 1990:67). Consequently, it is necessary to briefly study the physical characteristics of the Kunene River basin to see why the actors in the basin behave in a certain way.

Physical characteristics of the Kunene River Basin

The Kunene River rises in the central highlands of Angola near Nova Lisboa, where the annual rainfall is in the region of 1,500 millimetres (mm). The river is 1,050 km long and has a catchment area of 110,000 km² with an annual discharge of about 15 km³/yr. The last 340 km of the Kunene make up the border between Namibia and Angola. The area where the Kunene has its source is very mountainous. After it crosses the border between Angola and Namibia the flow accelerates, and for 30 km it runs through ravines, and over rapids and waterfalls. It is estimated, from an engineering perspective, that the Kunene River has a surplus of water (Conley 1995:7). These physical characteristics give rise to the Kunene River's hydroelectric potential (Best & de Blij 1977:327).

Namibia, the downstream riparian in the Kunene River basin, is the driest country in Africa, south of the Sahara. The mean annual rainfall is approximately 284 mm (Devereux & Naeraa 1996:427-428) and the total surface water reserve is about 4.1 billion cubic metres per year (bcm/yr). Of the total rainfall, 83% (between 2,600 mm and 3,700 mm) evaporates immediately after it had fallen, while the other 17% gets carried away as surface run-off. Of this remaining 17%, only 1% percolates into the ground to replenish groundwater and 14% is lost to evapotranspiration. Only 2% remains to be stored (Internet: Food and Agriculture Organisation 1997b). The only perennial rivers are also international rivers, on which Namibia is very dependent.

On the other hand, Angola, with its mostly tropical climate, has a more

stable rainfall pattern than Namibia. Rainfall decreases from north to south, and also as one moves further away from the coastal areas. Angola is therefore more water-rich than Namibia. The total water source is about 158 bcm/y. However, Angola is only using 0.3% (50 m³ per capita per year) of its available water resources. It is the lowest abstraction rate in the SADC region (Du Toit & Jacobs 1995:30-31). The country's 26-year-long civil war is solely to blame for this. Having expended all of its resources on the civil war, the government does not have the financial capabilities to develop the country's water sector. Also, much of the water infrastructure has been damaged during the conflict and repairs cannot be made. This is the milieu which forms the background to the hydropolitical game in the Kunene River basin.

The dynamics of water politics in the Kunene River Basin

Owing to the fact that Namibia is not very richly endowed with water resources, the states that had control over Namibia in the past – as well as the present legitimate government – came up with a number of coping strategies which followed adaptive behaviour. Adaptive behaviour is defined as a manifest response to water scarcity and can take any one of a number of forms, perhaps the best example being the undertaking of large water projects to alleviate water scarcity. A coping strategy can be defined as the output of the decision-making elite, usually in the form of some coherent policy or set of strategies such as water demand management, which seeks to manage the water scarcity in some form or another (Turton & Ohlsson 1999:3). Adaptive behaviour and coping strategies were part of the dynamics of water politics in the Kunene River during the previous century and continue to remain a part of the scenario, usually taking the form of large-scale water projects to step up the supply of water and electricity in different areas of Namibia. For instance, at around the turn of the nineteenth century, the German colonists, Brincker and Gessert, first suggested damming the Kunene River to supply water to *Deutsch SüdwestAfrika*. Later, when South Africa held sway over Namibia, the development of the Kunene River was undertaken in order to facilitate the overall development of Namibia (Christie 1976:31). Dirk Mudge, South African MEC and acting administrator of Namibia in 1976, held the following view regarding the development of the Kunene River and what it meant for Namibia: 'The Kunene scheme is very important, for one just cannot develop these territories without water and electricity. ... We need

a strong economy to provide jobs in the southern sector for people from the native homelands. One cannot have a strong economy without infrastructure' (Christie 1976:40, personal interview with D. Mudge).

Owing to the fact that the Kunene River is an international river, it was necessary for the previous entities which controlled Namibia and Angola – as well as for those who do so at present – to come up with some agreement regarding the sharing of the river's water. International agreements and cooperation regarding the waters of the Kunene River formed part of the coping strategies envisaged by Namibia and Angola. However, it was not always plain sailing to develop the Kunene River, because international political factors had (and still have) a profound impact on these projected plans.

From cooperation to conflict: 1926-1988

Cooperation regarding the joint management of the Kunene River can be traced as far back as 1926, when the Union of South Africa and the Republic of Portugal signed an agreement to regulate the use of the Kunene River waters for the purposes of generating power, inundation and irrigation in the mandated territory of South West Africa (SWA) (Agreement 1990a; Christie 1976:31). Ernest Oppenheimer envisaged that one of his companies would build a dam on the Kunene River to supply the mining industry in SWA/Namibia. At that time, Jan Smuts tried to redraw the Angolan border to include the dam site at Calaqueu within the territory of South Africa, but he did not succeed. No substantial infrastructural developments were undertaken after the 1926 agreement. However, the Kunene Water Commission undertook a survey in 1927 to investigate the possibility of damming the Kunene and diverting its water into Owamboland (Wellington 1938:26). The reason why no development took place at that time, was that SWA and Angola were in no great need of water. The ground was, however, prepared for future cooperation.

In 1962, the South Africa government established the Odendaal Commission to investigate a report concerning the socio-economic potential of SWA and the measures to be taken to stimulate the rate of development in that country. The final report of the commission was published in 1964. One of the commission's conclusions was that the waters of the Kunene River should be utilised for the generation of electric power. This kind of development could provide a substantial economic contribution to the accelerated



development of SWA. A utility, the SWA Water and Electric Corporation (SWAWEK), was set up to develop the power and water potential of the Kunene River (Olivier 1977:125).

In the same year, a second agreement was reached between South Africa and Portugal regarding rivers of mutual interest to both Angola and SWA — the agreement included the involvement of the Kunene River scheme. In 1969, a third agreement was reached between South Africa and Portugal regarding the construction of supply-side management projects on the Kunene River. This development included the following: a dam at Gové in Angola to regulate the flow of the Kunene River; a dam at Calueque (upstream from the Ruacana Falls), for further regulation of the river in conjunction with the requirements of the power station to be built at Ruacana; a hydro-electric power station at Ruacana, with a capacity to generate 240 MW of electricity; and a pumping station at Calueque for irrigation purposes in Owamboland. A fourth dam, at Matala in Angola, was built outside the agreement with the view to generating 40 MW of electricity. In other words, four dams are at present in existence on the Kunene River (Conley 1995:14). A Permanent Joint Technical Commission (PJTC), which is still functioning today, was established within the agreement to oversee the implementation of the different projects along the river (Olivier 1977:128; Best & de Blij 1977:380).

After the infrastructural projects neared completion, it was realised that the Kunene River had further untapped hydro-electric potential because of several cataracts and waterfalls along its course. After the completion of the Gové and Calueque Dams, the Kunene River was more easily regulated, and it was therefore technically viable to continue with the development of the power potential of the river downstream from the Ruacana hydro-power plant. In the late 1970s, SWAWEK estimated the future potential of the river to be 1,560 MW of electricity, which could be generated at eight sites along the river (Olivier 1977:128). This forms the backdrop to current developmental plans for another hydro-electric power station at the site of the Eupa waterfall.

Immediately after Angola gained independence on 11 November 1975, a civil war broke out with the participation of both internal and external forces. The war is still raging today (McGowan 1999:233) between the government of Angola and UNITA (the National Union for the Total Independence of Angola). This has had a profound impact on the dynamics of water politics in the Kunene River. Not only was the fighting concentrated in

the southern part of Angola, and in particular in Angola's Cunene province, but the Ruacana hydro-power complex was also seen as an important strategic asset by the warring parties. This was highlighted in 1975, when the civil war was still in its early stages.

South Africa, under Prime Minister John Vorster, was very reluctant at first to become involved in the Angolan¹ civil war. The reason for this, was that South Africa did not want to offend Portugal and international opinion by interfering directly in what was still a Portuguese affair (Barber & Barratt 1990:191). However, after Cuba became engaged in the war on the side of the Angolan government, South Africa got very alarmed. According to Barber & Barratt (1990:189), the Cuban factor had a critical impact on South Africa's decision to get involved in Angola. Throughout the conflict, the Cuban issue was central to South Africa's policy on both Angola and Namibia. South Africa's first intervention in the Angolan conflict was in August 1975, when the South African Army went into Angola to protect the joint Kunene River project at Calueque. Clashes between the MPLA (Popular Movement for the Liberation of Angola) and UNITA, and harassment of workers at the dam site by the MPLA and UNITA, drew South African troops into Angola to occupy and defend the dam² (Barber & Barratt 1990:191; Christie 1976:31). The harassment of workers led to a halt of work on the Calueque Dam and gave rise to the possibility that water to Owamboland would be cut (Steenkamp 1990:37). The action by the South African Army at that time, highlights the strategic importance of the Ruacana-Calueque scheme for SWA/Namibia, as well as South Africa's hold on the territory. It should be made clear that South Africa intervened in the Angolan conflict not only in order to take possession of Calueque and to defend the water resources of SWA/Namibia. The reasons that South Africa initially intervened in Angola had to do with South Africa's own security concerns. Three aspects had an impact on this concern: Soviet and Cuban involvement, the threat to Namibia, and the threat also to the Kunene River project. The underlying motive, according to Barber and Barratt (1990:194), was to ensure a non-hostile, cooperative Angola, without Soviet influence, which would not threaten Pretoria's dominance in southern Africa, particularly in Namibia. The August 1975 Calueque incident was possibly the catalyst for South Africa's involvement in Angola, because it gave South Africa a foothold in that country. However, it certainly was not a water war. Other countries also became involved in the Angolan conflict at that time: the Soviet Union, Cuba, the United States, Zambia and Zaire. The Angolan conflict was therefore a classic example of a Cold War proxy military

conflict, fought along the ideological lines of the East-West divide, with the Kunene playing a small role. In addition, a number of African leaders – who also feared communist expansion – supported and appealed to South Africa to get involved in Angola. They included Kenneth Kaunda, Mobutu Sese-Seko, Houphouët-Boigny, Julius Nyerere and Leopold Senghor (Barber & Barratt 1990:188, 191-192). No action took place at the Calueque Dam for the remainder of the war, except in 1988. However, it was always a source of friction (Steenkamp 1990:42). Be that as it may, the outbreak of war in Angola had a very negative effect on the cooperative endeavours between South Africa and Angola with regard to the Kunene River project.

By 1979, SWA/Namibia considered extending its electricity supply-lines to South Africa. The reason for this, was that the Ruacana hydro-electricity scheme was not running at full capacity because of the war raging in Angola. The direct cause was that the South African and Angolan governments could not agree on the operation of the project, and work on the project was suspended. Angola refused to close the sluice gates of the Ruacana Dam and also refused to complete the work on the Calueque Dam. As a result, the powerplant at Ruacana could only run at 120-160MW capacity (*Financial Mail* 24 August 1979:739). The power grid between South Africa and Namibia was completed in the early 1980s, after Ruacana proved incapable of producing electricity at full capacity (*The Cape Times* 22 February 1980:1). This showed how dependent SWA/Namibia was on South Africa for electricity, as well as the importance of the Kunene River project to the country at that time. As the 1980s proceeded, it was still not possible to tap the full potential of Ruacana and Calueque because of the antagonistic relationship between South Africa and Angola. The same thing happened with the Cabora Bassa hydro-electric scheme in Mozambique after the civil war broke out there (*Business Day* 23 March 1987:6). It is obvious that the Angolan government used the Ruacana and Calueque Dams as a lever to strengthen their position in the war against South Africa. Not completing the project meant that water to Owamboland, and electricity to the rest of SWA/Namibia, could not be delivered. This made South African operations in the war slightly difficult. However, because South Africa extended its power grid northwards into SWA/Namibia, it had a balancing effect on Angola's leverage.

The strategic importance of the Ruacana-Calueque scheme was again emphasised in June 1988, when Cuban and Angolan forces launched an attack on the Calueque Dam, first by land and then by air. During the attack considerable damage was inflicted on the dam wall and the power supply to

the dam was cut. The water pipeline to Owamboland was also destroyed. This was at a time when Owamboland was suffering a severe drought, and negotiations between South Africa, Cuba and Angola were held at different venues in London, Brazzaville, Cairo, Geneva and New York (*Die Burger* 29 June 1988:1; Barber & Barratt 1990:342), in an attempt to end the conflict.

During the Brazzaville Round of talks, South Africa held negotiations with the Angolan delegation regarding the status of the Kunene River scheme. South Africa pointed out the importance of the project to drought-stricken Owamboland. The Angolan side reacted positively to this notion, and undertook not to cut water and power to Owamboland (*Die Burger* 29 June 1988:1). However, the attack took place after Angola's assurance that the water and power would not be cut. The explanation for this could be the Cuban factor. The Cubans probably wanted to inflict as much damage as possible to the South African forces and convinced Angola to jointly attack the Ruacana-Calueque scheme. At the time a military expert, Mr. Helmoed-Rohmer Heitman, declared that the objective of the attack on the dam was to put it totally out of commission. Heitman added that 'what is happening is that the Cubans have added to the bill [of South Africa] for defending Namibia. Perhaps they think if they keep on adding to it, the cost will become so great that South Africa will pull out' (*The Star* 30 June 1988:5). The assurance from Angola not to disrupt the scheme, indicated that as talks to end hostilities progressed, so did steps to cooperate regarding the development of the Kunene River. It also showed the importance of the Ruacana-Calueque scheme, not only to Namibia, but also to Angola. Bilateral cooperation in the Kunene River could start anew, following the withdrawal of South African and Cuban forces from Angola. However, the spectre of Angola's continuing civil war, and the external involvement of outside parties, added a new dimension to water resource cooperation in the Kunene River basin during the 1990s.

Outbreak of peace and renewed cooperation: 1989-2000

Following the implementation of the United Nations Resolution 435 and the election of the Namibian constituent assembly seven months later (Barber & Barratt 1990:344), peace finally broke out in Namibia and Angola in April 1989. The two countries were quickly out of the starting blocks to rejuvenate the Ruacana hydro-electric scheme. In May 1989, delegations from Angola and Namibia met in Windhoek to reactivate the 1969 agreement between

South Africa and Portugal. The purpose of the meeting was to discuss the setting up of a Joint Technical Committee (JTC) and to formulate plans to repair the Gové Dam, which was damaged during the war (*Business Day* 23 May 1989:3). In June 1989, a second meeting in Luanda set out to discuss the damage to the Gové Dam. Foreign assistance for the repair of the structure was also discussed, as it was difficult for Angola to raise the money internally because of the war (*Die Burger* 24 May 1989:15; *Die Republiek* 13 June 1989:3). In July 1989, the Administrator General of SWA/Namibia approved the Namibian component of the JTC. The JTC met for a third time that same month to start planning the reactivation of Ruacana (*The Windhoek Advertiser* 12 July 1989:3).

After Namibia gained independence in 1990, the stage was set for greater cooperation between the two bordering countries with regard to the Kunene River. The two governments could start with the socio-economic reconstruction of Angola and Namibia as they saw fit. The government of Namibia realised that the country needed electricity to power its numerous mining operations and deliver employment to its people. Consequently, a number of coping strategies were considered in order to achieve this. However, these coping strategies also required written agreements with Namibia's neighbours.

On 18 September 1990, Namibia signed two separate agreements with Angola concerning cooperation over the Kunene River, as well as cooperation in general between the two countries. One of the agreements concerned reactivating the three previous agreements between South Africa and Portugal in 1926, 1964 and 1969 respectively. This agreement had a number of purposes:

- To conclude the uncompleted Ruacana-Calueque water scheme.
- To establish a Joint Operating Authority, which would be tasked with ensuring maximum beneficial regulation at Gové for optimum power generation at Ruacana. The authority would also control the withdrawal of water along the middle reaches of the Kunene, and ensure the continuous operation and adequate maintenance of the water pumping works at Calueque, as well as the diversion weir at Ruacana.
- To allow the Permanent Joint Technical Commission, established in the 1969 agreement, to evaluate the development of further schemes on the Kunene in order to accommodate the present and future needs for electricity in both countries (Agreement 1990a:1-2).

The other agreement between Namibia and Angola created the Angolan-Namibian Joint Commission of Cooperation (Agreement 1990b). The commission was to deal with joint cooperative endeavours regarding a number of issues, one of which was water. This commission was in response to the friendly relations that existed between Angola and the South West African People's Organisation (SWAPO) in the years prior to Namibia's independence (Agreement 1990b:2). Consequently, five written agreements on shared water resources exist between Namibia and Angola, one of which relates to general cooperation between the two countries. These agreements bode well for peaceful interaction in the water sphere.

These two agreements demonstrate not only the importance of international rivers to Namibia's socio-economic well-being, but also to the relationship between the two countries. The linkage between these two agreements also highlights the fact that the overall relationship between countries sharing a river, can be a decisive factor in determining the kind of interaction one can expect between them when it comes to sharing the river's resources. In this case, Namibia and Angola's friendly relationship meant that cooperation in the field of water resources would follow as a matter of course.

With these agreements in place, Namibia and Angola could start with coping strategies in the water resource sector, in order to develop their socio-economic outlook. However, the water politics in the Kunene River basin took a dramatic turn in the early part of the 1990s. Firstly, the internal conflict in Angola took a turn for the worse after the breakdown of the Lusaka Accord, which was signed between the belligerent parties. Secondly, a new kind of actor arrived on the scene that elevated the dynamics of water politics to a new level.

Continuing conflict in Angola and new kids on the block

This section looks at the effect of the continuing conflict in Angola in the 1990s, as well as the involvement of non-state entities in future projects on the Kunene River. The only water project Namibia and Angola are pursuing at present is the Epupa hydro-electric scheme at the Epupa Waterfall. The two aspects identified in this portion of the paper – the war in Angola and involvement of non-state actors – have had a distinctive impact on the water politics of the Kunene River. These factors continue to influence the decisions of the two governments regarding the Epupa scheme, and they also (and this



is especially true of the non-state entities) cast the interaction of the Kunene hydropolitical game in a different light.

Angola's ongoing civil war

After the end of the Cold War, the conflict in Angola seemed to be on the wane and the Bicesse Accords were signed by the warring Angolan parties in 1991. However, the Accords were never fully implemented because UNITA challenged the result of the presidential elections held in 1992 (Boulden & Edmonds 1999:130). The second phase of Angola's conflict started at the end of October 1992 and lasted officially until 20 November 1994, when the Lusaka Protocol was signed in the Zambian capital on behalf of President José Eduardo dos Santos and Dr Jonas Savimbi. Negotiations regarding the Protocol had taken just over a year, following UNITA's announcement of a unilateral ceasefire in Abidjan on 14 September 1993 (Cleary 1999:145).

When the ceasefire broke down, renewed fighting erupted between the FAA (*Forças Armadas Angolanas*) and UNITA. The government ignored UNITA's termination of hostilities, disregarded the ensuing peace negotiations in Lusaka and deployed new weapons and better trained units against cities held by UNITA (Cleary 1999:146). The renewed fighting had a devastating effect on the economy of Angola. As Cleary (1999:146) put it: 'What little was left of Angola's economy after almost 16 years of civil war was destroyed between 1992 and the end of 1994. The GDP declined by 70% over three years; total external debt, as percentage of GDP, almost quadrupled, as did military spending, while social expenditure was halved'. Not only is Angola suffering from severe economic dislocation, but a landmine problem also increases the seriousness of the country's economic woes. Approximately five to eight million mines were planted across the country, but nobody knows how much land is affected (Boulden 1999:131). The landmine and economic problems of Angola certainly have a negative effect on the country's water resource management strategies. The economic situation makes it difficult for Angola to find money to launch new water development projects, not only internally, but also for international projects. Landmines make it very difficult for the agricultural sector to be developed to its fullest potential. Consequently, adaptive capacity is at its lowest level and coping strategies cannot get off the ground — except perhaps if Angola goes into

partnership with neighbouring countries. For instance, tap water supplied to towns is not potable and cholera is an ever-present threat. Visitors to Angola are warned not to drink the water. The water supply is in need of upgrading, as water supply stoppages are an almost daily occurrence in Luanda. Only 32% of Angola's population have access to safe water and only 16% have adequate sanitation facilities (SADC 1999:127). This is a grim outlook indeed. The war, which is still raging today, has not only had a negative effect on water resource development across the whole of Angola, but is also hampering the proposed Epupa scheme.

The decision as to whether or not to build a dam at Epupa Falls or Baynes Mountain lies with the Namibia-Angola Permanent Joint Technical Commission (PJTC). During 1998 and 1999, numerous meetings of the PJTC — organised to discuss the proposed projects on the Kunene — had to be postponed because of the security situation in Angola (Internet: *The Namibian* 25 June 1998). The war was not the only factor delaying the decision on the Epupa Dam. The PJTC had to put off a decision about the project in July 1998, after it found that the feasibility study on the project was incomplete (Internet: *The Namibian* 10 July 1998). In 1999, the PJTC decided that a meeting should be held in 2000 to make a decision on the Epupa project. The postponement of the decision caused a lot of frustration on the Namibian side, because if the Epupa Dam is further delayed, the cost of the dam could rise and make it unprofitable. A number of projects, like the Haib copper mine and Scorpion zinc mine, could also be affected, and consequently, the long-term economic outlook of Namibia (Internet: *The Namibian* 23 August 1999). The war in Angola has therefore an indirect impact on Namibia's socio-economic prosperity. At the same time, Namibia and Angola have not seen eye-to-eye on the sites of the proposed dam. Angola favours Baynes Mountain, and Namibia the Epupa Falls site. The Angolans' argument is that if a dam gets built at the Baynes site, then it will mean that the Gové Dam, which was damaged in the civil war, could be renovated. This in turn would bring much-needed development to Angola's Huambo province. Namibia, however, would like to see a dam built at Epupa. The Baynes site, they argue, is too small, despite its environmental and social advantages. The Epupa site is regarded as a prestige site by Namibia (Internet: *The Namibian* 13 July 1998). A dam at Epupa will also be larger than one at Baynes. The Epupa Dam will be the third-largest dam in Africa, and this holds the promise of much status and prestige for Namibia.

In September 1998, fierce fighting between UNITA and Angolan

government police forces broke out at the Gové Dam. The fighting was caused by a dispute over control of the installation (Internet: *The Namibian* 11 September 1998). The battle at Gové Dam shows that taking control of a water installation is only one strategy which belligerent parties use to gain advantage in an armed conflict. Whatever the purpose of the battle, it has certainly had a severe impact on a future dam at Epupa, as well as Angola's arguments for a dam at Baynes.

There seems to be a linkage between the damaged Gové Dam, the postponement of the decision about building a dam at Epupa or Baynes, and Namibia's sudden involvement in the Angolan conflict in December 1999. The Namibian President, Sam Nujoma, said that Namibia would back the Angolan government in its campaign against UNITA. The reason for this decision is the long-term friendly relationship between Namibia and the Angolan government (Internet: *Mail & Guardian* 15 December 1999). It seems as though the cooperation between Namibia and Angola regarding the war against UNITA, is pay-back for the support Angola showed SWAPO in its struggle against South Africa and UNITA in the 1970s and 80s. It could also become a bargaining chip for Namibia in the upcoming decision on the site for the proposed dam on the Kunene. Also, the fighting reportedly occurred more to the west, away from the Kunene River and in the region of the Okavango River. It could have been a strategy by Namibia to contain the fighting in that area, and keep it away from the Kunene basin and its strategic water installations. Should UNITA gain ground again and project the conflict towards the Kunene River basin, it could spell trouble for any proposed project on the river. Namibia's actions in Angola and the Democratic Republic of Congo (DRC) do not go unnoticed by the international community. If donor agencies perceive the financing of a dam on the Kunene as a severe risk, Namibia could find it very difficult to secure money for the project. Owing to Namibia's perceived negative image, governments of such donor institutions could also influence them not to supply money to Namibia.

The war in Angola will, as long as it continues, have an impact on any international project on the Kunene River. However, military confrontation is not the only type of interaction that influences the hydro-politics in the Kunene River. In the mid-1990s, the dynamics of the hydropolitical game in the Kunene River took on a new dimension with the appearance of a different kind of actor — the non-governmental organisation (NGO) or interest group.

The role and involvement of non-state actors

Giving an in-depth analysis of the role and involvement of non-state entities, and their impact in the politics of the Kunene River, is beyond the scope of this paper. However, a brief overview is possible. After various international and local non-governmental organisations became involved in the politics of the proposed Epupa Dam in the 1990s, a distinctive interaction developed between these non-state entities, other international non-governmental organisations (INGOs) and sovereign governments. In this section of the paper the different types of interaction will be highlighted. The contact between the various actors must be seen in the light of resource use perception. Resource use perception is the perceived utilisation of a resource within a distinctive mindset. It is because of different resource use perceptions that the engineer and the ecologist or environmentalist do not see eye-to-eye on large-scale supply-side management projects. These differing perceptions bring to the fore the nature and degree of interaction between NGOs and governments with regard to the implementation of large-scale supply-side management projects.

For the purposes of this paper, the term 'non-governmental organisation' (NGO) will be used interchangeably with that of 'interest group'. The growth and significance of NGOs, particularly with human rights and environmental agendas, have been very strong characteristics of the changing international dimension of water politics during the early part of the twenty-first century (Turton & Meissner 2000). These non-state entities can launch organised and determined opposition to a dam project anywhere in the world, and can elevate the project from a national political issue to an international question. This is the case in respect of the proposed Epupa hydro-power scheme. These non-state entities range from environmental, human rights and anthropological NGOs to grassroots interest groups in Namibia. Before discussing the engagement of these non-state actors, it is necessary to first determine what an NGO or interest group is, and what role or function they fulfil in society.

Interest groups or NGOs, like political parties, form the major link between the citizen and government in a society (Heywood 1997:252). They are also a distinguishing feature of democratic regimes (Sadie 1998:280). The linkage between interest groups or NGOs and government comes to the fore in the definition of an interest group. Interest groups form part of civil society, and can be defined as the wide range of voluntary associations that occupy the broad terrain between the individual and state. They are the primary

means by which citizens can articulate their interests to both the state and society at large (Baldo & Sibthorpe 1998:64). All in all, these groups have but one purpose, and that is to influence the political decision-making process (Ball 1988:96), while remaining apart from it (Duverger 1972:101). NGOs' business is the articulation of certain interests. In this case, it is the Epupa Dam project and the impact it will have on affected communities, as well as Namibia in general.

To articulate the interests of citizens, interest groups have a wide range of tactics and political strategies at their disposal. Different groups have different characteristics which produce a variety of strategies of influence (Whiteley & Winyard 1987:85). Two types of influencing techniques can be discerned: direct personal communication with decision-makers at the national and international level; and indirect contact via the media, as well as public opinion. Strategies of direct communication include deputations to politicians, meetings with different actors, personal presentations of research results and testimonies at hearings. These techniques are found to be the most effective (Sadie 1998:284) for lobbying purposes. Although sometimes by proxy³, litigation can also fall under this type of contact, and can be just as effective (Hjelmar 1996:69). Less effective methods of impersonal communication are letters, telegrams and public relations campaigns. Tactics that fall under indirect communication include petitions, protests, strikes and demonstrations (sometimes violent, sometimes peaceful) against civil obedience (Sadie 1998:285). Most of these tactics are being used by interest groups in their fight against the proposed Epupa hydro-electric dam.

Two types of NGOs are involved in the politics of the Kunene River: those that operate within the national *status quo* (Shepherd 1996:424), and those that operate across international borders. The latter are characterised by organised activities occurring simultaneously in a number of countries, and by objectives that do not relate to the interests within any given territory (Holsti 1995:61). It seems as if the latter group of NGOs is the most vociferous in its campaign against the proposed Epupa Dam.

Non-governmental organisations became involved in the Epupa Dam debate in 1995, after an anthropologist, Christa Coleman (who worked with the Himba in that region) highlighted the plight of the Himba, should the Epupa dam be constructed⁴ (Internet: Coleman 1995). The reaction of Coleman in raising the awareness of the Himba was, in fact, the initial trigger event that set the ball rolling. A second trigger event occurred when Earthlife Africa-Namibia (ELA) contacted the International Rivers Network (IRN)⁵ and

asked the IRN to get involved in the debate. Since then, a number of international NGOs, each with different agendas, have become embroiled in the Epupa Dam debate, together with local groups. At the local level, the Himba community organised the Epupa Action Committee (EAC) in 1997. Other Namibian interest groups are: the Legal Assistance Centre (LAC), Earthlife Africa-Namibia, the National Society for Human Rights (NSHR) and Greenspace. The Democratic Turnhalle Alliance (DTA), the main opposition party in Namibia, is also involved in the debate about the proposed dam. The most notable international interest groups are: the IRN, Environmental Defence (ED),⁶ the Association for International Water and Forest Studies (FIVAS) from Norway, Survival International from the UK, and a large number of NGOs from South Africa, most notably the Environmental Monitoring Group (EMG), Earthlife Africa (ELA) and the Southern African Rivers Association (SARA). In South Africa, the Green Party also threw its weight behind the anti-dam lobby. The NGOs work together in a sort of loose coalition and have contact with each other on a regular basis (Lori Pottinger, personal communication). The interest groups are not merely against the proposed dams for the sake of opposition alone. Alternatives have also been proposed. These include wind and solar power, the Kudu Gas thermal power station with desalination capabilities (Meissner 1999:82), and the importation of electricity from South Africa, which, it is argued, would be cheaper than the Epupa hydro-power scheme. The central issue that is articulated is the plight of the Himba people, should the dam be constructed.

There is a mixture of conflict and cooperation between the interest groups and actors directly and indirectly involved in the proposed projects. The tactics of these NGOs also vary greatly, with direct personal communication and indirect contact being used at the same time. Studying their strategies and tactics will tell us more about the nature and degree of interaction between the actors.

In June 1996, the environmental lobby put a hold on the proposed R2-billion Epupa Dam. The construction of the proposed dam was delayed until an environmental impact assessment could be conducted, the results of which were published in 1997 (*Financial Mail* 21 June 1996:73). In October 1996, a public hearing was held in the Namibian capital, Windhoek, where the Himba community voiced their opposition to the dam. The issues they raised to substantiate their objection were, *inter alia*, that the land they are living on would be lost, as well as the graves of their ancestors and the grazing land for their cattle. The Himba people were represented by their chief,

Hikunimue Kapika (Internet: International Rivers Network 1996).

In March 1997, the DTA sided with the interest groups, after the party made it clear that it would do everything in its power to stop the Epupa Dam, including an attempt to block the financial assistance which the government or Nampower might seek in order to build the dam. The Legal Assistance Centre (LAC) warned the government that it would use litigation if it defended its decision to go ahead with Epupa. The LAC also threatened litigation if complaints by the Himba were not properly addressed. The National Society for Human Rights (NSHR) called on the government to treat the issue with extreme caution if it wanted to avoid bloodshed (Internet: Pottinger 1997). The Deputy Minister of Mines and Energy, Jesaya Nyamu, said that the dam would be built, irrespective of the outcome of the feasibility study. In July 1997, the anti-dam lobby in Namibia was given a great boost when Hikunimue Kapika and Paulus Tjavara made a visit overseas. The chiefs visited Germany, Belgium, Great Britain, Norway and Sweden. They met with members of the German Parliament, European Union Ministers and managers of financial institutions, as well as NORAD and Norconsult, the Norwegian organisation that sponsored the Epupa feasibility study. A press conference was held after their arrival in Windhoek. Seven overseas organisations who sponsored the chiefs' visit sent a letter to President Nujoma, urging him not to build another dam on the Kunene. The Ministry of Mines and Energy responded angrily to the visit and called it a 'well organised farce'. The Ministry also said that the chiefs were used by 'environmental extremists' in the West. At its African conference, Earthlife Africa passed a resolution condemning the proposed Epupa Dam (Internet: Earthlife Africa 1997).

The draft feasibility study was completed in October 1997 and the Himba people were asked to comment on it, but they still opposed the dam in principle (Internet: International Rivers Network 1997). In November 1997, the EAC sent a letter to the President of Finland, Martti Ahtisaari, asking him to advise the Namibian government not to go ahead with Epupa and to consider alternative options of power generation (Internet: Letter to President Martti Ahtisaari 5 November 1997). In December 1997, a letter was sent from the Society for Threatened People to NORAD and Norconsult, asking them to stop supporting the dam (Internet: Letter to NORAD and Norconsult 19 December 1997). A number of independent scientists reviewed the feasibility study at the end of 1997. In general they found that, *inter alia*, the study was not up to standard (Internet: International Rivers Network 1998). A public hearing was held in Windhoek on 6 and 7 February 1998. Submissions were

handed in by both the IRN and the EAC, which pointed out the negative effects of the proposed dam on the Himba. The IRN released a press statement in which they reported on the feasibility study in general. The press release, echoing the conclusions of the experts who reviewed the study, stated that the investigation was 'riddled with incorrect conclusions, false assumptions and missing data', and that this meant 'that it cannot be used as a basis for a well-informed decision on the project' (Internet: International Rivers Network 1998). The World Bank and the European Union also had strong reservations about the viability of the project (Internet: *The Namibian* 1 June 1998).

One of the most peculiar responses from the Namibian government were the gifts of a four-wheel drive 'bakkie' (pick-up truck) and a speed boat to the Himba community. Whether or not these donations were a strategy on the part of government to reverse Himba opposition to the Epupa debate, is a matter for debate. If they were, they did not serve their purpose: the Himba community reiterated their anti-dam stance after the gifts were received (Internet: *The Namibian* 2 June 1998; 2 July 1998). Gifts were not the only government response to NGOs involved in the Epupa debate. In June 1998, President Sam Nujoma launched a scathing attack on the opponents of the Epupa Dam. He also warned foreign nationals in Namibia who 'disturbed the peace', that they would be 'deported', 'got rid off' or 'dealt with', with 'immediate effect'. The LAC came under severe criticism from the President (Internet: *The Namibian* 22 June 1998). This reaction gives some idea of the strained relations between the government and the NGOs, and also demonstrates Namibia's insistence on going ahead with Epupa. The utterance of the President was the spark in the powder keg which unleashed a fierce debate in Namibia. Other NGOs and the DTA defended the LAC. The President was accused of racism, and of threatening peace and stability in the country. SWAPO party members and other political allies defending the President received similar accusations (Internet: *The Namibian* 23 June 1998).

In March 1999, renewed criticism was levelled at the government concerning the Epupa Dam. This time the critique came from Kasita Mburura, Regional Councillor for the Epupa constituency. His arguments were that Epupa had potential for tourism, mining and agriculture, but that the government had not undertaken any developments such as schools, clinics, roads, water and other infrastructure. He also said that the 'statements by deputy ministers about the building of the Epupa Dam are destroying the peace and harmony of my region' (Internet: *The Namibian*

17 March 1999). In the same month, the Minister of Mines and Energy, Jesaya Nyamu, indicated that a referendum could be held in the Kunene region to decide whether the controversial Epupa Dam should go ahead (Internet: *The Namibian* 29 March 1999). If a referendum is held on the Epupa issue, it will be a move in the right direction and would reduce possible internal conflict in Namibia.

The strategies and tactics of the different national and international NGOs continued during the last part of 1999. In August, the loose coalition of NGOs sent a letter to Getinet Giorgis of the African Development Bank (ADB), urging the ADB not to finance the Epupa Dam, if indeed they were considering doing so. The letter was signed by 42 organisations and 17 individuals (Internet: Letter to Getinet Giorgis 1999). Of the 42 organisations, more than half (23) were from South Africa,⁸ while five were from the UK and three from Namibia and Germany. This letter coincided with a briefing document sent to President Thabo Mbeki from the Environmental Monitoring Group (EMG), just before his visit to Namibia in August 1999. In the document the negative effects of the dam (in terms of the environment and the Himba community) were highlighted. The briefing document echoed Mbeki's vision of an African Renaissance and emphasised the importance of the minority human rights of the Himba. The letter also stated that the proposed Epupa Dam was undermining the progressive development of Namibia, and was contrary to South Africa's own self-interest in southern Africa (Internet: International Rivers Network, 1999). This shows that the NGOs are doing everything in their power to stop the Epupa Dam. It also indicates the link between government and citizens, and the democratic processes that are involved in lobbying for a certain issue. The letter and the briefing document are further steps in the internationalisation of the Epupa debate and indicate the initiatives which NGOs can take to advance their stance on an issue.

The interest groups pulled out all the stops, and used every forum possible to prevent Epupa from being constructed. In November 1999, the EAC and the LAC presented the case of the Himba before the World Commission on Dams (WCD) during a hearing in Cape Town. The WCD heard about the negative effects the dam could have on the Himba community. Andrew Corbett, from the LAC, also told the hearing that numerous meetings of the EAC in Namibia had been broken up by armed police (Internet: *Cape Times* 12 November 1999).

National and international NGOs can have a profound impact on supply-side management projects in developing countries. At this stage, the

lobbying activities are well organised and peaceful, and should not turn violent in the near future. Yet, as long as the Epupa Dam is on the cards, the interest groups will keep up their campaigns against it.

Conclusion

The interaction between the different actors in the Kunene River basin has, since 1926 passed through phases of conflict and cooperation. However, the Kunene River was not the direct causality in the periods of conflict. The chronological study shows that a number of factors – most importantly ideological differences between the actors during the Cold War – contributed to the conflictual state of affairs during the period 1975–1989, with the waters of the Kunene playing a small role. The last stage of the relationship between the two neighbouring states is characterised by a larger degree of cooperation than has been demonstrated in the past. The good and solid relationship between Namibia and Angola is the reason for this, and this factor will always bode well for water politics in the Kunene River basin. The only bone of contention is the dam sites for the proposed dam on the Kunene. In all likelihood, if the issue of the dam sites persists into the future, the issue will be resolved peacefully. Initially, negotiations at ministerial level would be held between the two respective ministers who are concerned with the issue. Should these fail, talks will be held on a presidential level between Dos Santos and Nujoma. After this option has been exhausted, Namibia and Angola will move on to mediation and arbitration. However, it is envisaged that the issue will be resolved at presidential-level negotiations, if indeed, it should even come to that.

The role and involvement of national and international NGOs are of such a nature, that the issue of the Epupa Dam will continue to go against the grain of the non-state actors well into the future. One thing is certain, and that is that the interest groups in the Kunene River basin are here to stay, and will dog the Namibian government and influence other actors (like financial institutions) until the two countries either cancel the dam, or go ahead with it irrespective of the anti-dam lobby. The interest groups in Namibia are using peaceful means to advance their opposition to Epupa. If the Namibian and Angolan governments press ahead with the construction of a dam, the loose coalition will step up its campaigns against the governments, especially Namibia, which is seen as the driving force behind the new dam. If Namibia

proves steadfast in its decision to build a dam, the most likely action the interest groups in Namibia will take is litigation. The international NGOs will go ahead with their letter-writing and influencing of statesmen and women (and financial institutions) in other countries to persuade Namibia not to go ahead with the dam. The prospect of a referendum on the issue holds the promise of a peaceful resolution. A Memorandum of Understanding between the governments and the Namibian NGOs – like the one signed between the Lesotho Highlands Development Authority (LHDA) and the Lesotho NGOs regarding the Lesotho Highlands Water Project (LHWP) – could also bring the issue to a peaceful conclusion. The only movement which could transform the interaction between the state-actors in the Kunene basin is UNITA, should it decide to attack the strategic installations on the Kunene River. However, this will not be a water war, but pay-back for Namibia's support of Angola against UNITA.

Will there be a water war in the Kunene River basin? If the Sidudu/Kasikili island dispute between Namibia and Botswana is taken as a yardstick for the way disagreements will be handled in southern Africa, then it bodes well for the peaceful resolution of water disputes. Also, the relations between the countries in southern Africa, and between Namibia and Angola in particular, are quite peaceful. These friendly relations are crucial to the prevention of conflict in the arena of hydropolitics. In conclusion, then, a water war, as defined in this paper, has not occurred in the Kunene River basin in the past, and the likelihood that it may occur in the future is very remote.

Footnotes

- 1 It was the hawkish Defence Minister P.W. Botha who, at a cabinet meeting in 1978, insisted South Africa become more directly involved in the Angolan war. The cabinet was overwhelmingly in favour of South Africa's involvement and Vorster had to give in to the hawks (De Klerk 1998:58-59).
- 2 The Portuguese ambassador to South Africa protested against the action by South Africa on the Calueque Dam, but no assurances could be given by him with regard to the safety of the workers and the pump station, and the South Africans remained at Calueque (Steenkamp 1990:39).
- 3 When litigation is used by an NGO or interest group it will not necessarily mean that a lawyer will be hired. Many interest groups and NGOs in the North employ their own legal experts and teams of lawyers, whose purpose is to articulate the interest of the organisation through litigation.

- 4 According to Coleman, President Sam Nujoma put an effective halt to the debate on the topic of the Epupa Dam, by declaring that any civil servant opposing the plan would be fired (Internet: Coleman 1995).
- 5 The IRN was established in 1985 by Philip Williams, who had for years helped environmentalists trying to stop water projects in California (McCully 1996:307). The IRN's policy regarding the involvement in large dam projects abroad is that a local interest group should first contact the organisation before they will lobby the issue. The reason for this is that the IRN, like any organisation, has limited resources at its disposal and cannot get involved in large dam debates everywhere.
- 6 Formerly known as the Environmental Defence Fund (EDF).
- 7 These organisations are: Gesellschaft für Aktives Umweltbewusstsein, Arbeitskreis Afrika, Gesellschaft für Bedrohte Völker, Survival International, European alliance with Indigenous People, FIVAS, IWGIA International Secretariat, Copenhagen and IWGIA Sweden (Internet: Earthlife Africa 1997).
- 8 These include, among others, the Southern African Rivers Association (SARA), Green Party of South Africa, Environmental Monitoring Group, Earthlife Africa and the CSIR: Environmentek.

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Institutional Evolution at Lake Chad: Traditional Administration and Flexible Fisheries Management

Marie-Thérèse Sarch

Lake Chad is a vitally important wetland in the semi-arid Sahel corridor. It provides the basis of many thousands of livelihoods which depend on its seasonal fluctuations to renew fish stocks, farmland and rangeland. This paper describes how access to farmland and fishing rights has evolved on the Nigerian shore of the lake. The paper aims to assess the applicability of different institutional approaches to natural resource management on the lake shore. These include the 'equilibrium or tragedy' approach characterised by Hardin (1968), critiques discussing attempts to impose state regulation of renewable natural resources in the Sahel, models of institutional adaptation to resource scarcity and approaches which perceive institutions, such as those which govern access to natural resources and act as crucial determinants of social and economic development.

The western shore of Lake Chad has been under the jurisdiction of Borno State (in its various guises) since the end of the fourteenth century, and is currently one of 36 states in the Federal Republic of Nigeria. Although the

administrative status of Borno has varied, it has been dominated by a Kanuri aristocracy for most of its existence. Traditionally, the Kanuri administration has played a crucial role in allocating access to farm land. In recent years, the Kanuri administration has not only maintained its pre-colonial authority over farming on the lake shore, but has also expanded it to cover new areas of the lake floor, as well as the increasingly lucrative fishing opportunities which the federal government has been unable to regulate. This success suggests that collaboration with the traditional administration is essential to the success of future natural resource management efforts.

Introduction

Institutions are social constructs which guide human behaviour. They range from laws which are formal and with which compliance is obliged, to informal conventions to which conformance is expected. The importance of such institutions in shaping the livelihoods of the poor has been increasingly recognised (e.g. Swift 1989; Moser 1998; Carney 1988; Scoones 1998). The aim of this paper is to examine the evolution of the institutions which govern access to farmland and fishing rights on the Nigerian shore of Lake Chad. These have been examined within a 'sustainable rural livelihoods' (SRL) framework (Sarch 1999).

In focusing on the systems of access to farmland and fishing rights at Lake Chad, the paper aims to assess the applicability of different institutional approaches to natural resource management on the lake shore. This is important, because natural resource development initiatives in the Sahel have frequently been based on institutional approaches that may not have been appropriate to the situations in which they were used and, in any event, are rarely universal. A total of four institutional approaches to natural resource management are considered in the first section of this paper. These are followed by a review of the natural and social contexts of Lake Chad, as well as research into the fishing and farming livelihoods there. The third section presents an analysis of resource access institutions on the lake shore. The paper concludes with a discussion of the relevance of different institutional approaches to systems of natural resource access on the Nigerian shore of Lake Chad.

Institutional approaches to natural resource management

Like Malthus (1803) almost two centuries earlier, Hardin (1968) expressed a pessimistic view of the capacity of the environment to support population growth. Although not the start of the debate, the 'Tragedy of the Commons' which Hardin described in 1968, has focused much attention on the issue of access to natural resources.¹ The 'Tragedy of the Commons' model predicts dire environmental consequences as a result of the human inability to restrict personal gain for societal benefit: 'Ruin is the destination toward which all men rush, each pursuing his own best interest...' (Hardin 1968:1244). Rather than advocate population controls such as Malthus and subsequent supporters have done, Hardin advocated controlling access to the environment. He recommended privatisation of natural resources and state enforcement of exclusion from them. The implications of this are that natural resources exhibit a fixed carrying capacity and that producers will not develop their own systems regulating access to shared resources.

Although many recent approaches to natural resource management have reflected this approach, a growing literature has developed, both in support of and critical of Hardin's thesis. Several distinct approaches can be identified. The first includes work critical of the confusion surrounding the nature of the property rights described by Hardin (1968). A spectrum of property rights have subsequently been defined and distinguished from the shared resources to which they apply (see Ciriacy-Wantrup & Bishop 1975; Bromley & Cernea 1989; Schlaeger & Ostrom 1994 etc.). The next group broadly concurs with the model of impending 'tragedy', and has attempted to devise the most appropriate ways to privatise and/or impose state regulation of RNRs. The experience of these approaches is examined next, with particular reference to the Sahel.

Other authors have rejected the static notion of resource access arrangements implied by many economists, and envisage more complex and dynamic relationships between resource tenure and developments in resource use. Two contrasting approaches are considered here: those which envisage institutional adaptation as a process which responds to developments such as population growth; and those which perceive the institutions which govern access to natural resources as a crucial determinant of social and economic development, and are themselves manipulated to serve the interests of the powerful members of the societies in which they operate.

Institutional intervention

Despite many instances where common property regimes have been successful, there are several recent examples of 'tragedies' which have occurred in natural resource management. Fish stock collapses in the Scottish herring fishery, the Canadian cod fishery, and the Peruvian anchovy fishery, each provide examples of 'tragedy' (Caddy & Gulland 1983; Whitmarsh et al 1995; Charles 1996; Roy 1996; and see Cushing 1982 and 1988 for the history of fish stocks). Although some have pointed to the large fluctuations which occur naturally in RNRs and have suggested that equilibrium in them is not natural or normal, equilibrium frequently remains the objective of resource managers. Many theorists have concluded that state regulation and the privatisation of property rights are the only options to sustain these resources, and great effort has been concentrated on defining how the limits of resource use should be set (Mahon 1997).

There have been successful state attempts to regulate access to fisheries. The transferable quota system introduced in Iceland has been noted for its success in sustaining the demersal fishery (Arnason 1994). However, there are many more which have either failed in their objectives – for example, the British Columbia salmon fishery (Fraser 1979) – and/or have led to considerable dissatisfaction among fishing communities (Bailey & Jentoft 1990). Despite the mandate provided by UNCLoS in 1982, there have been comparatively few attempts at state regulation of African fisheries (Lawson 1984). In west Africa, these have been associated with the sale of offshore fishing rights to the European Union. The information available on the outcomes of state attempts to regulate African fisheries shows mixed results (Johnstone 1996).

The forest reserves created throughout the Francophone Sahel during the colonial era, are examples of state regulation of natural resources in sub-Saharan Africa. They were established in areas which were thought to be vacant and under-used, and were subsequently managed by the state forest service with the objective of obtaining sustainable timber yields. These have generally failed, not least of all because their use and management by local villagers were underestimated (Shepherd 1991). Villagers were reluctant to leave land fallow in case it should be seen as vacant and were inclined to overwork it, rather than let it return to woodland (Thomson 1983). A lack of enforcement allowed many reserves to become open access (Freudenberger & Mathieu 1993). The decline of systems of access to the forests, seasonal pastures and fisheries of the Niger Delta in Mali, as well as their subsequent over-exploitation, have also been attributed to the intervention of the colonial

authorities and their nationalisation of natural resources (Kone 1985; Brinkerhoff 1995; Williams 1998). Licenses issued by post-colonial governments for cutting wood and fishing in the Delta have further undermined the customary management of these resources (Moorehead 1989; Quiensière et al 1994). This process has also been observed in Senegal, where the government has permitted the conversion of both rangeland and forests to peanut fields (Freudenberger 1991; Williams 1998).

Exogenous adjustments to the institutions which govern access to natural resources have been initiated in anticipation of a range of potential benefits. Very generally, these can be divided into two attempts: those described above, which aim to achieve sustainable production through state regulation; and those which aim to improve the productivity of natural resources through the introduction of private property rights. In Africa, a well known example of an external attempt to improve agricultural productivity is Kenya's strategy of land registration for smallholders initiated after the Mau Mau rebellion in the 1950s (Swynnerton 1954). However, Haugerud (1989) argues that although agricultural productivity did improve in Kenya, this happened in spite of land registration, rather than because of it. Although Tiffen et al (1994) illustrates how population has grown and how individualised tenure has spread in Machakos District, this has been criticised for masking differentiation within Machakos (Rocheleau 1995; Murton 1999).

Institutional erosion

Overall, the alternatives of state regulation and private ownership of natural resources have frequently had little success in Africa, and in some cases, the reverse outcome has resulted: environmental degradation and reduced productivity. Several authors depict a situation where the depletion of natural resources has been the direct result of intervention from outside agencies. External organisations, such as powerful rulers, colonial agencies and emerging nation states, have either eroded or dissolved community-based access arrangements in order to appropriate them or to create more productive arrangements. This process has been observed not only in the rangelands, forests and fisheries of the Sahel, but also in the access arrangements of many natural and 'common' resources in other parts of the world. (Bromley & Cernea 1989; Jodha 1986, 1992; Platteau 1996).

Whether or not external attempts to regulate access to natural resources can improve their sustainability and/or their productivity, there is consensus that, in Africa, external intervention has had an important impact on the

institutions which govern access to natural resources. However, in many situations, the systems of access introduced during the colonial and post-colonial eras have not replaced customary systems. Rather, both systems have persisted and the administrative dualism of overlapping state and community systems of resource tenure has increased the vulnerability of community-based systems to abuse (Platteau 1996; Williams 1998; IIED 1999).

Institutional adaptation

Despite the considerable effort expended in improving the resource access institutions of the developing world, there is a wide body of literature which documents and explains processes of endogenous institutional adaptation and evolution.

The concept of adaptation has been used in the development of natural resources policy, where in contrast to Hardin's (1968) picture of resource users 'rushing to ruin', systems of resource access are envisaged as evolving in response to the costs and benefits associated with resource exploitation. Boserup's (1965) theory predicts that as the population grows, land tenure will increasingly become individualised in the process of agricultural intensification. Netting (1993:158) describes a range of examples which he uses to show that 'land use determines land tenure'. Demsetz's (1967) 'Theory of Property Rights' suggests an alternative outcome to the inevitable 'tragedy', where demand on a resource increases (for example, through population increase), with the result that its value increases and the relative cost of excluding others from its use decreases. It becomes worthwhile for producers to develop their own systems of regulating access to the resource (Demsetz 1967).

Wade's theory (1988) differs from other theories of property rights, in that neither environmental tragedy nor increasing exclusion is inevitable. Rather, common property can be the end result of institutional adaptation. He describes how systems of property rights develop in response to risk, where the costs of privatisation and exclusion are high and the benefits uncertain. A fundamental difference in this approach is that it allows for individual and community interests to coincide. Runge (1981; 1984), Ostrom (1990), Quiqqin (1993) and others have also identified circumstances where communal forms of property are economically efficient and have been successful in avoiding environmental 'tragedies'.

There are many examples which show how resource users can and do adapt systems of access to natural resources when it is in their best interests to do so.² These have validated the adoption of community-based approaches

by both national and international development agencies, which have advocated and sponsored a range of local-level resource management initiatives, or 'community based sustainable development' around the world (Leach et al 1997a). There have been several such initiatives in the Sahel.³ However, the outcomes of such processes vary as widely as the natural resources and resource users themselves (Toulmin 1991; Painter et al 1994; Brinkerhoff 1995; Leach et al 1997a). They have, however, often fallen short of expectations and their experiences do not point to easily applicable policy measures (Western et al 1994; Leach et al 1997a).

Institutional manipulation

In contrast to models of institutional adaptation, North (1990) considers the process of institutional evolution as a determinant, rather than a result of economic development. North (1990) argues that rather than being socially efficient, institutions are created to 'serve the interests of those with the bargaining power to devise new rules'. More specifically, Leach et al (1997b:4) argue that the assumptions of distinct and consensual communities, as well as relatively stable local environments – which are fundamental to most community-based resource management initiatives – are incorrect. They suggest that the failure of such initiatives can be attributed to these assumptions, and propose an 'Environmental Entitlements Framework' in which co-users of natural resources use their varying rights and resources to negotiate for different levels of access (Leach et al 1997b). The processes of codifying 'native' arrangements for access to land, which Berry (1993) examined in former British colonies, fit this framework well. She describes how this process generated a blizzard of claims and counterclaims, and placed enormous power in the hands of those with contacts in the British administration. Both North's (1990) and the environmental entitlements approach point to the crucial role of power relations in shaping the institutions that determine the use and management of natural resources. Although the community-level focus on resource users remains valid, consensus and cooperation between them cannot be assumed.

Lake Chad

The Lake Chad basin covers a large part of central Africa. The lake itself lies at the south-east extreme of the Sahara Desert, and traverses the Saharan,

Sahel and Sudan-Savannah agro-climatic zones. Although rainfall is low and variable in these zones, it has little impact on the volume of the lake which is 'an accumulator of positive departures from the mean Chari/Logone discharge, rising in response to runs of wet years, falling with successive years of drought' (Grove 1985:146). Water from the Chari/Logone Rivers flows into the lake at its southern extreme, and flows northwards and outwards, encouraged by the lake's gradient and prevailing winds. This inflow peaks in October/November, following the end of the rains in the southern catchment area, and reaches a minimum in May/June, at the start of the next year's rains. These flood waters take between one and two months to reach the Nigerian shore, where water levels peak in January and reach their minimum in July (Olivry et al 1996). In the past 25 years, annual rainfall in much of the catchment area has been reduced and the surface area of the Lake has varied considerably, both on an intra- and interannual basis (Sarch & Birkett 2000). Although the limits of different ecological zones in the lake are determined by its level, the map in Figure 1 indicates the approximate location of these zones, as well as the study area in the swamps of the Nigerian shore.



Figure 1. Map of the Lake Chad Basin

The western shore of Lake Chad has been under the jurisdiction of Borno since the end of the fourteenth century. Borno State is currently one of 36

states in the Federal Republic of Nigeria. Although the administrative status of Borno itself has varied, it has been dominated by the Kanuri ethnic group for most of its existence. (McEvedy 1995). Migration during the latter part of the millennium has brought to the lake basin, Shuwa Arabs from the east and Fulani pastoralists from the west. Recent settlers on the lake shore include Hausa families from across northern Nigeria, who were attracted by fishing opportunities at the lake during the 1970s (Meeren 1980; Neiland & Verinumbé 1990). Although certain ethnic groups have particular traditions (for example, the fishing traditions of the Hausa), households from a variety of ethnic groups fish, farm and/or herd cattle (Harris 1942). This paper focuses primarily on the communities who have settled on the south-west lake shore. They mainly include Kanuri and Hausa households, but also smaller numbers of Fulani, Shuwa and Yédina.

The Kanuri hegemony of Borno was named the 'Native Administration' by the British colonists (and is called the 'traditional administration' in this paper), who collaborated with them to develop their system of taxing the rural population (Temple 1919). This was based on a system of fiefs – either territorial or by association (by trade, for example) – which were allocated by the *Shehu* or suzerain to members of his family, favoured courtiers, or high ranking slaves. Under this system, the population was obliged to pay a variety of taxes to the fiefholder, who administered the fief through a tax collector or *Chima*, as well as a hierarchy of village heads, *Lawans* or *Bulamas* (Brenner 1973). Brenner (1973:112) describes how mutual interest was the primary justification for these administrative links:

'Barring drought or other causes of crop failure, the peasantry could support itself without the aid of the state, which in any case did little to plan against possible famine. But the protection which the ruling classes provided was crucial, for without it a village might be the constant target of slave raids and looting forays'.

Under the colonial system of taxation, the *Shehu* nominated District Heads or *Ajia*, who were responsible for collecting tax from the various regions throughout Borno. The *Ajia* delegated this task to sub-district heads or *Lawans*, who usually delegated to local agents known as *Bulama*, all of whom were expected to channel revenues upwards to the *Shehu*. Initially, when this system was set up in 1905/6, the *Shehu* was required to pass half his receipts to the British (Palmer 1929).

Since Nigerian independence in 1960, a modern government has

operated in parallel with the traditional administration and consists of three tiers: Local, State and Federal. Although State and Local Governments can and do raise their own revenue, they mostly rely on Federal Government allocations. In contrast, the traditional administration raises most of its revenue at a local level, predominantly by taxing the rural population.

There are five Local Government Areas (LGAs) which are adjacent to the Nigerian shore of Lake Chad. Although LGAs have a fishing and agriculture remit, the level of involvement in fishing and/or farming varies between each LGA. The study region includes the middle three: Kukawa, Mongonu and Marte.

The Borno State Government has a minimal involvement in the administration of the Lake, as well as its immediate vicinity. This is partly due to international tensions. Outbreaks of armed clashes and rebel activity on islands in the lake have persisted since the 1970s, and are largely associated with the succession of civil wars in the Republic of Chad. A multi-national 'Joint Patrol' has been created in response to these outbreaks, and it has been monitoring the lake to prevent further violence. Along the western shore of the Lake, the Nigerian Army dominates the Joint Patrol.

Despite huge investments in irrigation (and smaller investments in fisheries) during the 1970s, development initiatives have achieved little lasting change at Lake Chad (Azeza 1976; Kolawole 1986; Hutchinson et al 1992; Sarch 1999). Although linked to the Nigerian economy through the marketing of their produce, the households making their living on the Nigerian shores of Lake Chad are geographically and politically remote from Nigerian policy-makers. The villages in which this study was based, have hardly been acknowledged by Federal Government. They have received negligible public investment in their welfare: most wells are hand dug; education is restricted to Koranic schooling for boys; medical facilities are only available in the large towns; and the security services usually monitor only transport nodes. The villages are reached either on unmarked tracks on the lake bed, or via channels in the swamp vegetation.

Research at Lake Chad

Fishing and farming livelihoods have been analysed using household survey data collected in 1993, as well as findings of participatory research conducted with four communities on the lake shore during 1995. These exercises were undertaken as part of the British Government fisheries research project (Neiland & Sarch 1993). The subsequent analysis examined the data in the wider context of the environmental fluctuations, socio-economic

development and institutional changes described above (Sarch 1999).

Unlike the systems described in many text books, the farming systems at Lake Chad are not readily assessed as 'shifting', 'semi-permanent' or 'permanent', or extensive or intensive (Sarch 1999). Farming systems in the study area have been developed to exploit the seasonal flooding of the lake shore (Sarch & Birkett 2000). In key respects, the farming techniques used are extensive: farmers rely on 'new' land to maintain fertility levels and labour is an important constraint to production; whereas in other respects, farming systems are intensive, with three or more crops often relayed within the season. Although farming is largely unmechanised, production is commercialised, with high levels of cash input and crop sales. In 1993, the value of farm sales represented more than three-quarters of the mean household output within the study region (Sarch 1999).

Similarly, the fishing systems on the lake shore have been developed to exploit seasonal flooding (Ibid.). Although estimates of fish production from the lake vary, and the exact impact of the lake's contraction and the exploitation of fish stocks is difficult to ascertain, at least part of the reduction in production during recent decades is accounted for by the contraction of the lake (Stauch 1977; Olivry et al 1996). Following this contraction, the *dumba* method of fishing has become increasingly popular. A *dumba* is a row of fish traps which are placed across a channel of receding lake water. The traps are linked by small meshed netting, which forces the fish in the retreating flood water into the traps. The *dumba* is especially effective as fish retreating with the receding flood cannot escape them, and they do not need to be baited.

The investigation of systems of access to farmland and fishing rights in the study area was based on the findings of participatory appraisals conducted in four case study villages within the study area during 1995 (Figure 2). The appraisals were designed to understand the institutional channels of resource access, and their context and evolution, as well as the contrasts and comparisons between them. The later stages of the investigation used predominantly secondary sources to examine access institutions at the district, regional, and national levels.

Resource access institutions at Lake Chad

The results of this investigation are presented in this section. Systems of access to farmland are considered first, and exclusive access to fishing rights

is considered next. Analysis of secondary sources at national and regional levels have been used to explain the evolution of the de jure or theoretical systems of access, and this contrasts with what was learned at a village and district level regarding the subject of how access to farmland and fishing rights operates in practice.

Access to farmland in theory

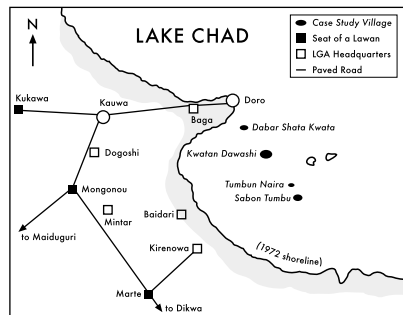


Figure 2. Map of case study villages at Lake Chad

Under the provisions of the 1978 Land Use Decree, all land in Nigeria was nationalised: 'All land comprised in the territory of each State in the Federation are hereby vested in the Military Governor of that State and such land shall be held in trust and administered for the use of common benefit of all Nigerians'. (cited in Uchendu 1979:69).

In theory this decree removed land from the trusteeship of families, communities and community leaders, and replaced them by the State

Governor; it also restricted individual interests in land to one of occupancy '... and [to] the sole right to and absolute possession of all the improvements on the land'. (Ibid:70). The decree vested the management and control of all non-urban land in the Local Government. Individuals utilising non-urban land were assigned rights of customary occupancy, which may be certified by the Local Government. The Local Government may also grant rights of occupancy of up to 500 hectares per individual or organisation for agricultural purposes. As there are few 'urban' centres at Lake Chad, most of the land in the Nigerian Sector comes under the jurisdiction of the Local Governments adjacent to the Lake.

Access to farmland in practice

In practice, the Kanuri aristocracy has retained almost total autonomy with regard to the allocating of land on the shores of Lake Chad. Apart from land acquired in 1973 by the federally-sponsored South Chad Irrigation Project (SCIP), farmland is allocated in much the same way as before the 1978 decree. Currently, *Bulamas* act as ward or hamlet heads. They allocate land and collect taxes under the jurisdiction of the local *Lawan*, also known as a sub-district head. In addition to the revenue received from *Bulamas*, *Lawans* may also receive dues of various kinds from representatives who receive taxes from non-village sources, such as pastoralists and fishermen. These tax bases parallel the territorial and associational fiefs granted by the *Shehu* in the pre-colonial era. Currently, *Lawans* are obliged to channel their tax revenues to the Local Government.⁵ However, where *Lawans* do pass on a proportion of their revenue, they do so to the *Ajia* or the District Head.

Although this system has evolved since Nigerian independence, it is similar to the system which operated before colonisation. It differs, however, in one important respect. Whereas in the past the system was balanced by the need to defend itself — the aristocracy depended on the peasantry to replenish their armies, and in return the peasantry was protected from the slave raids of hostile neighbours; however, when the British colonised Borno and undertook its defence, taxation and protection were divorced. The current State and Local Governments receive little, if anything, from land taxation (see for example, the report of the Borno State Local Revenue Committee 1982). The Joint Patrol receives nothing from these taxes either. It is officially funded by the Federal Government, and is also unofficially funded by the charges which its officers levy on movement around the lake basin.

Details of the land access arrangements in four case study villages are provided in Table 1. The table shows that the arrangements for allocating the land have changed little since the settlement of each village. Although the first settlers did not need to request land to farm with, local aristocrats were quick to claim their taxation rights, especially where disputes over land had arisen. In most cases, the local *Lawan* – nearly always a Kanuri – asked the community to nominate a *Bulama* whom they could channel their annual taxes through. In return, the *Bulama* was given the *Lawan*'s authority to allocate residential property and farmland, as well as authority to settle disputes within his community. Disputes over the right to allocate farmland, such as that between the *Bulamas* of Daba Shata Kwata and Dabar Shata Gari, are usually settled in the favour of the Kanuri community. In the case of Sabon Tumbu, similar disputes within the Hausa community have been settled in favour of the candidate with the ability to deliver the largest tax payment to the *Lawan*.

The size of the tax payments made to the *Lawan* is subject to annual negotiations: the *Bulama* must satisfy both the *Lawan* (on whose authority his position depends) and the community on whose support he relies. If taxes are too high or low, he risks alienating one or the other. Although taxes are never welcome, they were not unexpected by settlers, since many of the lake floor farmers had come from home regions where similar systems had operated in the past (Hill 1972; Mortimore 1997).

Access to fishing rights in theory

No national legislation regarding the licensing or regulation of inland fisheries was enacted until the Inland Fisheries Decree of 1992. The decree charged the Commissioner for Agriculture in each state with the responsibility for licensing and regulating inland fishing. Certain regulations on gear were introduced in the decree, and there is provision for the creation of further regulations at Federal level. Nonetheless, there remains no provision in the law for the ownership of water bodies. Rather, through assigning responsibilities to license and control inland fishing within each state to the Commissioner for Agriculture, it implies he is the trustee of the inland water bodies of each state (Inland Fisheries Decree 1992, Supplement to the Official Gazette Extraordinary No.75, Vol.79, 31 December 1992). Notwithstanding this, each LGA also has a remit for fishing, which is usually a concern for the Department of Natural Resources (Madakan & Ladu 1996).

Since the promulgation of the Federal Decree on Inland Fisheries in

Table 1. Access to farmland in four case study villages on the Nigerian Shore of Lake Chad

Village	Land allocated by	Taxes handled by	Taxes passed to	Year farming started	Major Changes	Conflicts
Dabar Shata Kwata	<i>Bulama</i> of neighbouring Dabar Shata Gari	<i>Bulama</i> of Dabar Shata Gari	The <i>Lawan</i> of Bega	1981	None	Initially, with <i>Bulama</i> of Dabar Shata Gari over right to allocate land
Kwata Dawashi	The <i>Bulama</i>	The <i>Bulama</i> 's assistants are overseen by the <i>Lawan</i> 's assistant	The <i>Lawan</i> of Dogoshi	1984	None	Periodically, between villagers and Fulani herders over access to lake water over farming land
Sabon Tumbu	One of three <i>Bulamas</i> representing the main ethnic groups	The <i>Bulama</i> 's assistants are overseen by the <i>Lawan</i> 's assistant	The <i>Lawan</i> of Beidari	1985	None	Recently, between transhumant farmers and Fulani pastoralists; and periodically within Hausa community over <i>Bulamaship</i>
Tumbun Naira	The 'acting' <i>Bulama</i>	The <i>Bulama</i> 's brothers and the <i>Bulama</i>	The <i>Lawan</i> of Mintar	1984	1994: Village flooded and abandoned; 1995: Few had returned to farm	None

Source: Key interviews and group discussions during the participatory rural appraisals of the four case-study villages in 1995



1992, the damming of inland water (and in effect – *dumbas*) has been prohibited:

The appropriate authority shall regulate and control the building of dams, weirs or other fixed barriers or obstruction to ensure the free movement of fish, and where permission is granted to a person to build a dam, weir or other fixed barrier or obstruction, fish ladders shall be built to ensure free movement of fish' (Inland Fisheries Decree 1992, Section 10 [1]).

The Lake Chad Basin Commission's Joint Regulations on Fauna and Flora also effectively prohibit *dumbas*.⁶ The regulations specify that member states will take the necessary measures to prohibit '... dikes, dams or other obstacles which hinder or prevent the migration of fish' (see part B, aquatic fauna, article 6; cited in Moschetta 1991).

Access to fishing rights in practice

Both Federal and Local Government have attempted to manage fishing at Lake Chad. The LGAs in the study region endeavour to play an active role in regulating and taxing fishing in their areas. In 1995, for example, Mongono and Marte LGAs charged a 200 Naira license fee to fishermen within their jurisdiction. However, compliance with measures such as these is limited by a lack of LGA resources, and by an inability of their staff to reach the most productive fishing areas on the lake to enforce them. The Federal Fisheries Department has attempted to enforce the regulations of the 1992 decree at Lake Chad through visits to the lakeside Local Government areas to explain the stipulations of the 1992 decree to LGA staff.

In practice, access to fishing at Lake Chad varies with the season (Tables 2 and 3). Fishing during the rising flood is more or less open access. Anyone with the means to do so, can fish the rising flood waters. Rising flood fishing does not require permission and is not charged for directly. There are, however, indirect costs. For example, the discretionary charges imposed by the Joint Patrol.⁷ As the flood peaks and begins to subside, fishermen have the option to either fish the area of open water remaining at the centre of the lake basin, or to fish the pools and channels of residual flood water which remain around the villages of the study area (Table 3). Access to these fishing grounds is restricted to those who pay for it, usually in advance.

The allocation and taxation of *dumba* sites has become an important focus of fisheries regulation since they were introduced in the 1980s. Since

Table 2. Access to rising flood fishing from four case study villages on the Nigerian Shore of Lake Chad

Village	Restrictions enforced	Taxes/Fees	Taxes/ Fees passed	Year fishing started	Major Changes	Conflicts
Dabar Shata Kwata	None	The <i>Bulama</i> expects an acknowledgement from fishermen staying in the village	No further	1978	None	None
Kwatan Dowashi	None	None	N/A	1980	None	None
Sabon Tumbu	None	Fee paid to one of the three <i>Bulamas</i>	Used to meet tax demands of <i>Lawan</i> of Baidari	1985	None	None
Tumbun Naira	None	None	N/A	1984	None	None

Source: Key in interviews and group discussions during the participatory rural appraisals of the four case-study villages in 1995

Table 3. Access to *Dumba* fishing during the receding flood from four case study villages on the Nigerian Shore of Lake Chad

Village	Restrictions enforced	Taxes/Fees	Taxes/ Fees passed to	<i>Dumba</i> fishing started	Major Changes	Conflicts
Dabar Shata Kwata	Fishing at <i>Dumba</i> sites is restricted and licences are endorsed and enforced by the Army	Negotiated through his village-based assistant and paid in cash to <i>Lawans</i> ' representative. A further fee is also paid to the Army	The <i>Lawan</i> of Baga	1989	In 1993, conflict led to regulation and licensing of <i>dumba</i> site allocation, which had previously been on a 'first come, first served' basis	<i>Bulama</i> involved in dispute over the <i>dumba</i> licence which he paid for in 1995 and was subsequently ignored and <i>dumba</i> rights denied
Kwaton Dawashi	Fishing at <i>dumba</i> sites is restricted and licences sold	Fees negotiated with and paid in cash to the <i>Bulama</i> who issues a LGA receipt	Kukawa LGA	1989/1990	In 1994, Kukawa LGA took over <i>dumba</i> licensing revenues from <i>Lawan</i> of Dogoshi (and the Army). Recent enforcement of 1992 decree challenges the LGA taxation of <i>dumbas</i>	None mentioned
Sabon Tumbu	Fishing at <i>dumba</i> sites is restricted and licences sold	Negotiated through 1 of the 3 <i>Bulamas</i> . <i>Lawan</i> 's rep. decides whether to issue licence & accepts payment in cash	A proportion is passed to the <i>Lawan</i> of Baidari (& on to District Head)	1989	In 1994, Marte LGA took over direct allocation and licensing of <i>dumbas</i> , and then had to stop after the enforcement of the 1992 decree. The system then reverted back to its current status.	None mentioned
Tumbun Naira	Fishing at <i>dumba</i> sites is restricted & sites are allocated by acting <i>Bulama</i> for an initial fee	Taxes assessed in relation to catches and paid to acting <i>Bulama</i>	A proportion is passed to <i>Lawan</i> of Mintar (& to District Head)	1989	The system of <i>dumba</i> regulation had evolved by 1993. Mongonou LGA considered taking over <i>dumba</i> licensing, but considered it too problematic	None mentioned

Sources: Key interviews and group discussions during the participatory rural appraisals of the four case-study villages in 1995

then, there has been considerable competition for suitable sites in which to locate *dumba*. Until 1993, *dumbas* had been a source of conflict between *dumba* fishermen and those downstream of them. In 1993, the conflict was resolved by a wealthy *Lawans*, who agreed to issue a written license which could be checked and (the exclusive rights of the licensee) enforced by the Joint Patrol or Army.

Then in 1994, Kukawa and Marte LGAs attempted to license and tax the *dumbas*, and confusion developed over who had the right to license them. This was resolved when, in early 1995, Federal fisheries officers visited the LGAs and explained the regulations of the 1992 decree. These prohibit *dumbas* and thus prevent LGAs from taxing them (Table 2). Nonetheless, the use of *dumbas* persists. The 'traditional' administration filled the void created by the withdrawal of Local Governments and expanded its authority over fishing, particularly with regard to the allocation of *dumbas*.

Although there was considerable variation in the systems of access to *dumba* which operated from each case study village, the profits to be made from *dumba* fishing were reflected in the ubiquitously high license fees which were charged for them. In 1995, the exclusive rights to operate a *dumba* at a particular site were sold for as much as 10,000 Naira, or more than US\$100. Not surprisingly, the focus of access institutions has shifted away from other methods of recession fishing. In general, the exclusive rights to the fishing from a *dumba* site were sold for cash (in advance) on a seasonal basis. Purchasers of these could then sub-let these rights for various time periods during that season. *Dumba* sites are allocated by various agents of the local *Lawan*, although rarely the *Bulama*, with the objectives of revenue collection and conflict prevention. The second of these objectives is shared with the Joint Patrol, whose officers also profit from their endorsement of the *dumba* licenses issued by certain *Lawans*.

Discussion and conclusion

Rather than evolving from communities in response to their production strategies, the system of access to farmland on the current Nigerian shore of Lake Chad has been imposed by an aristocracy, which is based in the towns and villages along the former lake shore. This system was familiar to most in the case study communities and, since much of the agricultural production at Lake Chad is for sale, the system does not seem totally unworkable. However,



it is, largely arbitrary, because farmers have no say in who receives their taxes, or how they are spent. Unlike during the pre-colonial era when peasants received protection from the Kanuri aristocracy, the farmers of the lake shore receive nothing (other than access to farm the recently revealed lake shore) in return for the taxes paid to the *Lawan*.

Unlike the case for farmland, the systems of regulating access to fishing have only been created recently. They developed in response to the introduction of the highly profitable method of fishing, which led to conflict and confusion. Conflict between fishermen developed over the impact of *dumbas* on downstream fisheries, as well as confusion between modern administrative agencies over *dumba* regulation and taxation. Large *dumba* profits were both a source of conflict and a motive for the traditional administration to resolve the conflict in order to benefit from the profits.

The institutions for access to resources at Lake Chad do not readily conform to existing models of resource tenure. The following discussion considers the extent to which those discussed at the start of this paper offer an explanation of resource access at Lake Chad. The first model to be considered was outlined by Gordon (1954) and described as the 'Tragedy of the Commons' by Hardin (1968). This was based on the notions that environmental carrying capacity is finite, 'tragedy' ensues once this capacity has been exceeded and as the users of a resource will not voluntarily restrict their exploitation of it, the state must impose and enforce exclusive rights to the resource. This theory cannot be applied to Lake Chad, where a major determinant of environmental carrying capacity is the extent of the flood, which fluctuates from year to year. The impact of resource exploitation on the capacity of the lake to support its population is unclear and in any event, is restricted by a variety of institutions which control access to the lakes resources.

The second model to be considered was the historical process of institutional erosion observed in the Francophone Sahel. The degradation of forests and rangelands throughout the region has been attributed to the partial imposition of 'modern' statutory measures to ensure their sustainability. These not only failed in their objectives, but undermined the customary tenure arrangements that did exist. The result has been a dual system, in which the many areas where tenure is either unclear or not enforced, have been over-exploited. A similar institutional dualism exists at Lake Chad and this also has had gaps in its coverage. For example, in the allocation of fishing rights. However, the fortunes of the traditional administration at Lake Chad

differ from those of the systems of customary tenure in the Francophone Sahel.

The first difference is in the relationship between the traditional administration and the state. Rather than being undermined by 'modern' tenure arrangements, the British colonial policy of collecting tax through the traditional administration served to strengthen it. This legitimised what is essentially a system of feudal exploitation. The current system differs very little. However, in the past the 'Native Administration' passed on a proportion of the tax collected to the British, whereas today, very little of the revenue from farm taxes reaches the Local Government or Nigerian Army, which now defends the lake.

A second lies in the objectives of the two systems. Systems of customary tenure have been characterised as broadly benevolent, in that they sustained rural livelihoods. At Lake Chad, however, the overriding and overt objective of institutions for resource access is profit. *Lawans* collect taxes as rent on 'their' fiefs. The ability of such fiefholders to acquire and extend their fiefs has not been the result of any investment in, or historical association with the lake floor. After all, the floor was only revealed after the lake began to contract in the 1970s. Essentially, their ability to instigate the institutions of access to the resources of the lake floor is a function of the power of the 'traditional' administrators to pursue their own interests.

The third model considered was that of the institutional development which Boserup (1965) and Netting (1993) linked to the process of agricultural intensification generated by population growth and an increased demand for land. The model predicts that the intensity of resource exploitation will determine the exclusivity of property rights, as resource users will develop institutions to exclude others from benefiting from their resource investment. Agriculture at Lake Chad has not experienced intensification or institutional development in the way that Boserup, Netting and others have described. The contraction of the lake has prevented the establishment of long-term rights to farmland, and while farmers use a high level of working capital and sell a large proportion of their output, they have made minimal investments in fixed capital.

The process of institutional development at Lake Chad conforms most closely to the model propounded by North (1990), in which institutional evolution determines the outcome of economic development, rather than *vice versa*. North maintains that where the evolution of institutions is driven by the interests of those with the power to devise them, nepotism, monopolies and

underdevelopment results. For households making their living at Lake Chad, the result of this process is arbitrary taxation. The taxes imposed by the traditional administration are illegitimate, because the obligation to pay them is not matched by a duty to provide. Such taxes are inimical to livelihoods, because revenues are not used to provide the schools, health centres and other social and physical infrastructure that would enable households to build on their assets.

Despite the exploitation inherent in it, the system of land tenure at Lake Chad has important advantages over the system of fisheries management. The most important of these is that it works. The institutions for access to land are widely understood, they have almost complete compliance and they are stable. The households of the lake shore know when they will be expected to pay their farm tax, they know who they will pay it to, they know roughly what proportion of their harvest will be required and roughly what other households in the village will be paying. In contrast, the allocation of fishing rights varies from village to village, has required the Army to prevent conflict, and has swung between the control of Local Government, the 'Native Administration' and the Army.

Although broadly benevolent and similar in their aims to sustain fish stocks and fishing livelihoods, the efforts of the Federal Fisheries Department and Local Government have conflicted and resulted in failure. Federal attempts to enforce a ban on *dumba* fishing at the beginning of 1995, prevented Local Government regulation of *dumba* fishing. Consequently, the traditional administration resumed their allocation and taxation of *dumba* licenses, and where disputes arose, the Nigerian Army were paid to endorse these 'traditional' licenses. *Dumba* fishing persists and Local Government has little control over it. Fisheries management, like the other modern administrative institutions at Lake Chad, cannot operate effectively because there is confusion over which agencies have jurisdiction over which areas. In addition, the formulation of regulations cannot to keep up with dynamics of the Lake.

Although farm taxes are neither accounted for, nor invested in the communities who pay them, the understanding which all involved have about the way they are collected is an advantage. Most of the other taxes imposed at Lake Chad are not only illegitimate, but inconsistent too. The allocation of exclusive fishing rights is one example of this. The inconsistent nature of these taxes severely constrains the ability of farmers and fishermen to plan for them.

These conclusions indicate a radical route forward with regard to the

problem of addressing the inconsistent nature of much taxation at the lake. Whether the taxation is legitimate or not, is not the real issue. Rather, if the taxation is at least transparent, then households could plan for it. Lowering the transaction costs involved in both acquiring and allocating access to fishing grounds would be in the interest of both the households making their living on the lake shore, and the organisations whose agents rely on fishing revenues. This would not require rigid regulations. The comparative success of the traditional administration in allocating farmland can be partly attributed to their flexibility in adapting to the changing environment at Lake Chad. If formulae (rather than fixed amounts or dates) could be established and disseminated for taxes which must be paid, this would reduce the transaction costs for all involved.

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Endnotes

- 1 In a similar vein to Hardin, Olson (1965) argued that if an individual can derive a benefit from a public good, there would be no reason for she or he to contribute to the good. Other authors have described this theory using the 'prisoners' dilemma', where individuals are offered a choice between cooperation with each other or defection. If both cooperate and stint in their use of the common resource, its over-exploitation is not inevitable. However, the theory predicts that joint users of a common resource have no incentive to stint in their use of it, as they cannot be sure that their co-users will do likewise. Instead, they will pursue the 'free-rider' strategy and will ultimately over-exploit, leading to 'tragedy'. (Runge 1984, Moorehead & Lane 1993, Wade 1988)
- 2 For example: Acheson (1975) describes how 'fief' holders have created exclusive rights to the lobsters on the Maine coast; McGoodwin (1983) describes a variety of indigenous mechanisms of self regulation in unmanaged fisheries; Wade (1988) shows how users have developed a system of managing access to irrigation; Child (1993) describes how rural



- communities in Zimbabwe now manage and market their wildlife successfully; and Kurien (1995) describes how communities are acting collectively to rejuvenate coastal fisheries.
- 3 For example, the *Programme National de Gestion des Terroirs Villageois* in Burkina Faso (see Toulmin 1991) and a similar strategy for forestry management in Mali (see Brinkerhoff 1995). The TMAF project, through which research for the thesis was conducted, is an example of such an initiative funded by the UK DFID to promote community-based solutions to perceived fisheries management problems. The recent UK DFID sponsored Capacity Building for Decentralised Development (CBDD) project, based in central Nigeria, is another example.
 - 4 Extrapolating from figures for the fish sold in the two key, lake-side markets, Sagua (1991) estimated an average annual production of 56,000 tons (fresh weight equivalent) between 1986 and 1989. This is a fraction of the figures calculated by Duran (1980) for the 1970-1977 period, which allow a comparable estimate for an average annual production of 243,000 tons.
 - 5 Since 1976, village heads (i.e. *Lawans* rather than *Bulamas*, who are officially described as ward or hamlet heads) have, in theory, been the paid employees of Local Government (see Thomas, Jimoh & Matthes 1993). This is not, however, always the case for the *Lawans*, whose areas of jurisdiction are adjacent to Lake Chad. The power and status of individual *Lawans* varies considerably: those with least are most likely to attend LGA sessions, and those with most will not. LGA officials may even seek audiences with the most powerful *Lawans*. For example, the *Lawan* of Baga.
 - 6 Although the Lake Chad Basin Commission's Joint Regulations on Fauna and Flora were ratified by the member states (Nigeria, Niger, Cameroon and Chad) in 1988, they have not been enforced in Nigeria.
 - 7 In theory, fishers were required to have licences issued by the LGA. In practice, the LGA does not enforce compliance with this however members of the Joint Patrol can ask to see these licences and can extort payment when they are not presented immediately.

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Legislation

- 1977 Joint Regulations on Fauna and Flora of the Lake Chad Basin Commission, ratified by the Federal Government of Nigeria in 1988.



Water Wars: Enduring Myth or Impending Reality?

Anthony Turton

Introduction

There is a fascination with the notion of a Water War, and the existence of such a false phenomenon seems to prevail, despite irrefutable evidence to the contrary. This concluding chapter will suggest that it is time for us to debunk the myth of Water Wars for two important reasons. Firstly, such things tend to be highly emotive, and as such, they lure us away from the real issues that we should be focussing on. Water Wars are nothing more than a red herring, consuming our collective research energy when there are other more pressing problems which we need to attack. Secondly, this construction of knowledge is actively fed into the media, who then propagate the myth as if it were reality. As such, the media is doing us a grave disservice, because such untested information informs an already negative perception that exists about Africa, which undermines investor confidence and continues to marginalise the continent. Who, after all, would want to invest in a region when the popular belief is that it is likely to slip into a quagmire of water wars during the twenty-first century?

The myth of water wars

Water Wars are nothing more than a myth. There is not a shred of evidence to support their existence in any of the chapters in this book. True, there is a lot of conflict, or potential conflict, over water resources. This is particularly true where these water resources are found in shared river basins or aquifers. However, this does not mean a war over water. In this sense, we need conceptual clarity (Turton 2000a). Water scarcity, as both a necessary and sufficient condition for going to war, is an almost non-existent phenomenon.

In this regard, it is illuminating to read the revealing findings of a comprehensive research project which used the Transboundary Freshwater Dispute Database. One of the main conclusions was that, 'the actual history of armed water conflict is somewhat less dramatic than the water wars literature would lead one to believe: a total of seven incidents, in three of which no shots were fired. As near as we can find, *there has never been a single war fought over water*' (emphasis in the original text), (Wolf 1998:255) This has been the case since at least 2,5000 BC, when the Sumerian city-states of Lagash and Umma went to war over the right to exploit boundary channels along the Tigris River (Cooper 1983 as cited in Wolf 1998:255). However, that was not even a true water war (Turton 2000), falling neatly, instead, into the definition of a quasi water war. These seven incidents are briefly as follows (Wolf 1998:256):

- The 1948 partition between India and Pakistan saw the Indus Basin being divided in a convoluted fashion. No less than 12 years of negotiations, led by the World Bank, resulted in the Indus Waters Agreement.
- Between 1951 and 1953, Syria and Israel exchanged sporadic fire over Israeli water development in the Huhleh Basin. Israel moved its freshwater intake to the Sea of Galilee.
- In 1958, Egypt mounted an unsuccessful military expedition into disputed Nile riparian territories. Tensions eased when a pro-Egyptian government was elected in Sudan and the Nile Waters Agreement was signed.
- Between 1963 and 1964, border skirmishes between Somalia and Ethiopia erupted over disputed territories in the Ogaden Desert, which included some critical water (and oil) resources. Several hundred deaths occurred before the ceasefire. One element in this conflict was the fact that the 1948 boundary had left Somali nomads

under Ethiopian rule.

- Between 1965 and 1966, Israel and Syria exchanged fire over the 'all-Arab' plan to divert the Jordan River headwaters, presumably in order to counter the Israeli plans to develop the 'national water carrier'. Construction of the Syrian diversion halted in July 1966.
- In 1975, Iraq claimed that their water from the Euphrates was insufficient, citing upstream dam construction as the cause. This resulted in Syrian-Iraqi hostility with military posturing, but successful mediation by Saudi Arabia eventually eased tensions.
- Between 1989 and 1991, two Senegalese peasants were killed in a dispute over grazing rights on the Senegal River. This sparked off ethnic and land reform tensions in the region, resulting in the death of several hundred people. Significantly, the fighting was not between two armies, but between civilians from opposing sides. The army intervened and order was restored.

We can therefore safely conclude, that based on available evidence, Water Wars as defined by Turton (2000) are very rare indeed. In fact, their existence is nothing more than a myth which deserves to be debunked. The conclusion of Wolf's comprehensive study serves as a wise warning in this regard — he said that, 'while water wars may be a myth, the connection between water and political stability certainly is not' (Wolf 1998:261). Consequently, we should accept that water and conflict are deeply intertwined, therefore we need to focus more sharply on the finer nuances of this if we are to move forward with the discipline of hydro-politics as a distinct branch of political science.

When it comes to water as a target of war, there is vast literature to show that this is indeed true. However, this is not a water war. It can be regarded as a conventional form of war, with hydraulic installations as a tactical component (Turton 2000). The best examples of this in southern Africa at present are in Angola, where major hydraulic installations on the Kunene River are either damaged or malfunctioning, directly as the result of military action (Meissner 2000).

The existence of quasi Water Wars can also be found in southern Africa. In this case, the conflict is not over the resource itself, but the theatre of the conflict happens to coincide with aquatic environments. The best example of this is the Kasikili/Sedudu Island issue, which was dealt with in the chapter by Ashton (2000). These are interesting cases in their own rights, because despite the fact that the International Court of Justice has made a ruling on



the cases, the fundamental dynamics of the conflict have not been considered in the judgements. The conflict can return, in response to fluvial dynamics and tectonic movements, which can in fact affect a number of other islands in the area. Clearly this is an interesting area of future work, and one that will yield rich pickings for the researcher.

The important emerging issues

So, if Water Wars are unlikely – at least in the true sense of the definition – what are the really important hydropolitical issues that we should concern ourselves with? At least six distinct issues can be isolated at this time.

The first major issue is that which relates to the role of civil society. Recent work (Turton & Meissner 2000) suggests that civil society has become an increasingly important role player within the water sector. Nowhere is this more evident than in the activities of NGOs. In this regard, NGOs are likely to play a key role in at least three areas – the environment, human rights and water service delivery – and should be regarded as legitimate hydropolitical role players. This implies that conflict is inevitable as more role players become involved in what used to be the exclusive domain of the government. This conflict is likely to centre on the interaction between, and definition of, legitimate roles for each actor. Consequently, there is the need to conduct research into this problem, in order to map out the processes at work and suggest viable solutions.

The second major issue is that regarding environmental security, which is alluded to in the Chonguica (2000) contribution. Elements of this are expanded on in the contribution by Du Plessis (2000). This is likely to become a major thrust of political science studies in the future, especially as Environmental Diplomacy is increasingly brought to bear by the developed countries of the world. To this end, the words of Rodal (1996) are illuminating:

'[T]he environmental issue symbolises the logic and complexity of the new agenda, a defining element in the emergence of a different shaping spirit of world politics. ... Environmental issues symbolise what appear to be among the salient features of the post-Cold War [and] the emergence of an agenda comprising truly global issues. In the West, at least, the health of the global environment is commonly perceived to be critical for the sustainability of civilisation, and yet to be in deepening crisis. Integral to this conception

is the idea that meeting the environmental challenge will require new conceptions of security and of the national interest, and new forms of action and coordination. The existing international political and economic system, grounded in the parochial interests of states and industries, is seen as a major part of the present environmental problem. Indeed, the environment is seen as the quintessential global issue. ... It is seen as being above ideology. It serves as something of a unifying concept linking a range of problems which need connected, transnational, complex strategies if they are to be treated. It is an element in statecraft, foreign policy, Canada's relations with other states and in Canada's participation in international bodies'.

If environmental security is increasingly becoming an issue, and if Environmental Diplomacy is becoming a post-Cold War phenomenon, then the whole issue of conflict mitigation becomes relevant. Thus, the third major issue relates to conflict mitigation, with two sides of the coin being evident. The one side relates to conflict resolution, whereas the other side relates to conflict mitigation. A number of key issues are central to both of these components:

- We need to reach consensus on what a hydropolitical hotspot is and how we define it. This is complicated and not easy to develop. The chain reaction of cascading problems is evident in Mozambique, where dams that are built downstream as the direct result of reduced flow (caused by upstream use), in turn result in flooding and unseasonal water supply on peasant land (Leestemaker 2000). The contribution by Meissner (2000) shows the value of developing a hydropolitical history of each major river basin. This will help contextualise each conflict within a broader historical and geographical setting, and will assist with the generation of enduring conflict mitigation strategies.
- The role of good governance is also highlighted under this broad heading (Mocchebelele 2000). We need to understand what good governance entails, and then transplant it from one basin setting to another if we are to effectively mitigate conflict. An element of good governance is the establishment of a clear set of institutional guidelines that embrace the values of society (Nundwe & Mulendema 2000). In this regard, the concept of the 'hydro-social contract' is of critical importance (Turton & Meissner 2000). Thus, we need to



understand this better.

- When talking of hotspots, the issue of geographic scale immediately comes to mind. What is a crucially important issue at the water-hole or household level, seems to pale into insignificance at the international level. Wolf's (1998:261) finding – that there is an inverse relationship between the level of geographic scale (ranging from the international down to the household or farmer) and the degree of violence – is therefore highly relevant. In other words, an individual is more likely to resort to violence over water than a country is. Yet each level is relevant, and each is potentially a source of endemic conflict. Thus, we need to map these out and understand them better as part of a comprehensive conflict mitigation strategy at the SADC level.
- An age-old coping strategy has been the use of trade. In hydropolitical terms, this trade in 'Virtual Water' – the water that is used to produce a crop or product – has offered a viable way of balancing the water budget at the strategic level. 'Virtual Water' is therefore likely to become increasingly relevant to conflict mitigation. Yet we understand little of this process. Whereas a lot of work has been done in the Middle East/North Africa (MENA) region, most notably by Professor Tony Allan, very little has been done in southern Africa. We need to ask this central question: can 'Virtual Water' trade be an effective alternative to augmentation within the SADC Region, and if so, what do we need to do in order to implement this as a coherent strategy? In truth, this is a complex problem, deserving a major research initiative. One critical issue which needs to be understood is the implication of changing from a policy of national self-sufficiency in food production, to one of food security. There are far-reaching ramifications regarding this issue, and we have not yet begun to map these out in a coherent way.

This leads on to the fourth emerging hydropolitical issue, namely that of Sovereignty. At the heart of normal international political interaction is the concept of sovereignty, which is said to be indivisible and absolute, resulting in an international political milieu in which all states are treated as legal equals. This is a myth however, as states are equal only in terms of legal fiction. Nowhere is this problem more evident than in international river basins, where you have two major issues confronting one another. On the

one hand, state sovereignty as embodied in the United Nations Charter is taken to be absolute; whereas on the other hand, the changing consensus on the desirability of Integrated Catchment Management places the emphasis on the entire river basin as an integral unit. Thus, these two concepts are mutually exclusive of one another if interpreted in extreme forms. Consequently, acceptable middle ground needs to be found. In terms of this issue, the following are becoming increasingly relevant:

- The need to deconstruct the concept of sovereignty was expressed at the Second World Water Forum at The Hague. In this regard, there has been a call for the acceptance that national sovereignty is limited by the respect for the sovereignty and rights of other states (GCI 2000b:61). We need to map out the ramifications of this new trend.
- Related to this is the emerging debate on rights versus needs, which was also evident at both the 1999 Stockholm Water Symposium and the Second World Water Forum at The Hague. Whereas the absolute sovereignty paradigm focuses on the rights that states have to appropriate water in a given international river basin, the alternative needs-based paradigm suggests that we should approach the issue of allocation in a more humane way. An example of the former is the Harmon Doctrine, and an example of the latter is the principle of equitable utilisation as found in the Helsinki Rules. This is gaining credibility and is extremely important from a conflict mitigation perspective, because the rights-based approach is inherently conflictual (being based on the zero-sum principle), whereas the needs-based approach is inherently conciliatory. This debate is likely to find ready supporters in the southern African region. Downstream states which have a heavy reliance on exogenous water are likely to support the needs-based model, while upstream states are likely to support the rights-based model. There are clearly implications for this which we need to start understanding in a more profound manner.
- Linked to the notion of sovereignty is the problem of international border disputes. These typically fall into the category of quasi-water wars as defined by Turton (2000a), and southern Africa has a number of potential hotspots under this heading. At the time of writing, there are tensions over the various islands in the Zambezi Basin around the Caprivi Strip, and the ramifications of shifting the South African/Namibian border to the centre of the Orange River

(Ashton 2000) are only starting to be appreciated by government. We need to unravel the dynamics of these issues further, so that we can effectively resolve them in a peaceful and sustainable manner.

The fifth emerging hydropolitical issue is directly related to water scarcity at the regional level. Southern Africa is characterised at present by the development (or planning) of major inter-basin transfers of water, some of which cross international borders. Some of these projects are extremely ambitious. The Eastern National Water Carrier in Namibia is a complex system of dams, pipelines, canals and aquifers. Plans exist to augment supply by building a pipeline from the Okavango River at Rundu. There is a network of pipelines and canals which take water from the Kunene River into Owamboland. Plans exist for harnessing water from the Congo (Zaire) River and transferring it to Namibia. This would traverse Angola, linking at least three different southern African countries, one of which (Angola) has been the centre of an ongoing civil war that appears to be unstoppable. The first phase of the North-South Carrier has been completed in Botswana, and additional phases are being planned (Chenje & Johnson 1996:202). The Matebeleland Zambezi Water Project is planned to take water from the Zambezi River to Bulawayo (Chenje & Johnson 1996:174) (Berry & Nel 1993), but at present no funding is available. Indications are that this may be linked, at some future date, with the North-South Carrier in Botswana. Then there is the Lesotho Highlands Water Project which is already in existence. These pipelines are getting increasingly complex, costly and vulnerable to the vagaries of international political tensions. Thus, we need to develop a deeper understanding of the politics of pipelines (Turton 2000b) within the context of SADC. The central questions here are:

- Who benefits?
- Who pays?
- To what extent is resource capture justifiable?
- What are the impacts on the environment?
- Can 'Virtual Water' trade be a viable alternative to pipeline development, and if so, what needs to be done to make this sustainable?

Sixthly, we need to grasp the fact that the problems we are being confronted with are becoming increasingly complex. As Wolf (1998:263) notes, water is an interdisciplinary resource, therefore the attendant disputes can only be resolved through active dialogue between and among disciplines. This is of

critical importance if we are to effectively mitigate against the conflict potential in the southern African region. Consequently, we need to focus on the development of a multidisciplinary capacity, across international borders, between bureaucratic entities, and within the broader framework of SADC. To this end, we need to look to the SADC Water Sector and ask what needs to be done to empower this structure in order to make it an effective vehicle for delivery? One important element of this problem is the establishment of a set of concepts and models which can be used to link the various disciplines. Another critical element is how we deal with the issue of historically advantaged versus historically disadvantaged institutions. Thus, we are confronted with the challenge of developing capacity – against the trends of the historically skewed patterns which characterise southern Africa – between countries, institutions and disciplines.

These six issues are the important ones, deserving of our undivided attention. Therefore, to focus any more energy on Water Wars will merely dilute those efforts and undermine the long-term need to develop effective coping strategies to ensure social stability in a region facing increasing levels of water scarcity.

Proposed research project for southern Africa

Having noted that the Water War debate is largely sterile, and then having suggested six more fruitful areas of hydropolitical research, it now becomes possible to propose a focussed research agenda for consideration by various funding agencies, governments and institutions. It seems that what is needed in southern Africa is a regional map of existing and potential hydropolitical hotspots. In short, we need an atlas of such problem areas, capable of overcoming the issue of scale. Such a venture would provide decision-makers with a solid foundation of empirically derived data on which they can base future decisions. This will go a long way to mitigate conflict before it flares up to unmanageable proportions. We therefore need a three phased approach to the problem.

Phase 1 would entail the development of a clearer conceptual understanding of what we actually mean when we refer to a 'hydropolitical hotspot'. Ideally, this would be consensus-based and would cross all of the international borders within SADC. The outcome of this initial process would consist of two distinct items: Firstly, there would be a general understanding

of what is meant by the term 'hydropolitical hotspot'. If sufficient consensus has been achieved, then this concept would be legitimate; Secondly, there should be a clearly defined research methodology, capable of being used in every river basin in southern Africa. This will have to be developed in close consultation with a wide spectrum of role players.

Phase 2 would then consist of a number of independent studies, at the level of the respective river basins, but using the agreed methodology that emerged from Phase 1. Ideally these studies would focus on the major river basins, but if possible, the entire SADC region should be covered. The end product of this process would be a series of basin-wide studies, all using the same methodology and sharing a common terminology.

Phase 3 would then entail the synthesis of these basin-wide studies into one coherent Atlas. Ideally, this phase would result in three distinct end products: Firstly, a Hydropolitical Hotspot Atlas would be generated, which would show up every existing and potential problem area; Secondly, a coherent conflict mitigation plan will be developed for consideration by SADC and member countries; Thirdly, scientists from a wide variety of disciplines, from across the entire SADC region, would be able to see the problem in a more holistic way, and attack it with an arsenal of newly-defined concepts and models that are both indigenous and appropriate.

Conclusion

This book has been an attempt to start the journey towards the establishment of a regional hydropolitical conflict mitigation/resolution capability. The authors have covered a wide variety of topics, some of them from a broader African perspective. While it seems doubtful that Water Wars will happen, this does not mean to say that conflict over water will simply go away. It won't! In fact, conflict over water resources is likely to escalate, but probably only at the sub-national level. It is abundantly clear that within southern Africa, we already have the necessary goodwill to cooperate in a peaceful way. Our combined challenge is to transform the prevailing negative peace – the mere absence of open hostility – to a condition of positive peace – the existence of all the necessary pre-conditions for prosperity, investment, job creation and social stability.

For this to happen, at least four key elements are needed. SADC must get fully involved in the process. We also need the full political commitment

of all of the regions' leaders. From this, the development of solid institutional structures must evolve. These, in turn, must be empowered with the necessary intellectual and financial capital. In short, the so-called second-order resources are likely to be the key determinants of our joint futures. For that reason, a unique and specific research project has been proposed – the Hydropolitical Hotspot Atlas of Southern Africa. If adopted, it will foster cooperation across international borders, develop intellectual capital and redistribute this scarce resource in a more equitable way, which will ultimately help generate the blueprint for sustainable peace. In short, unless we effectively develop second-order resources where they are needed in the water sector, social instability is likely to result from increasing levels of water scarcity.

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Notes on Contributors

Peter Ashton

Dr. Peter Ashton trained as a botanist at Rhodes University in Grahamstown and received his PhD in aquatic plant ecology in 1983. He is a Professional Member of the South African Institute of Ecologists and Environmental Scientists, and is also a member of eight other South African and international scientific associations. He has been employed by the CSIR since 1975 as a water quality and resources specialist, and was appointed as Divisional Fellow on 1 January 1998. He has carried out environmental studies and consultancies in several African countries. Peter Ashton was elected as Vice-President of the International Commission on Water Quality (ICWQ) of the International Association of Hydrological Sciences (IAHS) (1999-2003), and was also appointed as Honorary Professor of Water Resources Management at the University of Pretoria for a three-year term (1999-2002). He has studied the impact of land use and development projects on the quantity and quality of water resources and, in particular, their effects on aquatic ecosystems, as well as their role in integrated catchment management. He has a special interest in the role of aquatic ecological issues in decision-making processes for conflict prevention or resolution, and the management of water resources in shared river basins. Peter Ashton is the author and co-author of more than 80 articles on aquatic plant ecology and management, phytoplankton succession patterns, nutrient cycling, saline lakes, general limnology, the impacts of development on aquatic ecosystems, water resource management in shared river basins. In addition, he is the author and co-author of more than 70 technical reports for external contract



clients. Peter Ashton is Divisional Fellow/Water Quality and Water Resources Specialist at the Division of Water, Environment & Forestry Technology, CSIR email: pashton@csir.co.za

Anton du Plessis

Anton du Plessis is Professor of International Relations, Department of Political Sciences at the University of Pretoria. He has also lectured at the Universities of Stellenbosch and Pretoria. Professor du Plessis is a specialist in international relations theory, foreign affairs and strategic forecasting, with an emphasis on geostrategic concerns. He is a contributor to several books, author of various monographs and has also written numerous articles on international relations and related issues. He received a D.Phil in International Politics from the University of Pretoria in 1985. He is a member of several associations, including the South African Political Studies Association and the South African Institute of International Affairs.
Email: adupples@postino.up.ac.za.

Richard Meissner

Richard Meissner is Research Associate at the African Water Issues Research Unit, e-mail address, meiss@mweb.co.za. Richard Meissner has a Master's degree in Political Studies obtained from the Rand Afrikaans University. His Master's thesis was on: Water as a Source of Political Conflict and Cooperation: A Comparative Analysis of the Middle East and Southern Africa. He is currently busy with his D.Phil. in Political Sciences at the University of Pretoria. The study will be on the role and involvement of interest groups in international water politics.

Marie-Thérèse Sarch

Marie-Thérèse Sarch BSc, Msc, PhD, Research Fellow. Dr. Sarch completed her doctoral work on fishing and farming livelihoods at Lake Chad in the

School of Development Studies at the University of East Anglia. This followed from her work on a UK-DFID sponsored project in northern Nigeria and previous assignments in Africa for USAID, ODI and other non-government organisations. She has written numerous reports including development impact studies and evaluations of participatory research initiatives, and has published widely on the development issues surrounding fisheries. She is now a research fellow at Middlesex University's Flood Hazard Research Centre and her current research interests centre on how flood dependent communities construct their livelihoods on the floodplain. She is building a network of researchers working at the land-water interface.
Email: t.sarch@mdx.ac.uk

Hussein Solomon

Professor Hussein Solomon is head of the Unit for African Studies at the Centre for International Political Studies, University of Pretoria and is Senior Associate of the African Centre for the Constructive Resolution of Disputes (ACCORD). He is also a Research Associate of the Centre for Defence Studies in Zimbabwe and the Institute for Security Studies in Pretoria. His research interests include international relations theory, conflict and conflict resolution in Africa, and South African foreign policy.
Email: hussein@accord.org.za

Anthony Turton

Anthony Turton is head of the African Water Issues Research Unit (AWIRU) at the Centre for International Political Studies (CIPS), University of Pretoria. A political scientist by training, he has a special interest in aquatic ecosystems and their associated social and political environments. Mr Turton is also an associate of the SOAS Water Issues Study Group at the University of London. He currently serves on the Coordinating Committee for Water Ecosystem Research (CCWER) at the Water Research Commission. His e-mail address is awiru@postino.up.ac.za, art@icon.co.za and at31@soas.ac.uk. Mr. Turton is active in the international water sector, having coordinated and led the

Southern African Panel at the Second World Water Forum which was held at The Hague during March 2000. Mr. Turton is currently doing his D.Phil. in International Relations at the University of Pretoria, with his thesis being on the politics of the international river basins in South Africa, with an emphasis on conflict mitigation, regime creation and institutional development. An element of this is the proposed development of a Hydropolitical Hotspot Atlas for use at the regional level. He also has an active interest in the development of hydropolitical theory, specifically where this can be used to assist with the development of policy for developing countries in water-scarce regions. Mr. Turton also works as a consultant in the water sector, and is a member of the International Union of Anthropological and Ethnological Sciences (IUAES), the South African Institute of International Affairs (SAIIA), the Southern African Society of Aquatic Sciences (SASAQS), the Africa Institute (AI), Pugwash and the Professional Association of Dive Instructors (PADI).