PSP 2013

Short Profiles

Dr Gregory Alexander (Psychology of Education)

Senior Lecturer: School of Education Studies

Gregory Alexander's personal experience as teacher in the highly diverse learning environment of the Northern Cape of South Africa prompted a return to academia and a doctorate on the design and evaluation of staff development programmes for schools in the region. This project was also informed by Alexander's regional involvement in several initiatives to fully integrate schools in post-apartheid South Africa: he has served as advisor on ministerial and technical task teams for policy formulation and implementation (frameworks, structures, procedures and facilitative processes). With a rich background in schooling and education policy, Gregory joined the University of the Free State (UFS) in 2006.

Gregory Alexander is funded by the South African National Research Foundation (NRF) to explore the particular challenges for multicultural education posed by the post-apartheid integration of schools in the Northern Cape Province and how these may be both understood and addressed through consideration of teaching and learning practices. His work in this field has been recognised in Ireland and the USA with 'best paper' awards at education conferences. As extension of his research, Alexander has also facilitated workshops and seminars in Malaysia and the Philippines. Alexander is motivated by a strong activist research ethic: "Although schools in a post-apartheid society are in principle desegregated, persistent challenges to de-racialise remain, especially for historically white schools. I view the latter as a research imperative aimed at improving access, equity and quality in the South African educational landscape."

Dr Tom Ashafa (Phytomedicine and Phytopharmacology)

Senior Lecturer: Department Plant Sciences

Tom Ashafa, 44, investigates the biological effects of medicinal plants used in the folkloric medicine of the Eastern Free State Province of South Africa. He aims to discover, isolate and purify active phytoconstituents and hence assist in the worldwide promotion of accessible and affordable medication in developing countries. In the laboratory, Ashafa and his students are investigating traditional Basotho medicinal plants for potential qualities associated with their use as antimicrobials, antioxidants,

anthelmintics, antidiabetics, antitubercular, anticancer and antidiarrhoeal agents. This includes an evaluation of the toxicity of these plants for human kidney, liver and heart function in order to establish safe dosage parameters.

Ashafa's research informs his teaching and is aimed at the development of expertise in ethnobotany, phytomedicine, phytopharmacology, novel bioassays and natural product chemistry, as well as the isolation of biologically active molecules. His recently conducted ethnobotanical survey in the Eastern Free State has already led to the discovery of twenty plants with identified use in the management of sugar-related disorders. Ashafa and his students have also identified three anthelmintic plants used traditionally by rural livestock farmers to manage intestinal parasitic nematodes.

Dr Tanya Beelders (Human-Computer Interaction)

Senior Lecturer: Department of Computer Science and Informatics

Tanya Beelders' (32) work in Human-Computer Interaction (HCI) is directed at increasing the usability of software applications for a variety of users. This includes localisation and multimodal interfaces. Until now, her work was primarily focused on word processors, but it is equally applicable to a majority of software applications. The incorporation of eye-tracking into a word processor in order to create a hands-free multimodal interface for mainstream and disabled users alike, has offered promising avenues of research. This multimodal interface makes use of eye-tracking and speech recognition in order to facilitate document handling, text input and formatting. Beelders' publications generated from this work have been accepted for the Eye-Tracking Research and Applications Conference (ETRA), which is the foremost international conference of its kind. In turn, the international exposure offered by this, has provided invitations to publish, as well as the opportunity for Tanya to serve as programme chair for the inaugural Eye-Tracking South Africa (ETSA) Conference. In this capacity, she coordinates an impressive group of leading international scholars acting as reviewers for the conference.

Aside from her main focus, Beelders' research in the field of eye-tracking has been multi-disciplinary in nature, including cooperation with colleagues in Marketing and the UFS Business School.

Dr Alice Brink (Inorganic Chemistry)

Lecturer: Chemistry Department

At 26, with an MSc in Inorganic Chemistry (homogeneous catalysis), Alice Brink co-authored her first major publication accepted by *Dalton Transactions*. She has also conducted research at the Universities

of Lund (Sweden) and Zürich (Switzerland). This led to a number of publications in, among others, *Crystallography Reviews*, where the importance of using X-ray diffraction in the fields of drug design and homogeneous catalysis is explained. Brink has also been the recipient of the CCDC (Cambridge Crystallographic Data Centre) Poster Prize at the European Crystallographic Meeting in Darmstadt.

Brink (29) holds a PhD in Inorganic Chemistry. Her primary research is on the design of model radiopharmaceuticals, exploring the effects caused by various bifunctional chelators and coordinated biomolecules. Her emphasis is on how the absolute configuration, as determined by X-ray diffraction, may elucidate the chemical and biological behaviour.

Dr Johan Coetzee (Bank Management)

Senior Lecturer: Department of Economics

Coetzee, 35, is the recipient of a South African National Research Foundation (NRF) Thuthuka research grant. His interest in the dynamics of managing bank-client relationships, especially in a behavioural and risk context, prompted a return to academia after years in the private sector. In 2007, as chair of the Banking the Underbanked Conference, hosted by the International Quality and Performance Centre, Coetzee's first publication identified the interaction strategies that the big four South African retail banks have adopted to address the banking needs of the predominantly rural-based 'unbanked.' His subsequent research has benefited from a particular interest in the relationship banking strategies and perceptions of the big four banks of South Africa's retail clients. This focus has also been extended to include comparative international retail bank selection criteria and this in turn has prompted collaboration with scholars in Austria, Australia, Saudi Arabia, the Czech Republic, Malaysia and Pakistan. Coetzee's collaboration on the forced financial restatements on share returns of JSE-listed companies would prove the first to focus exclusively on South African data. It was published in the *International Business and Economics Research Journal*.

Since 2008, Coetzee has been a visiting lecturer in Banking at the Salzburg University of Applied Sciences in Austria. He serves on the Advisory Board for the Milpark Business School's Faculty of Banking and has been invited as lecturer and assessor for the Risk Management programme at the South African Reserve Bank. Coetzee is currently completing an MBA at Bangor University, Wales, that will make him a Chartered Banker.

Dr Charles Haddad (Arachnid Systematics and Ecology)

Senior Lecturer: Department of Zoology and Entomology

Charles Haddad (34) is one of Africa's leading scholars on spiders. His research on the systematics and ecology of African spiders has benefited from close collaboration with Ansie Dippenaar-Schoeman of ARC, the Plant Protection Research Institute in Pretoria. Haddad is a prolific author with more than 60 publications on spider taxonomy, biodiversity and biology, to his name.

Haddad's master's degree investigated the biodiversity and role that spiders play in pistachio orchards as biological control agents. His 2012 doctorate indicated a shift in direction to focus on the taxonomy and biology of ant-like sac spiders (Corinnidae) in the Afrotropical Region, a family that has historically received little attention. This work, as well as several international collaborations, has led to the description of eleven new genera and more than 180 new species of African corinnids since 1998. Haddad continues to describe the multitude of new species from the continent in order to contribute to a clearer picture of the biodiversity of the spider family, providing the basis for his more applied work in the fields of biogeography, molecular phylogeny and evolutionary history. He has also been involved in taxonomic research on several other spider families through collaborative efforts, including Salticidae, Gallieniellidae and Penestomidae, and together with the new corinnid taxa he has described more than 120 new species in his short career. Haddad is currently serving as the assistant project manager for the South African National Survey of Arachnida, a national arachnid biodiversity initiative, and is the chair of the African Arachnological Society.

Dr Gladys Kigozi (Health Systems Research)

Researcher: Centre for Health Systems Research and Development

Gladys Kigozi works on tuberculosis (TB), referred to as the 'new black death' by a recent *Time Magazine* cover. The spread of especially drug-resistant tuberculosis is a global concern, but for South Africa, with its high rates of HIV/AIDS, the threat is acute. Kigozi's topical research explores the facilitating factors and barriers to TB/HIV service integration at the primary health-care level and the need to research and develop, facilitate and promote best practice in expanding and improving case finding in care, in order to address this global scourge at a local level. At 33, her research on HIV, AIDS and TB in South Africa is widely published, including an article and abstracts in *The International Journal of Tuberculosis and Lung Disease*. Kigozi has managed to collaborate and co-publish with several leading scholars and a number of international institutions, including the Centers for Disease Control and Prevention (CDC) South Africa,

State University of New York Downstate Medical Center, University of British Columbia and the University of Antwerp.

Kigozi holds a doctorate in Psychology and Health Systems Research. In her relatively short research career, she has already acted as facilitator or co-researcher on a number of projects in collaboration with the University of British Columbia. These projects aim to assist in building research capacity in South Africa in order to promote the health and safety of the health-care workforce in TB/HIV prevention and management. Kigozi is also contributing to the evaluation of professional and community health-worker training and mentoring models to improve TB patients' uptake of HIV counselling and testing. She is currently working on the comparative advantages of community- vs. facility-based multi-drug resistant (MDR) TB management. Her work is deeply interdisciplinary and future research directions point at the socio-behavioural (patient) dimensions of TB and HIV epidemic co-management.

Dr Aliza le Roux (Behavioural Ecology)

Senior Lecturer: Department of Zoology and Entomology

Aliza le Roux (35) is a South African National Research Foundation-rated (NRF) scientist (Y2) and the winner of a 2012 UFS Excellence in Teaching Award. She has devoted the past decade to research on the cognitive and communicative skills of wild mammals in the arid regions of South Africa and the highlands of Ethiopia. She spent four years as postdoctoral research fellow at the University of Michigan, leading to groundbreaking research on the cognitive and communicative underpinnings of gelada monkey behaviour. Her work garnered significant international attention for a unique discovery on tactical deception in gelada monkeys, published in *Nature Communications*. Le Roux's broader interest in primates continues with the supervision of a postdoctoral research fellow conducting pioneering work on spatial cognition in wild Samango monkeys. This will assess how cognitive abilities in primates are affected by the risk of predation, using the novel Landscape of Fear paradigm first proposed by Russell Hill of Durham University.

Since her return to South Africa, Le Roux's research on bat-eared foxes in the Karoo has been supported by the Thuthuka programme of the NRF. Bat-eared fox males are unusual amongst mammals as they take extensive care of their offspring, creating a unique opportunity to study the origins and consequences of caring behaviour in mammalian fathers. This is the first study of its kind, assessing the

impact that extensive paternal care can have on wild mammals' cognitive development, social behaviour and physiology.

Le Roux, with 120 citations and an H-index of 8, hopes to raise the profile of behavioural ecology for student and layperson alike. During her tenure in the United States she blogged for *Nature Magazine* on her adventures as field biologist. Her popular work has since found its way into numerous websites, magazine and newspaper articles and she has been interviewed on radio and BBC World. Le Roux continues to combine scholarship with popular forums to advance the study of animal minds and bring the plight of carnivores, in particular, to wider public attention.

Dr Willy Nel (Educational Psychology)

Lecturer: School of Education Studies

Willy Nel (44) is a registered educational psychologist, committed to making an impact in education research in South Africa. His 2011 PhD was based on empirical work among the ǂKhomani San in the Kalahari. This helped him to define his scholarly focus on critical community psychology in education. Nel's most recent publication uses critical community psychology to highlight the experiences of black faculty members at a historically Afrikaans-language South African university. He served as associate editor of the *South African Journal of Psychology* until 2012 and he is currently on the editorial board of the *South African Journal of Education*. Nel has an established network of potential research partners in private practice and academia, having served as the chairperson of the Division for Educational Psychology (a division of the Psychological Society of South Africa, PsySSA) for two consecutive terms. His advocacy for the relevance of critical community psychology in the training of educational psychologists has been lauded as 'very significant' by, among others, Prof Sandy Lazarus (SA Medical Research Council) and Prof Elias Mpofu (University of Sydney).

Nel's commitment to the continuous renewal of educational psychology is perhaps best exemplified by his tireless work in the Task Team for Educational Psychology. As part of this group, he negotiated with the Health Professions Council of South Africa for the acceptance of a scope of practice which acknowledges the skills and professional competencies of educational psychologists in South Africa.

Dr June Palmer (Education Management and Leadership)

Lecturer: Department of Comparative Education and Education Management

June Palmer's (42) doctorate focused on the emotional intelligence of educators and their roles as managers of change by analysing how emotions should be managed in a changing school environment. Since her appointment at the UFS in 2009, Palmer has co-authored publications in the areas of emotional intelligence and teaching for transformation. Her writings highlight the importance of positive emotions to effect successful and sustained school change.

Palmer's primary research interests include emotions and leadership in education, school change, teacher autonomy and social communication. In her future research, she intends to investigate what social-cultural and political understandings, often unspoken, provide the foundations for emotion in education settings. Her work will endeavour to make sense of how cultural groups form, understand and use emotion as an enabling or resistant force in transforming education. In this respect it will coincide with a growing global social scientific interest in study of the emotional domains of human existence.

Dr Frederick Roelofse (Igneous Petrology)

Senior Lecturer: Geology Department

Freddie Roelofse (33) joined the Department of Geology at the University of the Free State (UFS) in 2011. His research aims to elucidate isotopic disequilibrium within large layered intrusions, using the Bushveld Complex, the world's largest resource of platinum group-elements, as his natural laboratory. Roelofse's research record has been lauded as 'very impressive,' with publications in the top journals in geology, with some of his early work as young graduate published in *Journal of Petrology*. A senior scholar in his field recently referred to Roelofse's body of research as both 'impressive' and 'innovative.' Roelofse is currently collaborating with scientists at the GeoForschungsZentrum (Potsdam) to investigate inter- and intracrystalline variations in isotopic compositions of the co-existing minerals of the Bushveld Complex. This work could shed light on the fundamental processes operating within large magmatic systems and the interaction of mantle-derived melts with crustal material. A better understanding of these kinds of processes potentially contributes to current knowledge on ore-forming processes. This, in turn, may aid the search for new mineral deposits, among other applications.

Dr Marietjie Schutte-Smith (Chemistry)

Lecturer: Chemistry Department

Marietjie Schutte-Smith (30) authored her first publication at 24. As graduate student, she spent time as visiting researcher to Roger Alberto's research group at the Inorganic Chemistry Institute (University of Zurich). Marietjie's work focuses on the design and kinetic investigation into the intimate mechanism of potential radiopharmaceutical drugs. This has far-reaching potential for application in the pharmaceutical industry.

As doctoral student, Schutte-Smith performed a novel aqueous substitution kinetic study on *fac*-[Re(Trop)$(CO)_3(H_2O)$] (Trop = tropolonato), as well as high-pressure kinetic studies on four systems of the type *fac*-[Re(L,L'-bid)$(CO)_3$(MeOH)] (L,L'-bid = various bidentate ligands, MeOH = methanol). High-pressure studies are the only means of unambiguously determining the mechanism of a system. One of the aims of conducting this kind of research is to gather sufficient evidence to assist in predicting a mechanism for a reaction, with sufficient motivation. This, in turn, informs our understanding of how a drug/system will behave and react in the human body when administered, possibly metabolised and excreted. Furthermore, the investigation of the aqueous kinetic studies of these systems is important. These compounds must be water-soluble to allow easy administration to patients if it is biologically active and used as a radiopharmaceutical, but also because current labelling kits all use saline as solvent.

Schutte-Smith's work is unique. To date, the results have been excellent and well received, with publications, among others, in *Inorganic Chemistry*.

Dr Matildie Thom Wium (Musicology)

Lecturer: Odeion School of Music

Matildie Thom Wium (30) belongs to a new generation of South African musicologists that seeks to participate in international debates on critical musicology while maintaining a close relationship with their uniquely South African heritage. In her doctoral thesis, "Contextual Readings of Analysis and Compositional Process in Selected Works by Arnold van Wyk (1916-1983)," Thom Wium interpreted four works by this South African composer, drawing on structural analysis and sketch studies. She situated the readings contextually within international discourses ranging from English Sibelianism studies and musical intertextuality to post-Holocaust art criticism, thereby making incisive contributions to current South African debates on the postcolonial and post-apartheid criticism. She intends to build on her doctoral work by broadening her research on the music of Arnold van Wyk to include a study of British

colonial symphonic music contemporaneous to the Second World War, in order to highlight colonial contributions as important in the redefinition of British musical modernism.

As part of her doctoral programme, Thom Wium spent a year at Royal Holloway, University of London, as student of Nicholas Cook. She also received supervision from US Schenkerian analyst, Timothy Jackson. She has presented her research in Amsterdam and London, and has been invited to participate in a major research project on music in 19th-century London, directed by Roger Parker (King's College, London). Her contribution to this initiative will focus on the music of two prominent salons in London, and will endeavour to highlight their pivotal role as interlocutors between public and private music practices.

Dr Brian van Soelen (Astrophysics)

Lecturer: Physics Department

Brian van Soelen is at 29 an example of an emerging generation of young South African scholars to benefit from the South African Square Kilometre Array (SKA) Project. Van Soelen works on high-energy astrophysics: gamma-ray binary systems and Be X-ray binaries. His work contributes to an understanding of how these systems work and to a description of the physical processes involved. Van Soelen's scholarship includes observations using telescopes such as the Southern African Large Telescope (SALT) and the Very Large Telescope (VLT). To date, this has led to publications in, among others, *Monthly Notices of the Royal Astronomical Society*, of which one publication is the result of successful observation collaboration. The research team to which Van Soelen belongs, is part of the South African contingent (with the University of the Witwatersrand and North-West University) that has recently joined the international H.E.S.S. (High Energy Stereoscopic System) consortium. The team is also a member of the working group, *Astrophysical transients, their hosts and their physics*, established as part of a Dutch NWO/NRF Bilateral Agreement in Astronomy and Enabling Technologies for Astronomy. This group will focus on radio observations of transient and variable sources, with the MeerKAT telescope.

Van Soelen's current and future research contributes to the important work of observing and modelling high-energy sources in the universe. Gamma-ray binaries are binary star systems where the radiation is dominated by gamma-ray emission. Van Soelen's work is centred on modelling such systems in conjunction with multi-wavelength observations made with these telescopes. By considering different models, the aim is to discover how particles could have accelerated in the system and what effects

contributed to the acceleration and gamma-ray production. These models may be used to find similar processes occurring in other high-energy systems.

Dr Merridy Wilson-Strydom (Higher Education Studies)

Assistant Director: Directorate for Institutional Research and Academic Planning

Merridy Wilson-Strydom (37) is a Rhodes Scholar (South Africa-at-large, 1999). She completed her MPhil in Development Studies at Oxford University. Subsequently she also spent three months in Germany on a DAAD fellowship at the first International Women's University that brought together women scholars across disciplines to work on collaborative research projects. Wilson-Strydom recently (2013) completed her PhD in Higher Education Studies at the University of the Free State to great acclaim. Her work was described by one of her international examiners as 'exceptional.'

Wilson-Strydom's work considers the complex challenges of building a socially just higher education system in South Africa, and beyond. In theorising social justice in higher education, she is breaking new ground with her application and operationalisation of the Capabilities Approach (developed by Amartya Sen and Martha Nussbaum) in higher education. She has proposed and defended a Pragmatic Capabilities List for the transition towards a more 'socially just' university. The pragmatic list consists of seven capabilities, which not only provide a framework for university transition, but also opens new theoretical avenues for understanding readiness for university.

In 2011 and 2012, Wilson-Strydom led a large-scale study on higher education in the Southern African Development Community (SADC). The study, conducted for the Southern African Regional Universities Association (SARUA), focused on profiling public higher education across the fifteen countries in the region. The study provides vital information for decision-makers at regional, inter-governmental, national and institutional levels, thus encouraging higher education development in the region.

Wilson-Strydom is currently the head of monitoring and institutional research within the Directorate for Institutional Research and Academic Planning (DIRAP) at the University of the Free State.