



Conference program

5th NATIONAL MULTIDISCIPLINARY ECOHEALTH AND WELL-BEING RESEARCH FORUM-CONFERENCE



Sharing Multidisciplinary Reflections on Environment, Health, and/or Well-Being Research in Southern Africa

20 & 21 November 2014
SunWa River Lodge, Parys, Free State



Some forum delegates, 21-22 November 2013 at Golden Gate Highlands National Park



(Keynote: Prof Anthony Turton)

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A WARM WELCOME TO ALL CONFERENCE PARTICIPANTS!

The 5th Multidisciplinary Ecohealth and Well-being Research Forum-Conference indeed is another milestone for the organisers. Not only because the event aged to allow for celebrating a quinquennium from 2010 to 2014, but also that this fifth year also marks the first year that the former Forum events has formally transformed to become a national conference! It is hoped that this multidisciplinary effort with its wide, but yet focussed scope on ecohealth and well-being matters and aiming at all regions in South Africa, will progress to a more matured and extended level of participation in the next five years to come.

This year's conference in Parys (in the Free State Province but so close to Gauteng!) at the SUNWA River Lodge on Our heritage, our future holds promise for some exciting presentations (two keynotes, 15 papers and a half day excursion to the internationally known and well-researched Vredefort Dome). The organisers believe that this conference aspire a platform for knowledge exchange between academia and professionals in the private and public and this will continued to be encouraged. The Ecohealth and Well-being Research Forum Conference encourages scholars from the Humanities and the Social Sciences and other non-related sciences to engage together and debate ecohealth and well-being issues such as local and regional environmental threats, environmental management, human environmental involvement and the well-being of humans in their environments (service delivery matters) as well as creating a platform for sustainable built environments.

As this time of year may very well be labelled the graveyard time of year where all wants to simply settle down and finalise work outstanding before taking a well-deserved leave during the December festive season, some nevertheless stood firm and decided to attend. A big hand and a warm thank you for attending!

May you not only enjoy the discussions, but may you also find opportunities to connect with others and further improve and extend your research. It is hoped that this intimate academic opportunity will continue paving ways for collaborations across the various disciplines (and institutions) in Southern Africa.

On behalf of my co organisers (see list below) I wish you all a convivial welcome. I am certain that we are going to have a lively and enjoyable time together.

Kind regards

Elize van Eeden

(on behalf of the NWU (NRF-IMD Community Engagement Research Group, and the CUT, TUT & UNISA members of the organising committee)

PROGRAMME

<http://www.nwu.ac.za/vaal/ecohealth%26wellbeing%20research%20conference-2014>

5th NATIONAL MULTIDISCIPLINARY ECO HEALTH AND WELL-BEING RESEARCH FORUM-CONFERENCE

on

Our heritage, our future

(A joint venture between the North-West University; Central University of Technology, Free State; the University of South Africa and the Tshwane University of Technology)

DATE: 20 & 21 NOVEMBER 2014

VENUE: SUNWA RIVER LODGE, PARYS, FREE STATE

Dr Pieter Möller, General facilitator, Conference

DAY 1: THURSDAY 20 NOVEMBER 2014	
09:00 – 09:30	Registration: Tea / Coffee
Session 1: Facilitator – Dr Pieter Möller	
09:30 – 09:45	Opening & Word of Welcome <i>Prof Susan Coetzee van Rooy</i> (Research Director, NWU-Vaal Triangle Campus)
09:45 – 10:45	Keynote Address 1: Groundwater Use: The Balancing Act <i>Mr Fanus Fourie</i> (Department of Water and Sanitation, Directorate Water Resource Planning Systems)
10:45 – 11:05	Refreshments (Conference-Photo Session)
<u>DELIBERATIONS ON ENVIRONMENT, HEALTH AND WELL-BEING RESEARCH</u>	
Session 2: Facilitator – Prof Eric Nealer	
11:05 – 11:25	Ecology within: Metacognition as key to subjective well-being <i>Prof Ignatius GP Gous</i>
11:25 – 11:45	Integrative research on ecohealth and well-being matters in South Africa: Exploring processes and sharing experiences <i>Prof Elize S van Eeden, Prof Elma H Ryke, Dr Tumi Khumalo and Dr Mada Watson</i>
11:45 – 12:05	The possible value of green spaces in the living environment of the Bekkersdal community members, Westonaria, South Africa <i>Dr EP (Nellie) de Crom & Prof EJ Nealer</i>
12:05 – 12:25	Investigation of affluent consumers' cognitive evaluation and selection of white goods in an emerging economy to determine subjective well-being <i>Ms Lorna Christie</i>
12:25 – 12:45	Pigeons and people: Mortal enemies or lifelong companions? A case study on staff perceptions of the pigeons on the University of South Africa's Muckleneuk campus <i>Ms Emma Harris, Dr EP (Nellie) de Crom and Ms Ann Wilson</i>
12:45 – 13:05	Footprints in the hydrosphere of the Vaal River in the Vredefort Dome <i>Dr Claudia Gouws</i>
13:05 – 13:45	Lunch
13:45 -18:45	Conference Lecture and Excursion: The Vredefort Dome (with Mr Jan Fourie as tour guide)
19:00	Evening Conference Dinner (A cash bar will be available)

DAY 2: FRIDAY 21 NOVEMBER 2014**Session 1: Facilitator – Dr Pieter Möller****08:00 – 08:30** **Registration: Tea / Coffee****08:30 – 9:15** **Keynote Address 2:**
Greening and how to use waste products, a South African Councillor's perspective-
Mr Thabo Olivier (Councillor, Mangaung, Bloemfontein)**REGIONAL HEALTH AND WELL-BEING RESEARCH****Session 2: Facilitator – Prof Annabel Fossey****09:15 – 09:35** Cooperation possibilities between polluter and activist-protagonist to address social and environmental impacts as a result of mining
Ms Mariette Lieferink**09:35 – 09:55** Health status of the Bloemspuit stream in Mangaung, Free State, South Africa
Ms Gladys N Belle, Prof Annabel Fossey and Ms Leana Esterhuizen**09:55 – 10:15** A structural functional analysis of a mining community: The case of Bekkersdal on the West Rand
Prof Freek Cronje, Ms Carina Snyman and Prof Eddie Bain**10:15 - 10:25** **Conference-Photo Session****10:25 - 11:00** **Refreshments****WATER HEALTH AND THE WELL-BEING OF COMMUNITIES.****Session 3: Facilitator – Prof Freek Cronjé****11:00 – 11:20** Water use within Bekkersdal: Scientific and community impressions on the past and present and future use of the Wonderfonteinspruit
Ms Simone Lieferink, Prof Elize S van Eeden and Prof Victor W Wepener**11:20 – 11:40** Water health index for ground water in the Free State, South Africa
Prof Annabel Fossey, Ms Leana Esterhuizen**11:40 – 12:00** Surface water catchment as determinant of integrated water resources management and co-operative governance
Prof Eric J Nealer**12:00 - 12:20** Groundwater Quality on Dairy Farms in central South Africa
Ms Leana Esterhuizen, Prof Annabel Fossey and Dr Elsa Potgieter**12:20 – 12:30** **Conference Summary on “Our heritage, Our future”: Dr Pieter Möller & Prof Elize van Eeden****12:30 - 13:30** **Lunch & Departure (Committee meeting during lunch)**

KEYNOTE SPEAKERS

MR FANUS FOURIE

Fanus grow up in East London, studied at the University of the Free State and obtained his B.Sc degree in Geology (1994) and B.Sc (Hons) in Geohydrology (1996). He started with the Department of Water Affairs and Forestry in 1997 and worked in Upington and Kimberley. And he is for the last 8 years working Pretoria in the Chief Directorate: Integrated Water Resource Planning as a Scientific Manager responsible for national groundwater planning initiatives. Some of the projects were: National Groundwater Strategy, Artificial Recharge Strategy, Aquiworx groundwater management tool, and the Guideline for Assessment, Planning and Management.



Groundwater Use: The Balancing Act

Mr Fanus Fourie¹

Groundwater in South Africa is an important resource for all sectors and the development of this resource will be crucial for sustaining water security (NWRS2). The knowledge and use of groundwater need to be increased along with the capacity to ensure sustainable management (GS). To achieve these goals planning need to be the starting point.

The minister of Department of Water Affairs needs to increase the use of groundwater as part of her Outcome 10 deliverables to secure water delivery for the future. Various programs, tools, guidelines and maps were develop to ensure the local municipalities, water service providers, planners, etc. to help them in assess, plan and manage their groundwater resources on a sustainable manner.

Only 40% of all the available of groundwater resources are developed in RSA and the development of surface water are becoming more costly and challenging. Over the last 8 years the Department of Water and Sanitation develop many reconciliation strategies for Water Management Area, the big metro municipalities and for the smaller towns and villages in South Africa. The reconciliation strategies entails

¹ Directorate Water Resource Planning Systems, Department of Water and Sanitation, Pretoria

towns and villages in South Africa. The reconciliation strategies entails among other things sustainable ways to source additional water supplies for the selected towns/metro's or villages. Groundwater played a major role in the recommended interventions. The challenges are now the implementation of the groundwater schemes and sustainable management of the groundwater resource. Or differently put: the balancing act between selling of groundwater and the prevention of over-abstraction. The bankability of regional schemes, the credibility of groundwater as a bulk scheme source, poor management of boreholes / well fields, institutional responsibility, acceptable quality and treatment of groundwater still challenge the use of groundwater development. Groundwater need to play its role in addressing the future water needs of RSA or can it?

Keywords: Groundwater use; Reconciliation study; Tools; Planning.

MR THABO OLIVIER

A Bloemfontein councillor has been named the “Greenest” councillor only waste material and also established a vegetable garden which uses recycled water.

Thabo Olivier is a green role model, and feeding the hungry with fresh produce from his vegetable garden has made him popular. The house he built from waste material will be used as a training centre where the youth will be taught to maintain their own gardens.



Olivier's popular vegetable garden receives about 30 visitors a day. The Khula Foundation, where Olivier is an ambassador, named him the greenest councillor in the country.

Greening and how to use waste products. a South African Councillor's perspective

Mr Thabo Olivier

Qala Tala Project

Qala Tala that means to start green is a gardening project in the Free State. Thabo Olivier uses the resources available to him to grow healthy vegetables. His green methods include a sky garden that saves space on the ground and he uses old tyres to grow veggies in. He is training people living in rural areas to grow their veggies sustainably, despite limited resources.

Qala Tala promotes healthy living

The rural development and land reform deputy minister, Lechesa Tsenoli, has urged the communities of Mangaung and the surrounding areas to take a leaf out of the book of the Qala Tala greening project, which promotes sustainable living practices in the smallest of spaces.

Qala Tala is a pro-active social initiative based on collaboration that seeks to address core issues related to the creation of sustainable human settlement and poverty alleviation, through the establishment of 40 to 50 hanging and sky vegetable gardens.

The project was pioneered by Thabo Olivier in partnership with Centre for Development Support at the University of the Free State (UFS), Mangaung Metro Municipality (MMM) and national rural development and land reform department.

During his visit to the Qala Tala project in Bloemfontein, Tsenoli said the project seeks to maintain a balance between environmental cleanliness and poverty alleviation.

"It is an interesting demonstration on how to use a small space to your advantage and benefit in many ways.

It also promotes sustainable healthy living practices and ensures that nobody lives in a hungry environment because everyone can actually do this. I am very amazed with this project and believe that if community members can take notes and copy what has been done here, many lives can be changed for the better," said Tsenoli.

Olivier told The Weekly that the hanging and sky-garden is built to fulfil the Qala Tala vision of sustainability, food security and also generating opportunities for employment and household income.

“With fresh and good quality food on the table, the garden will also promote the health of the family.

The size of the garden is relatively small but by producing fruit and vegetables on three levels we have managed to triple the area, thus tripling the amount of food to be produced and also drastically minimising the amount of water needed to sustain the garden.”

He said that the triple level garden is achieved by growing “runner” crops like pumpkins, gems, patty pans and baby marrows on a level two metre’s above the ground.

“This is called the sky-garden. Below this we have a hanging garden that is made up of plastic bottles and PVC piping that hangs below the sky garden. The crops grown here are the bush-beans, peppers, chillies, strawberries and cucumber.

“On ground level, we have the traditional garden made from car-tyres and cement blocks. Spinach, potatoes, cabbage, beetroot, carrots, gems, radish, tomatoes and herbs are grown here,” said Olivier.

To ensure the maximum use of water, the watering of the garden takes place through a drip system that starts at the sky-garden, letting the excess water drip through to the hanging garden and then ultimately to the ground garden.

It is envisaged that the garden will produce more than five times the food required by a family of four, thus allowing the family to sell 80 percent of their crop to generate an income.

MMM deputy mayor, Connie Rampai, said it will be proper for the municipality to take the initiative further to the communities of Mangaung and encourage them to have this kind of garden.

“It will be important for residents of Mangaung and surrounding areas to start having this hanging and sky-garden in their yard because it will help them and also help us in saving water,” said Rampai.

The entire concept is said to be based on five pillars and they are; water and food security; sustainability, energy efficiency and recycling, and is entirely aimed at improving people’s lives.

Moreover, the Qala Tala project will upgrade informal settlements; build proto-type houses and activate existing suburban house activation.

ABSTRACTS

(in alphabetical order)

Health status of the Bloemspruit stream in Mangaung, Free State, South Africa

Gladys N Belle, Annabel Fossey and Leana Esterhuizen

Department of Life Sciences, Faculty of Health and Environmental Sciences, Central University of Technology, Free State

Increasing number of people living along the Bloemspruit stream has brought along extensive pollution of the stream. Polluted water causes death of less tolerant aquatic organisms living in the stream, resulting in a decline of biological diversity. The polluted stream water is also a medium of transmission of various water-related diseases affecting humans and animals using the stream. An assessment of the health status of the stream will provide information about the extent of its deterioration and degradation. Twelve sampling sites along the course of the stream and its tributaries were assessed for physical, chemical and microbiological properties. An ecological assessment of the stream was also conducted to provide an indication of stream deterioration and degradation. A number of tools were used to determine the status of stream health. These included the calculation of a Water Quality Index (WQI), the South African Scoring System score (SASS5), the Average Score per Taxa (ASPT), the Modified Invertebrate Habitat Assessment System score (MIHAS), and the Index of Habitat Integrity score (IHI). WQI calculations revealed poor water quality at 67% of the sampling sites, while 33% displayed marginal water conditions. SASS5 and ASPT results indicated that two thirds of the sites were critically impaired with few tolerant taxa present, whereas the remainder presented severely impaired conditions with only a few tolerant taxa present. Conversely, the impact of the pollution is not yet discernable in macro-invertebrates habitats, whereas 75% of the habitats showed good habitat conditions and only 25% ranged between adequate and poor. These results indicate confidently that the health of the stream is declining and in the future could impact heavily upon the macro-invertebrate habitats. There is also an aesthetic decline with the ever increasing odour and presence of visible solid waste. Humans and animals that use the water are also at risk of contracting water borne diseases.

Keywords: Water quality; Ecological quality; Stream health; Macro-invertebrates; Habitats.

Investigation of affluent consumers' cognitive evaluation and selection of white goods in an emerging economy to determine subjective well-being

Lorna Christie

*Life and Consumer Sciences
University of South Africa*

Purchasing decisions influence buyers and the contexts they are involved in. Purchasing household appliances (white goods) has an influence on a buyer's perception about the economic and social standing of himself/herself, the growth of the economy, and the environment. The question is: how do buyers make their decisions? What makes them choose a specific product? It is important to ask these questions and to understand the answers thereto, for various reasons. People want to eke out a better living for themselves and want to be happy. Countries want to develop, especially economically. The environment needs to be cared for in terms of sustainability. All of these aspects are interrelated, and are impacted on by a single purchasing decision. It is therefore crucial to understand consumer decision making relating to white goods. Several studies have addressed consumers' situational factors and motivational constructs regarding the purchase and consumption; intent and actual behaviour of environmentally friendly white goods of individuals in developed economies, furthermore models of consumer decision making regarding this have also been developed and tested within the First-world scenarios, but these are not necessarily relevant in terms of the cultural complexities and situational factors of a developing economy, i.e. South Africa. Empirical evidence exists that suggests a select few South Africans are responsible for the majority of consumption within the country. It is important that this population groups' consumer decision making be analysed to investigate subjective well-being on an individual level. These factors needs to be investigated concerning the more affluent consumers in South Africa since an increasing number of citizens are entering this rapidly emerging middle class. If all of these consumers discount the future, and consume in the manner currently experienced, it will have detrimental consequences to their personal well-being, to the sustainability of the natural resources and ultimately to the progress of the country.

Keywords: Affluenza; Relative Deprivation; Future discounting; Well-being; Emerging economy; White goods.

A structural functional analysis of a mining community: The case of Bekkersdal on the West Rand

Freek J Cronjé, Eddie G Bain, Suzanne Reyneke, Carina Snyman

*Research Team, Bench Marks Centre for Corporate Social Responsibility
North-West University (Potchefstroom Campus)*

This paper will take a Structural Functional approach in analysing some critical aspects within the mining community of Bekkersdal on the West Rand. Three main concepts will anchor the approach conceptually, namely Social Structure, as well as Functional and Processional aspects.

In terms of social structure, the paper will look into an institutional set of structural components, supposedly to ensure harmonious patterns in societies and communities. More specifically, groups, institutions, statuses, roles, norms and values, as well as an overarching culture in the community will be investigated. With regard to functional aspects, the distinction between manifest and latent functions will be looked into, whilst interaction and socialisation will be highlighted as major processes that 'glue' social structure together.

The described conceptual framework will be supported in a deductive way by some baseline quantitative data being gathered and analysed in 2013 in the community of Bekkersdal.

Keywords: Bekkersdal; Function; Mining community; Process; Social structure; Structural Functionalism.

The possible value of green spaces in the living environment of the Bekkersdal community members, Westonaria, South Africa

EP (Nellie) de Crom & Eric J Nealer

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Technology, Pretoria; Public Administration & Management,
University of South Africa*

The Bekkersdal township was founded in 1945 as a mining community. As the mines in the area closed down, unemployment grew and more people moved into alternative townships. Not only were backyard shacks erected, but an entirely new informal township was established towards the west of the existing township. The tracts of parkland located on the western boundary of Bekkersdal Proper also became squatter

areas, with the concomitant health and other socio-economic issues and a lack of green space in the immediate environment.

There is increasing evidence for a positive relation between the amount of green space in the living environment and people's health and well-being. This paper addresses the following question: "do green spaces matter in this specific socio-economic environment?"

Results indicate that although residents have generally positive feelings concerning their natural environment, it is not regarded as an important reason to live in the area. Problems such as a dusty environment, exposure to dangerous fumes, litter, noise, visible sewage, and pollution were highlighted as important risks to households.

Research suggests that green spaces may have beneficial effects on health in so far as they promote social contact, for example through green meeting places in neighbourhoods. Trees, grass and vegetable gardens in common spaces, attract residents to outdoor spaces and activities, thereby leading to frequent contact amongst neighbours. Besides offering meeting opportunities, such green spaces can also promote a general sense of community, which is strengthened when they feel at home (community attachment), have bonds with others, and feel a sense of connection with the place (community identity - pride and care). Thus, natural features can promote a sense of community by increasing feelings of emotional attachment to a neighbourhood and people's identity with a place, which in turn could decrease feelings of loneliness and despair, and increase social support and hope in an otherwise demoralising socio-economic environment.

Keywords: Bekkersdal; Green spaces; Well-being; Informal settlement; Mining community; Pollution; Health; IMD research.

Integrative research on ecohealth and well-being matters in South Africa: Exploring processes and sharing experiences¹

Elize S van Eeden, Elma H Ryke, Tumi Khumalo and Mada Watson

*Schools of Health Sciences; Basic Sciences & Behavioural Sciences,
North-West University, Potchefstroom Campus and Vaal Triangle
Campus*

The authors of the paper will engage with a form of integrative research on ecohealth and wellbeing as experienced in a space of the eminent and historical West Wits Line gold mining region in the West Rand, South

¹ The authors acknowledge the financial support for the research by the National Research Foundation of South Africa.

Africa. The particular space is Bekkersdal: A township existing since 1949 within the present day Westonaria municipal region. The processes to be exposed are i) the research procedures that had been originally adopted and had gradually matured in this complex research project (hosting 11 disciplines) to undertake research that transcends from disciplinary, to interdisciplinary and then transdisciplinary modes. Furthermore the ii) developing of a baseline questionnaire covering the basic knowledge needs of all the disciplines on ecohealth and wellbeing issues will be executed for its value and its challenges. Lastly the iii) impressions of the disciplines involved in the research so far, will be concisely shared through the means of their impressions on the strengths, weaknesses, opportunities and threats. The project team's aim with ecohealth and well-being research in communities is to broadly cover the following conceptual features in its efforts to contribute to science communicating in an integrative multidisciplinary way:

- the built environment (like services, housing provision, service delivery, local management & security);
- the immediate and/or natural environment (such as the environmental capacity, community experiences, issues and concerns);
- the well-being environment (for example the financial, physical, social, emotional and mental state of communities).

Keywords: Bekkersdal; Westonaria Municipality; Ecohealth and Wellbeing research; Integrative research.

Groundwater Quality on Dairy Farms in central South Africa

Leana Esterhuizen, Annabel Fossey and Elsa Potgieter

Department of Life Sciences, Faculty of Health and Environmental Sciences; Microbiology Laboratory Services, Mangaung Metropolitan Municipality

Dairy farms in central South Africa depend mostly on groundwater for domestic needs and dairy activities. Groundwater samples were collected from 37 dairy farms during 2009 and 2013. Sixteen water quality parameters were tested and compared to the standard. Four parameters in 2009 and six in 2013 exhibited 100% compliance with the standard. Nitrate, E. coli and total coliforms showed relatively low compliance across farms and years. Almost all farms were non-compliant for hardness in both sampling years. T-tests revealed significant changes from 2009 to 2013 for pH ($t = 2.580$; $p = 0.006$), hardness ($t = 2.197$; $p = 0.016$) and K ($t = 1.699$; $p = 0.0468$). For hardness, approximately 45% of the farms in 2009 and 57% in 2013 posed a health risk to sensitive consumers. More

than 50% of the farms in both years demonstrated levels of nitrates that could pose a health risk, particularly for babies. High levels of coliforms and *E. coli* were found indicating a health risk for clinical infections in consumers. The number of farms presenting three or more parameters with a health risk more than doubled from 13.5% in 2009 to 27.0% 2013.

Keywords: Water quality; Groundwater; *E. coli*; Coliforms; Nitrate; Hardness; Dairy farms.

Water health index for ground water in the Free State, South Africa

Annabel Fossey and Leana Esterhuizen

Department of Life Sciences, Faculty of Health and Environmental Sciences, Central University of Technology, Free State

Dairy farm effluent, which refers to manure and urine deposited during milking, is diluted during washing down of a milking shed floor. Animal waste in dairy effluent is a major source of pollution through nutrient enrichment of streams and ground water, which may in turn have a significant impact on the environment. In South Africa, dairy farm effluent is mainly discharged onto pastures and land by irrigation or flooding and has been shown to pollute ground water. Three prominent water quality indexes, namely, Weighted Arithmetic, Weighted and the Canadian Council of Ministers of the Environment water quality indexes were critically reviewed for their applicability to assess ground water quality and to be used as a tool for non-professionals to describe the overall quality of water. These indexes were tested on ground water measurements obtained from 34 dairy farms in 2013. Eight health related parameters were identified and health limits assigned. A five point scale was used to classify and calculate water quality indexes using the three selected indexes. Water quality index values of the indexes were compared to a manual rating of the raw data to assess their accuracy. Overall, the Weighted Arithmetic and the Weighted water quality indexes presented similar results that also matched the manual rating, although the indexes calculated using the Weighted method were marginally closer to the manual rated data. Although the Canadian index included microbiological parameters, it is scientifically complex and requires multiple sampling rounds. It is thus recommended that the Weighted index is adjusted to be used as Water Health Index for ground water in the Free State.

Keywords: Drinking water quality; Ground water; Water quality index; Water health index.

Ecology within: Metacognition as key to subjective well-being

Ignatius GP Gous

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College of Human Sciences
University of South Africa*

John Lennon apparently said “Life is happening to you while you are busy making other plans.” An unknown soldier-of-life shortened this idea in the not-so-elegant existential observation regarding the unpredictability of life events and experiences, saying “S**** Happens”. Maybe we should rather use proper French and say “C'est la vie”. Whatever the language, the question remains how we can heed the call “Don't worry, be happy!” Is it at all possible in our day and age and in this country and environment?

Subjective Well-Being (or happiness) is a balancing act, whereby people evaluate their satisfaction of life by means of emotional reactions and cognitive judgements. Personality traits, life experiences, performance in life areas, outlook on life and many more aspects play a role in the judgement about life satisfaction. Happiness is therefore a cognitive and affective construct created by an individual or even by groups of people.

Metacognition is a deliberate cognitive attempt of understanding, evaluating and controlling aspects of thinking and being. It focusses on four important aspects, namely Goal, Person, Task and Strategy. As such, it is geared toward striking an informed and healthy balance in life, where life Goals are aligned with Personhood, and supported by choices and decisions regarding suitable Tasks and effective Strategies. However, very few people know about this powerful and life-changing strategy, and therefore live lives where they are not in control.

In this paper, Metacognition and Subjective Well-being is being described and unpacked, and then brought to bear upon each other. If we want to conquer life in ways that are ecologically balanced, in other words good to ourselves and good to our contexts, we will have to do more than “Just do it” like the Nike slogan says – we will have to “Think while doing it!”

Keywords: Metacognition; Mentalising; Subjective Well-being; Happiness; Awareness.

Footprints in the hydrosphere of the Vaal River in the Vredefort Dome

Claudia Gouws

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The settlement history of the Vredefort Dome world heritage site in the Republic of South Africa can be described as a process of cultural development. The Vaal River hydrosphere, which was for many years a prestigious settlement site, initially attracted large scale game and later livestock farmers. The drifts were a central part of a network of early strategic communication routes and outspans. From 1838, pioneer settlement, farm occupation and agricultural development followed, and the area eventually entered an agriculture-mining era. Gold-mining stimulated the regional economy and also played a significant role in the development of towns in the area. The location of the water source often determined where people settled permanently. Man's fear associated with drought (too little water), floods (too much water), meteorology (the necessity of water), and the role of the supernatural (to divine water) and superstition (the water snake stories) was expressed in the interaction between people and this water environment. A wide variety of people with distinct cultures lived alongside each other in the area. Western and African cultural goods, as well as customs and beliefs, were mutually adopted by these different cultural groups as a result of this contact.

This world heritage site has drawn global interest and ecotourism has attracted visitors to the Vaal River area. The riparian dwellers, however, remain victims of up-stream industrial and sewage pollution; in future, they are likely to fall prey to acid mine water pollution, the consequences of which could be disastrous.

Keywords: Cultural history; Ecotourism; Environmental history; Local history; Parys; Regional history; Transdisciplinary history; Vaal River; Vredefort Dome; Water history; Water resources; World heritage site.

Pigeons and people: Mortal enemies or lifelong companions? A case study on staff perceptions of the pigeons on the University of South Africa's Muckleneuk campus

Emma Harris, EP (Nellie) de Crom and Ann Wilson

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This study explored the perceptions of staff concerning the pigeons inhabiting the Muckleneuk campus of the University of South Africa, and the proposed control programme directed at resolving the perceived pigeon problem. Pigeons have been a part of our lives for as long as we can remember. Some people view them with joy, others disdain. Regardless of the perception, control measures are often implemented against the birds in a bid to eradicate or reduce their presence in urban environments without considering members of the public in the process. Complaints associated with pigeon activity are, by human nature, heard louder than praise for these birds. It is these complaints which have bought about the many establishments which try to control and eradicate pigeon populations, through various methods. However people who are pro-pigeons are often not provided with the forum to express their views of the pigeons and the proposed control measures. Recognising that public participation in the development and implementation of pigeon control plans is an integral part of the process will provide the opportunity to learn from others, build peoples' confidence in management as well as ensure the sustainability and effectiveness of proposed pigeon control programmes. Focus should therefore not solely be on the biological aspect of a perceived pigeon problem, but should also include the human association because unless all stakeholders are recognised and heard it is unlikely that actions to reduce or eradicate pigeons from a particular area will be successful and sustainable. This research contributes to the understanding of the relationship between people, the natural world and environmental issues.

Keywords: Pigeons; Pest management; Public participation; Muckleneuk Campus, UNISA.

Cooperation possibilities between polluter and activist-protagonist to address social and environmental impacts as a result of mining

Mariette Liefferink

*CEO: Federation of Sustainable Environment
Johannesburg*

Increasingly, we are seeing demands from the community and non-governmental organisations for greater environmental and social responsibility and accountability from the extractive industry. In response to these changing expectations, the terminology of corporate social responsibility and licence to operate is increasingly occupying the thinking of some boards and senior management of mining companies. This thinking can influence many aspects of a company's operations, from commencement of mining to closure.

Recognition of societal and environmental demands and the goal of improving community relations have resulted in a memorandum of understanding (MOU) between the Federation for a Sustainable Environment and Gold Fields' South Deep Mine which incorporated an independent high confidence survey.

The MOU was motivated by the increased demands from local communities for greater environmental and social responsibility and accountability within the Gold Fields' South Deep Mine.

The objectives of the MOU between the FSE and Goldfields' South Deep Mine are to:

- Create awareness of the impacts of historical and current mining operations as well as current positive aspects of mine.
- Actively engage with South Deep Gold Mine communities in transparency and openness.
- Have a realistic expectation of potential benefits.
- Ensure that the interests of both current and future generations are not compromised.
- Incorporate community relations in the business plans.
- To put proactive strategies in place to develop and sustain enduring relationships with communities throughout the life of the South Deep Gold Mine.
- Take positive steps toward improved risk management and improved results; and
- Evolve from a short term means of meeting regulatory and tender requirements, to a longer term, more strategic channel for relationship building, risk mitigation and new business identification, new approaches to and forms of engagement.

Keywords: Non-Governmental Organisation; Societal and environmental demands; Mining Communities; Extractive industry; Accountability; Responsibility; Memorandum of understanding.

Water use within Bekkersdal: Scientific and community impressions on the past and, present and future use of the Wonderfonteinspruit

Simone Liefferink, Elize S van Eeden and Victor W Wepener

School of Biological Sciences, Faculty of Natural Sciences, North West University, Potchefstroom

Relationships between humans and nature are well-known to science. South Africa's constitution, along with a plethora of laws and regulations, define the protection that must be afforded to natural resources to ensure the environment is protected for the benefit of present and future generations. Water is a natural resource that has long been regarded as essential for anthropogenic life and every South African citizen is afforded the right to access to sufficient water. Despite the importance of water to the survival of humanity, the management of fresh water by local governments and the communities it serves is often poorly achieved. The focus of this paper will be to explore this statement by exchanging some of the recent recorded impressions of the Bekkersdal community in the Westonaria Local municipality about the Upper-Wonderfonteinspruit. The strong reliance on municipal water services, 100% of water users, along with the desire for people to have options other than relying on the municipality such as by using the Wonderfonteinspruit and Donaldson Dam as alternative water sources will be discussed. Results show that the Mandelaville informal section of Bekkersdal showed a 98% interest in using the Wonderfonteinspruit and Donaldson Dam for activities such as irrigation (71%), religious practices (53%) and recreation (55%). Even with the poor present ecological state of the Wonderfonteinspruit, which will also be considered in this paper, 10% of the sample group admitted to using the Wonderfonteinspruit for activities such as washing, drinking and watering cattle, especially during periods when municipal water was unavailable. Other impressions on the nature-human relationship between Bekkersdal citizens and the Wonderfonteinspruit – along with possible solutions to water related issues will also be concisely touched on.

Keywords: Bekkersdal; Westonaria; Municipality; Water; Water Management; Upper-Wonderfonteinspruit; Donaldson Dam.

Surface water catchment as determinant of integrated water resources management and co-operative governance

Eric J Nealer

Department of Public Administration and Management, University of South Africa, Pretoria

South Africa's newly established and merged municipalities (down to 283 from over 800) are demarcated according to demarcation principles such as historical interdependence, capacity, existing boundaries, land use, and administrative consequences. The fact that these municipal government jurisdictions for the purpose of improving integrated municipal management, in most instances do not take into account environmental and physical land features such as the location of a river and its surface water drainage region boundaries, could lead to ineffective and non-economical municipal management of water, sanitation and environmental services. Unfortunately, the latter characteristic is also the case with reference to human settlement and development of especially water related public services management to the Bekkersdal community which is situated in the Westonaria Local Municipality's municipal area of jurisdiction.

By means of a literature review as well as the use and study of geographical tools such as maps, ortho-photos and information data bases, the bare essential geographical and geo-hydrological aspects of importance for the municipal service providers and managers in the Westonaria area have been identified. From this research and various other reasons, (e.g. deteriorating physical environment due to mining activities, air pollution, sub-standard storm water and sewage management and migration [informal settlements] and increasing sophisticated needs of the residents of the area) the presenter of this paper is of the opinion that the effective municipal management of basic municipal services in the developing South Africa entails highly complex hydrological, geo-hydrological and public management functions in a dynamic and highly regulated environment. It requires the municipal managers, officials and political office-bearers of a municipality to be equipped with specific knowledge and skills regarding the physical environment and management of basic natural environment related (e.g. soil, air and water) public services.

In conclusion, the presenter wants to hold that by understanding the need for all geographical macro-planning in a municipal area to be done according to the surface water catchment demarcation, more

effective co-operative governance will realise and ultimately, more effective integrated water resources management will be brought about.

Keywords: Surface water catchment; Municipal management; IWRM, Co-operative governance.

SHORT CV'S

Gladys Belle:

Educational qualification: B. Tech. Environmental Health; BSc (Hons). Major: Environmental Science; Minor: Biology; General Certificate of Education Advanced Level (GCE 'A' Level); General Certificate of Education Ordinary Level (GCE 'O' Level)

Working experience: 2014 – Part Time Lecturer – Central University of Technology; 2013 – Student Assistant – Central University of Technology; 2005-2011 – Biology and Science Educator – Holy Names High School; 1997-1999 – Plant Species Inventory – Korup National Park Mundemba - Cameroon

Lorna Christie:

Education: 2014 – Enrolled for a PhD Consumer Science: University of South Africa; 2012 – M. Consumer Science, Cum Laude: University of Pretoria; 2009 – B. Consumer Science: University of Pretoria; 2004 – Matric: Hoërskool Warmbad

Employment:

02/2013	current – University of South Africa;
Occupation:	Lecturer, Department of Life and Consumer Sciences
01/2008 – 12/2011	University of Pretoria
Occupation:	Technical and Teaching assistant to the Department of Consumer Science

Conferences attended: 2014 Unisa Student Research and Innovation Showcase; 28 to 29 August 2014- Runner up in the Long Paper Presentation: Social Sciences

Freek Cronjé:

Freek Cronjé is the Director of the Bench Marks Centre for Corporate Social Responsibility at the Potchefstroom Campus of the North-West University. In 2003 Freek was an exchange researcher at the Sussex Migration Centre in Brighton, UK and at the European Centre for Migration and Social Care (MASC) in Canterbury, UK. Most of his research is conducted under the 'umbrella' of Sustainable Development. His specific research interests are Migration Studies and Corporate Social Responsibility (CSR) in the mining sector.

Engela P de Crom is a senior lecturer in the Department of Nature Conservation at the Tshwane University of Technology, Pretoria, South Africa. She started off as a zoologist with an MSc in Zoology and later added the human sciences to her interests by obtaining an Masters degree in Sociology. She holds a multidisciplinary PhD with the focus on human-nature interactions. She investigated the influence of nature experiences on individuals in natural environments in Southern Africa. Her interests also involve the human experience of nature and the positive and valuable contribution that such experiences can have for the well-being of humans and eventually for all species on earth. She is also involved in a number of multidisciplinary research projects concerning human-nature interactions, and provides supervision for post-graduate students in the field of Ecotourism, Nature Conservation and Environmental Management. She has participated in various national and international conferences.

Leana Esterhuizen is from Bloemfontein. She attended school there and graduated with an M Tech in Environmental Health from the then Technikon Free State. She worked as an EHP and Occupational hygiene technologist before she was appointed as a lecturer at the Central University of Technology, Free State. She is currently involved with postgraduate supervision and has just finalised her D Tech thesis. She focuses on groundwater quality on farms in the Free State. Leana has been involved with the South African Youth Water price and Aqua Enduro competitions hosted by the Department of Water Affairs and Sanitation in the Free State.

Annabel Fossey (nee Hofmeyr): completed a BSc degree majoring in Genetics, Physiology and Biochemistry at the University of Pretoria. She was then appointed as a lecturer in Genetics at the University of Pretoria, during which time she completed her honours, masters and DSc degrees. In 1999 she joined the genetics department of the University of KwaZulu-Natal, after which she became a principal researcher at the CSIR in 2006. In March 2010 she joined the Central University of Technology in Bloemfontein as a research professor in Biotechnology. She has published many scholarly articles, books and made numerous conference contributions.

Prof Ignatius GP Gous is an interdisciplinary scholar who believes what lecturers teach should really make a difference to the communities they serve. He has been a member of staff at the University of South Africa since 1984. He completed his PhD in Old Testament Studies in 1988, authored 20 books, 51 articles in scientific journals, is on the editorial board of an international journal on Cognition, presented papers at 73 local and international conferences, does talk shows on local radio and national television in South Africa, and serves on a ministerial commission on discipline in schools convened by the national Department of Basic Education in South Africa.

His research and teaching interests focus on the Cognitive Sciences and Metacognition. He is therefore interested in how minds work – at home, at work, while learning and when teaching – currently leading a project on how ODL students learn. He also uses MOOC's for personal enrichment, and has already completed four of them through Coursera – on Neuro-Economics, Learning how

to Learn, The Brain and Space and Supporting children with difficulties in reading and writing.

Claudia Gouws received her BA degree from the University of Pretoria in 1984 majoring in Art History and Cultural History and her BA honours degree four years later. In 2003, she continued her studies at Potchefstroom University (Vaal Triangle Campus) obtaining a Post Graduate Certificate in Education and her MA in History in 2008. She received a PhD in 2013, in History at North-West University (Vaal Triangle Campus). Since 2008 she was a member of the CuDyWat (cultural dynamics of water) research team at North-West University (Vaal). At present she is a part time lecturer for History at NWU (Vaal).

Emma Harris: Researcher and independent contractor of Unisa. Currently completing an MSc in Environmental Sciences at Unisa. Achieved the National Diploma and B-Tech in Ecotourism at TUT cum laude. Awarded Chancellors and Deans awards for outstanding academic achievement. Involved and interested in wild bird rehabilitation and human-wildlife associations. Plan to pursue a career lecturing and educating others about the natural world, as well as to continue to assist in the rehabilitation of birds in urban environments.

Tumi Khumalo is an associate professor in Psychology at the North-West University's Optentia research focus area (Vaal-Triangle campus). He leads the Psycho-social well-being and communal thriving sub-programme. Tumi is a registered Clinical Psychologist. His research in Positive Psychology focuses on measurement and cross-cultural application of psychological well-being in youth and adults. He received his PhD from the NWU in 2011. His research participation is demonstrated through peer-reviewed journal articles, book chapters, supervision of Master degree students, and conference presentations. He is a co-editor of South African textbook on Positive Psychology: "Towards flourishing: Contextualising positive psychology".

Mariette Liefferink:

- CEO: Federation for a Sustainable Environment

- ◊ (The FSE is widely recognized as the most prominent of the environmental activist stakeholders in the mining industry -http://www.miningmx.com/pls/cms/mmx_rain.profile_detail?p_nid=372.)

- One of the 100 most influential people in Africa's Mining Industry (MiningMX 2013 – "Rainmakers and Potstirrers")

- SAB Environmentalist of the Year – Winner (2013)

- SAB Environmentalist of the Year – Merit Winner. Nick Steele Award (2012)

- Winner of the Enviropaedia Eco-Warrior Award (2011)

- Awarded the Chancellor's Medal of the North West University on the 9th of October, 2009.

- Member of inter alia:
 - The Department of Water and Sanitation's (DWS) Regional Steering Committee of the Catchment Management Agency for the Vaal River
 - The DWS' study steering committee on the Feasibility Study For A Long Term Solution To Address The Acid Mine Drainage Associated With The East, Central And West Rand Underground Mining Basins
 - The South African Human Rights Commission's Section 5 Advisory Committee on Mining and Water

Simone Liefferink:

Undergraduate degree: University of Johannesburg, BSc Zoology and Environmental Management, Cum Laude

Honours: University of Johannesburg, BSc Hons. Zoology

MSc: North-West University, Currently in progress

Work experience:

Two years' experience in working with a non-governmental organization, the Federation for a Sustainable Environment (FSE). I have dealt with numerous communities and assisted with creating opportunities for discussion between mining affected communities, mining companies and government. I have represented the FSE at stake holder engagements wherein key social and environmental issues have been raised.

Eric J Nealer:

Relevant educational background:

- Doctor Administrationis (PhD equivalent): University of South Africa (UNISA) (1993 -1996)
- Masters in Public Administration: UNISA (1990 - 1992)
- Honours in Public Administration (UNISA) (1988 - 1989)
- Bachelor of Arts in Public Administration (UNISA) (1984 - 1987)
- National Diploma in Government Administration (Technicon Pretoria) (1979 - 1982)
- National Diploma for Technicians: Geology (Technicon Pretoria) (1974 - 1976)

Experience:

- Professor: Public Administration and Management, UNISA (1 March 2014 – currently)
- Professor: Public Management and Governance, School for Social and Government Studies, NWU (January 2014 – 28 February 2014)
- Associate Professor: Public Management and Governance, School for Social and Government Studies, NWU (January 2009 – December 2013)
- Subject Head: Public Management and Governance, School for Social and Government Studies, NWU (January 2007 – December 2009)
- Senior Lecturer: Public Management and Governance, School for Social and Government Studies, NWU (July 2006 - December 2006)
- Senior Lecturer: Public Administration and Management, UNISA (1995 - June 2006)

- Lecturer: Public Administration and Management, UNISA (1991 - 1994)
- Geo-hydrological Control Technician in the Directorate Geo-hydrology of the National Department of Water Affairs and Forestry (1973 - 1990)
- Member of several societies and professional bodies

Elma Ryke: Prof Ryke completed a BA (Social Work) at RAU (now UJ) in 1984 and a MA (Social Sciences in Mental Health) at UNISA in 1994. In 1999 she obtained a Postgraduate Diploma in Philosophy (with distinction) at the PU for CHE and in 2004 a PhD.

During her professional career she practised as social worker at the Castle Carey Clinic and later at the Weskoppies Hospital's unit for children, where after she started a career as lecturer at the PU for CHE in 1991. She is currently an associate professor lecturer and subject chair at the School of Psychosocial Behavioural Sciences, subject division Social Work at the Potchefstroom Campus of the North-West University. She also lectures undergraduate students (currently advanced social policy), supervises Masters and Doctorate students, participates in the Bekkersdal Research Project and publishes in academic journals. She received an NWU Teaching and Excellence Award in 2013.

Elize van Eeden is a full professor at the Vaal Triangle Campus since 2009. She currently resides under the Research Focus Area Sustainable Transformation, situated at the NWU-Potchefstroom Campus. As historian she specializes in regional history studies, inclusive of integrative research studies in regions on ecohealth and well-being matters. From 1985 to 2014 Elize has published widely on regional-related and integrative regional research. These include 90 articles in accredited academic journals and the publication of more than 20 local, corporate and general history book publications inclusive of contributions to book publications. Currently she is involved in funded (NRF and WRC) projects dealing with integrative multidisciplinary research in Gauteng and KZN. Elize chairs the South African Society for History Teaching since 2009 and acts as editor of the accredited peer reviewed scientific journals *Yesterday and Today* and *New Contree*. She also is an editorial member of three other peer reviewed journals and a member of five history related societies. She also currently supervises 8 PhD and 2 MA students. She is in subject chair of History at the Vaal Triangle Campus.

Victor W Wepener:

Qualifications: 1997 – Ph.D. (Zoology), Rand Afrikaans University- Metal ecotoxicology of the Olifants River in the Kruger National Park and the effect thereof on fish haematology.

Experience: 2012 – present: Director: School of Biological Sciences, North-West University

Research: 1993 to date, Completed: NRF-rated scientist – C2; Published/Co-author 70 peer review articles an attended over 83 conferences. 11 Projects; Busy with 5 research projects.

Serve on:

Membership of Scientific Organisations:

South African Society for Aquatic Scientists – Secretary 2002-2004; additional Executive Committee member 2009-2014; Suid Afrikaanse Akademie vir Wetenskap en Kuns; Society of Environmental Toxicology and Chemistry (SETAC) –Past president African Branch of SETAC Europe; Aquatox Forum: Chairman 2009-2011.

Supervision of post graduate students:

BSc Honours projects – 32; MSc dissertations - 40 completed and 2 ongoing; PhD theses - 9 completed and 4 ongoing.

Marine Pollution Bulletin, Environmental Toxicology and Chemistry (2008-2011), African Journal of Aquatic Sciences.

Ann Wilson (nee Cheater): Ann Wilson is a lecturer at the University of South Africa (UNISA), based at the Science Campus in Florida, since 2007. She is in the Department of Environmental Sciences, lecturing modules within the Nature Conservation programme. Her research interest is in general conservation management as well as wildlife welfare, which is where her passion lies. Prior to Unisa, she lectured part-time at the Tshwane University of Technology, since 2000. Her Masters (Use of the upper second premolar for age determination of the African lion (*Panthera leo*) in sub-Saharan Africa, for purposes of remote monitoring), was obtained through the Tshwane University of Technology.

Some Forum delegates, 24-25 November at Misty Hills, Muldersdrift, 2011



(Keynote: Prof Kobus van der Walt)

Riverside Sun, Vanderbijlpark, 22-23 November, 2012

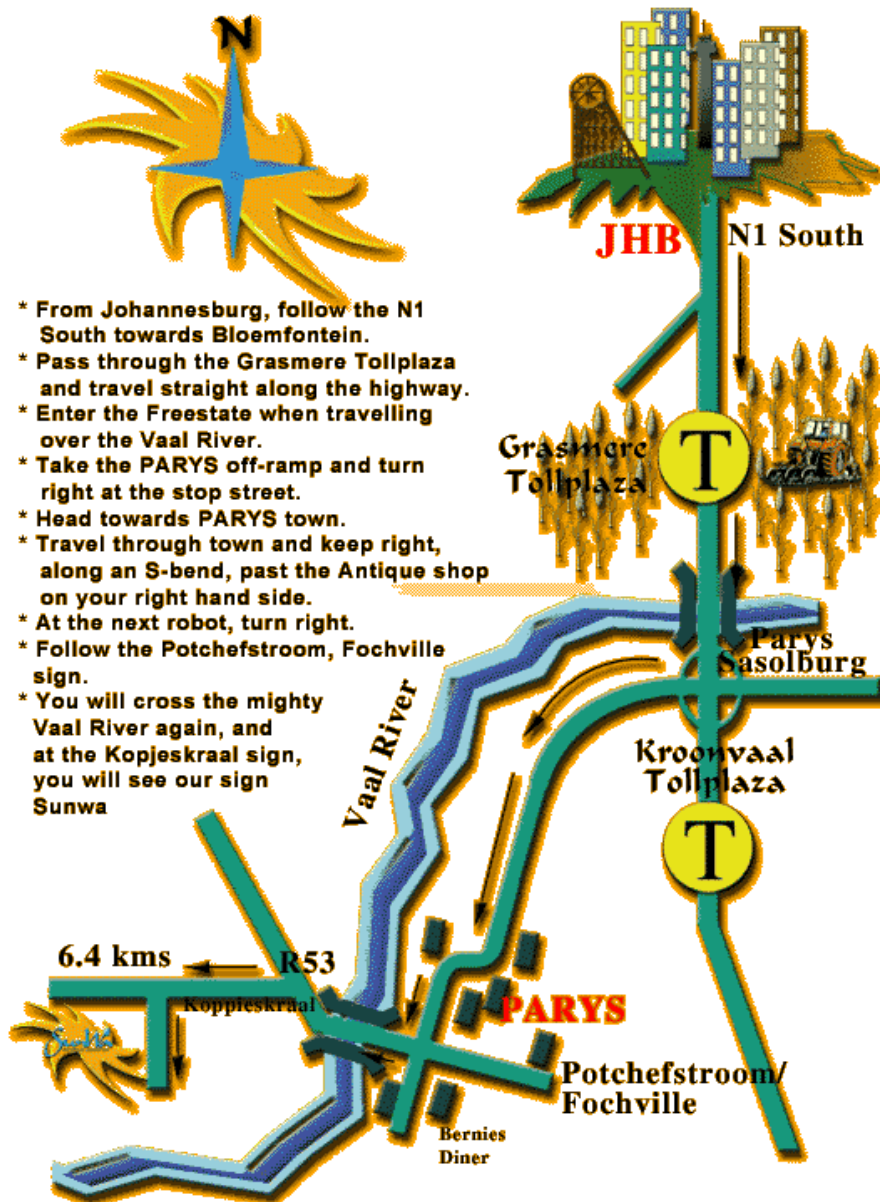


(Keynote: Prof Frank Winde)

SunWa River Lodge – MAP & Directions

GPS coordinates: S 26° 54.049'

E 27° 23.212'



- * From Johannesburg, follow the N1 South towards Bloemfontein.
- * Pass through the Grasmere Tollplaza and travel straight along the highway.
- * Enter the Freestate when travelling over the Vaal River.
- * Take the PARYS off-ramp and turn right at the stop street.
- * Head towards PARYS town.
- * Travel through town and keep right, along an S-bend, past the Antique shop on your right hand side.
- * At the next robot, turn right.
- * Follow the Potchefstroom, Fochville sign.
- * You will cross the mighty Vaal River again, and at the Kopjeskraal sign, you will see our sign Sunwa