



# IMPACT

RESEARCH AND OUTREACH AT THE  
UNIVERSITY OF CAPE TOWN 2006

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## Our Mission Statement

Our mission is to be an outstanding teaching and research university, educating for life and addressing the challenges facing our society.

**Educating for life means that our educational process must provide:**

a foundation of skills, knowledge and versatility that will last a life-time, despite a changing environment;  
research-based teaching and learning;  
critical enquiry in the form of the search for new knowledge and better understanding; and  
an active developmental role in our cultural, economic, political, scientific and social environment.

Addressing the challenges facing our society means that we must come to terms with our past, be cognisant of the present, and plan for the future.

**In this, it is central to our mission that we:**

recognise our location in Africa and our historical context;  
claim our place in the international community of scholars;  
strive to transcend the legacy of apartheid in South Africa and to overcome all forms of gender and other oppressive discrimination;  
be flexible on access, active in redress, and rigorous on success;  
promote equal opportunity and the full development of human potential;  
strive for inter-disciplinary and inter-institutional collaboration and synergy; and  
value and promote the contribution that all our members make to realising our mission.

**To equip people with life-long skills we must and will:**

promote the love of learning, the skill of solving problems, and the spirit of critical enquiry and research; and  
take excellence as the bench-mark for all we do.

We are committed to academic freedom, critical scholarship, rational and creative thought, and free enquiry. It is part of our mission to ensure that these ideals live; this necessarily requires a dynamic process of finding the balance between freedom and responsibility, rights and obligations, autonomy and accountability, transparency and efficiency, and permanence and transience; and of doing this through consultation and debate.

*This Mission Statement was formulated by a Working Group of the University Transformation Forum and was affirmed and adopted at a University Assembly on April 24, 1996*

# foreword

## window on our world



**Research is the lifeblood of many universities, and no more so than at the University of Cape Town. As an incubator of new knowledge, this university is committed to growing new generations of inquiring and creative minds.**

As an institution rooted in the Western Cape, we have an added responsibility to direct our research efforts towards those social, economic, legal and medical problems that hamstringing our development as a community of diverse people where there are enormous gaps between rich and poor. We also recognise our responsibility towards the growth of our nation, and as a driver of development on our continent.

In this publication, the *Impact* report, we have assembled a cross-section of research activities that we believe reflect our efforts to bring about positive changes in our communities.

To hone our efforts, we have launched key research initiatives, known as Signature Themes, that will be rolled out over the next few years. The two themes

that were approved in 2005 are Marine Research, which optimises our strategic location with respect to the southern oceans and the central role of fishing in our coastal communities; and the Brain-Behaviour Initiative, which is about understanding the neurocircuitry that underlies resilience and vulnerability after psychological trauma.

Though these are part of UCT's institutional strategy, these themes are very well aligned with national initiatives, such as the National Research Foundation's (NRF) Research Niche Areas and the Department of Science and Technology's Strategic and Frontier Science Programmes.

Four years ago, our Research Office started the Emerging Researcher Programme, the first of its kind in the country. This is a project to support the development of entry-level researchers. It supports them in their completion of higher degrees, with publishing and in obtaining research funding. To achieve this, we contracted four retired UCT scholars with impressive track records in research and, particularly, in mentor-

ing young researchers, to provide counsel that is both discipline-specific and generic.

In this regard, we are particularly proud of the young cohort of researchers now developed in critical areas (see pgs 52 to 58), many supported by benefactors vital to research.

I am therefore very pleased to note that UCT is showing significant successes in addressing this challenge. What was particularly pleasing about the 2005 cycle of NRF ratings is that we increased not only the number of A-rated researchers to 21, but very importantly, the number of P- and Y-rated researchers, giving us reason to be optimistic about the next generation of top researchers at UCT.

A handwritten signature in black ink, appearing to read 'Njabulo S Ndebele'.

**Vice-Chancellor and Principal  
Professor Njabulo S Ndebele**

# intshayelelo khawubone esikwenzayo



**Uphando bubomi bayo nayiphi na iyunivesithi, akukho ndawo inobunyani kuyo loo nto ukodlula kwi-Yunivesithi yaseKapa. Njengovimba wokufukama ulwazi olutsha, le yunivesithi izinikele ekukhuliseni isizukulwana esitsha seengqondo eziphandayo nezinobuchule bokuyila.**

Njengeziko elingcambu zalo zimiselwe kwiNtshona Koloni, sinoxanduva olongezelelweyo lokujolisa imizamo yethu yezophando kwiingxaki zokuhlala, zezoqoqosho, zezomthetho kunye nezonyango ezizizithinteli kuphuhliso lwethu njengoluntu olunabantu abohlukileyo, apho kukho iyantlukwano enkulu phakathi kwabo bazizityebi nabahluphekileyo. Siyalwamkela nolunye uxanduva lwethu olusingisele ekukhulisweni kwesizwe sethu, yaye nanjengomhexeshi wophuhliso kwisizwekazi sethu.

Kolu shicilelo, luyi-Impact Report (Ingxelo yeeMpembelelo), siqokelele umfuziselo wayo yonke imisebenzi yophando esikholelwa ukuba lubonisa imizamo yethu ekwenzeni iinguqu ezakhayo kuluntu lwethu.

Ukufezekisa imizamo yethu sindulule amaphulo abalulekileyo aziwa ngokubayiMixholo ePhawulayo, ayakuqalisa uku-

sebenza kuleminyaka imbalwa izayo. Imixholo emibini eyamkelweyo ngo-2005 luPhando lweZolwandle olusebenzisa ngokupheleleyo ubuchule bendawo esimi kuyo ngokweelwandle zasemazantsi kunye nendima ebalulekileyo yokuloba kuluntu lwangaselunxwemeni, kunye nePhulo lokuSebenza kweNgqondo elimalunga nokuqonda ukudibana kwemithambo-luvo esekela ukomelela nokubabuthathaka emva kokwenzakala ngokwasengqondweni.

Nangona la maphulo eyinxalenye yobuchule bolawulo be-UCT njengeziko, le mixholo ilungelelaniswe kakuhle kunye namaphulo esizwe, afana neMiba yoPhando ebuBuchule beZiko lezoPhando leSizwe kunye neeNkqubo zoBuchule boLawulo nezobuNkokeli kwiNzululwazi zeSebe leNzululwazi noBugcisa.

Kuleminyaka mine idlulileyo, i-Ofisi yeZophando yethu yaqala Inkqubo yaBaphandi Abasakhasayo, eyayiyokuqala yoluhlobo kweli. Le yinkqubo eyenzelwe ukuxhasa uphuhliso lwabaphandi abasaqalayo. Ibaxhasa ekugqibeni izidanga zabo eziphakamileyo, ngoshicilelo nangokubafumanela imali yokuxhasa uphando. Ukuze sifezekise oku siye sanezivumelwano zengqesho nabafundi base-UCT abasele besidla um-

hlalaphantsi, abanamava athabathekisayo ezophando nawokuqeqesha, ingakumbi, abaphandi abasebatsha ngokubanika ingcebiso emayelana kanye nesifundo kunye nengcebiso jikelele.

Siselapho, siyazingca ngeqela labaphandi abasebatsha abaqeqeshiweyo ngoku kwizifundo ezibalulekileyo (jonga kumaphepha 52 ukuya kwe-58), uninzi luxhaswe ngabancedi ababalulekileyo kuphando.

Ngoko ke ndiyavuya ukuchaza ukuba i-UCT ibonisa impumelelo ebalulekileyo ekujonganeni nalo mngeni. Into evuyisa kakhulu malunga nomjikelo ka-2005 wemilinganiselo ye-NRF kukuba asandisanga inani labaphandi abafumene oo-A aba-21 kuphela, koko sandise, okubalulekileyo, nenani labaphandi abafumene u-P no-Y, nto leyo esinika isizathu sokuba sibenethemba ngesizukulwana esilandelayo sabaphandi abaphambili e-UCT.

**I-Vice Chancellor kunye neNqununu U-Professor Njabulo S. Ndebele**

# voorwoord

## venster op ons wêreld



**Navorsing is die lewensbloed van enige universiteit, en nêrens meer so as aan die Universiteit van Kaapstad nie. As broeikas van nuwe kennis is hierdie universiteit daartoe verbind om nuwe geslagte leergierige en skeppende mense te kweek.**

As diepgewortelde Wes-Kaapse instelling het ons 'n ekstra verantwoordelikheid om ons navorsingspogings te konsentreer op daardie maatskaplike, ekonomiese, geregtelike en mediese probleme wat ons ontwikkeling, as gemeenskap van uiteenlopende groepe met reusegapings tussen ryk en arm, kniehalter. Ons erken ook ons verantwoordelikheid teenoor die groei van ons nasie, en as dinamiese voorloper van die ontwikkeling van ons vasteland.

In hierdie publikasie, die Impakverslag, het ons 'n deursnit van navorsingsbedrywighede byeengebring wat na ons mening ons pogings weerspieël om positiewe veranderings in ons gemeenskappe teweeg te bring.

Om fokus aan ons pogings te verleen, het ons sleutel-navorsingsinisiatiewe, bekend as Spesialiteitstemas, van stapel gestuur wat in die loop van die volgende paar jaar bekendgestel gaan word. Die

twee temas wat in 2005 goedgekeur is, is Marine-navorsing, wat ons strategiese ligging tussen twee suidelike oseane, en die sentrale rol van vissery in ons kusgemeenskappe optimaliseer, en die Breingedragsinisiatief, wat fokus op 'n beter begrip van die neuronetwerk onderliggend aan weerstand en kwesbaarheid ná sielkundige trauma.

Alhoewel hierdie temas deel van UK se institusionele strategie uitmaak, is hulle ook in pas met nasionale inisiatiewe, soos die Nasionale Navorsingstigting se Nis-navorsingsvelde en die Departement van Wetenskap en Tegnologie se Strategiese en Grenswetenskapprogramme.

Ons Navorsingskantoor het die Program vir Opkomende Navorsers, die eerste in sy soort in die land, vier jaar gelede geloods. Dit is 'n projek wat daarop gerig is om die ontwikkeling van intreevlaknavorsers te ondersteun. Dit help hulle met die verwerwing van hoër grade, publiserings en die verkryging van navorsingsbefondsing. Om dit te bewerkstellig, het ons vier afgetrede vakkundiges van die Universiteit van Kaapstad, met indrukwekkende prestasie rekords op die gebied van navorsing en studieleiding aan jong navorsers, gekontrakteer

om op sowel gespesialiseerde as meer algemene vlak as raadgewers op te tree.

In hierdie verband is ons veral trots op die groep jeugdige navorsers wat tans in kritieke rigtings ontwikkel word (sien pp 52 tot 58), van wie heel party deur weldoeners noodsaaklik vir navorsing ondersteun word. Die ontwikkeling van 'n nuwe geslag

Om hierdie rede is ek verheug om te kan berig dat UK belangrike sukses in die aanspreek van hierdie uitdaging behaal. Veral bemoedigend omtrent die NNS se 2005-graderings is dat ons nie alleen ons aantal A-gegradeerde navorsers tot 21 opgestoot het nie, maar dat ons ook die aantal P- en Y-gegradeerde navorsers verhoog het, wat goeie rede is om optimisties omtrent die volgende geslag puik navorsers aan die Universiteit van Kaapstad te wees.

**Vise-kanselier en Prinsipaal  
Professor Njabulo S. Ndebele**

# negative, positive

**A year before her HIV diagnosis, Nkosasana Ngubane (19) from Gugulethu in Cape Town told the nurse at the local clinic that she was okay. She and Sizwe had been in a relationship for just over eight months. They had been faithful from the start and were hoping to start a family soon. She wasn't to know that he was already HIV positive.**

The scenario is all too common. HIV infection is now shifting from a primary group of infected people to couples, moving the target of prevention strategies to thousands of discordant couples; couples where one partner is HIV-positive and the other HIV-negative.

A UCT study recently unveiled at a Gugulethu clinic is helping HIV-negative partners in discordant relationships maintain their negative status. It's also the platform for a genital herpes treatment trial to prevent HIV transmission.

Gugulethu's Manyanani@Empilsweni

(Come together to the wellness centre) is an established site for HIV prevention trials by the university's Infectious Diseases Epidemiology Unit in the School of Public Health and Family Medicine, headed by Professor Rodney Ehrlich. This study has been called Partners in Prevention.

In the Falmouth Building on the medical campus, principal investigator Dr David Coetzee is sketching on a pad. It's a graphic to show how the infection is spreading from a primary HIV-positive pool with multiple casual partners, described as "more promiscuous", to a peripheral group of uninfected people in regular partnerships.

"It's an important aspect this," he says, connecting the circles. "As the epidemic matures, the HIV-positive people infect more people outside this core group and more than 50% of HIV transmission happens within regular partnerships now. Sometimes this may be when they come into relationships,





but often transmission occurs in partners who have been together for a long time. That's what we've got to watch."

The genital herpes factor tied to HIV infection is an altogether lesser-known but serious aspect of the disease.

At the Uluntu Centre, study co-ordinator Dr Mercy Kamupira has just come from a briefing. They are training community workers to spread the message, to get couples to come in for testing.

She says that over 40 studies in the past 15 years have shown that genital herpes, a common sexually transmitted infection, is a huge risk factor for the transmission of HIV. Genital herpes infection causes recurrent episodes of blisters and ulcers in the genital area, promoting the transmission of HIV by providing gateways to and from the body. Genital herpes is not curable but treatment can prevent recurrences.

"HIV-infected people with genital herpes are more likely to transmit HIV, even when there is no ulcer present, because they can shed large amounts of HIV," Kamupira notes.

Outside, the world races by along the main road, an artery into the dense community, one of the oldest in Cape Town.

It's important that their study - the first of its kind - evaluates whether HIV transmission can be reduced by sup- ▶

pressing genital herpes with the widely used prophylaxis, acyclovir.

“Do you know that up to 90% of HIV-infected people worldwide are infected with the herpes simplex virus type 2 (HSV-2), the genital herpes virus?” she asks.

There is hope. Researchers believe that acyclovir suppression could reduce HIV transmission through genital herpes by 50%.

“And if we’re successful, this study could lead to an important new approach to HIV prevention in South Africa.”

Working from the centre, Kamupira’s team is assessing the efficacy of a daily 400mg dose of acyclovir in participants who are both HIV- and HSV-2-positive.

Similar studies, all funded by the Bill and Melinda Gates Foundation, are being conducted elsewhere in Africa, under the same umbrella. Already there are six sites in East Africa (Kenya, Uganda, Tanzania, Rwanda) and six sites in Southern Africa (including Orange Farm and Soweto in Johannesburg, Botswana and Zambia).

In all, researchers hope to enrol more than 3 000 couples at the 12 sites. Each couple is being tracked for a year, with

screening and treatment for other sexually transmitted infections. They also receive condoms and risk-reduction counselling.

A medical graduate of the University of Zimbabwe and with a master’s in public health from UCT, Kamupira is currently registered for a PhD in public health at UCT and will be looking at Dyad-related factors in HIV prevention, under the supervision of Dr Landon Myer.

This PhD aims to understand some of the factors that contribute to HIV transmission in couples and the characteristics of the sexual partnerships that warrant focus on them as effective HIV-prevention units.

“UNAIDS statistics show that in Africa, most HIV transmission occurs in stable relationships,” Kamupira says, endorsing Coetzee’s view. “HIV-positive partners are infecting the HIV-negative partner.”

The simple strategy of testing couples for HIV instead of individuals, is a method that eluded health organisations for too long.

“We should have thought of this earlier,” Kamupira reflects. “In many ways it would have made HIV-prevention and



**Partners in prevention: Dr Mercy Kamupira (middle) with colleagues Dr Smruti Patel (left) and Alana de Kock at the Uluntu Centre in Gugulethu.**



education campaigns that much more effective.”

But it's not too late. Since March 2005, 800 couples from the Gugulethu and Nyanga communities have attended the centre's couple HIV-counselling and testing facility, with community educators working hard to educate the community about the benefits of knowing their HIV status as couples.

Of the 800 couples counselled and tested, the majority are concordant negative, with 185 discordant couples - or one in every four couples. (Statistics show that 30% of women attending antenatal clinics in 2004 in the Gugulethu community are HIV infected.)

The Cape Town site hopes to enrol 225 discordant couples in the study over two years.

And even if couples do not join the trial, they still benefit from the full spectrum of HIV-management and counselling services the clinic offers.

The idea is sound, the work vital. But there are difficulties with couple counselling.

“It's hard enough getting one person to have an HIV test,” Kamupira says. “Communication between the partners has to be very strong.”

Coetzee believes the project has huge merit and potential, but has reservations about testing and counselling taking place at formal health sites. Stigma is still too large a factor.

“We've got to take voluntary testing and counselling out of health services and put it elsewhere. You don't want them to come when it's too late. You want to be testing the 'well'.”

The HIV epidemic hasn't yet peaked in the Western Cape, though there has been a marked drop in new infections thanks to mothers receiving antiretrovirals. In 2004 (2005's figures aren't available), 15% of women at the province's antenatal clinics were HIV positive.

Coetzee and Kamupira are hoping that Partners in Prevention will be strong enough medicine. [Helen Theron](#)

# black diamonds

**For sheer hand-over-fist buying power, few groups in South Africa can match the booming black middle class.**

Since the early 1990s, the ranks of this market have swollen by about 15% per year. They're now some two million strong, making up just under 10% of the black adult population of around 22.5-million. Just a decade ago they were hardly a blip on the radar.

And, as a group, they come with deep pockets, spending around R150-billion at the shops each year. That accounts for roughly 50% of total black spending and 25% of all South African spending of R600-billion. (The biggest chunk is on "I've arrived" goods like homes, cars, DVDs and the like.)

"They've grown from a very small group to a very large one in a very short period of time," says Professor John Simpson, director of the Unilever Institute of Strategic Marketing and Research Surveys. "And just like any middle class elsewhere in the world, they're the driving force that fuels the economy."

Credit them, then, for much of the 5% growth rate South Africa enjoyed in 2005, says Simpson.

But for a group with such sway, very little is known about them. This means marketers often get their messages wrong.

That's an information gap the Unilever Institute tried to plug last year with its Black Diamond marketing survey, a snapshot of the emerging black middle class in South Africa. Researchers conducted 750 face-to-face interviews with residents in both suburbs and townships in what is said to be the most comprehensive study of this market yet.

The findings have shot holes in a couple of assumptions about the group. For one thing, these are no cookie-cutter consumers, as marketers had thought. This is why researchers have broken down the group into smaller segments based on age, education level, income and location within major metropolitan areas, ie township or suburb.

The research showed that the growth in the market isn't all the work of young, high-fliers. The findings point to an overlooked, older segment that researchers have dubbed the "Established", thought to be the first to benefit from BEE and affirmative action.

Also, the high-fliers aren't as cash-flush as some would think.

"Marketers tend to target people who

**Researchers conducted 750 face-to-face interviews with residents in both suburbs and townships in what is said to be the most comprehensive study of this market yet.**



have just started their careers because they like to flash the little they have," says Refiloe Mataboge, director of research surveys at Unilever and Black Diamond project leader. "This segment, which we have called the 'Start-Me-Ups', have hectic social lives and show off their earnings, but in fact have very little disposable income."

Another popular view that has been

shaken is that affirmative action has led to job-hopping among the black middle class. However, the Black Diamond study showed that 40% have changed position only once during the past three years, while only 15% have moved twice. Just 10% have changed jobs more than three times during that period.

There are other dynamics to consider.

Like the fear of unemployment. Unlike their counterparts elsewhere, almost all in the study have family members without jobs.

There's also a sense of being torn between two worlds.

"What makes South Africa's scenario more intricate is the cultural paradox," says Mataboge. "There exists a 'pull-back' to cultural roots that is often in contradiction with aspirations towards Westernisation."

More and more, members of the group are moving out of the townships, settling in the suburbs instead. (All of 73% believe that moving out of the townships shows that they've made it in life.) But come the weekends, they head back to the townships or rural areas for traditional cultural activities.

As in any aspiring middle class, parents want their kids to do better than they did. So there's a lot of spending on "good" schools. But with that comes more change. An overwhelming 97% of respondents in the survey said that they would like their children to be taught in English at school. With that comes the fear, though, that children will lose both their mother tongues and touch with their cultural roots.

The group and its smaller segment are changing all the time, as expected. For now, they're boosting the economy with their spending rather than, say, starting up their own businesses. But that will likely change in time to come, says Simpson.

It's these shifting sands marketers have to keep in mind so that they, if nothing else, can just keep up. [Megan Morris](#)

# living libraries

**How do you take traditional environmental knowledge, passed down through generations and fragmented by histories, and reconcile it with scientific approaches to understanding nature?**

This question intrigued anthropologist Dr Lesley Green and became the basis of her research into the relationship between traditional knowledge and the sciences.

Her fascination began in 1997 when she and her Brazilian-born husband, David, visited a Palikur Indian village in the Amazon jungle. An elderly man and long-time acquaintance of David enthralled them with stories about places where his people used to hide during times of war. They asked him to take them to one of those locations.

“We were literally crunching old pottery underfoot while we walked,” says Green.

An armadillo suddenly charged by, with several hunters in hot pursuit, and it disappeared down a burrow around which was scattered a wide circle of pottery fragments.

They realised that they were standing on the remnants of burial urns, and that the site was probably an ancient rock shelter that had also been used as a burial ground at different times in history.

“It was an extraordinary find because some of the styles of decoration and the stories of the site suggested continuity with that of the people who live there now,” says Green. “In the Amazon, that is very rare since people have been severely displaced by conquest. The site suggested that there was a possibility of doing a project with people in the region, using archaeological research together with oral histories.”

They secured funding to research the history of the Palikur in collaboration with top Brazilian archaeologist, Professor Eduardo Góes Neves of the University of São Paulo.

Working with David, who is fluent in the Palikur language, Green’s responsibility was to collect the stories of the people in the villages, correlate them with potential archaeological sites, and educate the villagers in how archaeology could help to verify their histories.

This experience opened Green’s eyes, and got her to look beyond her academic mindset, appreciating their traditional ways of organising history, which were very different from her Westernised methods.

“It was an enormous challenge as no-one there had ever seen a museum before, much less a university or a library. But we wanted to proceed on the basis of informed consent, so Eduardo took us and three Palikur on an archaeological

**Valuable work is being done in indigenous areas internationally by many environmental organisations, but at the same time Green was seeing many cultural misunderstandings, with ecologists and specialists making the same kinds of mistaken assumptions she had made when she began her research.**



field school in the Amazon for several weeks. We then ran workshops back in the village to try and make sense of the histories we were recording, and reach agreement on which sites and stories were worth investigating."

They recorded over 200 stories and learnt very quickly that trying to periodise these narratives wasn't going to work. They had to find another way of thinking about history that worked locally.

After almost nine months of fieldwork, they finally realised that the Palikur way of history is not centred on dates or individuals but is told in relation to place: where events happened.

"It's a way of doing history that's similar to doing a walking tour of a city. Place is the 'index card' that triggers historical memories, as if geography and history are one. It was so simple once we could see it, but it took us forever to grasp it and recognise that it was a credible and logical system."

An archaeological project ensued in which they carefully avoided burial grounds and focused on settlement sites.

"We found a fascinating consonance between the stories and the archaeological data we collected. Somehow, in the course of that project, the translation we made of the word 'archaeol- ▶

**Cultural crossing: Dr Lesley Green worked with the Palikur Indians in the Amazon.**



ogy' changed from 'studying things in the ground' to 'reading the tracks of the ancestors'."

This changed their research focus from being preoccupied with objects to grasping the ways in which people had lived in this region, and so redefining the key question: How did large populations survive in this environment centuries ago and what might we learn from them?

In the process, Green began to learn that Palikur knowledge of place was closely interlinked with astronomy, ecology and ethics.

"A story about the stars, for example, would also be a story about seasonal rains that fall during the arrival of a certain constellation, and at the same time it would be about what animals or plants are spawning or bearing fruit, and consequently what social obligations people expect of one another in that season."

By comparison, says Green, Western knowledge traditions tend overwhelmingly to compartmentalise knowledge.

"At universities, ethics, astronomy and health sciences fall into different disciplines and faculties. This simplification of knowledge makes it very difficult for scientists to work with traditional knowledges like those of the Palikur."

She also realised that people know the landscape in relation to the way the profiles of hills change when seen from different directions. This is a way of mapping the world in profile, which includes the sky, unlike a map that imagines the world "as if from everywhere and nowhere".

Using maps therefore did not work in measuring the Palikur approaches to spatial memory.

Valuable work is being done in indigenous areas internationally by many environmental organisations, but at the same time Green was seeing many cultural misunderstandings, with ecologists and specialists making the same kinds of mistaken assumptions she had made when she began her research.

She argues that working across different knowledge traditions is one of the major challenges facing the post-colonial university in places like South Africa and Brazil.

"My thinking is that anthropology students are well positioned to play this kind of mediatory role. Very few students in the humanities have any exposure to the sciences but are able to work credibly and flexibly with scientists as well as local people, so that all sides recognise and place value on what the

other side has to offer."

In 2006, Green initiated a new first-semester graduate course at UCT - Tradition, Science, Environment - that explores the interaction of scientific and traditional knowledge in African and Latin American contexts, and proposes ways in which different knowledge systems could be better understood and integrated.

This kind of work has become enormously relevant in South Africa, where there is a growing appreciation of the value of traditional practitioners who are considered as "living libraries" of indigenous knowledge.

The Indigenous Knowledge Systems Policy (IKS) was recently legislated, spearheaded by the Department of Science and Technology to protect and promote IKS and ensure fair benefit sharing with local communities.

Green says that this kind of work is not simply about preserving cultural heritage, but also about placing value on marginalised rural people as citizens and recognising what they have to contribute to society.

She has received a significant award from the South African Department of Science and Technology, one that will enable her team to continue its research through 2007. [Shumi Chimombe](#)

# rave and rage

**Fifty percent of people who develop psychiatric disorders will do so by the age of 14 years. Seventy-five percent will do by the age of 24 years, providing a breeding ground for a range of risk behaviour and providing a vivid picture of a group in crisis.**

It's a picture Professor Alan Flisher is well familiar with. The director of the Adolescent Health Research Unit and head of the Division of Child and Adolescent Psychiatry, Flisher is the foremost authority on risk behaviour among teens. The main ages for the onset of psychiatric disorders match those ages risk behaviours start - and have high prevalence rates.

"There is a direct association between risk behaviour and psychopathology," Flisher says. "Our approach to reducing risk behaviour should include psychopathology and vice versa."

It also presents a compelling argument for comprehensive mental health programmes for the country's youth. "And those most at risk are between 10 and 19."

Flisher holds what must be a record seven degrees from UCT. He earned his BSc in 1977 and amassed a further six degrees: an honours in social



science, an MSc in clinical psychology, an MBChB, a master of medicine in psychiatry, a PhD and a master of philosophy in child and adolescent psychiatry.

His PhD thesis was on the epidemiology of risk behaviour among the Cape Peninsula's high school students. His interest was piqued as an honours student when he was part of a project investigating the counselling needs of UCT students.

There are many long-winded definitions of risk behaviour, but Flisher has a neat summary: this is behaviour that places a person at risk for "adverse ►

**There are many long-winded definitions of risk behaviour, but Flisher has a neat summary: this is behaviour that places a person at risk for "adverse consequences", whether psychological, social or physical.**

## rave and rage

consequences”, whether psychological, social or physical.

“This could be interpersonal violence leading to injury or psychological trauma, or it could be unsafe sexual behaviour causing pregnancy or sexually transmitted infections.”

According to World Health Organisation statistics, 70% of premature deaths of adults is due to risk behaviour initiated in youth.

The rise of tik abuse in the Western Cape mirrors this. On the Cape Flats it's responsible for the fastest addiction rates yet seen in those communities associated with gangsterism: Mitchell's Plain, Hanover Park, Retreat and Elsies River. One of Flisher's PhD students, Andreas Plüddemann (Medical Research Council's Alcohol and Drug Abuse Research Group), says tik has surpassed mandrax as the drug of choice, presenting short- and long-term health and social hazards.

“Nowhere else in the world has tik taken off in the way we are finding in these communities.”

Tik gives adolescents what they don't have: power and heightened sexual levels, the feeling of being on top of the world, especially if that world is dominated by gangsterism, unemployment and poverty.

“Adolescents, particularly the 12- to 19-year olds, react very severely to tik,” Plüddemann says. “The fallout is very serious, and at the extreme we're talking delusional and psychotic behaviour.”

Addicts suffer memory loss, probably as a result of the strokes it induces.

Where does one begin to address the problem? In schools, Flisher says. Since 1990, he and his research groups have been involved in nine school-based epidemiological studies, involving thousands of adolescents (grades eight to 12).

The studies all had common features and common core questions, providing researchers with a fascinating window on risk behaviour prevalence across different places and times.

One of the data sets, which compares suicide rates between Cape Town, Durban and Port Elizabeth, shows a markedly higher prevalence in Port Elizabeth (Cape Town reflects international rates quite closely).

Why is it this? It's not a question Flisher can answer straight off. It begs further research.

Comparisons of the 1997 and 2004 statistics for sexual behaviour, for example, show that boys are less likely to start sex early, more likely to use contraception, but, intriguingly, less likely to use condoms.

With the girls, there are no consistent trends regarding age of sexual debut. They are more likely to use contraception but there were no changes in the rates of condom use.

Gathering data of this nature takes time - and it's costly and prone to error. To counter this, Flisher and his team have introduced a trendier means



**Assessing risk: Prof Alan Flisher, winner of the 2005 Alan Pifer Award for his outstanding contribution to medical and scientific literature in the field of adolescent mental health.**



of data collection: personal digital assistants (PDAs). Data quality is better and it can be downloaded immediately and directly onto a PC.

But even with all this information, researchers like Flisher are still pondering the causes of risk behaviour and the interactions between the various contexts that produce risk proclivities: the distal context (culture and structural factors),

the proximal context (interpersonal factors, the physical and organisational environment), and the personal level (personal attributes and behaviour).

There are known causative factors. For example, low self-esteem in the family and school contexts, and high self-esteem in the peer domain, both significantly associated with multiple risk behaviours.

"In this instance, interventions that protect the adolescent from risk behaviour are most likely to be effective if they are aimed at the family and school domains," Flisher notes.

Researchers also know that there is a developmental sequence to drug use. Young people proceed from alcohol or tobacco to cannabis, to hard drugs.

"Prevention efforts for a particular substance should focus on preventing those in the previous stage from progressing down the sequence."

But as risk behaviours also co-vary with each other, interventions shouldn't target single-risk behaviours.

"Involvement in one risk behaviour should raise the index of suspicion for involvement in others."

Longitudinal studies are also crucial to establishing causes.

Flisher's team has also introduced some hard-hitting interventions. There's the school-based HIV/AIDS intervention programme involving local high schools. This initiative is part of the SATZ programme, a South Africa-Tanzania collaboration to promote sexual and reproductive health.

The aim is to catch adolescents before they become sexually active - often very early - between the ages of 12 and 14.

The classroom-based project is tailored to local culture and circumstances. It is hoped it will inform the outcomes-based life skills education prescribed by the Department of Education.

"We aim to postpone the onset of sexual activity among those who aren't sexually active, and increase safe sex practices among those who already are," Flisher explains.

The project grew out of an earlier European Commission-funded research network, the Adolescent Reproductive Health Network (or ARHNe), which promotes health among adolescents in South Africa, Tanzania and other countries in the region. There are interventions in Dar es Salaam in Tanzania, Polokwane in the Limpopo Province, and Cape Town.

The seven partner universities, including five institutions in Norway, Sweden and the Netherlands, each have a specific role. The African partners are accountable for developing, implementing and evaluating the intervention locally. The European partners provide technical and scientific support. The aim is to generate new scientific knowledge in the area.

"It isn't enough for teachers to preach abstinence. You have to take these kids through a discussion on how to escape risky or pressure situations." **Helen Théron**

# sibling rivalry

**Associate Professor David Jacobs and his students didn't think anything of it when they first captured a small, yellow-bellied bat in the St Lucia Wetland Park in KwaZulu-Natal in 2003.**

The bat, they figured, was simply another sample of *Scotophilus dinganii*, aka Dingaan's bat, which is common enough in the area. Smaller, yes, but the same features, including the distinctive canary-yellow abdomen.

But after running the creature through the taxonomic keys that are used to identify species - these yardsticks cover everything from ears to tails, nose leaves on the muzzle to wings and claws - the bat didn't, morphologically speaking, fit comfortably into any specific category. That's when the researchers from the Small Mammal Research Unit (SMRU) in the Department of Zoology first thought they were onto something special, and that maybe the bat belonged to a previously unidentified species.

So they put the creature through a series of additional tests, the first being its call.

Before the advent of bat detectors - super-sensitive microphones that can pick up ultrasonic sound - morphology was all scientists had to go on when

classifying bats, says Jacobs.

"So the bats were all lumped together, people thinking that they were the same species with a wide range in size."

Working in the field, the researchers placed the bat in a portable flight room and, with their pocket-sized detectors, measured the frequency at which the bats pitch their echolocation calls. They found that the bats' calls were similar to those of Dingaan's bats but, at 44 kilohertz, around 10 kilohertz higher than their doppehgängers.

In this day and age of genetic sequencing, the researchers could go even further in the lab to confirm their on-site hunch. In collaboration with Geeta Eick and Conrad Matthee of the University of Stellenbosch, they ran a series of ecological, morphological, echolocation and genetic tests, sampling bats in the Kruger National Park and several sites in Zambia.

The genetic tests showed a 3% difference between the new species and Dingaan's bats. While there's no gold standard in what separates one species from another genetically - in some cases a 3% difference is ample, in others 10 or 12% is required - the results, when matched with their earlier findings, seemed overwhelming, says Jacobs.

In addition, ecological studies ▶

**"These data all pointed in one direction," notes Jacobs, "viz the existence of a second species within *Scotophilus dinganii*, thus confirming our earlier suspicions."**



**Sibling species: The new bat also has a canary-yellow abdomen.**



found that the new species did not have the same roosts as Dingaans' bats. The new species prefers the more traditional tree roosts, while their bigger brethren hang around in roofs of houses, often in thatch roofs.

"These data all pointed in one direction," notes Jacobs, "viz the existence of a second species within *Scotophilus dinganii*, thus confirming our earlier suspicions."

The discovery of the new species - the first in South Africa - was confirmed at the International Bat Research Conference in Poland last year.

There are still tons of unanswered questions, admits Jacobs. What caused the speciation, ie the separation of the species between the new one and Dingaans' bats? And which species came first? And why, when interbreeding is

possible (they live in the same neck of the St Lucia woods) do the two species never mate?

"What we suspect is that the use of different kinds of roosts is what's maintaining the difference - why they don't intermingle. It may not be the cause of speciation, but it may maintain what we call their 'reproductive isolation'."

And, of course, they still have to be christened, Jacobs leaning towards naming them after one of Dingaans' half-brothers, Shaka or Mhlangana, just to emphasise that the two are also sibling species.

One can but hope that the bats, unlike their human namesakes who turned on each other, will continue to live happily alongside each other. Even if it doesn't look like they'll be moving in together anytime soon. [Megan Morris](#)

**Sharp ears: Assoc Prof David Jacobs with the bat detector that helped UCT's Small Mammal Research Unit identify the new species.**

# law and the land

**When Business Beat knocked on the door of the law faculty for help in drawing up a partnership agreement, they were met by participants of a new pilot project, launched in 2005.**

What the enterprise got was sound legal advice and practical help from intermediate and final-year law students – and the business partnership agreement they needed.

The project requires these students to perform 60 hours of community work as part of their course requirements.

In this case, the satisfied client went away with a partnership contract duly completed.

Any visitor to the Kramer Building might be forgiven for thinking that the doors on the southern side are in fact the main entrance. That is because the UCT Law Clinic is a veritable hive of activity.

“We must admit that the prospect of giving legal advice was daunting at first, but we knew there were many willing helpers,” one of the students commented. “While the thought of doing 60 hours of community service didn’t appeal to ▶

**Back to basics: Community service for law students extends to township schools.**





me at first, it was an invaluable lesson in practical experience."

Ester Steyn, the main facilitator of the pilot project, agrees: "Law is not only about giving legal advice, it is about the community and serving the people."

The faculty's philosophy is that doing a law degree should not only include paralegal and legal advice, it should also alert students to ways they can help the community that UCT serves. This is unremunerated work; the students volunteer and are there to put their academic knowledge to practical use.

It also gives them an invaluable opportunity to learn and experience different social contexts, often far removed from their own lives. It took some convincing, but once the students involved themselves, the project took off.

The 60 hours of community work is part of their qualification for the LLB

degree. One of the service providers they work with is Stembelo Matiso, a high school in Crossroads. Students tutor grade 11 pupils there on Saturday mornings, covering a range of subjects.

This pilot project is funded by the Attorneys' Fidelity Fund and it is envisaged that this kind of community service will become a formal part of the curriculum.

"The service providers give us great feedback and the students do the best they can at these NGOs," says project administrator Lisa Allison.

Students even have the option of helping in NGOs or service providers in their own provinces when they go home during vacations, an arrangement set up by the faculty's administration staff.

One of the service providers requires the students to advise people on start-

ing their own business. These service providers include Nicro, Black Sash, Mosaic and the UCT Treatment Action Campaign (UCT TAC), giving students a choice of service providers.

Steyn says the success of the project will be seen in five to 10 years time when attorneys begin doing pro bono work.

While their services are uplifting the black community and contributing to social development, it's a win-win project for all. The students' voluntary work is listed on their CVs.

The clinic also has a proud history of providing legal assistance to indigent communities. This tradition of assisting the vulnerable was extended to refugees in South Africa when the clinic became an implementing partner for the United Nations High Commission for Refugees (UNHCR).

Refugees needing legal advice or



seeking a durable solution, such as re-settlement or repatriation, are assisted by the clinic's two refugee attorneys, Fatima Khan and Tal Schreier, helped by a number of "remarkable, generous-spirited volunteers", well-schooled in international refugee law.

Some 1 644 refugee families sought and found help at the Law Clinic during 2005 alone.

Walk through the clinic on any given morning and you are likely to see crowds of people, many in traditional African dress, patiently waiting their turn to consult one of the refugee attorneys. The refugees are doctors, scientists, teachers and ordinary folk, all hoping for a chance to lead a new and safe life, recognised as refugees.

Few are aware of the extent of the work carried out by the refugee clinic, and much of their work goes unheralded, but for the refugees concerned

it can mean the difference between a life of persecution and the possibility of starting a new, productive life.

The excellent work of the refugee clinic was recently acknowledged by one of its clients, Jimmy Rukaka, an asylum seeker from Bukavu in the eastern Democratic Republic of Congo, where some of the most intense fighting has taken place in recent times.

A young university student whose studies were interrupted, Rukaka arrived in South Africa with no discernible possessions or support. He was given the initial legal advice that he sought at the refugee clinic and thereafter, in his words, a great deal of "support, kindness, trust and mentoring", particularly from Khan.

Overwhelmed, Rukaka returned to the clinic some time later with an award for Khan in recognition of the excellent service he had received. [Chwayita Nqiwa](#)

**Win-win: Law students work at Stembelo Matiso high school in Crossroads on Saturday mornings.**

# poor, but money-wise

**Here's how South Africa's low-income earners live. Hand-to-mouth, with money pouring out faster than it trickles in. End of story.**

Or maybe not, says the Financial Diaries project, a study by UCT's Southern Africa Labour and Development Research Unit (SALDRU) in which they tracked the financial behaviour of low-income households in South Africa. Over 13 months, from November 2003 to December 2004, SALDRU researchers interviewed 166 black households in three areas: Langa in the Western Cape, Diepsloot in Gauteng and Lungangeni village in the Eastern Cape.

And they came up with some surprising findings, released in May 2005.

Topping the list is the discovery that low-income earners, be they urban or rural, have financial lives far more complex than assumed. For one thing, these households use an average of 17 financial instruments over the course of a year.

That spans the formal – bank accounts, pension or provident funds, funeral plans, etc – to the informal, such as stokvel (*umgalelo*), one-on-one lending and borrowing, credit at the local shebeen or spaza (little cor-

ner shops), or even money guarding, where a neighbour or friend holds on to their cash.

Even those who receive state grants manage their pennies wisely.

"Poor households have little money, but this does not mean that they do not manage what they have," say researchers in the Financial Diaries report.

And, lo and behold, the low-income earners are, by and large, a spartan group and, as a result, potentially good savers. Unlike South Africa's credit-happy middle class, most are not caught in a debt trap.

They spend an average of 75% of their monthly income on whatever goods and services they need. The other 25% goes into savings, insurance and paying off debt.

And saving is important. "Every Wednesday I spend about an hour thinking about how I must prioritise so that I will be able to save some money," said one participant on his pre-payday routine.

One of the most popular forms of saving among the households in the study is the stokvel, where a group of women pool money. Every few months, one or more of the women gets to take home the stockpiled cash.

**Topping the list is the discovery that low-income earners, be they urban or rural, have financial lives far more complex than assumed. For one thing, these households use an average of 17 financial instruments over the course of a year.**

“Stokvels provide a ‘forced saving’ in that you wouldn’t want to let down your fellow members by missing your contributions every month,” project director and former Wall Street economist, Daryl Collins, says of the scheme’s popularity. “With the bank, there is no social interaction, so there is no one looking at you if you don’t manage to put your saving into the bank.”

But here’s the rub – the savings are mostly short-term, and don’t appear to benefit households in the long run. The money is dedicated to one or more specific events, like a big Christmas revel or, less joyful, the January school fees. And in one case study where a couple invested in a new house, the property was in an area where they were unlikely to sell it for a high return.

But what advice to give those who scrimp and save throughout the year to give their families a truly merry Christmas?

“The poor value having a good Christmas for their children and relatives as much as the wealthy and shouldn’t suffer criticism for giving themselves this reward for their hard work and discipline,” write researchers.

As financially wise as these households are, they still get blindsided by unexpected expenses. Often.

Most households appear to have plans in place - burial plans and the like - to cover the costs of in-household funerals.

But the most frequent financial event to hit their pockets is an unexpected request to contribute to an out-of-household funeral.

In the study, 81% had at least one such request during the 28-month period, while 47% had two or more.

The contributions often run into thousands of rands. In rural areas, contributions to out-of-household funerals are lower, around R450, but more frequent; on average four times over about 28 months.

“Funerals come up a lot and they are expensive,” says Collins. “They are so important to the financial lives of the poor because they are constantly planning for them, going to them and being asked to contribute to them.”

The Financial Diaries cover other aspects of the low-incomers’ financial lives as well.

These include households’ levels of debt, medical spending, and the success (or not) of survivalist businesses in the three areas.

These findings on the country’s “other” economy could prove insightful for government and the financial-services industry.

Both are keen to provide more services to poor households, but a lack of knowledge bedevils that task.

The results will also make their way into a book comparing the South African project to a counterpart Financial Diaries study in Bangladesh and India.

In addition, Collins will be sharing information from the project at conferences and symposia around the globe.

Soon, many will have a much better idea of how South Africa’s other half lives. [Megan Morris](#)



**Money-wise: The Financial Diaries’ Daryl Collins: “Funerals come up a lot and they are expensive.”**

# food for thought

**Hansen is interested in the boundaries that are being crossed in the presentation of food in the media, such as the swing in television cooking programmes towards reality TV.**

**When Jamie Oliver appears in London, he fills a football stadium with thousands of screaming teenage fans. More rock star than chef, Oliver embodies the celebrity chef phenomenon and throws into sharp focus the kinds of shifts that have occurred in food and cooking in the media - and in our lives - over the past 50 years or so.**

Turning an academic eye to the rise of the supercook, food channels and cooking in the media is PhD student Signe Hansen who tutors a third-year course, Food Media in South Africa, in the Centre for Film and Media Studies.

The course Hansen has put together draws on her PhD interest. It closely examines the phenomenon of the celebrity cook and the superstar chef and explores the “mass communication of food” in the South African context, with reference to international trends.

Hansen’s interest in food has grown out of a love of cooking and food in general, and the rise of what she describes as the “mass communication of food”, which has occurred over the past half century or so.

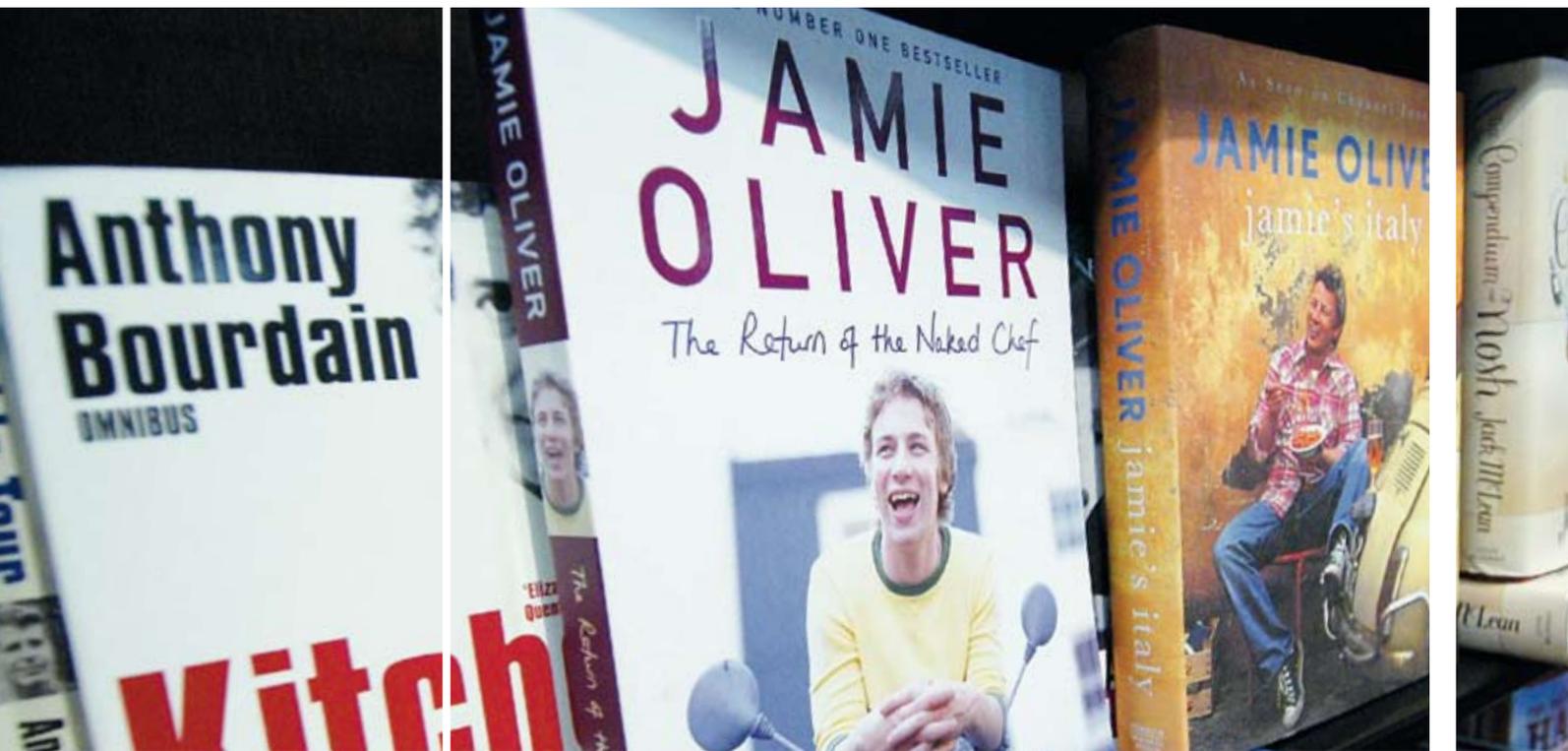
“This development has happened in tandem with, if not as a direct result of, new and emerging forms of media,

such as food TV, lifestyle programmes and the Internet,” says Hansen. “This intricate relationship between form and content at once suggests and confirms that food media involves a lot more than just food. Indeed, the strange new breed of superstar chefs points tellingly to the food industry’s growing love affair with entertainment, lifestyle, stardom and, not least, corporate concerns.”

An examination of food media, she suggests, can also reveal a lot about the intentions and methods used in corporate branding, advertising and marketing.

Hansen is interested in the boundaries that are being crossed in the presentation of food in the media, such as the swing in television cooking programmes towards reality TV.

“The focus on food offers a way to talk about what is happening in the media more generally, and the swing to reality TV is reflected in the way food/cooking programmes are being structured. There is a definite blurring of the boundaries between the public and the private in certain of Jamie Oliver’s programmes. As in reality TV, the viewer is invited into Jamie’s home, and we meet his partner, baby, his mum and his mates.”



While concerned with interrogating food media in a specifically South African context, Hansen and her students are comparing local and international food media trends, particularly as part of their examination of controversial notions of culture, identity and nation-building, which are inseparable from something as fundamental as food.

Ribbed that food is not an academic subject, Hansen says her course is about examining the media's impact in the South African context. This reveals, among other insights, the ironic disjunction between the general declines

in diet, and increases in clinical obesity and other food-related health issues, and huge escalations in the numbers of people who watch food-related TV shows and "consume" cookbooks and other food-related media.

Cultural theorists of the calibre of Susan Sontag (*On Photography; Where the Stress Falls*), Noam Chomsky (*Manufacturing Consent*, with E Herman), Raymond Williams (*Keywords: A Vocabulary of Culture and Society*), Roland Barthes (*Image, Music, Text; Mythologies*), and Walter Benjamin (*The Work of Art in the Age of Mechanical*

*Reproduction*), feature on Hansen's list of reading for the course. These appear alongside recipe books by leading British food writer Elizabeth David (*An Omelette and a Glass of Wine; Is There a Nutmeg in the House?*), as well as a biography of David by Artemis Cooper (*Writing at the Kitchen Table: The Authorised Biography of Elizabeth David*).

2005 was the first year that Hansen ran the course - to an enthusiastic group of students, most of whom plan to go into the food industry, either as chefs, food writers, or advertisers. [Jill Weintroub](#)

# sporting genes

**For sports science, it's the closest thing to the quest for the Holy Grail.**

For a long time, scientists have held that athletic ability comes from more than just 20 push-ups in the morning and eating your veggies. And in this age when the Human Genome Project has become a household name - even if we don't always get what the fuss is all about - it's no surprise then that they've turned to the Petri dish for answers.

"There are certain things that we can do to improve our athletic performance, like train properly and eat properly," says Dr Malcolm Collins of the

Medical Research Council (MRC)/UCT Research Unit for Exercise Science and Sports Medicine. "But there are also certain things we're just born with."

Genes.

Now Collins and colleagues at UCT, the Cyprus Institute of Neurology and Genetics, and the Cardiovascular Diagnostic Centre, also in Cyprus, believe they've identified two more genes that, in this case, can explain the "raw talent" of some endurance athletes.

In their study on competitors in the 2000 and 2001 South African Ironman Triathlons, published in *Human Molecular Genetics* in February 2006, the group found that specific variants of the bradykinin  $\beta$ 2 receptor (BDKRB2) and the nitric oxide synthase 3 (NOS3) genes are associated with athletic performance. This means that a higher proportion of competitors have the right variants of these genes than, say, the general population.

(Another recent overseas study also picked up on the BDKRB2, but not the NOS3.)

Collins' team also observed an interaction between the two genes, a never-

**"Athletic performance is a big puzzle. And we're just identifying single pieces."**





**Scientific view: Dr Malcolm Collins believes he and his team have identified two genes that explain athletic prowess.**

before identified phenomenon. And in another first, the scientists built a model around this interaction - throwing in variables like age and weight - to predict an individual athlete's performance in the races.

Their conclusion? BDKRB2 and NOS3 definitely play a role.

But don't start calling for genetic tests

to sort the hares from the tortoises just yet. (Or start citing *Brave New World* chapter and verse.) Genes may not be the only things that a podium finisher make, says Collins.

"Athletic performance is a big puzzle. And we're just identifying single pieces."

There may be hope for us slouches yet. [Megan Morris](#)

# second chance

**“Most of the children are from impoverished backgrounds and don’t even have breakfast in the morning. We have to feed them before we can begin the interventions so that we can rule out hunger as a reason for not improving.”**

**Researchers from UCT and their counterparts at the Universities of New Mexico and Stellenbosch are working on a novel research programme to provide practical interventions to help the development of children with Fetal Alcohol Syndrome (FAS).**

Called the Intervention Study, and part of the Collaborative Initiative on Fetal Alcohol Spectrum Disorders, it is funded by the National Institutes of Health’s (NIH) National Institute on Alcoholism and Alcohol Abuse. The project works with approximately 100 children, aged between nine and 10 years, from town and farm schools in the Wellington region. The intervention phase of the study will run over an 18-month period.

“We are taking children that we know from previous studies have been exposed to alcohol prenatally, and comparing two classroom interventions and a parent intervention in a standardised manner,” explained Dr Colleen Adnams, who heads developmental services at the Red Cross War Memorial Children’s Hospital and the Division of Child Development and Neurosciences in the

School of Child and Adolescent Health. Based at the school’s Child Health Unit, she is also the project’s South African principal investigator.

“Working at a cognitive level in one classroom intervention (Cognitive Control Therapy), we try to teach the children how to think about learning. This happens spontaneously in most children, but children with FAS don’t develop the building blocks to move forward. Through a systematic process involving structured games, toys, play and learning activities, we teach the children to recognise, process and use information.”

Children with FAS also experience marked delays (18 months and more) in language and literacy development. For this reason the second classroom intervention works with pre-linguistic skills, using basic sounds and language, before progressing to the literacy component of the intervention.

“Both interventions aim to influence a child’s ability to benefit from formal education in the areas of thinking and literacy,” Adnams adds. “And we hope to show that the interventions are effective in the extent to which they have facilitated improvements.”



**Child's play: (From left) Clinical psychologist Bernice Castle, principal investigator Dr Colleen Adnams and psychometrist Sean September are compiling a study on learning difficulties among children with Fetal Alcohol Syndrome.**

Understanding the marked influence of a child's home environment and the emotional link to learning, the researchers have also put in place a parenting intervention. A school psychologist assists parents with various parenting skills and issues surrounding learning and behaviour.

"Many of the parents have not had the benefit of much formal education and they don't know how to support their children's learning process. We would like to examine how their influence is carried over to the children."

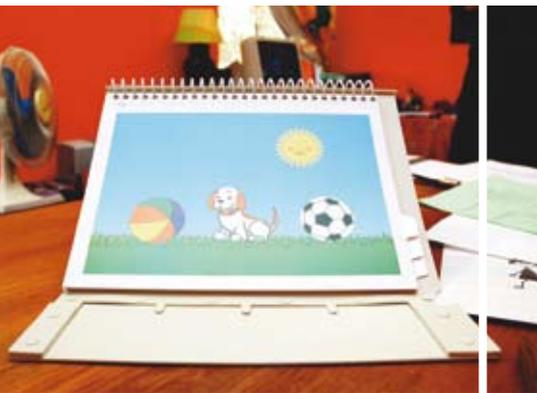
For over 30 years research on FAS has tried to answer questions at many levels. These include determining the size

of the problem and the effect of prenatal alcohol exposure on children in terms of learning, behaviour and growth.

Previous research on FAS in Wellington has determined the problem is huge, and although children with FAS have learning and behaviour problems, small pilot studies conducted by the team showed they do respond to interventions.

Children receiving the interventions are taken out of their classrooms once or twice a week for a total of one hour's intervention. According to Adnams, this is not perfect but it is sustainable.

"This is not nearly enough time; it is less than the gold standard, but we ▶



needed to set a realistic method so that if the interventions work, we will be able to implement them in the prevailing circumstances.”

And realistic this type of research clearly is.

Applying science and research to a human system involves hands-on work and many everyday situations are completely beyond the researchers’ control.

“There is no glamour in this work,” Adnams says. “Most of the children are from impoverished backgrounds and don’t even have breakfast in the morning. We have to feed them before we can begin the interventions so that we can rule out hunger as a reason for not improving. It’s heartbreaking and humbling to see children choosing not to

eat but rather to take the food home to their families.

“When you’re conducting research in a lab you can control most things, but when you work with humans, you can’t. You constantly need to be aware of the realities and take them into account in your planning.”

This is where clinical psychologist Bernice Castle comes into the equation. As the programme’s project coordinator, Castle supports Adnams in the day-to-day running of the research activities and pulls the team together.

“The challenge of undertaking community-based research, where the community is a partner in the research, is that we have to go very slowly and set clear terms of reference before any work is undertaken. In this way, we ensure that we get buy-in from the community,” Castle said.

In addition to the interventions, the research will also involve a battery of tests, conducted over several international sites, to find a key neurobehavioural profile of FAS. This will either support or dismiss the researchers’ hypothesis that FAS children have specific difficulty with abstract tasks and higher problem-solving abilities.

The neuropsychological tests on about 200 children, aged between nine and 14, will, however, also highlight these children’s strengths. The team will then be able to exploit these by making

sure their interventions take them into account and use them to build up the weaker areas.

The cause of FAS is alcohol abuse during pregnancy, and it is 100% preventable. It has been around since Biblical times but was first officially described in medical literature in 1973. It is currently a leading cause of learning problems and intellectual disability in Western societies, and occurs among people of all social and economic backgrounds.

The effects associated with FAS include facial abnormalities (small eyes and underdevelopment of the upper lip), growth disturbances (small head circumference, small size and weight), neurodevelopmental problems (learning, behaviour difficulties and intellectual disabilities) and other associated problems that may, but do not always occur, including heart defects and poor muscle tone.

“These children have small brains and are wired differently,” noted Adnams. “We can’t cure the effects of alcohol on their development but we can minimise the impact and prevent further problems and secondary disabilities.

“Children with disabilities are always written off. We hope to give them a chance by getting them to function optimally. It’s a personal passion for all involved.” *Nicole Chidrawi*

# dassie dung climate clock

Here's a jaw-dropping piece of trivia - the closest living relative of the African elephant is, believe it or not, the rock dassie. All modest 55 cm, 4.5kg of it. (The family resemblance lies in the feet and teeth, apparently.)

Here's another stunner – if you want to know more about climate conditions of the Earth's distant past, the selfsame dassie (*Procavia capensis*) is the one to turn to.

It's going to be a smelly exercise, though. But if you're up for it, find some dassie dung, sift through it for embedded pollen grains and you'll find a trove of clues to the planet's climatic history. You can go as far back as 30 000 years, in fact.

Climate, any decent climatologist will tell you, is all about cycles and patterns. It was towards the end of the 19th century that geologists first found evidence that, for the past few million years at least, the planet's climate



has been characterised by a series of lengthy ice ages (glacials) sandwiching shorter, warmer periods known as interglacials, such as the current one.

Each cycle is said to last tens of thousands of years, the last ice age drawing to a close some 10 000 or so years ago.

The question for UCT physical geographer Professor Mike Meadows ▶

**But if you're up for it, find some dassie dung, sift through it for embedded pollen grains and you'll find a trove of clues to the planet's climatic history. You can go as far back as 30 000 years, in fact.**

is this: Where exactly on that vast timeline of glacials and interglacials does Earth's - and, specifically for his research, the Western Cape's - current climate pattern fit? And, the biggie, has global warming thrown that trusted cycle for a loop?

Coming up with answers has been a headache for scientists, partly because of the surprise variations that occasionally crop up in the middle of a cycle - an unexpectedly dry winter, for instance.

"What we're really trying to do is distinguish between variation in climate and change in climate," says Meadows. "And the only way to know that is to look back in time. Without reference to the past, you can't measure where we are and certainly not where we're going."

In trying to draw that timeline of the planet's climate - past, present and future - scientists are hamstrung by a lack of information. Local weather records don't go back further than the 1700s, for instance, when the first rainfall measures were taken.

Instead, scientists have to turn to "proxy measures", such as foraminifera (forams for short), tiny marine creatures whose geochemical makeup provides tips to past climate conditions. The oldest foram fossils, for example, date back hundreds of millions of years.

A more common measure - and the

one that Meadows is partial to - is the microscopic pollen grain. Like forams, pollen grains fossilise well, keeping their size and shape despite the passing of time.

And as each flower or plant has its own unique pollen, it's easy to connect the dots and see, once the age of the pollen has been determined by radiocarbon dating, what vegetation was found in a particular place at a particular time. From the vegetation profile scientists can then extrapolate the climate of that period.

Pollen is well preserved in sediment, particularly in soil found in wetlands or ocean beds. "The only problem," says Meadows, "is that South Africa has relatively few wetlands." That leaves huge blanks in the puzzle scientists are trying to put together.

That is until about 20 years ago when the University of the Free State's Professor Louis Scott, who specialises in pollen morphology and regularly collaborates with Meadows, came up with a novel solution. While on sabbatical with the Desert Research Lab in Tucson, Arizona, in 1979/1980, he found that researchers there were extracting their pollen from the dung of pack rats.

"I thought that because it's a method so useful for drier countries," says Scott, "that we must have something similar here."

One eureka moment later, and he had latched onto the rock dassie. Dassies, after all, have been around since Africa was just an island continent, and are found these days in rocky areas all around South Africa.

Conveniently for researchers like Meadows and Scott, colonies of dassies stay in the same caves and rock shelters for generations, and share the same toilet facilities.

"They poo and pee in the same place for a long, long time," says Meadows.

And in the dassies' dung heaps/middens, some piled five or six metres high, are the telltale pollen grains. These include remnants from both the plants that the dassies ate, and free-floating pollen that got stuck onto the gooey mass over time.

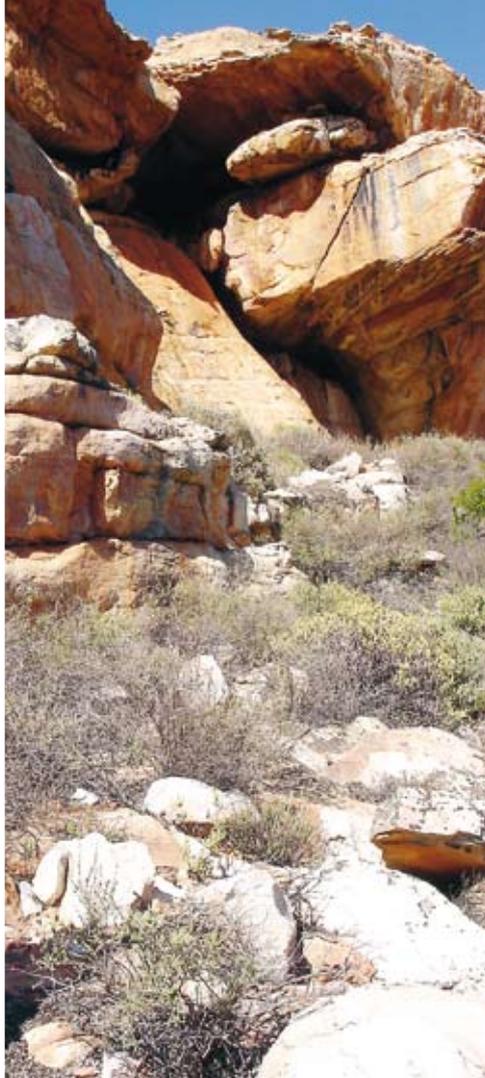
The pollen grains, along with some other sources, tell some interesting tales.

Twenty thousand years ago, when global ice sheets were at their maximum extent, the sea-level in the Western Cape was about 130m below what it is now.

Southern Africa and other stretches of the continent were not only colder then, but also parched. In the Western Cape, however, the cold fronts that bring winter rain were more frequent then and the climate was correspondingly wetter, Meadows also found.



**Raising a stink: Prof Mike Meadows searches dassie dung for climate clues.**



More recent changes are increasingly associated with human actions, such as colonial farming that triggered widespread vegetation disturbance across the region.

“Climate is a changeable entity,” says Meadows. “And that brings us back to the question: Is what we’re seeing now

is just variation or trend?”

If it is a trend, the questions are then whether it’s out of sync with what has gone before and what should be happening about now (a slow, steady lapse into the next ice age). There’s consensus that climate patterns are changing, and that it will lead to more extreme events, like droughts and floods.

But many models, even those designed to predict the possible distribution of vegetation in the future, are all at sea.

“We don’t know how plants are going to be able to cope with the changing environments,” says Meadows.

More research may shed some light on these topics, which is why recent funding from the Leverhulme Trust in the UK comes in handy.

The Trust has awarded more than R1-million to the Oxford University School of the Environment (OUCE) for work, in collaboration with UCT’s Department of Environmental and Geographical Sciences, to sample and analyse hyrax middens in Namaqualand and the Richtersveld in South Africa and, among others, the Brandberg and Kaokaland in Namibia.

For the next three years, Meadows will be working alongside Professor David Thomas of the OUCE and post-doc Dr Brian Chase. [Megan Morris](#)

# a question of land

**“Part of the problem lies with the Constitution, where women are not supposed to be discriminated against. And that includes land rights. But the institution of customary law and traditional leadership - where women are marginalised - is also recognised by the same Constitution.”**

**How can universities extend their resources to poor communities and so participate in social transformation? As an expert in the dynamics of rural society, and particularly the land question, Professor Lungisile Ntsebeza of the Department of Sociology sees his role as a bridge between the two.**

In the run-up to the 2004 national election, Ntsebeza took part in discussions with land activists on strategies to persuade the government to accelerate land distribution.

Disgruntled by what they considered to be the slow pace of land reform, the Landless People's Movement called for a boycott of the election with the slogan “No Land, No Vote”.

“I sounded a warning that perhaps they were flexing their muscles prematurely,” says Ntsebeza. “I did not think that their withdrawal would make an impact on a very popular government.”

Instead, he suggested alternative strategies to strengthen the organisation, strategies that would enable it to confront the issue in a more effective way.

This is one example of how Ntsebeza draws on his academic research to interact with both government policy and

grassroots society in advancing social justice and change.

“I see myself as a scholar-cum-activist, at the interface between theory and practice.”

A former political activist, Ntsebeza never imagined that he would become an academic, although he recognised study as a tool for development.

“I knew that earning our liberation was not all about fighting in the streets and that we needed to prepare ourselves intellectually for the struggle as well as the post-liberation phase, so study was uppermost in my mind as a way through which I could eventually make a contribution.”

Ntsebeza has now taken his activism into the corridors of academia, his research specialising in rural society and the land question, with a focus on the rural and urban economy, how people make a living in communal areas - especially in the former Bantustans or homelands - rural politics and the notion of chieftainships.

His research on the South African land reform programme has been published extensively in peer-reviewed publications and he recently published a book: *Democracy Compromised: Chiefs and the Politics of Land in South Africa*.

Ntsebeza has now consolidated his



research into five main themes encompassing various aspects of land issues in South Africa and the SADC region, namely deepening democracy, land rights for women, urbanisation and poverty, and land and agrarian movements in South Africa.

In deepening democracy, Ntsebeza explores the meaning of democracy for rural residents living under the authority of chiefs. He also questions the future relevance of these traditional authorities in the new South Africa, given that in the past chiefs were the local arm of the colonial and apartheid regimes, an association that rendered them highly unpopular.

Linked to this theme is the question of land rights for women in the communal areas, where male domination is seen as a hallmark and where in the

past women never enjoyed land rights of their own.

"I am particularly looking at the impact of two pieces of legislation that were passed in 2003 and 2004, which recognise customary law and entrench the powers of traditional authorities in land ownership and administration. This is worrying, given the patriarchal nature of customary law and traditional authority rule.

"Part of the problem lies with the Constitution, where women are not supposed to be discriminated against. And that includes land rights. But the institution of customary law and traditional leadership - where women are marginalised - is also recognised by the same Constitution."

The land and equity theme looks at whether land could play a role in alle-

viating poverty that is still embedded in the communal areas. This is within the broader context of the land reform programme, launched by the government post-1994, with land redistribution as one of its components.

Ntsebeza then branches out to explore the theme of urban land and development, which he dubs the "urbanisation of poverty". He focuses on the housing crisis that was spawned by the growing movement of people from rural areas into the cities, and the resulting proliferation of informal settlements that has become the norm in most urban areas.

What precisely is the politics of housing in South Africa?

"It's a critical issue, especially in the Western Cape where demand definitely exceeds supply and the problem is prioritisation. The dilemma currently being faced by the N2 Gateway project is a good example. Who will be given the houses first?"

The N2 Gateway housing project, sponsored by the City of Cape Town, is intended to provide accommodation for households living in informal settlements along the N2 highway.

Apart from land use, Ntsebeza is also studying what he terms "the politics of land" and the role of agency - the structures and organisations that define the land question. In land and agrarian movement in South Africa, he looks at the function and efficiency of past and existing land-based movements, which continue to play a prominent role in shaping policies on land.

One of these is the Landless Peo- ▶



ple's Movement, founded in 2001 and whose membership is drawn from the landless rural people themselves.

"My assumption is that in order to obtain resources and services, you must be organised. You want to lobby and put pressure on government. Yet my question is: How strong are these organisations, how well organised and informed are they about the land question and the current land programmes? Do they have a strategy and what are they going to do with the land once they get it?"

Ntsebeza has established working relationships with a number of organisations, which he views as a "dignified partnership".

"It's a critical engagement, and sometimes I agree with them and sometimes I don't. But that's the nature of the game, as long as the relationship is built on

openness and trust," he says, referring to the 2004 elections incident.

Ntsebeza's research will also involve supervising postgraduate students, including those from the SADC region, who are interested in his themes.

So how is his research helping in closing the gap between academia and poor communities?

"There are important resources that universities have that must be used by all members of society, and I see myself using these resources to benefit the poor."

He believes that academics and grassroots organisations should work on joint research projects and that members of these organisations should be encouraged to study at university.

This, he says, will have a great impact on their work. [Shumi Chimombe](#)

**Scholar-cum-activist Prof Lungisile Ntsebeza.**

# seen and heard

**South Africa is a signatory to both the United Nations Convention on the Rights of the Child and the African Charter on the Rights and Welfare of the Child, which give all children the right to survival and wellbeing. Yet every hour, 10 children under the age of five die. This means almost one in ten children will not live to see their fifth birthday.**

It is against this backdrop that the Children's Institute in the Faculty of Health Sciences operates, its policy research aimed at fulfilling the child rights agenda in South Africa.

"Child rights is the overarching philosophy of our work," says deputy director, Dr Maylene Shung-King. "And through our projects we try to unpack and interpret what children's constitutional rights are, and then find practical ways to make that explicit to the different duty bearers who are supposed to implement those rights."

Established in 2001, the Children's Institute pulls together information from its



(Pictures courtesy of the Children's Institute and the Means to Live Project.)

own and other research, and packages this in the best way to guide the development of laws and policies for children.

"I think that the evidence-based advocacy component of our work distinguishes us from other academic units because our research is always linked to a potential policy or service intervention," says Shung-King.

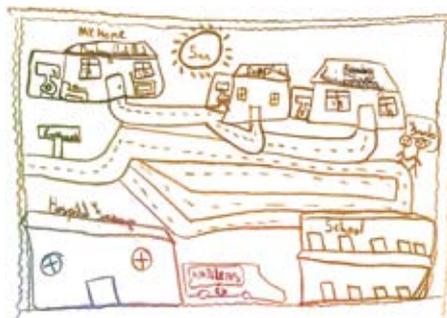
The institute focuses on four programme areas.

The first, child rights, forms the basis

of the institute's work and is part of its mission to ensure that the rights of children are fully understood and fulfilled. Research is conducted to understand child rights and to find ways to translate it into practical programmes.

It also involves training others in the field, specifically duty bearers like parliamentarians, government officials and different sections of civil society, on the theory and practise of child rights.

In this context, the institute ►



**In this context, the institute contributes to the Children's Bill, which, when legislated, will probably be the most significant piece of law for children in South Africa.**

contributes to the Children's Bill, which, when legislated, will probably be the most significant piece of law for children in South Africa.

Poverty, the second focus area, is seen to be at the core of many challenges affecting society, including children. These range across health, education, water and sanitation, and social services. The institute aims to address the impact of poverty on children by monitoring the government's poverty alleviation programmes and social security for children.

Then there is HIV/AIDS, which has wide-reaching political, socio-economic and health consequences, and one of the main obstacles to children's rights.

The final area, child health, is often the last consequence when things actually go wrong, says Shung-King,

"If we don't understand and implement rights and address poverty adequately, this often manifests through poor health in children."

The Medical Research Council's Burden of Disease Study in 2000 estimated that the infant mortality rate stood at 60 out of every 1 000 live births, while the under-five mortality rate stood at 95 per 1 000.

The leading causes of deaths among young children were HIV/AIDS (mainly through mother-to-child transmission) and poverty-related diseases such as diarrhoea and malnutrition. As the children grow older, they become more sus-

ceptible to unnatural causes of death, such as trauma and violence.

It is therefore essential for the institute to stay on top of what is happening in the child rights arena in South Africa, and to match its research to topical issues.

Scanning the environment is critical, using resources such as websites on law reform, developments in government and parliamentary debates and policy processes, as well as liaising with stakeholders in different forums to identify information gaps.

This research is then presented in a way that will best contribute to policy formulation and services for children.

One way the institute does this is by publishing products that monitor and report on child rights issues, such as the *Child Gauge*, which was launched in 2005.

The publication, which focuses on a different theme each year, from HIV/AIDS in 2005 to poverty in 2006, provides an annual report on the work being done, and the challenges that South Africa still faces. It draws on the latest child-centred research, which is then presented in a user-friendly tool for the target audience.

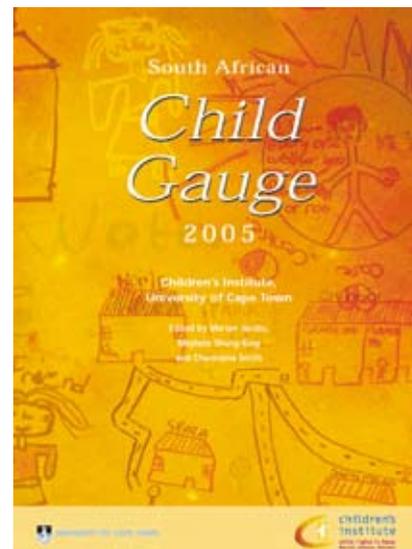
Shung-King explains: “The *Child Gauge* gives a snapshot of the situation

of children in South Africa, and that in return tells us what the key issues are that we need to address in order to make the maximum difference. It uses key indicators and narrative perceptions to reflect the most critical areas that we need to monitor. These indicators are carefully centred around information that we must know on an annual basis.”

And what are the major obstacles confronting children’s rights in this country today?

“The concept of child rights is very poorly understood by the many policy makers that have the responsibility to make those rights happen,” says Shung-King. “The other challenge is to convince the duty bearers to think of children in a very active and practical way and to incorporate children’s rights into all projects in the country. Children do not live in isolation but form an integral part of the family and the community, therefore their needs also have to be taken into consideration.”

The Children’s Institute serves as a bridge between the academic and policy environment, ensuring that their research informs and influences the policy-making processes in South Africa. [Shumi Chimombe](#)



# by the book

**It was an industrial psychologist's deficient evidence in a Port Elizabeth murder trial in 1995 that spurred Sean Kaliski to compile his ground-breaking text, *Psycholegal Assessment in South Africa*, a valuable handbook for South African practitioners in the field. It's also the first of its kind in the country.**

Trained at UCT and with over 15 years in practice, the associate professor in the Department of Psychiatry and head of the Forensic Psychiatry Unit at Valkenberg Hospital has long been frustrated by the chasm - and lack of formal structure in this area.

"Many professionals like psychiatrists, occupational therapists and social workers testify in South African courts daily on a host of issues, from dangerousness to contractual capacity, curatorship, child abuse and insurance claims. They have to make decisions on human behaviour, yet there is no defining work to guide them."

And like the industrial psychologist who gave evidence in a murder trial, Kaliski says many of the psycholegal professionals in our courts do not have

the necessary qualifications or expertise to do so.

He describes the close relationship between lawyers and clinicians like "long-married couples that still struggle to understand each other, despite their mutual dependence".

"We need to establish a standard to test the quality of psycholegal evidence presented and contribute towards justice in court. The book also provides a credible body of knowledge to ensure psycholegal assessments are conducted in a standardised and informed fashion."

As both editor of the book and a contributor, Kaliski has chosen each of the 22 authors for their niche areas of expertise. Many are fellow UCT academics and together they map sometimes precipitous territory: how to conduct various assessments, interpret clinical findings and communicate these to the courts.

The book is divided into five parts, the first dealing with aspects of law and mental health, followed by the forensic assessment and process, civil litigation, special groups (children, personality disorders, the elderly, etc), and professional skills and issues.

**Importantly, the book deals decisively with culture, language and ethnicity, factors that often bedevil court proceedings.**



**Mutual dependence: Editor of *Psycholegal Assessment in South Africa*, Assoc Prof Sean Kaliski, head of the Forensic Psychiatry Unit at Valkenberg Hospital, wants to get lawyers and clinicians on the same page.**

It also incorporates sections on how to write a psycholegal report and how to give evidence, supported by a substantial section on ethics.

Importantly, the book deals decisively with culture, language and ethnicity, factors that often bedevil court proceedings.

“It is well known that racism and racial stereotyping can be subtle influences that produce biased assessments, such as the prejudice that black psychotic patients are more aggressive and disordered than their non-black counterparts,” Kaliski adds.

It is also telling that although mental

health professionals shape the development and interpretation of the law - and its practice - forensic psycholegal practice hasn't yet been recognised as a specialised, registered profession in South Africa.

“What struck me years ago is that South Africa has huge demands on the courts, yet there is no formal training for forensic experts.”

To plug this hole, he has put forward plans for an MPhil in forensic mental health at UCT. Kaliski wants the field recognised as a sub-specialty.

He sees the book as a paving stone towards that. [Helen Theron](#)

# power up, lights on

**Since South Africa embarked on its ambitious national electrification programme after the watershed 1994 elections, three million homes have been electrified. Three million others remain in the dark.**

It's the classic chicken and egg scenario. The country's poorest, many living in rural backwaters, are benefiting from new infrastructure that delivers electricity to the furthest corners of the country. But over-burdened power plants are struggling to keep up with demand. Poor forecasting? A lack of strategic planning?

Ask Capetonians what life was like in the second quarter of 2006: dark and quiet, both at home and at work, especially the high-density commercial and industrial sectors. It's well documented that the power outages, aggravated by a damaged rotor blade at the Koeberg nuclear plant, and poor power quality, cost the Western Cape province millions.

In a large country with a sparsely distributed, poor rural population, getting power to all consumers is a tough ask. The government's drive to provide universal access to electricity by 2012, under the umbrella of the National Electrification Programme, is expected to cost R10-billion. (ESKOM's planned pilot Pebble Bed Modular Reactor (PBMR) at

Koeberg, mooted by Trevor Manuel in his Budget Speech in 2005, came with a cost estimate of R10-billion.)

"We need technologies and designs appropriate for the country and we're not going to get them in the textbooks," says electricity delivery expert Professor Trevor Gaunt (electrical engineering).

Postgraduate research in the department has turned to providing innovative solutions to some taxing problems around electricity delivery in the national electrification programme, as illustrated by the work of two students.

Clinton Carter-Brown's PhD research tackles the high cost of conductors used in power lines. He suggests planners look at the optimisation of conductor size used to minimise the lifetime cost of initial capital and the ongoing running costs for electrification networks, especially those to rural communities.

He developed a new method for sizing radial distribution networks supplying the stochastically-varying (randomly varying in time) loads of domestic consumers of electricity. The potential for cost savings is significant, he says.

Carter-Brown completed his PhD degree in electrical engineering at UCT this year, six years after he started his career with ESKOM Distribution. He is chief engineer in distribution network

**By using three parameters, Stowe's logger can measure reactive, active and apparent power usage, providing a picture of the predicted energy usage and growth in demand so that Eskom can plan well ahead.**

planning, involved in the standardisation and enhancement of network planning practices.

He was invited to Manchester University's Next Generation Seminar in September, a gathering of "the most promising researchers" in the field of power systems, an opportunity to meet and explore the latest ideas in the field. One of only 24 participants, he was the sole African representative.

Master's student Grant Stowe is developing an energy logger to assist the Domestic Load Research Group. The logger records power usage in residential, industrial and informal settlements. The logger also lends itself towards measuring quality-of-supply and can assist ESKOM in improving the quality of their service delivery to consumers.

In particular, shack consumers are an unknown consumption quantity. Market research shows that many are buying electrical appliances, but little is known about their electricity consumption as a

household, particularly since the introduction of Free Basic Electricity. Stowe's Power Profiler is the kind of device that will provide more accurate, cost-effective measurement of power usage.

The Power Profiler has the ability to simultaneously measure temperature, voltage, current and active, reactive and apparent power usage. Using these and several other parameters, models can be developed to provide a picture of the predicted energy usage and growth in demand so that ESKOM can plan well ahead when installing new infrastructure.

"It's clear we need more accurate measurement of data and subsequent modelling to better predict future network planning," Stowe says.

He looked at the existing system being used: loggers coupled to overhead power lines with no remote data-retrieval capability, and came up with some improvements.

The problem with existing power loggers is that the data has to be retrieved manually.

"Someone has to go out, put a ladder against a pole, connect to the device and download the information. And while they're doing this, the consumer may have to be shut down."

He says grappling with the communications set-up is a complex issue.

"This [power logger] is an intelligent box with multi-communication methods."

Stowe's Power Profiler has a number

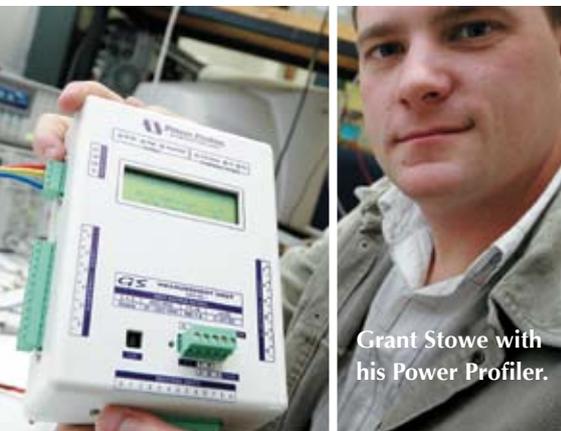
of facets to its design, which uses the latest 16 bit microcontrollers and incorporates Universal Serial Bus (USB), a technology capable of high-speed communications between computers; Bluetooth (radio technology built around a new chip that makes it possible to transmit signals over short distances between computers and hand-held devices without the use of wires); Global System for Mobile Communications (GSM), General Packet Radio Service (GPRS), a data transmission technique that does not set up a continuous channel from a portable terminal for the transmission and reception of data, but transmits and receives data in "packets"; RS485 network; and public telephone (TELKOM) modems.

Stowe's primary specification was to create an accurate measurement system, surpassing the capability of the existing system, and allowing centralised data retrieval.

He uses the latest cell phone technology for data collection and each logger can measure up to 12 different households. The logger can also be used in factories to measure consumption at individual sections and to demonstrate the achievement of energy efficiency objectives.

The next stage in the logger development is testing it to make sure it complies with ESKOM and several international measurement standards.

"They zap it with lightning and see if it survives," Stowe quips. [Helen Théron](#)



Grant Stowe with his Power Profiler.

# palaeobiologist's springtide

**One would never guess from Professor Anusuya Chinsamy-Turan's list of scientific achievements that she had a difficult start to academia.**

Difficult might be an understatement. The prejudices she encountered as an undergraduate in the 1980s gave her a slower start than one might have expected of a multi-award winning scientist, but by her third year she was pulling well ahead. And once she discovered palaeontology in an honours module, she was well on her way.

The P-rating she received from the National Research Foundation in 1996 was a clear marker of bigger things to come. And with the B1-rating conferred last year, she is edging towards the top strata of the research rankings.

Perhaps the early handicaps also shaped her own attitudes as a teacher over the past 17 years. Following her Woman of the Year Award from Shoprige Checkers/SABC 2, in 2005, congratulatory messages flooded her office.

Students came to her door to wish her well.

"I think I'm approachable. That's what they're looking for," she muses. Teaching is one of her strengths and beyond her home in the zoology department, she's ploughed this nurturing into external organisations like South African Women in Science and Engineering (SAWISE), which she chairs. One of the organisation's thrusts is encouraging young women to study science and engineering.

There's no doubt that Chinsamy-Turan is experiencing a springtide in her career, a timely confluence of research, outreach and publication. The past two years have brought recognition in a string of other awards. She was inducted as a UCT Fellow in 2004, an endorsement by her peers, all highly-regarded researchers. Last June she was named senior black female researcher in the Science Oscars, the National Science and Technology Forum Awards, and won the jewel in the crown, the

**There's no doubt that Chinsamy-Turan is experiencing a springtide in her career, a timely confluence of research, outreach and publication.**



**Going up: Prof Anusuya Chinsamy-Turan, edging towards the top strata of rankings.**

Distinguished Woman in Science (Contribution to Science) title in the 2005 Department of Science and Technology's Women in Science Awards.

The recent publication of her book, *The Microstructure of Dinosaur Bone*, capped an annus mirabilis. The first study of its kind, it synthesised more than 150 years of research into the composition of dinosaur bone and its transformation after death and fossilisation.

The book was a milestone ("really, really difficult to finish") in a schedule that leaves little room for anything but teaching, researching and her outreach work.

A reviewer in *Trends in Ecology and Evolution* describes the work as "an immense service to the field". For eons, clues to the biology of dinosaurs have been locked in the microscopic structure of their bones.

Though there are relatively few palaeohistologists (people who study fossil tissue), new studies are being unveiled all the time. With a growing array of samples available, researchers in the mould of Chinsamy-Turan are able to study the records of the original tissue preserved in dinosaur bones, right down to the cells and "beyond the resolution of computed tomography scanners". ▶

**Fast-growing bones, such as those found in the giant Tyrannosaurus rex, show markedly different texture to the bones of slower-developing animals, with fewer blood vessels and a finely layered appearance.**

"We've just begun to scratch the surface," she comments.

Very thin cross sections of bone are examined under the microscope, providing the histological clues that will tell her how - and how fast - the animal grew.

Fast-growing bones, such as those found in the giant Tyrannosaurus rex, show markedly different texture to the bones of slower-developing animals, with fewer blood vessels and a finely layered appearance. Bone-based growth curves evident in Tyrannosaurus rex, for instance, show why the animal towered over other dinosaur relatives.

It's a tricky field. Dinosaur bones sometimes show lines of arrested growth (lags), which are like those of slower-growing reptiles, but other features suggest that they grew rapidly. Like other animals, dinosaurs dissolved primary bone to bump up their calcium supply, or to repair microfractures, depositing secondary bone. Essentially, this erased the dinosaur bone's early history.

She's tickled by one reviewer's last line on her book: "I couldn't put it down until I finished it." Unusual praise for an academic study.

"I get quite excited about the potential of using bone microstructure to

flesh out the ancient animals and make them more real," she said in *Science*, in an article *Dinosaurs Under the Knife*.

She's keen to write another book, a popular work, this time on African dinosaurs to close a gap in the market. It will be aimed at children. She'll need all the months of sabbatical she has accumulated over the years.

"Books on dinosaurs tend to be American works," she comments. "South Africans don't know how valuable their own heritage is. We're rich in fossils."

Chinsamy-Turan's passion for science communication is mirrored in many of her outreach activities. Though her work as chair of SAWISE has been well publicised, few people know she took leave of absence to put her creative energies into turning around Iziko Museums' South African Museum in Cape Town, an underutilised resource for science communication.

In her 18 months as director of the Natural History Collections division, Chinsamy-Turan rolled up her sleeves and presented five lively exhibitions that created rich resources for public exploration and discovery.

"The days of static displays are long gone."

Like dinosaurs. [Helen Théron](#)

# mapping partners

**Census data released in 1996 showed a picture of New Crossroads as a community with high unemployment and low education levels. But place over that picture a wall-sized map of the area, produced by UCT's urban geography students in 2000 as a field research project, and a different picture comes into focus.**

The many home-based businesses highlighted on the map tell the story of a community where significant numbers of residents are economically active in

a wide range of enterprises.

Partnering non-governmental community-based organisation Mandlovu Development Institute (MDI), the students mapped public spaces and vacant plots, community assets and amenities, such as churches and halls, and homes in which economic activities were taking place.

Building on this initial fieldwork, the students mapped the kinds of business ventures that were being conducted from homes in New Crossroads. The collected data indicated 119 active home enterprises, providing a wide range of services and products. ▶

**Building on this initial fieldwork, the students mapped the kinds of business ventures that were being conducted from homes in New Crossroads.**



**“Rather than running laboratories and practicals on campus, I negotiate research projects with community-based organisations.”**

Distinct differences were found between survivalist and growth-orientated enterprises and the ways in which these reflected household dynamics and livelihood strategies.

In 2003, the urban geography students did follow-up field research, testing the waters for a structured skills survey by their community partner MDI. This would determine the ways in which age and gender differentiate the skills and work of residents. To collect the data for the pilot survey, the students linked up with teams from the community to conduct semi-structured interviews.

These field research components form part of Dr Sophie Oldfield’s human geography courses in the Department of Environmental and Geographical Science at UCT. Even though it is a demanding and time-consuming form of teaching, Oldfield feels the process has merit, exposing her undergraduate and postgraduate charges to socially responsive research and learning.

“Students treasure the opportunity to work on projects that are real, enjoy the friendships that grow with the community-based participants ... and the richness of these experiences cast the conceptual issues we deal with in lectures in more nuanced and complex layers.”

Oldfield’s course combines lectures on urban geographical theory and qualitative methodologies. Since 2000, fieldwork has been taught through com-

munity-based partnerships, such as the projects in New Crossroads from 2000 to 2003. These were followed in 2004 and 2005 by surveys of backyarders in Valhalla Park on the Cape Flats, in partnership with the Valhalla Park United Front Civic Organisation (UFCO).

On completion of the projects, each student produces a report of quantitative geographical information on the particular topic, as well as qualitative data-like life histories and narratives.

The work has resulted in the production of maps of the social assets in New Crossroads, of the service levels and housing overcrowding in Mau Mau, Nyanga, and of the backyarders in Valhalla Park, as well as of booklets listing life histories.

“Rather than running laboratories and practicals on campus, I negotiate research projects with community-based organisations. In the process, students learn field-research skills (interviewing and mapping) and experience first-hand problems of ‘Cities of the South’ discussed conceptually in class,” says Oldfield.

Oldfield believes it is equally important that the research makes a useful contribution to community mapping and activism. But she won’t select a project and a community partner organisation just for the sake of social responsiveness.

“That it is an experience for the students is very, very important ... so I have only proposed it with two groups

with whom I knew it would work for the students.”

Although there is no explicit curriculum or agenda for community learning through the course, community participants are given the opportunity to assess the student project presentations at the end of research sessions.

In the case of Valhalla Park, community members were also invited to visit the university once the project was completed. They spoke about the importance of feeling they had contributed to the students’ work. They were also grateful that this work had thrown a spotlight on the community’s poor housing conditions.

“Our story will get out and be heard by others and then they will learn something about our lives,” one Valhalla Park civic leader said. “I’m not in a hurry. Sometime or other, something will come out of the research – from here, something will happen.”

A value that shapes Oldfield’s social responsiveness teaching is the importance of making students aware that knowledge can take many different forms. She argues that through these research partnerships, the community actually services the students.

“Communities have all sorts of knowledge and that knowledge is all over the place ... knowledge is not [just] something that’s found up here [at UCT]...”

Social responsiveness research has allowed her to play a dual role as an

academic and an activist. For instance, she worked with the Valhalla Park UCF as part of the Anti-Eviction Campaign through the Community Research Group (CRG). She has found that her identity as an academic, her base at the university, and the university’s resources enables her to play her role as an activist. On the other hand, her interaction with activists through the CRG helps her focus the research more strategically.

Her teaching practices are enhanced through working and learning in teams, not only with other lecturers in the department, but with the community-based organisations and activists. She believes it is crucial for students to develop such team-working skills in the South African and Southern African contexts.

She talks of three main benefits of social responsiveness research projects: they provide students with an opportunity to link their studies to the real world; they enable her to carry out her own community-based research work (teaching at the same time); and they have helped to bridge university and community boundaries and practices.

Through the Service Learning Project at UCT’s Centre for Higher Education Development, Oldfield is researching two important issues around the Valhalla Park projects: whether they have left the community in a stronger lobbying position for better housing, and whether the information from the students’ projects can help their situation. *Erina Botha*



# ear to the ground



**Economic and social development is at the heart of The David and Elaine Potter Fellowships, awarded to candidates whose work furthers civil society in South Africa. These are talented young researchers whose degrees will contribute to the country in these spheres. Last year the fellowships underpinned new research by four promising postgraduate students. These are their stories.**

## Bones flesh out history

“Dead men tell no tales.” So the line goes.

Someone who disagrees is PhD stu-

dent Jacqui Friedling, resident in the human biology department. She’s made a career of unraveling the details of dead men’s lives by analysing their bones and teeth, working with eighteenth and nineteenth century remains from the city’s burial grounds.

Gruesome finds? She disagrees. These remains reveal hidden facts: how people died, what work they did, what they ate and what diseases they succumbed to.

Friedling has already made her mark, so to speak, as a result of her master’s research (which she received *cum laude*) into the dental modifications among the coloured population on the Cape Flats, “passion gaps” et al (the common practice among coloured people of removing their front teeth).

As for her analyses of old bones and

teeth, what are these forensic tales really worth? As Friedling explains, they help create a more holistic history of the city and its people.

“The history of Cape Town is critical in building a sense of civil wholeness in order to break free of the apartheid stereotypes of the past.”

The topic of bones was spotlighted at her Potter seminar, part of her academic commitment to her benefactors through the David and Elaine Potter Fellowships.

Community outreach is another important aspect of her fellowship, and she finds her work in the field deeply enriching. Friedling visits schools on the Cape Flats, broadening pupils’ understanding of the many study and career options open to them.



“You study what?” was the response from a grade 10 pupil in Belhar, who was gobsmacked to think that anyone could make a career of studying bones. On her part, Friedling was surprised to find that biology teachers didn’t know that biological anthropology was a viable career.

“The amount of information that can be gleaned from the humble bone actually astounds students and teachers alike.”

Putting the puzzle together is what drives her.

“What is manifested in the physical and behavioural characteristics of any living being is the result of the intermingling of an inherited genome with environmental factors,” she explains. “Environmental forces influence bones and

teeth. Bones respond to the mechanical forces and alter in response to activities and stresses, and can tell us about the lives of earlier peoples.”

Bones reflect growth, stress, disease and lifestyle factors. The age and growth of a sub-adult, for example, can be determined by examining dental development as well as the length of the long bones and the union of the epiphyses (the ends of the long bones). In adults, the keys are landmarks on the pubic symphysis, cranial suture closure (where the bone plates join), degenerative changes and the reabsorption of cancellous bone.

In addition to changes resulting from normal biological processes like growth and ageing, the bones and teeth also show the brunt of stress, brought on ▶

**1. Dem bones: PhD student Jacqui Friedling with the femur bone of a dwarf.**

**2. Hidden scars: Master’s student Haydn Tilley’s research examines the psychological effects of burns on adults.**

**3. Roundtable: Master’s student Trish Zweig threw the spotlight on land tenure and social transformation in the Western Cape.**

**4. Ear to the ground: Master’s student Babalwa Cwane looked at the efficacy of telecentres in rural areas.**

**She runs a finger over the grooves worn into the giant's bones, probably the result of an overdeveloped attached muscle and a likely indication of a lifetime of heavy work.**

by cultural practices (such as carrying loads on the head) and pathological conditions.

One example of the latter can be found in bone lesions identified by the spongy, porous nature of the roofs of the eye orbits and cranial vault, which is associated with iron deficiency and which result from pressure being exerted on the tables of the compact bone by the expanding marrow.

Diseases like osteoarthritis are also evident in bones. Likewise, dental disease reflects the physical evidence of dietary and non-dietary behaviours.

These days one might associate osteoporosis with post-menopausal women. But Friedling points out that men account for a growing proportion of cases. Thirty percent of men develop osteoporosis as a result of lifestyle choices: drinking and smoking.

Occupational stress also marks the bones. Enthesopathies (musculo-skeletal stress markers) can be seen as rough patches and bone projections at the insertion of tendons and ligaments. These develop as a result of prolonged and excessive muscular activity, a result of increased mechanical loading.

Down in the bone room of the Anatomy Building, Friedling shows off some of the more unusual specimens, physical remnants of those who lived and died in the Cape; the femur (upper

leg) bones of a giant and of a dwarf. She runs a finger over the grooves worn into the giant's bones, probably the result of an overdeveloped attached muscle and a likely indication of a lifetime of heavy work.

These days, no doubt, he would be put to work wearing a scrum cap.

## Kids in the city

While the first 10 years of democracy quickened change in the broader political, social and economic arenas, researchers know little about the factors shaping the everyday lives of our country's youth.

How do they view their current lives and prospects? Will they make the transition from school to work or further study successfully? What factors in their personal lives and communities enable or hinder them in achieving their goals?

It was master's student Sue Moses' abiding interest in social development (she'd always wanted to work for the non-profit sector, more so with children) that brought her to these "gaps in our knowledge".

Moses is part of the qualitative research team at the Centre for Social Science Research (CSSR) conducting the research project *Growing Up in the New South Africa: Perspectives*

*from children and adolescents in Cape Town*, presented at a seminar, a mandatory part of her David and Elaine Potter Fellowship.

According to the team (including Dr Rachel Bray and Imke Gooskens), “children’s lives are considerably under-researched in South Africa”.

“We have no up-to-date information on the everyday lives of children and adolescents in the Cape Town area,” the researchers say. “Yet knowledge of their experiences at home, school and in their communities can tell us about their current well-being, as well as the factors shaping their transition to adulthood.”

Moses believes that the findings of the study will provide a useful comparison to the Birth-to-Twenty study in Gauteng, a longitudinal survey of children born there in 1990, as well as projects like the Durban-based Transitions to Adulthood panel study.

“At this point [in our history] we would expect that policies intended to address social inequalities should be beginning to bear fruit,” Moses adds. “Research that investigates the lives of children living in diverse but geographically-close communities can shed light on the extent to which these policies are helping achieve the desired change.”

The CSSR research project integrates quantitative and qualitative data, the

former generated by an ongoing panel study, the Cape Area Panel Study (CAPS), started in 2002. Almost 5 000 young people aged between 14 and 22 (in 2002) will be interviewed five times over seven years.

The qualitative data has been collected from three field sites, the geographically-close communities of Masiphumelele, Ocean View and Fish Hoek. Using participatory methodologies, Moses and her colleagues have worked extensively with children from grades 5 to 12 to build a picture of how children experience their lives, and the various roles played by home, school and community structures (both formal and informal).

The importance of relationships and how children negotiate these is central to understanding the factors that enable or hinder children’s success.

Getting the children to take part needed extra measures: focus group discussions, drawing, collages, visual prompts, drama and role-play. Six young people, two from each research area, were trained as co-researchers and conducted interviews with their peers, a tactic Moses feels is reaping other rewards.

During a drawing activity, Moses got the Ocean View grade 9 pupils to construct community maps of their neighbourhoods, using different colours to

depict various areas: yellow for fun places (soccer field, play park, library), blue for important places (schools), green for places to get things (shops and spazas), and red for dangerous places (shebeens).

“Discussing the maps with the children gives us a sense of how they see and negotiate their environment.”

One map is completely red, flagging a scattering of the community’s riskier locales: the car-racing track in Soetwater, the rubbish dump, a very poor neighbourhood on the outskirts of the community, and the shebeens.

Despite their sometimes bleak social and economic circumstances, Moses was also heartened by what she heard and saw during the ten weeks of fieldwork.

“The children have to deal with a lot. But the upside is that we continually meet kids who are really positive - and determined to make it.”

## Scars within

Master’s student Haydn Tilley believes the staff in the Burns Unit at the Red Cross War Memorial Children’s Hospital deserve medals. Just like their young charges.

These are the survivors of shack fires and accidents involving hot water, vehicles, paraffin or electricity. ▶

**Burns are the third most common cause of injury in this country; 400 000 people suffer from burn injuries annually, more than the population of Pietermaritzburg.**

Many of the small patients will be disfigured for life. Others are luckier. But as chief medical officer of the burns unit, Professor Heinz Rhode, says, everyone who is burnt carries a scar - a psychological wound.

For Tilley, a trainee clinical psychologist, it's the scars within, the "plethora of intense psychological trauma concomitants", that are of concern.

Burns are the third most common cause of injury in this country; 400 000 people suffer from burn injuries annually, more than the population of Pietermaritzburg. Of these, 85% live in rural or informal settlements where there is limited infrastructure and which, says Tilley, substantially increases the risk of being burnt. Rural burn victims are also at a disadvantage because specialised treatment facilities are located in the cities.

His master's thesis investigates the more longitudinal affects of burns; the psychological effects on adults.

"Burns are often excruciating injuries and, in addition to the physical pain and the long and uncomfortable rehabilitation, the disfigurements force them into assuming a different physical and social identity."

He believes a deeper understanding of burns is essential. Often the psychological needs are not prioritised in the

light of the serious medical treatments needed to physically heal the burns.

"We need to mobilise the resources available to meet the needs."

He has been able to contribute to these resources. Working in the Red Cross Burns Unit, Tilley interviewed 10 parents of burn survivors and staff assigned to the unit, asking what information was needed, and what should be disseminated to the public.

The result was a psycho-educational booklet, which is used as a clinical community intervention.

"Information *is* the intervention," Tilley emphasises.

The booklet tells parents what to expect from the burns unit - and how to contain some of their children's difficulties.

"Some of the parents don't know what a skin graft is, or how complicated some of the treatment procedures are. It's also sometimes difficult for a parent in shock to know what to do."

Published in English, Afrikaans and isiXhosa, it is a welcome resource, especially in communities where burn survivors carry a cultural stigma.

As part of his commitments to his David and Elaine Potter Fellowship, Tilley put together a seminar on the psychology of burns, harnessing expertise on a variety of fronts.

One of his guests was jazz singer Thandi Klaasen, whose face was disfigured by acid after a premeditated attack on her some years ago. The seminar gathered professionals working in the area, integrating the narrative of burn survivors as well as the current state of knowledge. It included representatives of the World Burn Foundation and staff of the Red Cross Burns Unit.

Tilley's master's thesis will examine the effects of burns on adults; the hidden wounds that sometimes evade healing. And the healers.

## Undersized cities

Trish Zweig is something of a revelation. The scholar is euphemistically described as a mature student. A mother of two daughters, one of whom is also studying at UCT, the forty-something master's student in the Department of Environmental and Geographical Sciences waitressed for 20 years before deciding what she really wanted was a university degree.

Though her scholastic enterprise has run further than she planned, she draws a line firmly at the idea of a PhD.

"I want to get out and work in the community," she protests.

Her early leaning towards drama at

school gave way to a very different inclination once she entered higher education. The human aspects of the study of geography brought together her interests in people and place, and her master's degree has taken this into the realm of land tenure and social transformation in the Western Cape.

It's topical research and prisms open an area fraught with complexities.

"Apartheid left huge distortions in where people lived and so artificially undersized cities. It also deflected demand for access to urban areas and created highly mobile and unstable 'floating populations'," Zweig notes.

Little surprise then that questions of tenure continue to frame housing, land and infrastructure development in poverty-stricken areas of the province.

Zweig believes this insecurity of tenure produces bureaucratic, legal and political challenges that frame the often confrontational context in which state officials, NGOs and community based organisations, activists and researchers tackle development.

"The result is a well-intentioned but often piecemeal process of unpicking and redressing these historical inequities to meet constitutional socio-economic rights to secure tenure."

Using the New Crossroads community as a case study, Zweig examined

the legacy of black local authorities and how poor urban communities work with the local authority to address issues of tenure security.

Her Potter seminar provided a valuable opportunity to open these issues to important role players. It was something of a coup that she managed to gather the gamut of these representatives, eye to eye, around the same table and in the same forum, to share and reflect on existing policy and practice.

"We even had representatives of the Anti-Eviction Campaign sitting around the table with members of the City Council."

The seminar, in the form of a two-day workshop, included panel discussions on the legal, policy and political aspects of tenure.

"We wanted to tackle these issues in a collective way," Zweig said. "We wanted to bring together all our resources to address the issues raised."

## Hello or goodbye?

The government's drive to introduce First World communications systems to fast-track rural development has seen the rapid rise of telecentres in some of the country's remoter towns and villages. ▶

Social sciences graduate and master's student in information and library science, Babalwa Cwane, is examining the role of information and communication technologies, particularly telecentres, in community empowerment.

The seminar that came wrapped up with Cwane's Potter Fellowship presented some new challenges.

"I'd never organised an academic seminar before."

With a line up of renowned speakers in the field of business communication technologies (including Mike Jensen, guest speaker Dr Ed Maepa of the National Research Foundation and Telkom's Madoda Cuphe), she provided a forum for some lively debate.

More recently, Cwane's fieldwork took her to Port St Johns, for a first-hand look at the efficacy and role of telecentres in this community.

She has a special insight into the problems experienced by rural users. Her interest in computers grew out of her own frustrations around computer literacy as an undergraduate.

"With my background, I had to learn computer skills from scratch."

Telecentres have come to the fore at exactly the time the government has been encouraging the country's par-

ticipation in the global information society.

Proponents of telecentres believe these clusters of technology can deliver a range of developmental services, from health, education and agriculture to natural resource management, micro-enterprise support, pension and welfare payments.

The government charged the Universal Services Agency, a statutory body established in terms of the Telecommunications Act 103 of 1996, with the roll-out of information communication technology services in rural areas.

These telecentres are public information points; multi-purpose community centres that exploit the convergence in computer and telephone technologies.

While she agrees that information and communication technology has the potential to foster development in rural communities, it isn't enough to simply roll the hardware off the back of a truck.

"It's no good parachuting facilities into these communities without providing computer training or even consulting them. The people just ask: 'What can we do with this?'. Technology developers should be asking: 'Which technology might help here?'"

Her evaluation of telecentres will answer some pertinent questions. The first is: Do these hubs of technology work for these communities?

"Though they may offer an array of communications media: fax machines, photocopiers and computers, in many cases people use only the phones," Cwane says. This is technology that is understood.

The role of telecentres also goes beyond global connectivity. They offer natural gathering places for community meetings and for service providers, like the Department of Home Affairs, which gathers ID applications and death and birth registrations from these centres. These hubs are also used to disseminate HIV/AIDS information and even act as distribution points for condoms.

"One of the failures of information communication technology projects, especially telecentres, is the top-down, non-consultative, technology-driven approach where emphasis is on the technology itself and not the intended users," Cwane says.

"Whoever initiates the establishment of these centres must consult with these communities and complete proper needs assessments." *Helen Théron*

# research rootstock

**Research is the measure of a university's success. In South Africa, the yardstick is the annual the National Research Foundation (NRF) rating process, which grades academic researchers on the quality of their knowledge and published findings.**

This year, UCT emerged with 262 NRF-rated researchers, more than any other institution in the country. The university also has 21 of the country's A-rated researchers, a milestone that is integral to our mission.

In addition, UCT has more rated researchers in four of the six NRF categories, including the A-ratings and the increasingly coveted P-ratings for young researchers (see pg 63). And, for good measure, no fewer than 31 researchers have received ratings from the NRF for the first time this year. That high number of inductees is a record for UCT.

Among UCT's A-rated researchers, Professor Frank Brombacher was upgraded from an A2-rating to A1-rating. Brombacher is director of the Medical Research Council Unit on Immunology of Infectious Disease and a member of the Institute of Infectious Disease and Molecular Medicine at UCT.

Three new A-rated researchers (see below) also joined the fold during the past year: Professors Bill Nasson (historical studies), George Janelidze (mathematics and applied mathematics) and Pragasen Pillay (electrical engineering).

## Lens on humanity

**Bill Nasson** (pictured below) is irked by the request for an interview. He's on sabbatical, writing a new book with a charming title: *Springboks on the Somme: South Africa in the First World War*. Having to publicise his recent National Research Foundation A-rating (A2) is like paying for excess baggage. An unexpected nuisance.

"History is just a job," he protests. ▶



**This year UCT emerged with 262 NRF-rated researchers, more than any other institution in the country. The university also has 21 of the country's A-rated researchers, a milestone that is integral to our mission.**

**War fascinates him; it's a mirror of the human condition, involving judgement and analysis of barbarism, incompetence and morality.**

"Not a great mission."

He may be dismissive of the achievement, but nonetheless it pegs him in the upper echelons of the country's historians. Frankly, it was time he applied for a rating. Nasson has served on the NRF rating panel for three years and it would have seemed remiss not to do so.

Nasson was schooled at Livingstone High School when it was staffed by great educators like RO Dudley. He graduated from the University of Hull (where he got joint first-class honours in English and history and a string of undergraduate honours), and has an MA in Southern African studies from York and a PhD in history from Cambridge.

At UCT, his cache of awards underpins a trio of passions: scholarship, teaching and writing. He has a Distinguished Teacher Award (1999), became a UCT Fellow in 2000 and won the UCT Book Award in 1993 for *Abraham Esau's War: A Black South African War in the Cape 1899-1902*. It was a seminal publication, one that dissected an altogether neglected aspect of war and South Africa: the contributions of irregular soldiers and civilians.

His speciality is modern South African history, from the 19th century, with a lens on war and society, particularly the South African War (aka the Boer War) and the First World War.

War fascinates him; it's a mirror of the human condition, involving judgement and analysis of barbarism, incompetence and morality.

Nasson prefers to think of himself as a writer of history, not an historian who writes. The work he has taken sabbatical

to complete (the latter said with emphasis) is a study of South African experience of and participation in the Great War of 1914-1918. (White South African troops were known as Springboks.) He hopes it will be a "lively and witty" account. Penguin expects the manuscript by the end of the year. (Repeated with emphasis.)

Nasson has published extensively on war, as the winding list of books and papers on his CV bears out.

"As an historian, obviously I prefer the past to the present," Nasson says, glancing at the prepared questions for this interview. It brings him to the immediate past. What is the most important role of the historian at this juncture of South Africa's history?

"Ask the president," he quips.

In some respects, the current South Africa is not a place he altogether likes. The country has become a combination of "the grotesque and freakish", Jacob Zuma et al.

"We need a governor-general," he jokes, referring to the mismanagement, the power cuts that bedevilled the Western Cape in early 2006.

But back to history ("historical studies" gets up his nose), and the tendency among scholars to over specialise.

"There is a danger of writing more and more about less and less."

A curiosity of his own past is that he never intended to make history a career. Not until he ran into Hull University's head of history on the London Tube. Professor John Kenyon persuaded the young Nasson to read for a PhD and gave him names of institutions he

should approach for funding.

At the time he was working for the Wold University Service as a refugee scholarships administrator and student welfare counsellor, a stressful and tedious job. (He'd had stints working in a factory and as a seasonal agriculture worker in Norway). History looked good.

He's pretty well steeped in it. Even his private email address remembers the past: structured around the name of French general Robert Nivelle, a hero of Verdun, who in 1917 asked his troops for one more sacrifice "to honour France".

Lined up in their thousands, they turned their backs on him and began bleating. *Helen Théron*

## Pure mathematics

It was the 18th century mathematician and astronomer Siméon Poisson who said: "Life is good for only two things, discovering mathematics and teaching mathematics."

UCT's newest A2-rated National Research Foundation (NRF) scientist, **Professor George Janelidze** (below) of the



mathematics and applied mathematics department, would probably agree.

Janelidze, a leading research scientist of the Mathematical Institute of the Georgian Academy of Sciences in Tbilisi, Georgia, with a PhD from Tbilisi State University and a DSc from St Petersburg State University, joined UCT in 2004.

His area of expertise is the most abstract or pure mathematics called category theory, which, following set theory, makes a second attempt to unify all branches of pure mathematics.

Category theory was invented by two of the 20th century's mathematical giants: Samuel Eilenberg and Saunders MacLane. Their landmark 1945 paper, *General Theory of Natural Equivalences*, introduced a new language that transformed modern mathematics. Moreover, most of the latter mathematical developments would have been unthinkable without that language.

Apart from this, category theory has achieved much as a field of study in its own right, and its theorems have significant applications in algebra, topology, algebraic geometry and mathematical logic.

Janelidze counts himself fortunate. Although isolated from the West in the former USSR for more than the first 30 years of his life, he capitalised on opportunities to collaborate with a range of distinguished mathematicians, many of whose names appeared in the books and papers he studied.

These luminaries include MacLane, who gave a talk on Janelidze's work at an international conference on category theory in Belgium, as well as GM Kelly,

the founder of the Australian school of category theory, with whom Janelidze has written eight papers. Other collaborators hail from Belgium, Canada, France, Italy, Portugal and the United Kingdom.

Janelidze also pays tribute to George Chogoshvili, the founder of the topology school in Georgia, as well as Hvedri Inassaridze, Chogoshvili's student and Janelidze's former supervisor. Both played a significant role in his academic endeavours.

In addition, he is editor of four international mathematical journals, a member of the scientific committee at Tbilisi State University responsible for awarding PhD and DSc degrees in mathematical logic, algebra, number theory, analysis, geometry and topology. (Janelidze has three PhD students in Georgia and two in Portugal.)

Though a long way from his native soil, the new A-rated researcher says he has found a home in the Department of Mathematics and Applied Mathematics at UCT.

"Here there is a strong research group in categorical topology, founded by Keith Hardie and Guillaume Brümmer, and many other good mathematicians. It's a good place for research." *Helen Théron*

## Worlds together

**Professor Pragasen Pillay** may straddle two continents, but he keeps them as close-knit as possible.

For nine months of the year, he works for Clarkson University in New York in the US where he is the Jean Newell ▶

**He's learned, he says, that companies are that much keener to invest their research rands if they know there's an A-rated scientist or engineer at the business end of the arrangement.**

distinguished professor in engineering in the Electrical and Computer Engineering Department.

For the other three, he is professor of power engineering in UCT's Department of Electrical Engineering. (And now, of course, Pillay [right], who was educated at the Universities of Durban-Westville and Natal before moving to the US, is one of UCT's 21 A-rated researchers, and the only one in the Faculty of Engineering and the Built Environment.)

Thousands of miles separate the two institutions, but since the start of the arrangement in 1999, Pillay has made sure that his research interests at the two institutions are never worlds apart.

His interest has always been in electric machines, power electronics and power quality, focusing initially on the design and understanding of switched reluctance (SR) and permanent magnet (PM) motor drives. For this, he was named a fellow of the Institute of Electrical & Electronics Engineers (IEEE) in the US, billed as the world's leading professional association for the advancement of technology.

Over the past few years, however, Pillay has shifted his attentions to the application of these technologies towards sources of renewable energy and sustainability, a topical concern these days. Now he focuses his work on wind energy, biomass heat and power, rural electrification, energy efficiency and electric vehicles.

Some of that work overlaps - as on wind energy - but other parts are quite South Africa-specific, like rural electrification.



And Pillay's master's and doctoral students, as well as research officers, get the global treatment. He travels to UCT several times a year to supervise their work, and also conducts regular video conferences. All the students and research officers have had some international exposure, attending international conferences or visiting Pillay at Clarkson as visiting scholars and postdoctoral researchers. (So they get more than their three-months' worth, so to speak.)

"I have combined the research programmes in that South African students help me on US-based research, thus providing them with an international perspective," he says.

Already Pillay's A-rating has stood him in good stead for his work in South Africa. He's learned, he says, that companies are that much keener to invest their research rands if they know there's an A-rated scientist or engineer at the business end of the arrangement.

In fact, Pillay and UCT landed a R1.5-million research contract in 2006, mostly on the strength of the NRF A-rating.

That makes his time in South Africa all the more valuable. *Megan Morris*

# next generation

UCT has three new P-rated researchers, all women: Associate Professor Fiona Ross (social anthropology), Dr Eva Plagányi (mathematics and applied mathematics) and Dr Jenni Case (chemical engineering). That's a significant achievement, says Professor Cheryl de la Rey, deputy vice-chancellor for research at UCT.

**“The fact that we have increased our Ps by three in one year - and that they are all women - means we have reason to be far more optimistic.”**

P-ratings are given to young researchers, normally under 35 years of age, who have held doctorates or equivalent qualifications for less than five years and who have demonstrated exceptional potential in their fields.

“For some time we’ve been concerned about our next generation of top researchers as the current A-generation retires from our system,” De la Rey commented. “The fact that we have increased our Ps by three in one year - and that they are all women - means we have reason to be far more optimistic.”

**Assoc Prof Fiona Ross’** (above right) expertise is in the area of ethnographic



enquiry and research around domesticity and housing, as well as in political activism, specifically activism with a focus on gender issues. Her recent book, *Bearing Witness: Women and the Truth and Reconciliation Commission in South Africa* (2003, Pluto Press, London), is a study of women’s testimonies and political activism in the light of issues raised by the TRC. “I’m really excited about the rating and grateful for the wonderful support from my colleagues and research participants,” she said. ▶



**Dr Eva Plagányi** (left), completed her PhD study in 2004, focusing on developing a mathematical model of the abalone resource. She also assessed the possibilities of extending the single-species model to include multi-species effects, and evaluated the potential of a range of multi-species approaches that could contribute to practical management advice on marine resources. With two daughters, aged four and seven, her comment on the news was: "I am overwhelmed, honoured and surprised. In my letter to the NRF president I said it was a small victory for women such as myself, trying to juggle motherhood and a career. I would hope to encourage other women not to give up on that front."



**Dr Jenni Case** (below left), concentrates on improving the quality of student learning in tertiary science and engineering programmes, particularly in the context of the chemical engineering undergraduate programme at UCT where she is educational development officer in the department. Her current work shows how, together, these offer a productive methodology for undertaking this research, and also yield important findings that inform teaching practice. Case has just returned to work after maternity leave. "I would like to pay tribute to the UCT community, in particular my department and the Centre for Research and Engineering Education. My colleagues have been enormously supportive, inspiring and nurturing." *Helen Théron*

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