

Hydropolitics and Security Complex Theory: An African Perspective

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Introduction

When the Berlin Wall fell and the Cold War ground to a halt, a new wave of optimism engulfed the entire planet. It seemed, at least for a moment in time, that there was cause for a new optimism, and for some that history itself had reached its logical end (Fukuyama, 1992). This short-lived optimism quickly saw a new scramble for post-Cold War political hegemony, and a new global agenda started to emerge. In this process, two things occurred. The first was the expansion of the notion of security (Buzan, 1991; Buzan *et al.*, 1998), that brought with it the central concepts of *securitization*, *securitizing actors*, *referent objects* and *security complexes*. The second was the birth of a globalizing discourse with a number of key ramifications, one of which is the emergence of, "environmental issues [which] symbolize ... the most salient features of the post-Cold War world" (Rodal, 1996). One subset of these environmental issues is the emergence of a powerful global discourse for the management of water resources (Agence de l'Eau, 2000; Cosgrove & Rijsberman, 2000; van Hofwegen & Svendsen, 2000), that is likely to become a key component of the forthcoming World Summit on Sustainable Development (Rio + 10) (Turton, 2001a). In fact, the rise of the environmental movement contributed fundamentally to a widening of the concept of security (Buzan *et al.*, 1998:2), to the point of being seen by some as the "ultimate security" (Myers, 1993). In short, from a water sector perspective, the environment and related issues have become securitized (Gebremendhin, 1991; Hjort af Ornas & Salih, 1989; Mathews, 1989; Myers, 1986; 1993; Turton, 2001a). This paper seeks to examine some of the ramifications of this from an African perspective, using security complex theory as an analytical tool. It starts with an overview of security complex theory, followed by a review of the literature on hydropolitical security complexes as a distinct form of security complex applicable to areas where water scarcity is a salient feature of regional political dynamics. A case is then made for analyzing some Southern African political dynamics through the conceptual lens of a hydropolitical security complex.

An Overview of Security Complex Theory

The fact that the Cold War was won by accelerating the arms race, rather than by the actual use of those arms, emphasized the importance of expanding the concept of security

(Allan, 2001:244). Buzan *et al.*, (1998:2) note that the rise of a globalized environmental movement, along with other transnational issues such as crime, has contributed to the widening of the concept of security. However, security is a relational phenomenon, so consequently one cannot understand the national security of any given state without understanding the international pattern of security interdependence in which it is embedded (Buzan, 1991:187). Comprehensive security analysis calls for focus on how the regional level of political interaction mediates the interplay between states and the international system as a whole (Buzan, 1991:188). This has meant that regional political interactions are only now starting to manifest themselves in the post-Cold War era. The idea of a regional system has been historically linked to Europe and its inherent balance of power dynamics (Buzan, 1991:188). Even the massive process of decolonisation, which should have caused attention to be given to emerging regional security subsystems, was unfortunately overshadowed by the global superpower rivalry (Buzan, 1991:188). By focussing on regional subsystems, two important levels of analysis between system and the state are possible (Buzan, 1991:188). The first is the subsystem itself, whereas the second is the pattern of relationships among the various units. Consequently, Buzan *et al.*, (1998:201) defines a security complex as "a set of units whose processes of securitization, desecuritization, or both, are so interlinked that their security problems cannot reasonably be analyzed or resolved apart from one another". While securitization of water is not necessarily a desirable outcome of water resource management (Turton, 2001a; Wester & Warner, 2002), the concept does help us to understand political linkages between states in shared international river basins. Security complexes emphasize the interdependence of both rivalries and shared interests that can be depicted as a spectrum of possible relationships as shown schematically in Figure 1.

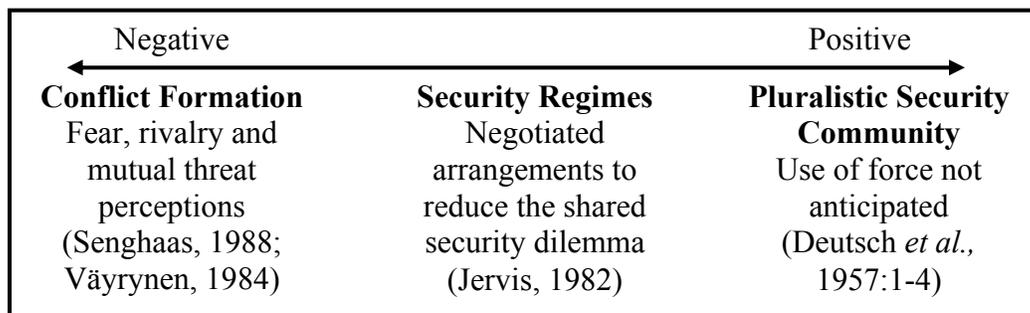


Figure 1: Schematic representation of the spectrum of security complexes that are possible. Adapted from Buzan *et al.*, (1998:12).

Significantly, security complexes are merely analytical devices, being an empirical phenomenon with both historic and geopolitical roots. In fact, security complexes do not require that their members think in terms of this concept - as such they are not actor defined conditions, but rather analytical tools (Buzan *et al.*, 1998:20). Due to the fact that threats are greater over shorter distances, security interactions with neighbours tend to assume a higher priority. Therefore, seen from the top down, security complexes are generated by the interaction of anarchy and geography, where the political structure of anarchy confronts all states with a security dilemma, but this is almost always mediated by the effects of geography (Buzan, 1991:191). The reality of security complexes can be

found more in the patterns of amity and enmity between states, than in the notion of self-awareness. Like the balance of power, a security complex can exist regardless of whether the individual actors recognize or acknowledge its existence (Buzan, 1991:192). A security complex occurs where a set of security relationships stands out from the general background by virtue of its relatively strong, inward looking character, as well as by its relatively weak outward security interactions with its neighbours (Buzan, 1991:193). The boundaries between security complexes are defined by relative indifference towards security perceptions and interactions (Buzan, 1991:193).

An interesting central feature of the emergence of security complexes is the impact of what is known as overlay. *Overlay* is that condition that prevails when the direct presence of outside powers in a region is strong enough to suppress the normal operation of security dynamics among the local states (Buzan, 1991:198). Overlay thus subordinates local security dynamics, which once removed, tends to become a transforming experience, unleashing new interactions over time. As such, overlay has had a major impact on regional security complexes, most notably the result of European and Japanese colonialism in the Third World. The process of colonialism ended at about the same time that superpower rivalry emerged after the Second World War, meaning that one form of overlay was merely replaced by another, thereby continuing to suppress the emergence of more visible local security dynamics. This means that overlay has had a significant impact on the study of security relationships, particularly in the developing world. With the demise of the Cold War, a number of regional security complexes are starting to emerge (Buzan, 1991:202-209). This led to early attempts to identify security complexes that were emerging in the Third World, such as the Latin American Security Complex, the Middle East Security Complex, the Southern African Security Complex, the South Asian Security Complex and the Southeast Asian Security Complex (Buzan, 1991:210).

Security is about understanding political interactions in a wider context. Therefore, international security is about relationships between threats and vulnerabilities, which are most marked in a regional setting. Consequently, Classical Security Complex Theory (Buzan, 1991:186-229) posits the existence of regional sub-systems as objects of security analysis and offers a framework for dealing with this (Buzan *et al.*, 1998:10-11). While Classical Security Complex Theory (Buzan, 1991:186-229) had the advantage of drawing attention away from the extremes of national and global security by focussing attention on mediating regional political interaction (Buzan *et al.*, 1998:14), it is still incomplete as an analytical approach. For this reason Buzan *et al.*, (1998) move beyond what they call Classic Security Complex Theory, because that specific approach is too narrow in focus (states only) with a bias towards military and nuclear threats and threat perceptions. They make the case for widening the conceptual net in order to increase the range of issues and sectors that can be analyzed in a meaningful way. In this process of widening, they distinguish two *generic types of security complexes* (Buzan *et al.*, 1998:16).

- *Homogenous security complexes* retain the classical assumption that security is concentrated within specific sectors and therefore composed of particular types of interaction between similar units. Examples of this are studies of power rivalries among states using terminology such as 'military complex'.

- *Heterogeneous security complexes* abandon the assumption that security is locked into specific sectors only. It therefore assumes a regional logic that seeks to integrate different types of actors that interact across two or more sectors. Examples of this are studies focussing on states, nations, transnational corporations and confederations interacting across the political, economic and societal sector.

Due to the fact that heterogeneous security complexes have the advantage of linking across sectors, the analyst is able to build up a more detailed understanding of complex political dynamics by identifying linkages between sectors (military, economic, societal, environmental etc.), units (states, nations, multinational corporations etc.) and levels (local, national, regional and global). In order to achieve this, scientific discipline is obviously needed, for without it, "the security of each is related to the security of all, [so] nothing can be fully understood without understanding everything" (Buzan, 1991:187). By taking a social constructivist approach to the understanding of the processes of securitization, Buzan *et al.*, (1998:19) move beyond this dilemma. Central to this is the way in which two key questions are answered:

- How to identify what is (and what is not) a security issue?
- How to identify and distinguish security actors and referent objects?

This wider approach to security achieves two things (Buzan *et al.*, 1998:4). Firstly, the wider agenda extends a call for state mobilization to a broader range of issues. This can have undesirable or unintended consequences however, as the case for the securitization of water resource management at the global level shows (Turton, 2001a). Secondly, the wider agenda elevates security to a common good. Wæver (1995) warns that this may be dangerous, calling for the desecuritization of issues wherever possible and appropriate. However, there is a clear set of criteria for something to be considered as a security issue. Buzan *et al.*, (1998:5) state explicitly that the following criteria distinguish normal political issues from security issues:

- The issues must be staged as an *existential threat*.
- This threat must be posed to a *referent object*.
- A *securitizing actor* must perform this securitizing action.
- The intention must be to *generate endorsements of emergency measures* beyond rules that would otherwise bind.

Seen in this light, security complexes become sub-systems or mini-anarchies in their own right (Buzan *et al.*, 1998:13). However, because they are durable manifestations of inter-state behavior, seeing them as sub-systems with their own pattern of interaction provides a useful benchmark against which changes in the security patterns can be identified over time. Having established the fact that security complexes are useful objects of analysis, Buzan *et al.*, (1998:13-14) identify the three main components of the essential structure of any given security complex. *Essential structure* is the standard by which change can

be measured in a given security complex (Buzan, 1991:211). The main components of essential structure are as follows (Buzan *et al.*, 1998:13-14):

- The *arrangement of units* and the differentiation between them.
- The *patterns of amity and enmity* that exist between those units over time.
- The *distribution of power* between the principle units.

Changes bearing on any given security complex are numerous and continuous. For this reason, the key analytical question to ask is how such changes work to either sustain or alter the essential structure of the security complex (Buzan, 1991:216-220; Buzan *et al.*, 1998:13-14), of which four main *structural options* are evident:

- *Maintenance of the status quo* means that the essential structure of a given security complex remains fundamentally intact over time. This does not mean that change does not occur, but it does mean that those changes tend to support rather than undermine the prevailing structure.
- *Internal transformation* of a given security complex occurs when the essential structure changes within the context of the existing outer boundary. This can occur as the result of regional political integration, changes in the distribution of power or changes to the pattern of amity and enmity.
- *External transformation* of a given security complex occurs when the essential structure shows change in the existing outer boundary. This can occur when major states join or leave the complex, or the overall distribution of power, amity and enmity is evident.
- *Overlay* can be the cause of change within a given security complex when one or more external powers move directly into, or out of that complex. This situation is distinct from the normal process of great power intervention.

Security complexes can be treated as objects for policy in the sense that problems can only be resolved within the context of the relevant security complex as a whole (Buzan, 1991:225). This introduces the valuable notion of proximity (Buzan *et al.*, 1998:11), or stated differently, geographic focus. The collapse of bipolarity that was associated with the Cold War means that the focus has shifted from the global level (international system) to the regional level (international sub-system) (Buzan *et al.*, 1998:9). It is argued that by identifying the mechanism that forms regions, this dynamic can provide a useful subsystem level of analysis in its own right (Buzan *et al.*, 1998:10). Once the regional level has been established, the range of layers in the given analytical framework can be sketched. The method for analysis is to first understand the distinctive security dynamic that works at each layer and then to determine the respective security interactions between layers (Buzan *et al.*, 1998:14).

This in turn raises the notion of different levels of analysis. Security complex theory allows attention to be given to the macro, middle and micro levels of political interaction (Buzan, 1991:222). In the study of International Relations, there are five commonly used *levels of analysis* (Buzan *et al.*, 5-6):

- *The international system* comprises the largest conglomerate of interacting or independent units that have no system level above them.
- *The international sub-system* comprises groups of units within the international system that can be distinguished by the particular nature or intensity of their interactions or interdependence on one another. Examples are the Organization of Petroleum Exporting Countries (OPEC), the African Union (AU) (formerly the Organization of African Unity - OAU) and the Southern African Development Community (SADC) etc.
- *Units* comprise actors that are composed of various sub-groups, organizations, communities and individuals that are sufficiently cohesive and independent to be differentiated from one another and to have standing at the higher levels. Examples are states, nations and transnational corporations.
- *Sub-units* comprise organized groups of individuals within units that seek to effect the behavior of the unit. Examples are bureaucracies and the lobbies of special interest groups.
- *Individuals* are the lowest level of analysis in most social sciences.

Building on this, Buzan *et al.*, (1998:18-19) develop three key definitions:

- A *region* is a spatially coherent territory composed of two or more states.
- A *sub-region* is a part of such a region whether it involves more than one state (but fewer than all of the states in the region) or some transnational composition (some mix of states, parts of states or both).
- A *micro-region* is a sub-unit that occurs within the boundaries of a given state.

It is noted that the criteria for assigning levels to a given analytical framework is essentially a political issue, focussing on what constellation of actors forms on any given issue (Buzan *et al.*, 1998:18). The cause and effect relationship can be an indicator of the appropriate level. For example, an issue like water scarcity can become securitized at the global level, but the major focus will most likely be regional in nature. This in turn can unleash political dynamics such as upstream/downstream concerns, which are likely to play into other rivalries within a given regional setting, thereby becoming tied to a more general regional security complex. The main aspect to focus on is where the security dynamics are principally located. Two considerations will affect the answer to this question (Buzan *et al.*, 1998:17):

- The *cause-effect nature* of the issues around which securitization is taking place. For example, water pollution occurs world wide, but it remains a local or regional issue. At best water pollution is a parallel regional issue.
- The *process of securitization* of a given issue.

The most important aspect of these two considerations is the level of the issue, rather than the level of its securitization (Buzan *et al.*, 1998:17-18). Central to this aspect is

identifying the actors that are linked, and how that linkage plays out. Associated with this approach is the potential role played by different sectors in any given analysis. If a multisectoral approach to security studies is to be meaningful, *referent objects* other than the state must be allowed to enter the overall analysis. As such, sectors serve to desegregate a larger whole for purposes of analysis, of which five exist (Buzan *et al.*, 1998:7-8). These are as follows:

- The *military sector* is about relationships of forceful coercion.
- The *political sector* is about relationships of authority, governing status and recognition.
- The *economic sector* is about relationships of trade, production and finance.
- The *societal sector* is about relationships of collective identity.
- The *environmental sector* is about relationships between human activity and the planetary biosphere.

Hydropolitical Security Complexes as a Distinct Form of Security Complex

This expanded approach to security (Buzan *et al.*, 1998) argues that it is necessary to raise awareness in order to generate the political will needed to deal with these newly identified insecurities stemming from environmental, social and political vulnerability (Allan, 2001:244-245). For threats and vulnerabilities to count as security issues, they have to be staged as existential threats, thereby endorsing emergency measures beyond the reach of 'normal' rules that would otherwise bind actors (Buzan *et al.*, 1998:5). Significantly, contemporary water literature reflects this tendency (Turton, 2001a; Wester & Warner, 2002), seeking to galvanize support by focussing on water and crisis (Bulloch & Darwish, 1993; Clarke, 1991; Falkenmark, 1989a; 1989b; 1995a; 1995b; Falkenmark & Lundqvist, 1995; Falkenmark *et al.*, 1990; Gleick, 1992; 1993; Gruen, 1992; Haftendorn, 2000; Pearce, 1992; Redclift, 1994; Saeijs & van Berkel, 1997; Starr, 1991). As enduring evidence of the securitization of water and the environment, the American Central Intelligence Agency (CIA) had established a number of hubs to collect environmental intelligence by the late 1990s, with plans to increase this capacity (Ohlsson, 1999:26) along the lines suggested by Rodal (1996). In addition to this, the CIA established the State Failure Task Force in order to determine what environmental linkages could be contributing factors to political instability (Homer-Dixon, 2000:298-301), largely in response to the genocide in Rwanda. Similarly, in a security review of situations in which the United States may be required to intervene, the CIA focussed on a possible war between Syria and Turkey in which water might play a role (Bulloch & Darwish, 1993:16). Other intelligence agencies are bound to follow this lead, not wanting to be left out of this new form of International Relations, so the spiral of securitization is set to escalate dramatically (Turton, 2001a). Indeed, even Agenda 21 and the World Water Vision is couched in securitization rhetoric - a sad fact that was probably unintended by the authors (Turton, 2001a).

Concepts of resource scarcity and sustainability have successfully mobilized public support (Buzan *et al.*, 1998:74), which some offer as evidence of securitizing moves, but

not necessary of full securitization. In order to achieve full securitization, an issue must be presented as being urgent and existential, and so important that it should not be exposed to the normal haggling of politics, being dealt with instead by top leaders as a matter of priority (Buzan *et al.*, 1998:29). Turton (2001a) argues that while the existing water management discourse tends to raise the issue as an emergency or crisis, it has failed to become one of the top priorities confronting the governments of developing countries. For example, while water is considered to be extremely important, it has not yet been placed on the SADC agenda at the Ministerial or Head of State level. This is healthy, because full securitization is the result of failure to deal with the issues in the normal political framework (Buzan *et al.*, 1998:29). By creating a sense of urgency, the water scarcity discourse seeks to justify a new set of water reforms, but this is narrow and flawed (Wester & Warner, 2002).

While securitization of water is not necessarily a desirable outcome of water resource management, the concept does help us to understand political linkages between states in shared international river basins. Central to this is the concept of a security complex as noted above. Schultz (1995:97) takes this further by providing us with a definition of a *hydropolitical security complex* being, "those states that are geographically part 'owners' and technical 'users' of rivers and further, as a consequence, consider the rivers [to be] a major national security issue". As such this is a useful scientific tool that has enabled some analysts to develop a deeper understanding of the political dynamics in various international river basins where water scarcity is a salient feature (Allan, 2001: 245-262; Schulz, 1995; Turton, 2001b; 2002; van Wyk, 2000).

In establishing a case for a hydropolitical security complex as a special form of security complex, Schulz (1995:92) starts off by arguing that the shortage of water has made hydropolitics, as a form of ecopolitics, a major issue for a number of Middle Eastern states like Turkey and Iraq. As such, the water issue links the various national security concerns of the respective states in the region (Schulz, 1995:92). Buzan & Rizvi (1986), Buzan (1988), Buzan (1991:105-115) and Buzan *et al.*, (1998:12) suggest the use of a "regional security complex" under conditions where states are linked by common security-related issues (Schulz, 1995:92). Allan (2001:242-262) generally supports this notion by identifying a security complex in the Middle East North Africa (MENA) region in which water is one of the key issues. In fact, Allan (2001:246) identifies three separate hydropolitical security complexes in the MENA region - the Nile Basin Complex, the Jordan Basin Complex and the Tigris & Euphrates Basin Complex - with two distinct but linked sub-complexes which he calls the Levant Sub-Complex and the Gulf Sub-Complex. Having noted this, Allan (2001:238) argues that there has been no overt link between water security and state security, largely because of the invisible and politically silent trade in water-rich products such as cereals. Significantly, Allan (2001:238) makes a case for the international trade in water-rich cereals - what he calls 'Virtual Water' - as being one of the invisible but strategically important linkages that drive the hydropolitical dynamics within that complex. In fact, Allan (2001:233) goes so far as to criticize International Relations theorists like Buzan *et al.*, (1998) and Homer-Dixon (1991; 1994) for failing to recognize the conflict-dampening effect of Virtual Water trade as an

element of a security complex. As such, a central component of Allan's (2001) thesis is that this trade is an important external linkage into any hydropolitical security complex.

Building on this, Schulz (1995:93) states that the risk of future water shortages constitutes one of the most strategically important security issues for Turkey, Syria and Iraq. The fact that Turkey has a Ministry of Energy, Iraq has a Minister of Irrigation and Syria a Minister for the Euphrates Dam proves the high priority given to the Tigris-Euphrates River Basin argues Schulz (1995:93), who goes on to say that the traditional definition of national security is thus questioned. The fact that the CIA is also of the opinion that water will have implications for regional security in the Middle East is an additional factor used by Schulz (1995:94) in developing his argument for a hydropolitical security complex. In addition to this, the joint dependency on shared river systems decreases the possibility of implementing national development strategies (Schulz, 1995:121) that fail to consider co-dependency on shared water as a strategic issue. Consequently, the case of the Tigris-Euphrates Hydropolitical Security Complex indicates the importance of including the water dimension to security studies (Schulz, 1995:120) in regions where water scarcity, or a high level of co-dependence on shared river basins, is a salient feature of international relations.

A valuable element of Schulz's (1995) concept of a hydropolitical security complex is the fact that it allows various linkages to be identified. He notes the existence of both horizontal and vertical linkages within the Tigris & Euphrates Hydropolitical Security Complex (Schulz, 1995:97). Examples of horizontal linkages are the Palestinian and Israeli conflict (Schulz, 1995:113) and the ecological dimension of sustainable development within the whole Middle East region (Schulz, 1995:115-117). Examples of vertical linkages are the Kurdish issue that ties the political interaction of Turkey, Syria, Iraq, Iran and the Former Soviet Union (Schulz, 1995:107-110). Another vertical linkage is the fact that various governments constantly try to discredit each other over using water from the Euphrates River on the grounds of Alawi-Baath versus Sunni-Baath political cleavages (Schulz, 1995:110-112). As a result of these various dynamics and linkages, Schulz (1995:102) concurs with Widstrand (1980) that water conflict can be identified under the following five headings:

- Upstream/downstream conflicts between states.
- Conflicts between governments and farmers.
- Conflicts between individual farmers.
- Conflicts between donors.
- Ecological conflicts.

In addition to this, Schulz (1995:102) has identified two more conflict dimensions, which has only been possible by using the conceptual lens of a hydropolitical security complex that has enabled horizontal and vertical linkages to be isolated. These are as follows:

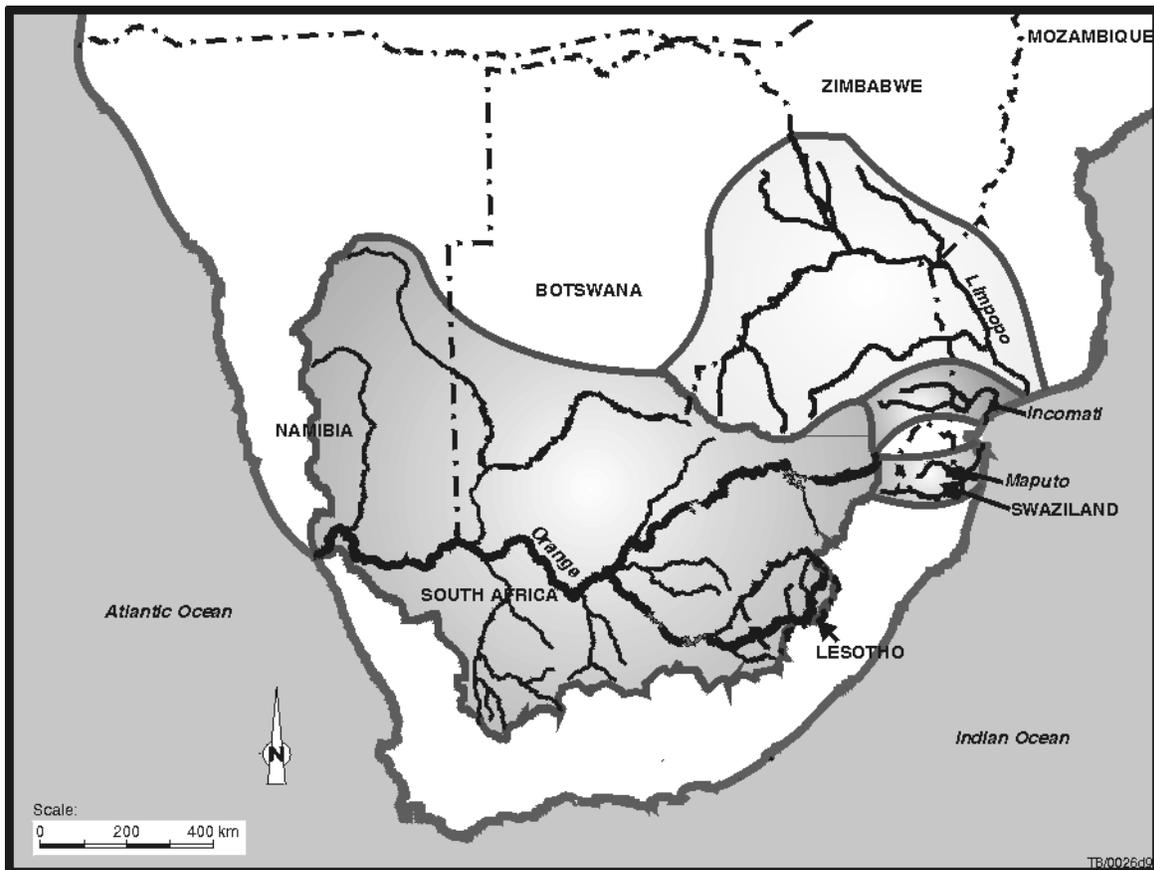
- Conflicts between the state and ethno-religious groups.
- Conflicts within and between various ethno-religious groups.

The Orange River Basin as a Component of a Hydropolitical Security Complex

Having noted that the concept of a Hydropolitical Security Complex is useful in analyzing International Relations dynamics in regions where water scarcity is a salient feature, we can now turn our attention to Southern Africa. The rationale for doing this is as follows:

- Four of the most economically active countries in the SADC region - South Africa, Zimbabwe, Botswana and Namibia - are also the most water-stressed states in Southern Africa (Falkenmark, 1989b:113). In fact in these four states, most of the available water has generally been allocated to economic activities of some sort or another, and many of the river basins are approaching closure¹.
- These four states are all linked via two major international river basins. The Orange River Basin is shared by Namibia, Botswana, South Africa and Lesotho; and the Limpopo River Basin is shared by Mozambique, Zimbabwe, South Africa and Botswana.
- In addition to this, two other shared river basins are strategically important to South Africa. Both the Incomati River Basin and Maputo River Basin are shared by South Africa, Swaziland and Mozambique, with the water being strategically important for the upstream riparian state - South Africa - but also to other co-basin states.
- Overlay is a central issue, with the SADC region having been both a focal point for colonialism, and subsequently a localized theatre in which the Cold War was played out. In addition to these two major forms of overlay, apartheid played a significant role. For example, Buzan (1991:217) predicted that the collapse of apartheid would change the dynamics of the Southern African security complex significantly. It can thus be argued that three levels of overlay (colonialism, the Cold War and apartheid) have effectively suppressed the emergence of regional political dynamics, and with the removal of these, a new set of security dynamics are emerging in SADC.

Some research has already been done on the Orange River Basin (Turton, 2000a; 2002) which suggests that the concept of a Hydropolitical Security Complex is a useful analytical tool. While the South African Minister of Water Affairs and Forestry, Mr. Ronnie Kasrils, is on record as saying that water is not a major security issue (Turton, 2000b:44), the context in which this was framed was viewing hydraulic installations as targets of aggression. This type of rhetoric is also common in water-stressed countries where politicians seek to downplay water insecurity and the resultant vulnerabilities that occur (Allan, 2001:238). As such, the use of security complex theory allows this analytical distinction to be drawn between political rhetoric and strategic reality. The strategic importance of a secure water supply as a fundamental component of economic stability within a river basin that is reaching closure, and in a region that is rapidly reaching a condition of water deficit, is self-evident.



Map 1. Transboundary Watercourse Systems Shared by South Africa (Basson, 1999:3).

Approximately 60% of the geographic area of South Africa is covered by four international river basins - Orange, Limpopo, Incomati and Maputo - which also represent the most developed transboundary watercourses in the entire SADC region (Basson, 1999). The physical location of these four river basins is shown in Map 1. Within the geographical confines of these four river basins, around 32% of the total South African Mean Annual Runoff (MAR) occurs (Basson, 1999:3). This supports the generation of approximately 70% of the South African Gross National Product (GNP) (Basson, 1999:3). In addition to this, a staggering 90% of the electricity supply in South Africa is generated (which in turn is about half of the electricity generated on the entire African continent), and almost all of the mining activity on which the overall economy is based occurs in these shared river basins (Basson, 1999:3). These four basins are also in close physical proximity to one another, all sharing a common watershed that runs through the Gauteng area where the vast majority of the economic activity is physically located (Turton, 2002).

Table 1: Comparative Statistics of South Africa's International River Basins (Adapted from Basson, 1999)				
	Orange	Limpopo	Incomati	Maputo
Total Basin Area	964,000 km ²	183,000 km ²	50,000 km ²	35,000 km ²
Average Mean Annual Runoff for the whole basin	11,200 Mm ³	5,750 Mm ³	3,600 Mm ³	3,900 Mm ³
Basin Area for South Africa	62% (59%)	45% (44%)	62% (61%)	56%
Mean Annual Runoff contribution by South Africa	55% (56%) Uncontested	81% (66%) Contested	81% (64%) Contested	56%
Basin Area for Botswana	9% (11%)	20% (21%)	Nil	Nil
Mean Annual Runoff contribution by Botswana	0% (0%) Uncontested	3% (6%) Contested	Nil	Nil
Basin Area for Zimbabwe	Nil	15% (15%)	Nil	Nil
Mean Annual Runoff contribution by Zimbabwe	Nil	7% (16%) Contested	Nil	Nil
Basin Area for Mozambique	Nil	20% (19%)	33% (33%)	10%
Mozambique contribution to Mean Annual Runoff	Nil	9% (12%) Contested	6% (16%) Contested	6%
Basin Area for Swaziland	Nil	Nil	5% (6%)	34%
Swaziland contribution to Mean Annual Runoff	Nil	Nil	13% (20%) Contested	38%
Basin Area for Lesotho	4% (3%)	Nil	Nil	Nil
Lesotho contribution to Mean Annual Runoff	41% (40%) Uncontested	Nil	Nil	Nil
Basin Area for Namibia	25% (27%)	Nil	Nil	Nil
Namibia contribution to Mean Annual Runoff	4% (4%) Uncontested	Nil	Nil	Nil
Note: Data shown in parenthesis is taken from Savenije & van der Zaag (1998:30) and is used to illustrate the contestable nature of data in some hydropolitical settings. Significantly, the Orange River Basin data is relatively uncontested unlike the Limpopo and Incomati Basins.				

Comparative statistics for the four international river basins in South Africa are shown in Table 1. From this it becomes evident that the most important river basin is the Orange, simply by virtue of its relatively larger volume of water (reflected as MAR) and surface area. The Mean Annual Precipitation (MAP) in the Orange River Basin is around 400 mm/a, which is arid by world standards. This is unevenly distributed however, with the upper basin areas in the Lesotho highlands having a MAP of around 2,000 mm/a (with a potential evaporative loss of 1,200 mm/a), in comparison to the MAP at the river estuary of around 50 mm/a (with an evaporative loss being a staggering 3,500 mm/a) (Conley & van Niekerk, 1998:143). The temperature range across the full length of the river is 60°C (-10°C at the source and + 50°C at the estuary), with habitat types varying from alpine grass in the highlands to desert dunes at the estuary, with the majority of the area being covered by Karoo scrubland (Basson *et al.*, 1997:40). For long reaches of the river, it can therefore be regarded as a linear oasis in the desert (Ashton, 2000:88). This is particularly

true for the last 600-km where it is shared as a common border with Namibia. Just before reaching this point, the basin is linked to Botswana via endoreic rivers such as the Molopo that drain into the general direction of the main watercourse (Basson, 1999:2), but which ceases as surface flow before reaching the Orange River (Basson *et al.*, 1997:41). There are 24 large dams in the Orange Basin (Pallet, 1997:60). Of these, the Gariiep (formerly H.F. Verwoerd Dam with the largest storage capacity in South Africa), when combined with the Vanderkloof Dam, are used to regulate irrigation flow, divert water to the drought-prone Eastern Cape and generate hydroelectric power. The Katse Dam is the highest in Africa, which combined with the Mohale Dam form the key components of the Lesotho Highlands Water Project (LHWP). The Welbedacht Dam on the Caledon River supplies water to the city of Bloemfontein, while the Hardup and Naute Dams provide water to various consumers in Namibia (Basson *et al.*, 1997:42). Groundwater is extensively used for stock watering and domestic supply in rural areas, but is generally low yielding as a result of the limited recharge rates in the arid portions of the basin. Groundwater mining occurs in many instances so sustainability is a key management issue.

Table 2: Various Transfers of Water Involving International River Basins in South Africa				
(Adapted from Basson <i>et al.</i> , 1997:54)				
Name of Transfer Scheme	Source International Basin	Recipient International Basin	Average Transfer ($10^6 \text{m}^3/\text{yr}^{-1}$)	Use
Vaal - Crocodile	Orange	Limpopo	615	Industrial, Domestic
Vaal - Olifants	Orange	Limpopo	150	Industrial (ESCOM)
Olifants - Sand	Limpopo	Limpopo	30	Pietersburg
Crocodile - Limpopo	Limpopo	Limpopo	6	Gaborone
Komati - Olifants	Incomati	Limpopo	111	Industrial (ESCOM)
Usuthu - Olifants	Maputo	Limpopo	81	Industrial (ESCOM)
Assegaai - Vaal	Maputo	Orange	81	Industrial, Domestic
Buffalo - Vaal	Thukela	Orange	50	Industrial, Domestic
Thukela - Vaal	Non International Basin	Orange	630	Industrial, Domestic
Orange - Buffels	Orange	Non International Basin	10	Industrial, Domestic
Orange - Lower Vaal	Orange	Orange	52	Irrigation, Domestic

Orange - Riet	Orange	Orange	189	Irrigation
Orange - Fish	Orange	Non International Basin	643	Irrigation, Domestic, Industrial
Fish - Sundays	Orange via Fish	Non International Basin	200	Irrigation, Domestic
Caledon - Modder	Orange	Orange	40	Industrial, Domestic
LHWP (1A)	Orange	Orange	574	Industrial, Domestic
LHWP (1B)	Orange	Orange	297 (by year 2003)	Industrial, Domestic

Note: All transfers involving the Orange River Basin are shown in bold.

The Orange River carries approximately 20% of the total river flow in South Africa, with the Vaal being the most important tributary (Basson *et al.*, 1997:40). The Vaal River is regarded as being a river basin in its own right and provides Gauteng with all of its water. Gauteng, on the other hand, houses approximately 40% of the South African population, creates around 50% of the country's wealth and generates around 85% of the electricity in the country (Conley & van Niekerk, 1998:146). The Vaal River now has links to 8 other basins in a complex web of Inter Basin Transfers (IBTs) that range from the Limpopo in the North to the Sundays in the South, and can be regarded as the most strategically important river in South Africa (Turton, 2000a; 2002). Table 2 lists some of the largest IBTs showing the volume of water that is involved in each case. Attention is drawn to the linkage between the Orange and Limpopo Basin, and the central role that the Orange River plays in these complex IBTs, all of which are considered to be of strategic importance to South Africa (Turton, 2000a: 2002).

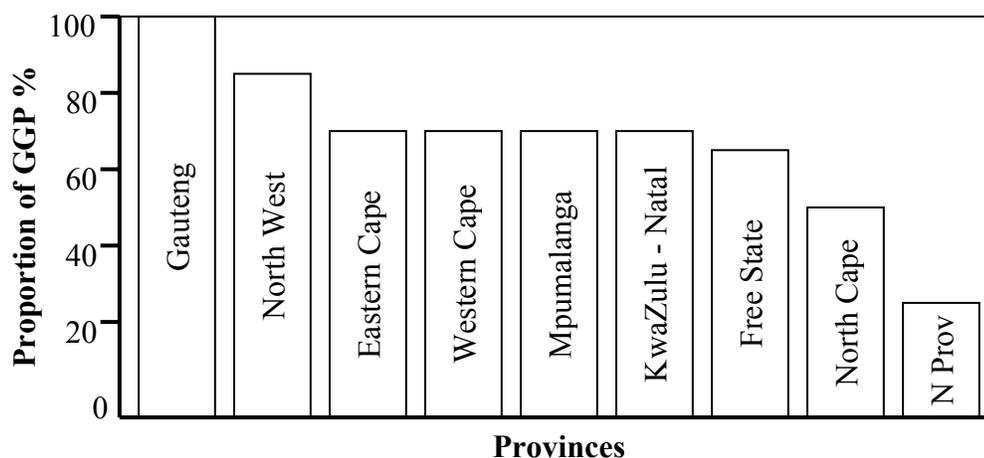


Figure 2. Graph showing the proportion of the Gross Geographic Product (GDP) that is supported by the Inter Basin Transfer (IBT) of water for each South African Province (Basson *et al.*, 1997:55).

The significance of this is illustrated in Figure 2, which shows the proportion of Gross Geographic Product (GGP) that is supported by IBTs in each of the nine South African provinces.

From an analysis of the Orange River Basin (Turton, 2000a; 2002), four distinct hydropolitical drivers can be isolated, which act as fundamental components of the dynamic process. For greater clarity, each will be dealt with separately.

National Interest

It is evident that the major development in the basin has been driven by national interest, the majority of which occurred during a period of apartheid-related policies in both South Africa and Namibia, which in turn had consequences for the other riparian states. In fact, a unique aspect of the Orange Basin is that three of the driest counties in SADC are riparian states in one form or another. Arguably the most important manifestation of this national interest is the South African Hydraulic Mission that has two fundamental components.

- The first of these is manifest in the development of major irrigation infrastructure, much of which is located in the arid reaches of the middle and lower basin where evaporative demands are extremely high and sustainability is therefore a key issue.
- The second of these manifests as a series of complex IBTs, largely as the result of thermal power generation in the Mpumalanga and Northern Province region adjacent to Gauteng where significant deposits of low grade coal occur.

This has resulted in the linking of almost every river basin in South Africa, including the four international basins (refer to Table 2), with one another as part of a complex strategic plan designed to safeguard the energy needs of South Africa in a system that is flexible enough to guarantee assurance of supply in times of localized drought (Pallet, 1997:61). This is being exacerbated by the National Water Act (36/98) that regards water as a national asset to be moved around the country as needed and in the national (public) interest. A high level of dependence on IBTs for economic security has resulted (Figure 2) from this practice. The heavy reliance by the South African economy on IBTs clashes with other legal systems (Basson, 1999:18) that may regard a river basin as being a coherent whole with the water therein belonging to the riparians of that specific river. IBTs therefore complicate the issue of equitable and beneficial use of water in an international river basin (Pallet, 1997:78). This also introduces the aspect of water as an object of a security complex for developing countries in semi-arid areas in which shared river basins are closed (Turton, 2000a; 2002).

The issue of national interest is not unique to South Africa however. Lesotho is an impoverished country with limited natural resources, a large and growing population, and a mountainous terrain that presents complex problems for development. The LHWP can therefore be seen as a viable way for Lesotho to add value to the water that would otherwise flow onto South African soil, and by so doing, generate a viable source of

revenue for itself while providing water to Gauteng by gravity. Lesotho also has plans to irrigate some land, but this is limited in scale and is unlikely to have a major long-term impact. The lack of sanitation facilities in Lesotho is regarded as being a greater problem (Basson, 1999:17).

Namibian national interest is only now starting to become manifest because of its recent independence. This is based on securing rights to the lower Orange, which in turn is linked to the establishment of the international border in the middle of the river (Meissner, 2001) - a process that has been initiated but not yet finalized - due to technicalities relating to compensation for grazing rights, diamond concessions and other issues (Ashton, 2000:86-89). South Africa is resisting this however, as the November announcement on the status of the South African / Namibian border attests to (Kashweka, 2000; PANA, 2000; SAPA, 2000). Good diplomatic skills are ensuring that Namibian strategic interests are still being taken care of, with the newly established Orange/Senqu River Basin Commission (ORACOM) being one example of how this is being executed. The border issue is therefore not closed, despite South Africa's opinion that it is, but it is also not impacting on the functioning of ORACOM. Development in the Fish River sub-basin is based on irrigation and municipal use, but this is modest in terms of the overall development in the South African portion of the Orange Basin (Conley & van Niekerk, 1998:146).

Botswana offers an interesting insight into this national interest issue. In the case of the Orange Basin, Botswana is a legal riparian even though it contributes no streamflow and derives no direct benefit from that river system (see Table 1). In this case Botswana national interest is manifest in the diplomatic bargaining position that it would be able to adopt, which if cleverly managed, can see coalition formation with various riparian states in return for concessions in other areas of strategic interest to Botswana. One example could be Botswana and Namibia cooperating in ORACOM in return for a concession on the Okavango River, which is currently the source of tension between the two countries (Ashton, 2000:80-82; 2001:8-9; Nicol *et al.*, 2001:35-37). In addition to this, there is tension between Botswana and Namibia over the Kasikili/Sedudu Island in the Eastern Caprivi strip (Ashton, 2000:82-86) which needs to be managed. Another example could be Botswana supporting South Africa within ORACOM in return for a concession in the Limpopo Basin, or in return for South African diplomatic support in the Okavango case. Alternatively, Botswana could provide a strategic long-term access route for Zambezi water to be transferred to South Africa - an idea that has been investigated in the past (MacDonald *et al.*, 1990:2-20; Davies *et al.*, 1993:143), but that is now no longer under serious consideration. On balance therefore, Botswana is clearly not as weak and powerless as it first appears when one examines the hydrological data presented in Table 1 within the context of a security complex. In fact, Botswana can be regarded as being an important balancer of power in the overall *rapport de forces* (to use Lowi's (1990) terminology) situation in both the Orange and Limpopo River Basins.

Ecological Issues

The National Water Act (36/98) regards water as a national asset to be moved around South Africa at will in order to satisfy competing needs. The same legislation also regards the environment as a legitimate user of its own water and protects this by right as part of the so-called 'reserve', which has to be met before any other allocations can be made. The significance of this issue is threefold (Turton, 2002):

- It implies that within the shared river basins in South Africa alone, an additional 8% of the MAR will be needed to maintain ecosystem health (Basson, 1999:4). This in turn means that this volume of water will not be available for other competing uses.
- Water quality in the lower basin now becomes important, especially in light of the recently declared Ramsar site at the estuary. In order to manage this Ramsar site, an Orange River Mouth Interim Management Committee has been established, linking together government and private sector interests in both South Africa and Namibia (Conley & van Niekerk, 1998:151). The extent of each country zone and management responsibility is dependent on the final outcome of the border demarcation, again bringing this issue into perspective. A ramification of this is that water will have to be left in the Orange River by South Africa in order to meet the Estuary Flow Requirement (EFR) as part of the legal concept of the 'reserve'.
- It raises the thorny issue of the beneficial use of scarce water versus environmental conservation (Basson, 1999:11).

Ecological issues can therefore have a beneficial effect in terms of inducing improved river basin cooperation if correctly managed. They also act as a horizontal linkage between water-scarce states in arid regions facing basin closure, as well as a vertical linkage between the respective hydropolitical security complex and the international system.

SADC Protocol on Shared Watercourse Systems

The SADC Protocol, which was amended in March 2000 to become the "Revised Protocol on Shared Watercourses in the Southern African Development Community Region" (Mokuoane, 2000; Ramoeli, 2002), envisages the establishment of River Basin Organizations (RBOs) that will overlap with existing technical and standing commissions. This will imply the need to amend the statutes of some structures, or the dissolution of existing bilateral agreements (Basson, 1999:18). It is not yet clear how this will be done and the Protocol itself sheds little light on the subject, leaving it to Member States to drive the process as needed. This gives rise to scientific speculation as to the future of the existing bilateral agreements in the Orange River Basin. This in turn raises a fundamental political issue - how to create an RBO such as ORACOM without surrendering too much sovereign control over a strategic natural resource? Clearly international cooperation has not yet reached a stage where technical-operational, legal-institutional and political processes are in balance (Conley & van Niekerk, 1998:155). Most advances have been made in technical-operational matters, but other cooperation is starting to grow. Cooperation around the Orange River Replanning Study (ORRS) is an

example of what can be accomplished, and hopefully the political climate within SADC will ultimately allow the entire structure to be brought into some form of sustainable equilibrium. An area where this can be managed fruitfully is in the generation of uncontested data. Table 1 shows that there is considerable area for cooperation in this endeavor, and third party organizations such as the World Bank, the United Nations and its various structures, donor agencies, academic institutions and other role-players can play an important role in this regard. The Swedish Development Financing 2000 Project (Nicol *et al.*, 2001) can thus become particularly relevant as a third-party role-player. Recent work in the contested Incomati River Basin has shown the value of third party involvement (Turton & Quinn, 2000).

Efforts will have to be made in the balancing of incompatible development goals, in which the Helsinki Rules will be tested, particularly regarding the notion of "equitable use" and the establishment of more formalized water sharing agreements between riparian states. Given the existing economic, infrastructural and other developmental inequality that is evident in the various riparian states, water can become a lead sector in establishing a common foundation on which future SADC integration can be based. An example of this is the benefit that has been derived from royalty generation in Lesotho. A component of this can also be the trade in Virtual Water within SADC in general (and in the Orange Basin in particular), in an effort to reduce inequity while managing basin-level water deficits through the trade in water-rich products at the strategic level.

Good Neighborliness

The cessation of political hostilities after the demise of the Cold War and the collapse of apartheid has resulted in the outbreak of negative peaceⁱⁱ in the SADC region. An element of this is the good neighborliness policy that is now enshrined in the National Water Act (36/98) in South Africa, in terms of which, "allocations agreed for downstream countries should be respected" (Conley & van Niekerk, 1998:150). This in turn raises the issue of how to define "equitable sharing" in terms of allocation, tradeoffs and the existence of a large number of IBTs in South Africa (Basson, 1999:20). The indisputable fact is that South Africa has most control over the Orange River and Namibia is the hardest hit. This also raises the question regarding the wisdom of continuing with large irrigation projects in the middle and lower basin, some of which are producing low value crops that can easily be purchased on the global market as part of a possible Virtual Water trade policy within SADC, and all of which are generally experiencing large losses as the result of delivery inefficiencies. There is clearly room for improvement here, and water can be made available to Namibia as a result. Recent indications that population growth in the Gauteng area may be lower than current projections is also encouraging, but it is not yet known if this growth is being offset elsewhere in South Africa (Basson *et al.*, 1997:47). A natural mitigating factor against future LHWP development is the fact that additional transfers of water impact negatively on the hydropower generation capacity at the Gariep and Vanderkloof Dams (Basson, 1999:17).

We are therefore confronted by the coincidence of two key issues that are likely to result in increased cooperation with Namibia.

- The first is the legal (and moral) requirement for good neighborliness that is inherent within the post-apartheid South African political culture.
- The second is the legal requirement to leave sufficient water in the river for the maintenance of ecological functioning. In terms of this, higher allocations are made for ecologically sensitive reaches of the river, of which the Augrabies Falls Reserve and Ramsar wetland at the estuary are important elements.

This guarantees minimum supply levels for Namibia, thereby increasing their water security situation.

The Usefulness of the Concept of a Hydropolitical Security Complex

The concept of a Hydropolitical Security Complex is useful in analyzing the Orange River Basin (Turton, 2002). The strategic importance of a secure water supply as a fundamental component of economic stability within a river basin that is reaching closure, and in a region that is rapidly reaching a condition of water deficit, is self-evident. This has also been demonstrated by showing to what extent the GGP in each of the nine South African provinces is dependent on IBTs (Table 2 & Figure 2), many of which are linked to the Orange River in some way. In terms of this argument, the Orange River Basin can be regarded as being a component of an immature regional security complex because not all of the actors have yet realized the strategic implications of water scarcity on their respective long-term economic growth and prosperity. In purely technical terms, it can be regarded as being a component of a specific type of heterogeneous security complex, which assumes that different actors interact across two or more sectors and state borders (Buzan *et al.*, 1998:16).

A Hydropolitical Security Complex in turn can be regarded as being a component of a Regional Security Complex of the heterogeneous type (Turton, 2002). Thus, while some role-players within the Orange Basin do not yet regard water as being a national security concern (at least in public pronouncements)(Turton, 2000b), the fact that the problems occurring within the basin can only be resolved within the context of cooperation within that same basin means that a Hydropolitical Security Complex exists. This is even more so when one notes the considerable room for diplomatic maneuver that Botswana has, should it choose to use this option in the newly established ORACOM, and other RBOs such as the Okavango River Basin Commission (OKACOM), that will be established in terms of the SADC Water Protocol. This will clearly link the Orange to other shared river basins in SADC such as the Okavango and Limpopo (and possibly even the Zambezi), thereby strengthening the argument for using security complex theory as an analytical tool.

The usefulness of a Hydropolitical Security Complex as a concept is that it enables linkages between various actors within a given river basin to be mapped out and analyzed in greater detail. In this regard, a series of both horizontal and vertical linkages can be identified. Vertical relationships within the context of the Orange River Basin are

centered around the high degree of reliance that each of the respective political economies has on water from the basin.

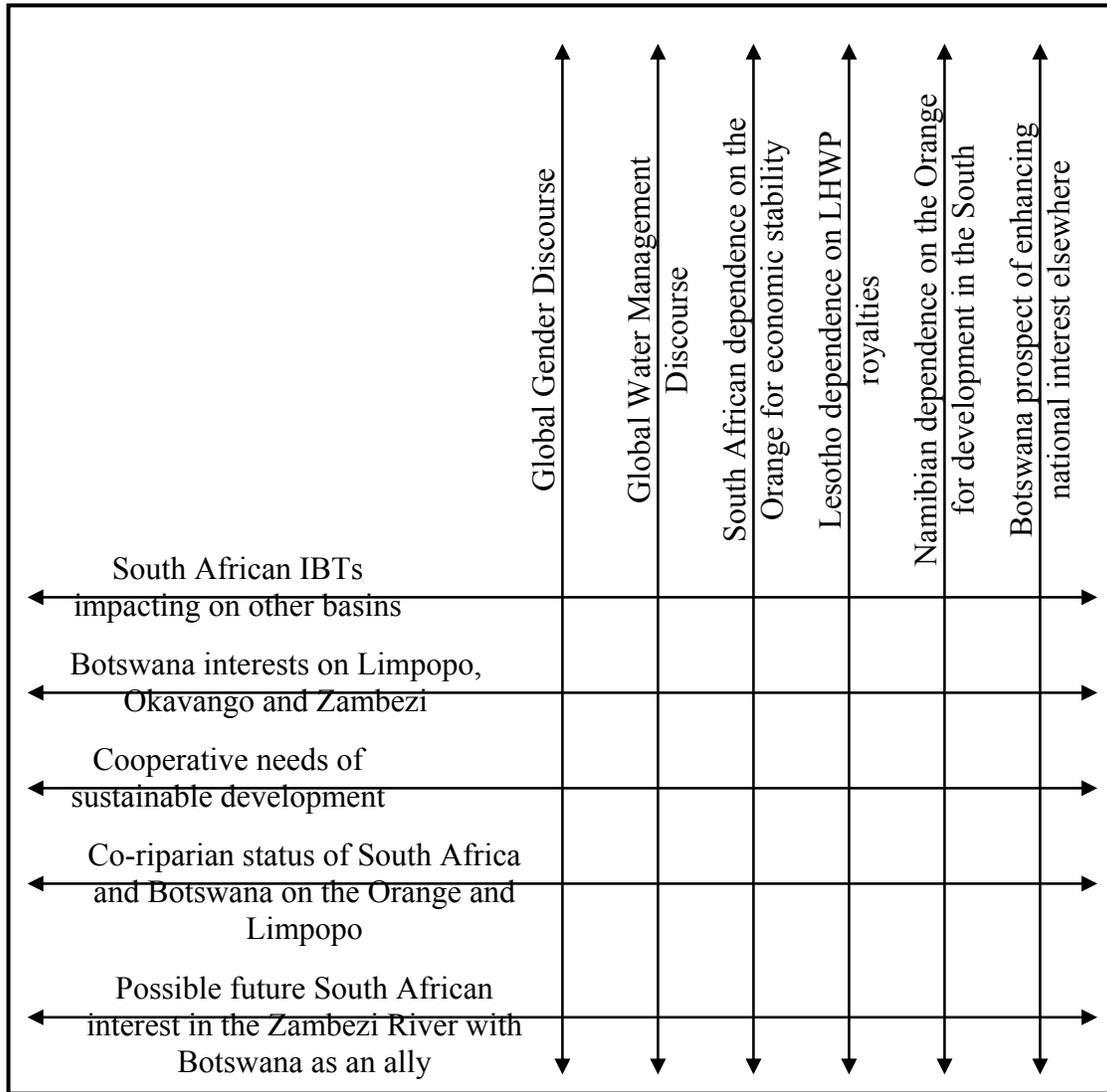


Figure 3. Schematic rendition of the Orange River Basin Hydropolitical Security Complex showing some of the vertical and horizontal linkages

In this case South Africa is the best example, where it has been shown that a high level of GGP activity within the various provinces is evident, with dependency in excess of 60% being shown in seven of the nine provinces (Figure 2), many of which are linked to the Orange Basin. In the case of Namibia, the future development of the southern portion of the country is predicated on secure access to the Orange River. For Lesotho, the royalties that are being derived from the sale of water to South Africa are a significant component of the total income to the fiscus. For Botswana, diplomatic leverage that it can generate for use in other contested river basins is important, with this aspect increasing her hydropolitical relevance to a significant extent, making this national interest component a

unique aspect of the Orange River Basin case. Other vertical linkages include the global gender discourse (Turton *et al.*, 2000) and the global water management discourse (Turton, 2001a) that will impact on notions of Sustainable Development. Horizontal linkages are also clearly evident. The first of these is the unique nature of South African water law that regards water as a national asset to be moved wherever it is needed. This in turn impacts on all other shared river basins in some way or other, establishing a clear relationship across basins. The relative advantage that Botswana can leverage in other river basins such as the Limpopo, Okavango and possibly even the Zambezi, is also a clear horizontal linkage across various basins in the SADC region. The same also holds true for South Africa if it chooses to engage in diplomacy at a level higher than the Orange River Basin. This aspect alone makes South Africa and Botswana potentially the most powerful role-players in the Orange River Basin, and possibly within SADC as a whole if viewed strictly from a hydropolitical security complex perspective.

Conclusion

The Cold War tended to suppress the regional political dynamics in Southern Africa after the ending of colonialism. Apartheid can also be regarded as being an important overlay factor. The removal of these three forms of overlay, suggests that Southern African international relations, and in particular security dynamics, can best be understood in terms of Security Complex Theory as developed by Buzan (1991) and Buzan *et al.*, (1998). This is particularly true when one factors in the strategic importance of shared river basins for economically developed countries facing water deficit. This in turn strengthens the argument that has been made by Schulz (1995) that a Hydropolitical Security Complex is a distinct form of security complex. In the Southern African Case, a Hydropolitical Security Complex can be regarded as being a component of a larger Regional Security Complex. The usefulness of this concept and approach to International Relations analysis is therefore being developed further for application in SADC, where a Hydropolitical Security Complex is emerging in the Orange, Limpopo and other shared watercourse systems such as the Okavango, Kunene, Incomati and Maputo River Basins.

In order to harmonize this approach with that of Buzan *et al.*, (1998:5-6), the *levels of analysis* can be seen as follows: SADC is the *international subsystem*; the riparian states are the *units*; and the various RBOs, respective Departments of Water Affairs and other structures such as environmental Non-Governmental Organizations (NGOs) are the *sub-units*. Similarly, in keeping with Buzan *et al.*, (1998:18-19), SADC can be seen as the *region*; the various international river basins can be regarded as the *sub-region*; and the portions of the international river basin that lie within the geographical territory of any one of the riparian states can be viewed as being the *micro-region*. This being the case, in order to harmonize this approach with Buzan *et al.*, (1998:14), the layering of the Southern African Regional Security Complex can be seen from the top down as consisting of the Regional Security Complex; followed by the Hydropolitical Security Complex clustered around shared international river basins; with the domestic security environment within each state being at the bottom. If this approach to the study of International Relations in Southern Africa is adopted, it is felt by the author that a new contextual dimension will start to emerge, particularly where the more industrialized

states face water scarcity as a limitation to their economic growth potential, while also relying for a significant portion of its strategic water supply from shared international river basins. As such the management of water resources in semi-arid regions can be seen as a strategic issue that is emerging once the effects of *overlay* have been eliminated.

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ⁱ A river basin is said to be facing closure when all of the available water has been allocated to some productive activity and there is no more water left to be allocated (Svendsen *et al.*, 2000). This increases the conflict potential and as such is an important concept in hydropolitical studies.

ⁱⁱ Negative peace is the mere absence of hostilities, whereas positive peace is the existence of confidence in the region to the extent that economic growth and social stability can be assured (Ohlsson, 1995:5). This is largely absent in Southern Africa at the time of writing.