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THE SOUTHERN AFRICAN SOCIETY OF AQUATIC SCIENTISTS

DECEMBER 2004



From the EXCO:

As this is the end of the Exco's term of office we would like make use of this opportunity to thank all members of SASAqS for their support during our period in Office from 2002 to 2004. We look back on our term in Office and recognize the major achievements of the past three years: our annual conferences is Bloemfontein, Cape Town and Midrand; our medal recipients: Brian Davies, Steve Mitchell, Bill Rowston, Jay O'Keeffe, Neels Kleynhans, Mary-Jean Gabriel and Annelise Gerber; and above all providing the forum for aquatic scientists in Southern Africa to communicate with one another. Indeed it was one of our main aims from the outset to promote and increase connectivity within the Society and with other relevant organizations. We would like to wish all SASAqS members a Merry Christmas and a prosperous new year.

Responses to the commentary by Patrick Denny on AJAS:

I read Patrick Denny's retracted article with interest partly because I related to the topic as an born and bred African and partly because I'm about to dive back into my accident suspended thesis "against-all-odds", and so have been looking into where exactly I will need to publish myself. So all in all, issues close to my heart. I agreed with much on his thoughts on the process of creating a strong journal, I even understood his suspicion and paranoia of big brother (the Citation Index). All in all I agreed that this related to our business as a society and that it should be built on it's own bedrock, like a strong editorial board. Sure there are issues of ownership and responsibility relating to accessibility/ identity as driven by financial realities, such is life. Broadly I felt the journal should be maintained serving both relevance and quality while striving to embrace African water African scientist primarily. It should do this by remaining affordable to Africans while generating interest by other water workers with an eye to Africa though its quality and use (the dreaded Citation Index?). I agree that sponsorships, grants, NGO or GO funds should be sought, although I was a tad dubious on the suggestion that people reviewing manuscripts should be financially compensated. I think this would unleash endless basically human abuses and shortfalls. Sure there are survival strategies needed today to stay afloat on the continent, but having ones name in print while fleshing out ones Cv should be of enough use for those with a passion and consciousness.

I cannot understand what contention or controversy was raised by this article. It reads to me as a very perceptive and realistic commentary on our discipline itself, and the publication of its practitioner's findings. The commentary appears sincere, genuine, factually based and remains broadly supportive of SAJAqS, I see absolutely no reason why it should not be published. Quite to the contrary, it would reflect very badly indeed if as an invited editorial, it were to be shelved. What message would that convey – that the editorial board, or the wider Society for whom they 'speak' in terms of their responsibility for SAJAqS only wants to see what it/they wants in the journal. In short: "Thanks, Patrick Denny, for giving of your time to serve on and make inputs to our editorial panel, but, sorry, we no longer believe that your opinions or activities are any longer valid/justified/wanted?" As one of the longest-standing members of what is now SAJAqS, this is certainly not what I as an individual member would want – therefore only a wider canvassing of opinion can justify such a decision.

This is my impression on the evidence before me. Of course there may be "other" relevant issues which feed into this matter, but of which I am ignorant. And if there are, I'm frankly not sure whether or not I want my ignorance to be illuminated.

SASAqS Conference 2005: The 2005 Annual SASAqS conference will be held in Grahamstown from 13 to 15 July 2005. The conference will be held in conjunction with the Zoological Society of Southern Africa (ZSSA) conference. Please note that SASAqS is not a co-host of the conference and thus people wishing to attend the conference will have to register for the ZSSA conference. The majority of the SASAqS presentations will form part of the ZSSA themes and programme. However, special sessions that are particular to SASAqS themes will also be arranged. Please note the following deadlines: Submission of registration forms and payment - 31st March 2005 (after which a late registration fee will be applied). Submission of abstracts - 30th April. For more information contact Lil Haigh IWR (Wetland Group): lilh@iwr.ru.ac.za and visit the conference website <http://www.ru.ac.za/conferences/zooento2005/>

LEADERSHIP NEWS LETTERS: Attached also find Letters 23 to 27 on CMA's by Mark Dent. Any queries regarding back issues or other comments can be sent to Mark Dent (mark@netshare.co.za).

**COURSES: INTRODUCTION TO MANAGING ENVIRONMENTAL WATER QUALITY
24-28 January 2005.**

This is an opportunity for anyone involved in water resource management: researchers, scientists, managers who plan procedures, as well as those who will soon be conducting toxicity tests to satisfy DWAF policy changes in industrial waste water management soon to be implemented (see below). This course will allow participants to plan new procedures in advance, and be prepared when policy does change.

Applied aquatic ecotoxicology forms the basis for managing environmental water quality, along with biomonitoring and chemical monitoring. This course will demonstrate how these key concepts are utilised to provide the necessary essential information to managing environmental water quality.

The Department of Water Affairs and Forestry (DWAF) are working towards a change in policy regarding the management of complex industrial wastewater. The principles will apply to mining effluents as well. Presently, water pollution is only controlled by managing levels of single substances in wastewater. However, a source directed control will be introduced in 2005 in the form of toxicity testing of complex industrial wastewater (Direct Estimation of Ecological Effect Potential = DEEEP). This policy involves looking directly at the effect a mixture of substances may have on the environment.

In preparation for this policy change, the Unilever Centre for Environmental Water Quality (Institute for Water Research, Rhodes University, Grahamstown) is offering an Introductory Course on Managing Environmental Water Quality:

DATE: 24-28 January 2005.

VENUE: Resource Quality Services, DWAF, Roodeplaat Dam, Pretoria

For more information see the [brochure](#) or go to the following website:
<http://www.ru.ac.za/institutes/iwr/ucewq.html>

The registration forms need to be FAXED back to us.

NB!! Should two persons attend the course from one institute, a third person may attend free of charge. Contact Dr Heather Davies-Coleman (heather@iwr.ru.ac.za ; tel. 046-603 8532/ 622 2428; fax 046 622 9427) with any queries or to secure your place. Places are limited.

SIMPLIFIED SCHEDULE PRACTICAL COMPONENT

24 January 2:00pm: Practical course begins.
25-27 Jan 8:00am: Practical continues for 1-2 hours.
28 Jan 8:00am: Practical course continues to lunch.
Includes planning an ecotoxicological programme.

SIMPLIFIED SCHEDULE THEORY & POLICY COMPONENT

25 January 10:30am: Theory & policy begins.
26 Jan 10:30am: Theory & policy continues to 17h00.
27 Jan 09:00: Theory & policy continues to 17:30.
28 Jan 10:30: Planning an ecotoxicological programme. Continues to lunch.

Please visit the Society website on www.dwaf.gov.za/iwqs/sasaqs/ for updates on SASAqS matters.

CMA Leadership Letter 23 Living systems and thresholds

World renowned leadership expert John Maxwell reminds us of two differences between leaders and managers :-

- managers expect things to stay the same and leaders expect things to change;
- managers inspect, while leaders expect.

Leaders will **expect** the CMA establishment process dynamics to reach a threshold and then many things will happen fast. Leaders understand that what we are experiencing with the establishment of CMAs is a **living process**. Dynamic, living processes are non-linear and often transform dramatically, in their speed, when threshold points are reached. Consider the following :-

- Storm clouds gather for a long time before the calm breaks into a storm.
- Heated water remains liquid and motionless until a further one degree increase in temperature changes it into steam that can power an ocean liner.
- A lion pack stalks a herd of buffalo with imperceptibly slow movements and then on a signal the scene is transformed into a dramatic life and death kaleidoscope of action.
- A seed lies dormant until conditions are right then it germinates and transforms rapidly into a plant.
- A chrysalis lies motionless for weeks then turns into a butterfly in minutes.
- Enron and Worldcom transformed from corporate giants to disasters overnight.
- A seemingly rock solid bank can be brought to its knees by perceptions which translate into a disastrous run on the bank.
- The birth of a baby ends 9 months gestation in an instant.
- The Soviet Union whom many believed would last 1000 years, crumbled in 6 months.
- The anti-Apartheid struggle was long but the end was quick and relatively bloodless.
- The birth of an idea to solve a problem, has a long gestation then “*aaha!*” ... now I see it.
- Electrons build up energy in the same orbit then they jump by a quantum to a new energy level.
- The big fear with climate change is not the slow gradual sea or temperature rise but the unknown threshold points that could tip the earths systems into a cataclysmic process
- A catalyst can transform dormant chemicals into a vigorous reaction process in a split second.
- In a healthy brainstorming exercise , once the “cosmic egg” has been cracked all sorts of good ideas flow rapidly.

It is predictable that the CMA formation and birth process will have many of the generic attributes of the living processes above. A key question that future CMA leaders will be asking themselves is, “what will change ?”

Permission pathways will change :- as permission from the CMA players becomes of critical importance to DWAFs position, on the matter of allocation, for example. DWAF has certainly not gone through all the effort & pain of forming CMAs only to ignore them.

Players will change :- the major stakeholder groupings realize that they are no longer armchair drafters of the rules and the lines, but players and they are on the field and the game has begun.

Payers will change :- as stakeholders realize that they are spending their own money not taxpayers money in the process. Spending patterns will change.

Procurement pathways will change :- as the new players are now spending their own money to have analyses and investigations performed.

Providers of professional service will change:- as the procurement pathways change.

Perceptions will change :- as information becomes truly public domain and new insights are revealed to all players.

Plans will change :- as players realize the need to co-ordinate Catchment Management Plans (CMPs) and Integrated Development Plans (IDPs)

Processes will change :- as knowledge equity becomes an acknowledged imperative and interest based bargaining replaces rights based bargaining.

Positions will change :- as CMAs become the focal point for delivery of data from state and other organizations who wish to contribute to the integration process.

Power and relationships will change :- as stakeholders realize that the new law means relationships with fellow stakeholders are central to the game.

Possibilities for win-win will change :- as stakeholders realize that they will sink or swim ...TOGETHER.

Portions of water will change :- and this is what it is all about !

It is little wonder that not all the players have been keen to start the new and inevitable game.

Leadership Letter for CMAs No. 24 Capacity Building

Does South Africa have the capacity to cope with the skills implications of the 1998 NWA ?

This is a questions that has been asked for the past 6 years. Some say "YES" ; some same "NO" and some say "it DEPENDS". The people who say "YES" could be wrong. The people who say "NO" could be wrong. The people who say "it DEPENDS", are correct. But, one needs to ask them , "What does it depend on ?"

In my view it depends on whether we change our paradigm on capacity building or not. If we believe that the future will be business as usual and that we just need :-

- to turn out a lot more graduates to meet the skills requirements, and
- throw a lot more money at the problem,

then I believe that the "Naysayers" will be correct. We do not have the time or the money for this option, alone.

If we change our paradigm and approach capacity building from the view that it is our "capacity to cope" with the challenges that we face, then I believe that those who say YES will be correct.

We do have the capacity both in terms of skills and finances. Our society can achieve the required capacity to implement the 1998 NWA in broadly two ways. We need to pursue both simultaneously. The first is the fast track and it involves re-thinking the way we organize ourselves. The second is a much more long term, but nevertheless vital action and that is through education and training from grass roots upwards. The fast track re-cognition (re-thinking) and re-organisation route can serve as a catalysts and stimulant for the second.

This series of Leadership Letters for CMAs has essentially been developing an understanding of the powerful yet unseen dynamics of the transformation process, which will give us the capacity to cope. The letters (titles listed below) have explored issues and paradigms which I believe are crucial to the financial and skills viability of CMAs. Our ability, as a society, to cope with the challenges of capacity building for CMAs will depend on our acceptance of many of the views advocated in these letters.

1. Leadership A-Z for CMAs :- imperatives that leader's know
2. Leader's vision of the CMAs
3. Key strategic questions for CMA leaders
4. Leadership of CMAs recognise a radical redistribution of knowledge power.
5. Leaders know that teams become great when they stick together long enough to learn together.
6. Real leaders face the realities of interdependence in CMAs
7. Stakeholder sector leaders will understand the effect of a short, visible revenue pathway.
8. Leaders not lawyers step forward for interest based bargaining in CMAs
9. Integration and co-operative governance require new leadership abilities.

10. Information, options, decisions and conflict resolution in CMAs :- the work of real leaders.
11. Myths and misconceptions about information.
12. Three key factors and their consequences
13. Water knowledge management needs leadership
14. Leaders know it is not about structure
15. Developing Creativity and Exercising Control
16. Developing Creativity and Exercising Control (contd)
17. Integrated Reasoning Support Systems (IRSS)
18. "Lean & Mean" calls indicate maturing insights
19. Leading in a "demand management" environment.
20. Porter's 5 Forces Analysis applied to installed information and modelling systems (IIMS)
for CMAs
21. Co-ordination needs practice
22. Quickening of the pulse -
23. Living systems and thresholds

Leadership for CMAs Letter 25 Synthesis, dialogue, practice and data led modelling

Systems which encapsulate the hydrological cycle and integrated water resource management are detailed, complex and dynamic. There are two major types of complexity, both of which are present in water resources simulation modelling. The "detail complexity" of many variables and the "dynamic complexity" when "cause and effect" are not close in time and space and obvious interventions do not produce expected outcomes. Persons or group who aspire to play a meaningful role in such a system through the development and use of integrated simulation modelling system must engage both types of complexity.

How do individuals or groups set about the task of jointly developing their thinking regarding such complex systems and hence understand and go on to build complex system models? The answer to this question has many dimensions. World experts in the field of simulation believe that the only system maps we can interpret mentally, will be trivial and incomplete compared to the complexity of the systems which we seek to understand. We can create more complex and realistic maps of our systems, but our intuition is then insufficient to provide the guidance into their dynamics. One approach to addressing the above dilemma is to use computer simulation and extensive practice. The ability and intellect required to develop and manage these tools requires extensive practice as many of them require an interplay between the subconscious and the conscious. They also require extensive dialogue and the development and projection of new language to describe the new concepts.

The regular use of installed modeling systems in WMAs will enable individuals and groups to gain the practice required to mobilise subconscious processes. Computer based models accurately and speedily calculate the consequences of the assumptions in our system maps, no matter how complex. This ability is a most important aspect of one's systems thinking training. Experts emphasise that without modelling we may think we are learning to think holistically when we are actually learning to jump to conclusions. The implications of our assumptions can be shown by a well-crafted and tested computer model which enables us to close the feedback loop by which we learn. To do this we generally need to synthesise a great deal of information about the subject into a few key concepts and procedures. Synthesis is now surfacing and will take its place beside analysis as an important approach to the challenges of life. Group and multidisciplinary efforts predominate in synthesis activities. Synthesis provides a framework for guiding analysis, research, development, management and education and simulation models provide a framework for such a synthesis of ideas.

There are several important generic traits of simulation modeling which makes it so valuable in the pursuit of integrated water resource management. Models give the impression of speeding up or slowing down time, compressing space and isolating variables. They offer an experimental orientation in which we can contemplate the consequences of our intended decisions and the fear of failure is almost eliminated. They offer the opportunity to pause for reflection, to develop theory-based strategy and cultivate institutional memory. Models are ideal catalysts and vehicles, to engage teams in deeper sets of systems learning and allow them to experiment with the consequences of their thinking.

There is often a strong pre-occupation with data to prove that the scenarios are correct. Senge

(1990, Vth Discipline) makes a valuable contribution to this discussion through his comments on the use of modelling at Shell. He reflects that it did not matter whether managers at Shell believed the planners' scenarios absolutely. It mattered only that they became engaged in figuring out the implications. This example is so relevant to water resource systems simulation modelling since its key benefit is to enable developers and users to explore their mental models, the consequences of change and to engage in deeper conversations. In this way they also address a fundamental but often overlooked prerequisite to getting the right answer and that is to ask the right question.

The testing of whether the structure replicates the performance that we observe in the real world is crucial. However, modellers and managers often place undue emphasis on this aspect of modelling. It must be remembered that often the observed data sets are extremely limited and therefore all we can say with respect to such tests is that the model performs reasonably within the range of the observed data. The reason that we model however is to enable extrapolation in time, space and quantity beyond the original base of observed information.

The President of the International Association of Hydrological Sciences (IAHS) in 2002 devoted most of his July Newsletter to the subject of world wide interest AND ACTIONS in the PUB. No, I haven't been drinking whilst compiling this letter. PUB is the acronym for Prediction in Ungauged Basins.

Leadership Letter 26 Managing Information in the Context of CMAs

One of the key attributes of a leader is the ability to imagine future situations and to ask searching questions in relation to those situations. It is in this context that I have found the challenge of information systems in our upcoming CMAs so fascinating as a teaching exercise.

I teach the subject of water information systems at final year MBA level. I have used the, soon to be created, CMAs in my teaching for a number of reasons as listed below.

Students are challenged to :-

- gain insights into the value of "managing from the future" , for example, imagining the discussions at a CMA Board meeting when members discuss the business framework for affordable, functional and comprehensive integrated modeling and information systems that they will pay for themselves;
- develop an understanding of a complex dynamic environment for information management since if one can master the issues in CMAs one should be capable of handling them elsewhere in other forms of organization;
- contemplate the key organisational processes into which ALL organisations (including DWAF) will have to feed information AND draw information ;
- reflect on the skills required to manage without bureaucratic or coercive power because for both CMAs & for international water management it will not be possible to rely on such instruments;
- develop strategies and processes to transcend inter & intra- organisational barriers;
- recognise the presence of different assumptions & perceptions regarding water related information;

- appreciate and deal with the presence of different power bases;
- accommodate two new imperatives ie. ecological integrity & equity and particularly the information implications which flow from these imperatives;
- recognise that differences of information interpretation cause problems within an organisation and that these differences will be more acute in CMAs;
- appreciate that the financial value and power dynamics around the issues of data will be radically different from the present;
- anticipate that the size of the modelling and information systems market in CMAs will attract competitors of considerable size and power;
- imagine the possibility that service providers who use internationally acceptable software will be able to offer services back into the software's country of origin and hence benefit from the international exchange rate.

Finally, as research students at masters level MBA learners are quick to appreciate that cross cutting national issues which need researching, will be raised in the CMAs. They also anticipate that stakeholders operating under the auspices of CMAs are likely to be a dominant influence in the water research agenda. The insights of these mature students are worth noting.

For those interested in what is available free for CMAs in the GIS, info systems & modelling frameworks area , the following paper is exciting.

The Centre for Research in Water Resources (CRWR) is lead by Dr David Maidment, one of the world's leading persons in GIS and Hydrology and a very close associate of :- Jack Dangermond at ESRI the EPA the USGS

<http://www.crwr.utexas.edu/gis/gishydro04/Modeling/HSPF.htm>

Implementing the social process of equitable, effective, affordable and timely allocation of water under the 1998 National Water Act

The excellent National Water Act 1998 has now been in place for almost 6 years. Pressure is mounting to implement the aspects of the act which require stakeholders to be more democratically involved in the social process of equitable, effective, affordable, sustainable and timely allocation of water (*in other words the process that precedes the issuing of licenses*).

This pamphlet outlines and motivates **some** of the issues which need to be addressed to overcome the inertia of the *status quo* and commence implementation. These are :-

- Control, responsibility and accountability
- Supporting forces
- Skills
- Funds
- Time
- Achieving equity

The **target audience** for this pamphlet is the leadership in the many state and private sector stakeholder organisations involved with water.

Control, responsibility and accountability

*The ideas expressed in this pamphlet do **not** seek to shift control, accountability or responsibility from where the National Water Act 1998 has placed them.*

*The pamphlet **does** seek to assist those charged with these duties.*

*It proposes to achieve this *inter alia* by highlighting and explaining the many unseen, positive forces, which can be utilised to shift the status quo and usher in the new era.*

The game of football provides a useful analogy to illustrate the key concepts conveyed in this pamphlet.

Football administrators and referees have the responsibility for control. However, without the support of players in the opposing teams the game would descend into chaos. It would be neither enjoyable, successful nor spectacular. The game would die! The game is actually what happens **within** the lines on the field and **within** the laws. ***The lines and laws are not the game.***

This pamphlet refers to "**the game**" which is **the social process of water allocation** and it is played by all water users through the CMAs, primarily. Apart from other constraints the law demands that the outcome of this "game" be the equitable, efficient and sustainable allocation of the right to use and abuse (pollute) water.

Supporting forces

Implementing the water law will be difficult. There are many forces which will act to retard the process of implementation. There are however far more powerful forces in addition to the demands of the National Water Act 1998 itself, which support such implementation and make it imperative.

The reason for recording these forces in this pamphlet is primarily to enable those who are struggling to "get the game going" to draw encouragement and strength from the fact that the

goal is neither irresponsible nor premature as those who seek the *status quo* are prone to suggest.

International forces .

- Dialogue Forum, (WHO, FAO, UNESCO, IWMI etc etc)
- Global Water Partnership (GWP),
- International Geosphere Biosphere Programme (IGBP),
- International Conventions eg. Rio, Dublin, Helsinki, RAMSAR
- SADC imperative (70% of the land area comprises shared river basins)
- NEPAD

- and many more

National forces for co-operative governance, co-ordination and networking.

- Constitutional imperative
- National Water Act 1998
- Cabinet working mechanism which emphasises clusters
- Cities Network (initiative of Dept Trade & Industry),
- forestry, sugar, conservation, mining, industries and assoc. of irrigation WUAs.
- Presidential Initiative and the Forum of SA Directors General (FOSAD), Statistics SA & DACST regarding integration and sharing of information between govt departments.
- Policies of Department of Mineral and Energy Affairs wrt mine water, DEAT policies, Dept Agriculture policies, SANP policies and programmes

In addition to the above forces there are several, more direct forces which can assist government and other stakeholder co-operation. These are the:-

- positive effect of the drive for visible **delivery** by government departments which can be harnessed to assist delivery in CMAs, (other govt depts are more likely to channel their delivery through a CMA than through DWAF since such delivery is far more visible through the CMA and other multi-stakeholder structures)
- co-ordinating and integrating forces engendered by **short and more visible revenue streams** when CMA stakeholders start contributing financially.

Aided by the above forces, those dedicated to energizing the democratic process of stakeholder interaction, which is mandated by the National Water Act 1998, can turn the shortage of :-

- skills,
- funds,
- time ,

to advantage to hasten the implementation and the achievement of equity.

It is important to recognise that these "shortages" are only relative. With due respect, if we look to our neighbour countries with whom we share water resources, then our skills and funds are relatively abundant.

Skills

The challenges are complex and numerous. Highly skilled water people are few and over extended already. How will we cope ?

The forces promoting co-ordination, clustering of intellect combined with the shortage of funding will all assist in heralding new ways of structuring the use of the country's scarce water

skills. At present these skills are constrained to perform in a grossly sub-optimal manner for a variety of reasons which are beyond the scope of this pamphlet.

The natural clustering of interest groupings which have emerged strongly in the process of developing the National Water Act will form the basis of the new skills structures amongst the non-governmental stakeholders. This process of intellectual grouping is not constrained by the law and never will be. It is the democratic right of stakeholders to seek intellectual input from whomever they wish. Most of the major stakeholder grouping (eg. Forestry, mining, sugar, industry, metro councils, conservation, irrigators) already have their preferred sources of intellectual input and such powerful developments are certain to increase.

In the interests of equity the state will inevitably need to fund *pro deo* intellectual input on water science issues for the previously disadvantaged communities. In addition to this the interest based bargaining paradigm (discussed under the heading Achieving Equity) will assist to level the "skills playing field".

Economies of scale, transaction costs and the sheer weight of logic will force stakeholders to seek countrywide standards in terms of the information rich systems to support reasoning in the social process of allocation.

Funds

Funds are already stretched to the limit and strong resistance from water stakeholders is expected against calls for more funding ?

Against a background of skills and funds shortages, the notion of almost autonomously resourced CMAs seem highly improbable.

Best practices will spread rapidly, driven by the strong resistance to duplication brought on by short and very visible revenue streams, from stakeholders to service providers in the CMAs, Forums and WUAs.

At present the taxpayer loses sight of the tax rand and it is impossible to track direct benefits from taxes in terms of IWRM. When stakeholders are funding the CMAs through the water management levy the cost/benefit relationship will be most visible. Consequently pressure will be intense to find inter-operability standards for information generation and exchange and to reduce transaction costs in the above sharing. DWAF (for example) will not want 19 different information management and generation systems and nor will any of the other powerful stakeholders with countrywide water interest.

The economic pressure to find inter-operability standards which do not hinder creativity and innovation will be intense. This is the case world wide. Our region is no different.

Time

The new Water Law was enacted 6 years ago. Time pressures for implementation are mounting as the status quo is becoming increasingly untenable and calls for delivery are increasing.

Time pressures will force parties to adopt a "*relationship*" approach to fast track their equitable

participation in the allocation process. There simply is not enough time (or interest) for each and every individual stakeholder to learn "*all there is to know*" about water so that they can engage the allocation process.

An analogy in the common law is helpful here. If one finds oneself in a position of defendant in a supreme court case one has two options with respect to engaging the process. One can study law to the point of being able to advise and defend oneself OR one can hire a trusted legal defence team (in the case of the poor the state provides *pro deo* defence) and form a trusting relationship with them.

In the labour / management interaction trusted professionals advise the parties with respect to intellectual input into the negotiations.

In the same manner trusted professional advisors are taking up positions to support interest groupings in many or all of the proposed CMAs, WUAs and Forums.

The rationale for these developments in terms of:-

- time,
 - quality of input,
 - quality of trust in the relationships,
 - and institutional memory,
- is evident and sensible.

Such intellectual advice formation and utilisation is NOT constrained by the law or by CMA or any other boundaries.

It is crucial for government (especially DWAF) to encourage these developments if the time, funding and skills challenges are to be met. All this will enable the allocation process to begin in the manner mandated by the National Water Act which is design *inter alia* to deliver on the challenge of equity.

Achieving equity

*Equitable allocation of water resources and pollution rights and responsibilities is vitally dependant on the **process** which leads to that allocation.*

Such a process is essentially a social process. It is a process, which is informed by science and takes place within the broad framework of the law.

However, just as the quality of a football match is not determined by the laws of football (good & bad matches are played within the same legal framework), so to the quality of the allocation process and hence its social acceptance is not determined by the law. The National Water Act 1998 is 6 years old, the equitable allocation **process** has not begun.

There are many facets to the overall process to achieve equitable allocation. It is beyond the scope of this pamphlet to cover them all. One of the areas of understanding amongst leadership which is bound to foster better insights into the process is the question of interest based and rights based bargaining.

Fostering of an **interest based bargaining** paradigm gives high leverage in this regard. All the

elements are in place to support an interest based bargaining paradigm in which :-

- the process is co-operative;
- the ongoing sound relationships between the parties are important ;
- stronger parties seek to empower weaker parties;
- open sharing of information occurs;
- information is used as a light and not as a weapon;
- productivity is enhance through sharing efforts;
- reasoning and decision making is easier in uncertain environments;
- intellectual resources are better utilised;
- state can leverage (enlist) voluntary help of powerful stakeholders to empower the disadvantaged;
- reduced incentive to poach skills;
- enforcement of the outcomes is primarily through intrinsic control **by** the parties themselves.

It is an established fact that this form of bargaining is more appropriate when several parties are involved and the levels of uncertainty with respect to the issues are high.

On the other side of the bargaining process spectrum is the **rights based bargaining** paradigm in which :-

- the process is adversarial ;
- the element of surprise plays a major role;
- the relationship between the parties is inevitably damaged severely;
- the stronger seeks to dominate the weaker party;
- no voluntary sharing of information;
- information used as a weapon rather than as a light;
- large scale duplication of effort;
- reasoning and decision making difficult in uncertain environments;
- expensive in terms of intellectual resources;
- state will have much difficulty ensuring a fair deal for the disadvantaged because the previously advantaged seek to retain the status quo and will thus not empower the disadvantaged;
- poaching of intellectual skills is problematic;
- enforcement of the outcomes is primarily through extrinsic control **of** the parties.

Economics, details of the law and the spirit of the law as well as common sense are all strongly on the side of interest based bargaining. It is vital that leadership conversations spend time exploring, educating around and practicing these skills.

Suggested actions by state and other stakeholders

Much effort, time and money has been expended in drawing up the policies, laws, administrative structures and funding mechanisms of "the game". It is now time to expend on preparing the players and the referees and actually starting to play the game.

- DWAFs role in this preparation could take several forms :-
 - seminars to reveal the "game" as opposed to the rules, policies & structures;
 - role clarification for stakeholders as players not observers;
 - facilitate the process of stakeholder interaction;
 - refuse to be drawn into a paternalistic role , except where the playing field requires

levelling;

- fund the process to some extent;
- ensure fair play;
- level the playing field by providing *pro deo* skilled advice for the disadvantaged;
- be the ultimate decision maker;
- legitimise decisions which are the outcome of healthy stakeholder interaction within the framework of the law and DWAFs responsibilities