

2021

Rhodes University

RESEARCH REPORT



RHODES UNIVERSITY

Where leaders learn





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Rhodes University RESEARCH REPORT

A publication of the Rhodes University
Research Office, compiled and edited by
**Jaine Roberts, Thumeka Mantolo,
Nichole De Vos and Anela Nzwanga.**

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*Front Cover: Associate Professor Philani Mashazi, awarded the Vice-Chancellor's Distinguished Research Award for 2021, with students (from left to right) Kopjane Kgatla (3rd Year Intern), Mojahi Motaung (MSc) and Nololo Mfamela (MSc) with the Time-of-flight Secondary Ion Mass Spectrometry (TOF-SIMS).
Cover Photo: Chris Marais*

Design: Sally Dore



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FOREWORD

From the Vice-Chancellorate

Professor Sizwe Mabizela
Vice-Chancellor

Photo: Dirk Pieters

Rhodes University offers its students, researchers, and collaborators a rich and distinctive intellectual space. One of its differentiators is that it is the only South African research-intensive university situated in a rural area. Moreover, Rhodes University is located in an impoverished region bedevilled with high levels of poverty and unemployment. This relatively unique characteristic has significant implications for the way its mandate as a research-led institution is fulfilled, and will continue to be fulfilled in the future. The relatively unique context of Rhodes University is played out in the nexus of research, teaching and learning, and community engagement. Engaged research is a significant feature of our knowledge production, and we strive to make ourselves simultaneously locally responsive and globally connected. The award by the Talloires Global Network of Engaged Universities of the prestigious MacJannet Prize to Rhodes University's Nine-Tenths Programme in 2021 was wonderful affirmation of our strategy to be locally impactful while also being globally influential.

The geo-social context of the University, combined with a strong research capability, has led to research foci that respond to the very visible social and environmental needs around it. Consequently, the University has over time built broad research strength in health-related studies, environmental sustainability, education, water related issues, and social sciences, to identify some of the broad categories of institutional research capacity.

Future research and innovation strategies will benefit from an existing strong scholarly culture, built over time on a broad scholar-teacher model, from inspiring research role models present on the campus, and from a collective research momentum.

The achievements of our Postgraduates contribute much to our scholarly reputation. The university held a special virtual Postgraduate graduation ceremony in October 2021, which highlighted the research-led nature of our university. Graduates completing their degrees at the end of 2021 were able to graduate in physical ceremonies in April 2022, the first live graduation

ceremonies since the global outbreak of COVID-19. For two years, the pandemic robbed us of the opportunity to celebrate the achievements of our graduates in the festive way we are used to. We promised our graduates who received their degrees virtually that, once the pandemic abated, we would invite them back to the campus to celebrate their academic achievements in person. We delivered on this promise in October 2022 when, in a week of wonderful celebration, a huge proportion of our graduates from 2019 and 2020 returned to be honoured in formal ceremonies.

Many of our outstanding scholars attracted external acclaim during the year under review.

- **Distinguished Professor Tebello Nyokong** continued to bring great intellectual profile and reputation to the University. McMaster University in Canada awarded Professor Nyokong an Honorary Doctorate at its 2021 graduation ceremony. This was her fifth honorary doctorate.
- **Distinguished Professor Catriona Macleod** and her team in the SARChI Chair in *Critical Studies in Sexualities and Reproduction* were exceptionally recognised by the International Society of Critical Health Psychology's 2021 awards. The Researcher Award went to Dr Ally Gibson (a former student of the Chair who is now an academic at Victoria University, Wellington), the Mid-career Researcher Award to Dr Tracy Morrison (a PhD graduate of Rhodes University, now a senior lecturer at Massey University), and the Society's Life Time Achievement Award to Professor Macleod.
- The Vice-Chancellor's Distinguished Senior Research Award for 2021 was awarded to **Professor Rod Walker** of the Faculty of Pharmacy, for the impact of his scholarly activities over a sustained period. In addition, the Pharmaceutical Society of South Africa in May, conferred the status of Fellow of the Pharmaceutical Society on Professor Walker, in recognition of his decades of distinguished service to the Pharmaceutical sector.



Professor Peter Clayton

Deputy Vice-Chancellor: Research and Innovation

Photo: Dirk Pieters

- The Vice-Chancellor's Distinguished Research Award for 2021 was awarded to **Associate Professor Philani Mashazi** of the Department of Chemistry, and Deputy Director of the Institute for Nanotechnology Innovation.
 - The Vice-Chancellor's Book Award for 2021 was made to **Dr Bongani Nyoka** of the Department of Political & International Studies, for his book *The Social and Political Thought of Archie Mafeje*.
 - **Professor Dion Nkomo**, of the School of Languages and Literatures, was approved by the NRF to succeed Professor Russell Kaschula in the SARChI Chair in the *Intellectualisation of African Languages, Multilingualism & Education*. **Professor William Froneman**, of the Department of Zoology and Entomology, was similarly approved to succeed Professor Christopher McQuaid in the SARChI Chair in *Marine Ecosystem Research*.
 - **Distinguished Professor Heila Lotz-Sisitka** was successful in an award to establish a new UNITWIN Cooperation Programme with the Network on Education for Sustainable Development and Social Transformation. Distinguished Professor Heila Lotz-Sisitka and her team also demonstrated a very high degree of social impact in their research on the scaling of community-based water quality monitoring, in collaboration with the Duzi Umngeni Conservation Trust (DUCT) and the Water Research Commission (WRC). This work was used to inform an initial tranche of R25 million from the National Treasury (NT) to the Department of Science and Innovation (DSI) to kick start the process of scaling up a successful pilot project, with the objective of eventually upskilling 10,000 young South Africans over the next few years, who are not taken up in employment or higher education, with hydro-environmental technical expertise to create job opportunities for them and supply much needed skills to the local government and NGO sectors involved in water, sanitation and river ecological work.
 - **Professor Özlem Tastan Bishop** was awarded an Africa GRADIENT Fellowship in the form of funding to pursue research on the development of TB and Malaria medications tailored to the populations of Africa, funded by the SA Medical Research Council.
 - **Dr Vincent Smith** and colleagues in the Department of Chemistry were awarded an NRF National Equipment Programme grant to purchase an X-ray Diffractometer for researcher at Rhodes and neighbouring universities.
 - **Professor Sandile Khamanga** was awarded a grant through the National Equipment Programme of the NRF to acquire an Electronic Tongue (E-Tongue) instrument.
 - **Professor Julie Coetzee** of the Centre for Biological Control and the Department of Botany was appointed President of the Entomological Society of Southern Africa.
 - **Dr Jonathan Davy** of the Department of Human Kinetics and Ergonomics was elected as President of the Ergonomics Society of Southern Africa.
 - **Professor Makaiko Chithambo** of the Department of Physics and Electronics was elected as the President of the South African Institute of Physics (SAIP).
- Many other individual academics received widespread national and international acknowledgement of their work. Their fine accomplishments are contained within the pages of this report.
- As we celebrate the tremendous achievements of 2021, we mourn the many lives that were lost over the past two years, especially those of our students, staff and alumni.
- Our congratulations and appreciation is extended to all our scholars, Postgraduate supervisors, partners, funders, and donors, who contributed to making 2021 a year in which research continued to flourish at Rhodes University. Your expertise, integrity, dedication, rigour and generosity make Rhodes University a rich and distinctive intellectual space.



INTRODUCTION

Jaïne Roberts

Director: Research and Innovation

Photo: Dirk Pieters

Our Research Report 2021, as the Report usually does, comprises an eclectic range of feature articles. Research at Rhodes University, and the Research Office as a supporting structure, is not rigid. We do not hold to single paradigms or assumptions but draw on multiple theories and ideas, practising diverse approaches and methods. As we operate with a very small staff complement in the Research Office, to maintain our level of research support we found working remotely for the five (5) weeks of Level 5 Lockdown in 2020 extremely difficult, and thus returned in May 2020 at 33% and thereafter to 66% of staff as the national lockdowns shifted, and then to 100% from Level 1 in November 2020 whereafter the Research Office worked fully on campus throughout 2021.

Features, with some notable exceptions, are drawn largely from the list of the most productive researchers - the TOP 30 Researchers 2021 - in the recognized Department of Higher Education and Training (DHET) accredited research outputs of Journal publications, Chapters in books and Books published, and Masters and Doctoral students graduated. **Distinguished Professor Tebello Nyokong** has long remained in the Number One position and is so far ahead that any unseating of her seems an impossibility. Seventeen (17) of the 2021 TOP 30 are from the Faculty of Science, four (4) from the Faculty of Humanities, four (4) from the Faculty of Education, three (3) from the Faculty of Commerce and two (2) from the Faculty of Pharmacy.

We feature our 2021 Vice-Chancellor's Distinguished Senior Research Award to **Professor Rod Walker** of the Faculty of Pharmacy; the Vice-Chancellor's Distinguished Research Award to **Associate Professor Philani Mashazi** of the Department of Chemistry (and featured on our cover); and the Vice-Chancellor's Book Award to **Dr Bongani Nyoka** of the Department of Political & International Studies for his book *The Social and Political Thought of Archie Mafeje* (Wits University Press, 2020).

Professor Graham Glover is featured for his Faculty of Law Researcher of the Year Award and his significant work in the law of contract. **Professor Stephen Flowerday** of the Department of Information Systems was awarded the Faculty of Commerce Research Award in 2021. Professor Flowerday's research fields are cybersecurity, behavioural information security and information security management. An accomplished 'cybercrime fighter', he remains fascinated by the human urge to 'click' that is so easily exploited by cybercriminals.

Conspiring at High Speed is a rich history that has never been fully told despite the decades that have passed, and a long, fascinating feature fills the gap in the story of how the Internet developed in South Africa. Thirty years ago Rhodes University opened the digital highway in South Africa/Africa - see a few photos of computers delivered and off-loaded from trucks (a thank you here to Natalie Ripley, Director of IT & S for supplying these), and read about the "bootstrapping, maverick approach by Rhodes staff, along with some serendipity, sheer bull-headed persistence, and an 'unrepentant hippy' at the end of the line in Portland, Oregon, USA". And so the first email was sent.

The **Mellon 30th Anniversary Artists Residencies Fellowship Program** call of 2018, celebrating the Andrew W. Mellon Foundation's 30 years of grant-making to Higher Education in South Africa, proposed that South African artists spend time at a university to pursue their art, interact with scholars and students and build collaborations between universities and other arts and cultural institutions. Our proposal for **Paul Hanmer** as the Artist-in-residence in African Art Music Research Specialization in the Department of Music and Musicology, hosted by Professor Jeffrey Brukman and Dr Nishlyn Ramana, was successful. Paul Hanmer, an internationally acclaimed South African musician, has made a unique contribution to South African music as an active local composer in the African Art Music idiom with an insider's knowledge of South African jazz, Western Art music, and the indigenous styles and traits of African music.

Paul Hanmer had also graduated with a MMus from Rhodes University in 2016, and he registered and completed his Doctorate as part of his Mellon Artist Residencies Fellowship.

The Fellowship also resulted in Paul Hanmer's composition of a four movement Symphony - the first Symphony composed by a Black South African. The Swiss Composer and Musicologist, Michael Schneider has written: *"Paul Hanmer's Symphony is a work of maturity, laboriously achieved in the compositional process, but in its effect virtuosically written and virtuosically orchestrated. It draws on decades of creative activity and reflects this experience at the same time as its living environment. Paul Hanmer's Symphony is a work of intense reflection. Yet it is not brooding, but warm-hearted and opens up with a generous gesture. 'It's me, my brother', the mobile phone message of the third movement, may therefore also be understood symbolically, as a statement by the pianist and composer. It is me, this is my symphony. It is the result of what I have experienced in my life. It is a reflection of the personality I have become. It draws from my private and artistic universe. It is the window of my soul."*¹

The feature on **Associate Professor Candice Christie** reveals the range of Human Kinetics and Ergonomics research work being undertaken by staff and more than forty (40) Postgraduate students in the Department of Human Kinetics & Ergonomics. Associate Professor Christie is a Sports Science specialist and one of her core areas is the Cricket Research Group.

Professor Heinrich Hoppe's research reveals more of the chemical mystery of life; more about malaria; about finding the targets in drug discovery and related trials and tribulations; and how Quinine and Chloroquine became useless. He notes that about 80% of the time, biochemistry researchers fail in what they are trying to do because that is the way research works.

Professor Rosie Dorrington of the Department of MicroBiology and Biochemistry, is a National Research Foundation SARCHI (South African Research Chairs Initiative) titled *Marine Natural Products*. Professor Dorrington describes being 'very proud' of Rhodes University and says "From an academic and research point of view, Rhodes is a really good place to be. It's small, so what we lack in critical mass, we make up for in creativity and ingenuity".

Professor Keith Cowan, Director of the Environmental Biotechnology Research Unit (EBRU), describes, in *Mentors, Molecules and Microbes*, his four main mentors and the work and research worldwide that he undertook before returning to Rhodes University in 2007. Professor Peter Rose drew Keith Cowan back to work on the Integrated Algal Pond System (IAPS) at the Waste Water Treatment Works in Belmont Valley. As Professor Cowan commented "In fact, we've got many of the answers to life's problems, but no one wants to believe it...But energy follows thought....We need to change people's ways of thinking about things".

Creative Outputs now have their own processes of accreditation with DHET and we submit these annually for subsidy earning recognition; notably Music, Fine Art, Drama and Creative Writing, amongst other areas, are now equally important for research productivity, and we thus highlight in this Research Report such creative activities. In the area of Fine Art, **Associate Professor Maureen de Jager** is featured for her ground-breaking practice-based PhD with the Kingston School of Art and her establishment of a new programme which is supported by the Oppenheimer Memorial Trust. The programme was developed over a period of several years and formally approved at all institutional levels during 2020 with the first enrolment of candidates in 2021.

The Rhodes University **Fine Art PhD**, the first of its kind in South Africa, is based on the model of Kingston University (London), which has been in existence since the 1990s; and the programme is supported by an informal partnership with Kingston School of Art. As is generally the case at the Doctoral level, the expectation is that a Fine Art PhD candidate undertakes high-level academic research, culminating in a submission which makes a substantial and original contribution to knowledge in the discipline. As such, the usual criteria for Doctoral degrees apply. At the same time, the Fine Art PhD - being practice-based - foregrounds creative practice as an underlying research methodology, encouraging and enabling ways of knowing and of making known. The final submission typically includes the presentation of a creative artefact (or artefacts) in partial fulfilment of the research requirements. However, the emphasis is not on making art 'for its own sake', but on utilising creative practice to undertake a sustained and purposeful research enquiry. The final submission includes a thesis which, as per standard requirements, situates the enquiry within a particular field and cogently elucidates the candidate's research findings. The *form* of the thesis is an extension of the candidate's practice, and the candidates are encouraged to produce a thesis which, whilst satisfying the expectations of academic rigour and sound scholarly writing, embraces modalities of creative practice in its eventual presentation.

The feature on **Associate Professor Michael Drewett**, whose research is in the political sociology of popular music, will take those of us who were young adults in the resistance movements of 1980s Johannesburg, back to memories of the oppressive censorship of the airwaves, and remind of the refuge and relief that was sought in live music venues such as the multi-racial Jameson's in downtown Johannesburg, the Chelsea Hotel and other venues in Hillbrow, and Kippies at the Market Theatre where Paul Hanmer played many a night. How far we have come.

1 Michael Schneider, Aarau 2021



Distinguished Professor Tebello Nyokong with her students.
Photo: Dirk Pieters

TOP 30 RESEARCHERS

Rhodes University acknowledges and congratulates the following for their accredited research outputs (Journal Publications, Books & Chapters, and Masters/Doctoral students graduated) in 2021:

- Distinguished Professor Tebello Nyokong**
Department of Chemistry, Rhodes/DST Institute for Nanotechnology Innovation
- Professor Özlem Tastan Bishop**
Department of Biochemistry and Microbiology
- Distinguished Professor Heila Lotz-Sisitka**
Faculty of Education, Environmental Learning Research Centre (ELRC)
- Professor Kirk Helliker**
Department of Sociology and Industrial Sociology
- Professor Charlie Shackleton**
Department of Environmental Science
- Professor Sioux McKenna**
Faculty of Education, Centre for Postgraduate Studies
- Professor Brett Pletschke**
Department of Biochemistry and Microbiology
- Professor Warwick Sauer**
Department of Ichthyology and Fisheries Science

9. **Associate Professor Iain Paterson**
Department of Zoology and Entomology
10. **Associate Professor Adrienne Edkins**
Department of Biochemistry and Microbiology
11. **Professor Rui Krause**
Department of Chemistry
12. **Professor Marc Schafer**
Faculty of Education
13. **Professor Steven Flowerday**
Department of Information Systems
14. **Distinguished Professor Martin Hill**
Department of Zoology and Entomology, Centre for Biological Control
15. **Associate Professor Philani Mashazi**
Department of Chemistry, Rhodes/DST Institute for Nanotechnology Innovation
16. **Associate Professor Michael Drewett**
Department of Sociology and Industrial Sociology
17. **Associate Professor Gilton Klerck**
Department of Sociology and Industrial Sociology
18. **Dr Brendan Wilhelmi**
Department of Biochemistry and Microbiology
19. **Professor Rod Walker**
Faculty of Pharmacy
20. **Professor Gavin Fraser**
Department of Economics
21. **Associate Professor Nelson Odume**
Institute for Water Research
22. **Professor Makaiko Chithambo**
Department of Physics and Electronics
23. **Dr Juniors Marire**
Department of Economics
24. **Associate Professor Uchenna Okeja**
Department of Philosophy
25. **Associate Professor Setshaba David Khanye**
Faculty of Pharmacy
26. **Professor Mellony Graven**
Faculty of Education
27. **Dr Amber Childs**
Department of Ichthyology and Fisheries Science
28. **Associate Professor Kevin Lobb**
Department of Chemistry
29. **Professor John Mack**
Department of Chemistry, Rhodes/DST Institute for Nanotechnology Innovation
30. **Dr Dane Brown**
Department of Computer Science

PhD Graduates

FACULTY OF COMMERCE (5 PhDs) DEGREE OF DOCTOR OF PHILOSOPHY

BROWNE, Michelle, MSc (Agric) (UKZN), in Economics, in the Department of Economics and Economic History. Degree by thesis. Thesis: *A framework for the economic valuation of wetland rehabilitation: Case studies from South Africa*.

Supervisor: Professor GCG Fraser.

Co-supervisor: Professor JD Snowball.

ENGELKE, Deon Hans, MBL (Unisa), in Management, in the Rhodes Business School. Degree by thesis. Thesis: *The relationship between firm culture, sustainable use of resources and financial performance: An institutional and natural resource based perspective*.

Supervisor: Professor NJ Pearse.

Co-supervisors: Professor FO Skae and Dr F Correa.

HOVENI, Jamela Basani, MCom (Rhodes), in Economics, in the Department of Economics and Economic History. Degree by thesis. Thesis: *Country risk and stock market volatility in Africa: Measuring the contribution of political and economic risk factors*.

Supervisor: Professor JD Snowball.

Co-supervisor: Dr A Ezeoha.

PHAKATHI, Sandile, MSc (Agric) (UKZN), in Economics, in the Department of Economics and Economic History. Degree by thesis. Thesis: *Institutional innovations for improved water security in smallholder irrigation schemes in KwaZulu-Natal and Eastern Cape Provinces, South Africa*.

Supervisor: Professor GCG Fraser.

Co-supervisors: Dr J Marire and Dr S Sinyolo.

THOMSON, Callie Deborah, BComHons (Rhodes), in Information Systems, in the Department of Information Systems. Degree by thesis. Thesis: *A Framework for Guiding the Interdisciplinary Design of mHealth Intervention Apps for Physical Activity Behaviour Change*.

Supervisor: Professor C Khene.

FACULTY OF EDUCATION (11 PhDs) DEGREE OF DOCTOR OF PHILOSOPHY

AUSIKU, Charity Makwiliro, HDip (Education) (Namibia), BEdHons, MEd (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *The role of visualisation in redefining the pedagogy of fractions in mathematics classrooms among senior primary school teachers*.

Supervisor: Professor M Schäfer.

CONDE ALLER, Laura, HDip (Greenwich), BA (Brighton), MSc (Brighton), in Education, in the Department of Education. Degree by thesis. Thesis: *Human Development, the Capability Approach and the Mediating of Sustainable Rural Livelihoods: A case study of women's empowerment through expansive learning in the Mzimvubu Catchment of the Eastern Cape province, South Africa*.

Supervisor: Distinguished Professor H Lotz- Sisitka.

HIESTERMANN, Michelle, NDip (Nature Conservation), BTech (NMMU), MEd (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *Mentoring as social learning value creation in two South African environmental organisations: a social realist analysis*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

Co-supervisor: Professor L Olvitt.

JAMES, Anna Katharine, MSc (UCT), in Education, in the Department of Education. Degree by thesis. Thesis: *The transformative potential of intersecting with arts-based inquiry and environmental learning in urban South Africa: A focus on socio-ecological water pedagogies*.

Supervisor: Distinguished Professor H Lotz-Sisitka.

KANGWA, Lemmy, MEd (Zambia), MEd (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *The incorporation of GeoGebra as a visualisation tool to teach calculus in teacher education institutions: the Zambian case*.

Supervisor: Professor M Schäfer.

LIVEVE, Angelius Kanyanga, BTech (TUT), Dip (Namibia), BEdHons (UNISA), MEd (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *Revitalisation and indigenisation of the science curriculum through drum*

making, drumming, music, and dance.

Supervisor: Professor K Ngcoza.

Co-supervisor: Dr Z Nhase (UFS).

MOTSHOANE, Puleng Lorraine, MEd (Computer based Education) (UJ), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *The mechanisms conditioning doctoral supervision development in public universities across South Africa.*

Supervisor: Professor S McKenna.

NGCOBO, Nomathemba Faustinah, MEd (UJ), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *The uptake of Educational Technology in South African Higher Education: A study of the context that conditioned emergency remote teaching in the pandemic.*

Supervisor: Professor S McKenna.

Co-supervisor: Professor M Harran (NMU).

THONDHLANA, Mazvita Mollin, BAHons (Midlands), MA (UFH), PGCert (Education) (Rhodes), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *The Nexus between Community Engagement and Academic Language Development.*

Supervisor: Professor S McKenna.

Co-supervisor: Dr SA Paphitis

VALLABH, Priya, MEd (Rhodes), in Education, in the Department of Education. Degree by thesis. Thesis: *Towards the Common Good: An Expansive Post-Abyssal (Re)stor(y)ing of the Epistemic Cultures of the Citizen Sciences.*

Supervisor: Distinguished Professor H Lotz-Sisitka.

Co-supervisor: Professor I Schudel.

VILAKAZI, Bella Phetheni, MEd (Computer based Education) (UJ), in Education, in the Centre for Higher Education Research, Teaching and Learning. Degree by thesis. Thesis: *An epistemic justice account of students' experiences of feedback.*

Supervisor: Professor S McKenna.

FACULTY OF HUMANITIES (27 PhDs)

DEGREE OF DOCTOR OF PHILOSOPHY

BELL, Joshua, MA (Rhodes), in Political & International Studies, in the Department of Political and International Studies. Degree by thesis. Thesis: *Social upgrading or dependency? Investigating the implications of the inclusion of commercial wine farms within South African Fairtrade certification.*

Supervisor: Professor S Matthews.

BROTHERTON, Michelle, LLB (Rhodes), LLM (Stell), in Philosophy, in the Department of Philosophy. Degree by thesis. Thesis: *The fiction of scarcity: conceptualising scarcity in terms*

of global justice.

Supervisor: Professor BU Okeja.

BROWN, Lauren Natalie, MEdPsych (Stell), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Don't let the little man live in your head for free: An interpretive phenomenological analysis of seafarers with reportedly high levels of well-being.*

Supervisor: Professor CS Young.

DAKI, Andile Lebohlang, MA (Rhodes), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *A sociological analysis of the experiences of Zimbabwean teachers in South Africa: The case of KwaZulu-Natal townships and township secondary schools.*

Supervisor: Professor KD Helliker.

DHODHO, Codelia, MA (Zimbabwe), MA (LCU), in History, in the Department of History. Degree by thesis. Thesis: *Colonial displacements and African coping strategies. The experience of BaTonga of Binga, Zimbabwe, 1956-2008.*

Supervisor: Professor E Msindo.

ENGELBRECHT, Natasha, BA (NWU), BAHons (UP), MA (Stell and Leipzig), PGDipHE (Rhodes), in German Studies, in the School of Languages and Literatures. Degree by thesis. Thesis: *Exploring structures and beliefs underlying textbook praxis in German foreign language courses at a South African university - a social realist perspective.*

Supervisor: Professor U Weber.

GABOBEGWE, Maoshadi Keletso Amanda, MSocSci (Rhodes), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Demand-Side Factors and the Employment of Young People: A Case Study of the Recruitment and Selection Strategies of Selected Firms in Johannesburg.*

Supervisor: Professor GG Klerck.

HANMER, Paul Dylan, MMus (Rhodes), in Music, in the Department of Music and Musicology. Degree by Composition Portfolio.

Supervisor: Professor J Brukman.

HELLEMANN, Phemelo Cordelia, BAHons, PG Cert. (Education), MA (Rhodes), in History, in the Department of History. Degree by thesis. Thesis: *Umzi ka Mama Family property transfer practices and the historical significance of title deeds to African female heads of household in Fingo Village: A Participatory Theatre Approach.*

Supervisor: Professor JC Wells.

JACOBS, Luzuko Gerrison, BAHons (UFH), MA (Rhodes), in Journalism & Media Studies, in the School of Journalism and Media Studies. Degree by thesis. Thesis: *Land expropriation without compensation: A study of constructions of the Parliamentary process in selected mainstream and "ground-up media" from 27 February - 12 August 2018.*

Supervisor: Professor LN Steenveld.

JACOT-GUILLARMOD, Genevieve Nicole, BAHons, PG Cert. (Education) (Rhodes), MPhil (Cantab), in Philosophy, in the Department of Philosophy. Degree by thesis. Thesis: *Institutional Self-Deception*.

Supervisor: Professor W Jones.

MACDONALD, William Tait, BSocSci (Natal), BCom (Durban-Westville), MCom (UKZN), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Language Learning Anxiety: A biometric investigation of stress and language learning using wearable devices*.

Supervisor: Professor J Akhurst.

Co-supervisor: Professor CS Young.

MALAMIS, Daniel Scott Christos, MA (Rhodes), in Classics, in the School of Languages and Literature Studies. Degree by thesis. Thesis: *Hymnoi Orpheioi: The generic context of the Orphic Hymns*.

Supervisor: Mr M Lambert.

Co-supervisor: Dr DJ van Schoor.

MAPHOSA, Mandlenkosi, MA (Zimbabwe), MA (Leeds), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *A Critical Analysis of the Urban Food System, Urban Governance and Household Food Security in Bulawayo, Zimbabwe*.

Supervisor: Professor KD Helliker.

MARITZ, Anneliese, MA (UPE), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Exploring the value of an educational partnership within a multilingual pre-school setting*.

Supervisor: Professor J Akhurst.

MSINDO, Esteri Makotore, MSocSci (Rhodes), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Ownership and occupation contestations in South Africa: The case of state housing in Buffalo City Municipality, Eastern Cape*.

Supervisor: Professor K Helliker.

MUFAMADI, Azwihangwisi Eugene, MA (Rhodes), in Journalism & Media Studies, in the School of Journalism and Media Studies. Degree by thesis. Thesis: *An examination of activism and "political listening" during the year of student protest at the University of Cape Town from 9 March 2015 to 9 March 2016*.

Supervisor: Professor AC Garman.

Co-supervisor: Ms J Reynolds.

MUNYARARI, Tinashe, BAHons (Midlands), MA (Rhodes), in History, in the Department of History. Degree by thesis. Thesis: *Youth, political violence and ZANU-PF politics in Zimbabwe, c. 1950-2018*.

Supervisor: Professor E Msindo.

NARE, Hilary, MSc (Zimbabwe), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *The nexus between*

territorial border controls, cross border trading and economic security in Zimbabwe: The case of Beitbridge border post.

Supervisor: Professor KD Helliker.

NCIIZAH, Tendai, MA (Midlands), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Land degradation and livelihood strategies in rural Zimbabwe: The case of two A1 farms in Shurugwi District*.

Supervisor: Professor KD Helliker.

NYATHI, Innocent, MA (Zimbabwe), in History, in the Department of History. Degree by thesis. Thesis: *Negotiating marginalisation: A socio-economic history of the Kalanga of Mangwe, Zimbabwe, 1940-2015*.

Supervisor: Professor E Msindo.

OLORUNNIBE, Folaranmi Flourish, BA (Adekunle Ajasin), MA (Ibadan), in History, in the Department of History. Degree by thesis. Thesis: *A social history of midwifery practices in colonial Ibadan, Nigeria, 1893 to 1960*.

Supervisor: Professor E Msindo.

OOSTHUIZEN, Mikaela, BAHons (NMMU), MA (Wits), in Journalism & Media Studies, in the School of Journalism and Media Studies. Degree by thesis. Thesis: *The rise of virtual influencers Lil Miquela and Kim Zulu: An exploratory study of Instagram's platform capitalism from an African context*.

Supervisor: Dr PA Boshoff.

VAN VUUREN, Cornelia Margaretha, MED (UP), in Psychology, in the Department of Psychology. Degree by thesis. Thesis: *Views of the journey of grade 1 learners with barriers to learning, in the inclusive education system: A multi-level systemic investigation*.

Supervisor: Professor J Akhurst.

VICTOR, Stephanie Emilia, BAHons (Stell), MA (Rhodes), in History, in the Department of History. Degree by thesis. Thesis: *A study in female power: Xhosa-speaking women of royalty in South Africa's Eastern Cape*.

Supervisor: Professor J Wells.

WILSON, Jacqueline Kaythrine, MSc (Dev Studies) (Lundt), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *An ethnographic exploration of Black Lesbian Rape Survivors' Access to support services in Cape Town, South Africa*.

Supervisor: Professor M Drewett.

ZENGENI, Faith Chipo, MSc (Zimbabwe), in Sociology, in the Department of Sociology. Degree by thesis. Thesis: *Socio-historical analysis of organisational change: A case study of Zimbabwe Posts (Zimpost), 2010-2020*.

Supervisor: Professor GG Klerck.

FACULTY OF SCIENCE (40)

DEGREE OF DOCTOR OF PHILOSOPHY

ATILAW, Tsige Yared, BSc (Gondar), MPhil (UCT), in Physics, in the Department of Physics and Electronics. Degree by thesis. Thesis: *An investigation of traveling ionospheric disturbances (TIDs) in the SANAE HF radar data.*

Supervisor: Dr Z Katamzi-Joseph (SANSA).

Co-supervisors: Dr J Stephenson (UKZN) and Professor D Walker (UKZN).

BOATENG, Rita Afriyie, BSc (Kwame Nkrumah), MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Diversified computational approaches for the identification of orthosteric drugs, allosteric modulators and unveiling drug resistance mechanisms; Application to infectious diseases.*

Supervisor: Professor O Tastan Bishop.

Co-supervisors: Dr T Musyoka (Kenyatta) and Dr OS Amamuddy.

CHAKRABORTY, Abir, MSc (Calcutta), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Structural Determinants of the HSP90-Fibronectin interaction and implications for fibrillogenesis.*

Supervisor: Professor AL Edkins.

FALAYI, Menelisi, BScHons (Midlands State), MSc (Rhodes), in Environmental Science, in the Department of Environmental Science. Degree by thesis. Thesis: *Environmental Governance, Agency and Multi-actor Dynamics in Southern Africa.*

Supervisor: Professor J Gambiza.

Co-supervisor: Professor M Schoon (Arizona State).

FARTHING, Matthew William, BScHons, MSc (Rhodes), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *The role of angling-guides in promoting pro-environmental catch-and-release attitudes and behaviours in the recreational angling community.*

Supervisor: Professor WM Potts.

Co-supervisors: Dr A-R Childs and Dr J Lang-Mann (SAAMBR).

KASOZI, Nasser, BScAgric (Makerere), MSc (Ghent), in Fisheries Science, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Effect of adding a probiotic to an aquaponic system on plant and fish growth, water quality, and microbial diversity.*

Supervisors: Professor H Kaiser and Dr BS Wilhelmi.

KHAIRALLAH, Afrah Yousif Hussein, BScHons (Pretoria), MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *The characterization of GTP cyclohydrolase I and 6-Pyruvoyl tetrahydropterin synthase enzymes as potential anti-malarial drug targets.*

Supervisor: Professor O Tastan Bishop.

LONTSI SOB, Aaron Joel, BSc (Buea), BScHons, MSc (Rhodes), in Physics, in the Department of Physics and Electronics. Degree by thesis. Thesis: *Dynamics of charge movement in α -Al₂O₃:C,Mg using phototransfer and optically stimulated luminescence.*

Supervisor: Professor ML Chithambo.

MAY, Aviwe Khanya, MSc (Rhodes), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Singlet oxygen and optical limiting applications of BODIPYs and other molecular dyes.*

Supervisor: Professor J Mack.

Co-supervisor: Distinguished Professor T Nyokong.

MNQETA, Zezethu, BScHons (UFH), MSc (Rhodes), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Quantifying the impacts of cactus biological control agents in South Africa.*

Supervisor: Professor ID Paterson.

MULLER, Cuen, MSc (NMMU), in Fisheries Science, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *An eco-physiological investigation of fisheries-induced evolution: comparing the resilience of larvae from exploited and unexploited commercial reef fish populations to projected ocean acidification.*

Supervisor: Professor WM Potts.

Co-supervisors: Dr N James (SAIAB) and Dr A-R Childs.

NNAJI, Nnaemeka Joshua, BSc (Nigeria), MSc (Ibadan), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Inhibition of aluminium corrosion using phthalocyanines - experimental and computational studies.*

Supervisor: Distinguished Professor T Nyokong.

NODO, Phakama, MSc (WSU), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Demersal fish distribution in the shallow marine nearshore and estuarine seascape of Algoa Bay: Nursery areas and the effect of environmental drivers.*

Supervisor: Dr N James (SAIAB).

Co-supervisors: Dr A-R Childs and Dr P Patrick (SAEON).

NTLOKO, Pindiwe, MSc (UFH), in Water Resource Science, in the Institute for Water Research. Degree by thesis. Thesis: *Taxonomic and trait-based macroinvertebrate response in sediments impacted rivers, Eastern Cape, South Africa.*

Supervisor: Professor ON Odume.

Co-supervisor: Professor CG Palmer.

NXELE, Siphesihle Robin, MSc (Rhodes), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *The systematic assembly of prostate specific antigen electrochemical sensors based on asymmetric Co(II) phthalocyanines, graphitic quantum dots and an aptamer.*

Supervisor: Distinguished Professor T Nyokong.

Co-supervisor: Dr F Bediouti (Chimie Paris Tech).

OJO, Taiwo Theophilus, BTechHons (Ladoke Akintola), MSc (Lagos), in Physics, in the Department of Physics and Electronics. Degree by thesis. Thesis: *Neutral winds and tides over South Africa*.

Supervisor: Dr Z Katamzi-Joseph (SANSA).

SEBOKOLODI, Makhuduga Lerato Lydia, BSc (NWU), BScHons (UCT), MSc (Rhodes), in Physics, in the Department of Physics and Electronics. Degree by thesis. Thesis: *A wideband spectropolarimetry study of spatially resolved radio galaxies: Cygnus A & Hydra A*.

Supervisor: Professor OM Smirnov.

Co-supervisors: Professor R Perley and Dr J Eilek.

SENKORO, Annae Maria, MEnvMan (Queensland), in Environmental Science, in the Department of Environmental Science. Degree by thesis. Thesis: *Ethnobotany and conservation biology of Warburgia salutaris (G.Bertol.) Chiov. a threatened medicinal plant in southern Mozambique*.

Supervisor: Professor CM Shackleton.

Co-supervisors: Dr A Ribeiro and Professor R Voeks.

TATA, Rolland Bantar, MSc (Buea), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Computational analysis of known drug resistant mutants of Plasmodium falciparum Dihydrofolate Reductase (PfDHFR) and screening for novel antifolates against the enzyme*.

Supervisor: Professor O Tastan Bishop.

VELDMAN, Wayde Michael, MTech (TUT), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Sequence, structure, dynamics, and substrate specificity analyses of bacterial Glycoside Hydrolase 1 enzymes from several activities*.

Supervisor: Professor O Tastan Bishop

AMOAKO, Esther Ekuu Amfoa, BSc (UDS), MSc (KNUST), in Environmental Science, in the Department of Environmental Science. Degree by thesis. Thesis: *The impacts of anthropogenic fires in West African savanna woodlands and parklands: The case of the Guinea savanna, Ghana*.

Supervisor: Professor J Gambiza.

Co-supervisor: Professor CM Shackleton.

BAA, Ebenezer, MSc (Buea), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Synthesis, characterization and host-guest complexes of supramolecular assemblies based on calixarenes and cucurbiturils*.

Supervisor: Professor G Watkins.

Co-supervisors: Professor RWM Krause, Dr V Smith and Professor DT Ndinteh (UJ).

BAYE, Bertha Cinthia, MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *An in silico study of the type II ndh: quinone oxidoreductase (ndh2) a new anti-malaria drug target*.

Supervisor: Professor KA Lobb.

Co-supervisor: Dr V Moses.

BROOM, Casey Jay, MSc (Stell), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Cape Fold Ecoregion fish community ecology and responses to stressors*.

Supervisor: Dr A Bernard. (SAIAB).

Co-supervisor: Dr J South (SAIAB).

CHEBON, Lorna Jemosop, BSc (UEAB), MSc (JKUAT) in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Identification of novel compounds against Plasmodium falciparum cytochrome bc1 complex inhibiting the trans- membrane electron transfer pathway: an in silico study*.

Supervisor: Professor O Tastan Bishop.

DITHUGOE, Choaro David, MSc (UFS), in Marine Biology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Disentangling the role of prokaryotes in regulating export flux via suspended and sinking organic matter in the Southern Ocean*.

Supervisor: Professor PW Froneman.

Co-supervisors: Dr S Thomalla (CSIR) and Professor TP Makhalanyane (UP).

GUSHA, Molline, BScHons (NUST), MSc (Rhodes), in Marine Biology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Functional biogeography: evaluating community assemblage patterns and ecosystem functioning in intertidal systems using trait-based approaches*.

Supervisor: Distinguished Professor CD McQuaid.

IBRAHIM, Labaran, MSc (Bayero), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Influence of seasonal dynamics on water quality, microbiome, and plant nutritional markers of an aquaponics system*.

Supervisor: Dr BS Wilhelmi.

KISULA, Lydia, MSc (Dar es Salaam), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Synthesis, in silico molecular modelling and the biological studies of the 1,4-dihydroxyanthraquinone derivatives as analogues of a natural anthraquinone*.

Supervisor: Professor R Krause.

LEE, Brendon, BScHons (Rhodes), MSc (UKZN), in Fisheries Science, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Stock structure of patagonian toothfish Dissostichus eleginoides (Smitt 1898, family Nototheniidae) in the Southwest Atlantic*.

Supervisor: Professor WHH Sauer.

Co-supervisors: Dr A Arkhipkin (Falkland Islands Fisheries) and Dr H Randhawa (Falkland Islands Fisheries).

MABATE, Blessing, MSc (Venda), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Furoidans from South African brown seaweeds - establishing the link between their structure and biological properties (anti-diabetic and anti-cancer activities)*.

Supervisor: Professor BI Pletschke.

Co-supervisor: Professor AL Edkins.

MHLANGA, Richwell, BScHons (Chinhoyi), MSc (NUST), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Characterisation of two novel ferrocenyl benzoxazines as in vitro triple negative breast cancer inhibitors*.

Supervisor: Dr J de la Mare.

Co-supervisor: Professor AL Edkins.

MPHEPHU, Tshililo Emmanuel, BScHons (Venda), MSc (UKZN), in Entomology, in the Department of Zoology and Entomology. Degree by thesis. Thesis: *Effect of Helicosporidium sp. (Chlorophyta: Trebouxiophyceae) infection on Cyrtobagous salviniae Calder and Sands (Coleoptera: Curculionidae), a biological control agent for the invasive Salvinia molesta D.S. Mitchell (Salviniaceae) in South Africa*.

Supervisor: Distinguished Professor MP Hill.

Co-supervisor: Professor JA Coetsee.

MWANZA, Daniel, BSc (Copperbelt), MSc (Rhodes), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Development of biosensor systems for detection of anti-cancer drugs and prostate cancer*.

Supervisor: Professor P Mashazi.

Co-supervisor: Distinguished Professor T Nyokong.

NABATANZI, Margaret, BSc (Makerere), MSc (Rhodes), in Bioinformatics, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Bioinformatics tool and web server development focusing on structural bioinformatics applications*.

Supervisor: Professor O Tastan Bishop.

NDALENI, Phumza Malibongwe, BScHons (WSU), MSc (Rhodes), in Ichthyology, in the Department of Ichthyology and Fisheries Science. Degree by thesis. Thesis: *Understanding resource partitioning in three species of Gobiidae living in the warm temperate Sundays Estuary*.

Supervisor: Dr N James (SAIAB).

Co-supervisor: Professor OLF Weyl (SAIAB).

OPENDA, Yolande Ikala, MSc (Nairobi), in Chemistry, in the Department of Chemistry. Degree by thesis. Thesis: *Dual and targeted photodynamic therapy ablation of bacterial and cancer cells using phthalocyanines and porphyrins in the presence of carbon-based nanomaterials*.

Supervisor: Distinguished Professor T Nyokong.

SAMSON, William John, BScHons (Rhodes), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Regulation of Oct4 expression during cell stress*.

Supervisor: Professor AL Edkins.

VAN ASWEGEN, Sunet, BScHons (NWU), MSc (Rhodes), in Microbiology, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Identification and characterisation of microbial communities and their metabolic potential in meltwater ponds, Western Dronning Maud Land, Antarctica*.

Supervisor: Dr G Matcher.

VUKEA, Nyeleti, BScHons (Rhodes), in Biochemistry, in the Department of Biochemistry and Microbiology. Degree by thesis. Thesis: *Mechanistic analysis of two cytotoxic thiazolidinones as novel inhibitors of Triple- Negative Breast Cancer*.

Supervisor: Dr J de la Mare.

Co-supervisor: Professor AL Edkins.



VICE-CHANCELLOR'S DISTINGUISHED SENIOR RESEARCH AWARD

Hands On Pharmacy

A pandemic and a need for hygiene triggered an extremely intense year in the life of **Rod Walker**, Professor of Pharmaceutics in the Faculty of Pharmacy. He won the Community Engagement award, as well as the Vice-Chancellor's Distinguished Senior Researcher award for 2021. He also learnt some extremely valuable lessons along the way.

At 5.30 on a Friday afternoon, early in March 2020, Professor Roderick (Rod) Walker received an email from a colleague in the Chemistry Department.

"He'd sent me the World Health Organisation's formulation for hand sanitiser, and asked if we could make it. I knew the WHO had guidelines for pharmacies and that sort of thing, particularly in Africa where there are water availability issues. Hand cleanliness is known to protect people from disease."

By then, COVID-19 was speeding around the world, and a South African lockdown was looming. What was happening overseas, and what could happen in South Africa with its high HIV/Aids-affected population was the subject of much debate and speculation among Professor Walker and his students.

"Monday morning, first thing, I wrote back to this guy and said ja, it's quite easy to make, but I doubt we can make for distribution. We don't have a proper manufacturing facility. I said the best we could do was maybe make some for use at Rhodes."

A BIT OF AN ISSUE

That week, Professor Walker called a contact at Aspen Pharmicare and casually asked after stocks of the primary ingredients for hand sanitiser: ethanol, hydrogen peroxide and glycerol.

"He said: you and the whole world are looking for that stuff at the moment. That's when I realised there might be a bit of an issue."

Days later, Angus Paterson of the SA Institute for Aquatic Biodiversity (SAIAB) quietly let Professor Walker know that they had a fair amount of ethanol available, maybe a thousand litres or more. SAIAB uses pure alcohol to preserve fish and other specimens, but since they were going to be closing their facilities a week before official lockdown, did he need some?

At least 70% of hand sanitiser is ethanol. Professor Walker immediately said yes.

"I made the first batch of 25 litres on the 20th of March. The next day, I made 50 litres. I was still trying to find an efficient way of making it. After that, we scaled up to 120 litres a day, to 150, and then finally to 300 litres, which was then biggest batch we could make at any one time. It takes 250 litres of ethanol to make 300 litres of sanitiser. And the ethanol came in 250 litres drums, so that worked out neatly. Fortuitous but by design."

Professor Walker was pumping the alcohol out by hand, a process that took at least two hours out of every day. He approached the Research Office for help in speeding up the process. Deputy Vice-Chancellor Peter Clayton immediately agreed to the purchase of a flame-proof pump.

Suddenly that part of the process was reduced to 20 minutes a day, and the amount of sanitiser being produced from Rhodes University laboratories shot up.

WHERE TO PUT IT ALL?

The first major challenge was to find containers for storage and dispensing.

"I headed downtown looking for those big 25 litre water containers with taps, but I couldn't get those, so in the beginning, I borrowed a few from people I knew."

Many more were needed, though. The local dialysis clinic turned out to be a gold mine.

"They discard plenty of five litre containers used for dialysis fluid. It's an aqueous solution, so it's quite easy to clean. We rinsed the containers with sterile water and isopropyl alcohol and then asked people to bring them back so we could refill them when finished. There's no point in making 300 litres of something if you can't put it into smaller containers.

"We were also offered 25 litre containers from manufacturers of animal feed, which we accepted with thanks, but cleaning out the isomalt residues was really difficult. I borrowed a high-pressure hose, but it had a different tap fitting to the one we had outside, so I actually changed the tap. It was problem-solving all the way."

One unexpected cache was later found right under everyone's noses. During the worst of the drought, Rhodes University's catering division had brought in hundreds of 25 litre water containers. And now they were lying in storage. Help yourself, said the staff.

But not everything worked out.

"I went to Carara, who make pickled vegetables. They had 25 litre containers that they get their vinegar in and were happy to donate. But we could never get out that pickle smell. Such a pity, because they were great containers.

Some of the clinics brought in their used water bottles to be filled with hand sanitiser.

"Many of their containers were absolutely filthy. That was a bit of an eye-opener, seeing the additional challenges they were facing."

Eventually, one of the laboratories in the Pharmacy Department began to look like a container warehouse.

BEG, STEAL AND BORROW

As lockdown took hold, Professor Walker and a small team started distributing the sanitiser to district clinics, old age homes, local hospitals, local doctors and pharmacies.

It was all for free, a service to the community.

"It didn't start off as a community engagement project, though. It was just making sanitiser to protect health care workers."

As for ingredients, "the Department of Health gave us peroxide and glycerol, and the University bought more, but we were borrowing and asking and buying and stealing and whatever. I'd say to Angus, we need more alcohol, and he had to contact the NRF for clearance. I got quite fit during that time, carrying around lots of containers of water and sanitiser."

In mid-2020, the Dohne Agricultural Research Facility outside Stutterheim contacted Professor Walker. They wanted to learn from the sanitiser production process he had set up. They brought along a boot full of badly needed pure ethanol, along with a written permit for alcohol transportation from then MEC of the provincial Department of Rural Development and Agrarian Reform.

“I trained their scientists here, and we made a dash up there as well to finetune the process.”

STAYING STREET LEGAL

Transporting and keeping so much alcohol, plus producing a sanitiser, needed permits, labels and levels of record-keeping that might have floored anyone less meticulous.

Professor Walker’s daughters soon excelled at documentation, cleaning, de-labelling and re-labelling.

The new labels had to contain the following information:

Where it was made (RU), formulation (WHO), date of manufacture, morning or afternoon, and one of three batches. These correlated to who had done the measurements and who had counter-signed them. The other information that had to go on was a record of the number of litres, that it was for external use only, that it contained ethanol, glycerol and hydrogen peroxide, that should be kept away from eyes and an open flame.

At first all bottles went out with a Rhodes University sticker, but they soon ran out.

In addition, every batch in and out had to be logged. All of this came in very useful when Professor Walker received an unexpected visit from the SA Revenue Service. Alcohol is a highly taxed good. Fortunately, he had all the paperwork showing the provenance and destination of all ingredients that came in, and how much sanitiser went out. Universities receive a rebate on ethanol because they are using it for science.

The local fire department also inspected the storage facility, because of flammability.

“We are meticulous with processes, so as a result, a lot of my postgraduate students have ended up working in the pharmaceutical regulatory environment.”

HURRICANE ROD

Professor Walker had learnt much about formulation development, manufacturing and documentation while on sabbatical with a contract research organisation, Applied Analytical Industries (AAI), in Wilmington, North Carolina during 1998 and 1999.

“It gave me insight into the manufacturing and documentation procedures needed for developing a product, something like sanitiser. It also affected the future direction of my research.”

The weather made this a particularly memorable time.

“While I was there, Hurricane Bonnie of 1998 threatened to destroy the work of many years. I was on the Hurricane Response Team for AAI. All archives had to be packed into trucks and moved away from the city so that the documentation required by the FDA when approving products would not be lost.

“I had never experienced a hurricane before, so it was quite frightening. But at least I was able to be with a team of people, not isolated at home. When I drove back after the storm had passed, several large trees near where I was staying had been snapped in half by the winds.”

STIRRED, NOT SHAKEN

One serious bottleneck with manufacturing sanitiser at speed was the fact that every 25 litre container had to have its contents stirred before going out, and that took five minutes each.

“I had one stirrer, so it took an hour to stir 12 containers. But we needed to speed it up, so I put out the word to the University community. Some offered to sacrifice their Nutribullets, but that wouldn’t have helped.



“Then radio astronomy Professor Justin Jonas got hold of one of the technical people in Physics, Andy Youthead, and asked whether another stirrer could be made for the sanitisers. Andy made one, and suddenly I could cut down the time from an hour to thirty minutes. Then we received a donation of another stirrer from one of our suppliers, and overnight, I could make 900 litres in a day rather than 600 litres.”

Photo: Chris Marais

THE RIP-OFFS

It was critical to do things by the book, in part because there were so many scams going on.

“There were municipalities being charged exorbitant amounts. Anywhere between R300 and R500 a litre. And that was on tenders, so someone was making money.”

The Department of Education became concerned at the quality of sanitiser they had bought from a tender provider. They asked Rhodes University Faculty of Pharmaceutics to do an analysis (gas chromatograph) of several bottles.

“It looked like dishwashing liquid, but varied in colour. There was a sediment at the bottom containing a banned perfume material. The ethanol content was too low. One bottle looked as if it had blood in it.

“Another government department had bought sanitiser that contained only 50% ethanol, so it was nearly useless. Not surprisingly they had a high infection rate.

“Some suppliers used acetone to denature their ethanol instead of isopropyl alcohol, which would be very painful on broken skin. We found the local doctors sought out our hand sanitiser because they found it didn’t dry their hands out as badly.”

In total, Rhodes University produced 14 862 litres of sanitiser and a series of extremely useful teachable moments.

“I think that teamwork and commitment to a common goal are crucial for success.”

Professor Walker also managed to deliver online teaching materials during Lockdown, as well as writing and publishing more than two dozen journal papers.

VALUABLE LESSONS

The logistics of scaling up production has long been a research fascination for Professor Walker. As he often says: Lots of products don’t get to market, not because they can’t be made, but that they can’t be made on a large enough scale.

“We introduced making hand sanitiser to our fourth year students who are doing elective industrial pharmacy. They then had to choose who they want to donate their batches to and why. It was setting a bit of an ethical dilemma for them and forcing them to think about, say, why this school and not that school. Making sanitiser became part of the course.

“In general, I want students to gain overall knowledge on the principles of manufacturing, formulation, product development, and characterisation. Then the dosage form and how to ensure it releases the drug at the right rates.

“I’m not particularly fussy on the methods of delivery. It can be a tablet, capsule, cream, gel, ointment, eyedrops or whatever. If I only stuck to students who were just interested in making tablets, I’d actually lose out on so many other interesting people wanting to come for postgraduate studies.”

The 51 MSc students and 12 PhD students that Professor Walker has graduated have their pictures in pride of place on his office wall.

“This is what it is all about for me.”

“The Corner Chemist”

Professor Walker has the highest regard for small independent pharmacists, as opposed to those you’ll find behind the counter of big discount retailers. The ones he likes the most are the pharmacists who know their community, who know immediately who is allergic to what, what other medications their customer is on, and so on.

The other pharmacists he admires are those who used their ingenuity to make something. Coca Cola was first made in a pharmacy. Of course, the cocaine it contained back then made it a real pick-me-up. Pepsi and Dr Pepper also started in pharmacies. Closer to home, Woodward’s Gripe Water and Bennett’s Bum Cream are seldom far from any South African mother’s medicine cabinet. Pharmacist Ambrose Lomax of Molteno and Adelaide in the Eastern Cape created Borstol Cough Remedy in 1894. It became the medication of choice during the Spanish Flu outbreak of 1918.

“I don’t think in our lifetimes we are going to see an environment again where you could just walk into a hospital and get treatment, with everything you need. Not in my lifetime, not in many of our children’s lifetimes.

“That’s why it’s so important to me that our students learn the whole story, crushing up tablet ingredients, making a cream, doing things the old-fashioned way. Some people say to me, why don’t you just take a cream or whatever, off the shelf. But I say to them, what if they’re in a place or time where there are no creams on the shelves?

“What if there’s a supply problem? They need to know what goes into it. Same as the sanitiser. There was a supply problem. That’s how this whole story started.”

By Julienne du Toit



VICE-CHANCELLOR'S DISTINGUISHED RESEARCH AWARD

Molecular Battles and Precision Medicine

Philani Mashazi, Associate Professor of Inorganic and Analytical Chemistry at Rhodes University, is engaged in a revolutionary new field of ultra-sensitive disease diagnostics. His overall work, and especially that on nanoBiosensors, saw him awarded the Rhodes University's Vice-Chancellor's Distinguished Research Award for 2021.

Long before you have a heart attack, long before you develop a malignant tumour, long before you develop Parkinson's or one of many other conditions and diseases, your immune system has swung into action.

To defend against the impending threat of which you are still blissfully unaware, it is creating highly specific autoantibodies from antigens or pathogens (body invaders) and other custom-made weapons for the battle that is underway at a molecular level.

Because they are so specific to cause, such a precise lock-and-key match between threat and defence, the autoantibodies

are tiny but highly accurate red flags. They are the biological markers that reveal the presence of a condition or disease, long before any actual symptoms show.

One of the best known and commonly used biomarkers is the Prostate Specific Antigen (PSA), which reveals the presence of prostate cancer. Screening for PSA has, since the 1990s, contributed to a significant decline (between 45% and 70%) in age-adjusted prostate cancer mortality in most countries. It is also far more reliable than the now mercifully obsolete and invasive digital rectal examination (featuring the infamous gloved finger).

ASSOCIATE PROFESSOR PHILANI MASHAZI VICE-CHANCELLOR'S DISTINGUISHED RESEARCH AWARD

But while the PSA test is now commonplace and accurate, there is currently no early warning for many other highly dangerous dread diseases - specifically lung and breast cancer. Lung cancer, for example, is almost never detected until Stage 3 or 4 because it can advance without any symptoms or pain. By the time these manifest, the cancer has usually metastasised (spread to other body organs). Breast cancer and ovarian cancer are also seldom detected until there is already a mass.

These are the tests - among several others - that Philani Mashazi, Associate Professor of Inorganic and Analytical Chemistry at Rhodes University, is working on. His cutting edge work in this field of study won him Rhodes University's Vice-Chancellor's Distinguished Research Award for 2021.

DETECTION IN A NANO WORLD

Antigens and autoantibodies are unimaginably tiny. They are miniscule assemblages of specific proteins 'folded' into characteristic shapes. If you were to shrink yourself down to the nano size of one of these antibodies, the width of a human hair might seem as high as Mount Everest.

Not surprisingly, the instruments needed to measure the chemical and biochemical traces and quantities of these nano-weapons must be delicate, custom-made, and ultra-precise.

Rhodes University is unique in the world for having six of these highly specialised pieces of equipment in one place. Currently they are in the Department of Chemistry but ground has been broken on a new building that will house them under the auspices of the Institute for Nanotechnology Innovation (INI), of which Associate Professor Mashazi is deputy director.

These rare items of machinery include the transmission electron microscope (TEM) and scanning electron microscope (SEM), the X-ray photoelectron spectroscopy (XPS), atomic force microscope (AFM), Raman spectroscopy and Time-of-Flight Secondary Ion Mass Spectroscopy (TOF-SIMS). They are part of a suite of instruments that can unravel nanotechnological mysteries.

From a tiny droplet of your blood, urine, tears or saliva, their nanoBiosensors can detect the biomarkers that indicate looming health issues.

It is possible not only to detect antibodies against certain cancers, but also to reveal how far the cancer has advanced,

from Stage 0 to Stage 4. These are mighty tools in the hands of oncologists.

PRECIOUS METALS

Metals like gold and palladium help to make diagnostic equipment more accurate and sensitive, says Philani.

During his Master of Science (MSc) degree at Rhodes University, he worked on electro-chemical sensors, some of which included precious metals. His work attracted the attention of Mintek. They offered young Philani a bursary with running costs, and the promise of a job after he graduated with his MSc.

"It was an absolute dream come true," says Professor Mashazi. He had been living on a hand-to-mouth budget, living in a tiny converted pantry in rented digs in Grahamstown (Makhanda). Even with the Mintek bursary, he carried on staying there, and devoted his life to study.

His Masters (which he graduated with Distinction) was on the study of metallophthalocyanines attached onto pre-modified gold surfaces.

ATOMIC RESOLUTION IN GHENT

During his Masters studies, Professor Mashazi experienced a four month exchange programme in Belgium. There he became somewhat addicted to Belgian foot-long sandwiches, and was exposed to nanoBiosensor research equipment for the first time.

"I saw that they have access to XPS, Ramans spectroscopy, and the atomic force microscope (AFM). I realised how much they could assist my research in helping me to 'see' the interface surface of the biosensors at sub-molecular and atomic resolution."

But the logistics were not easy. With the help of his co-supervisors, Philani booked the use of the instruments within two weeks of his arrival at Ghent University. But the waiting list was long, and tests could only be run a week before he returned to South Africa.

The various machines were in different places, often spread out over distant cities.

"After I got home, the results were sent to me by email. I presented the data to my supervisor, Distinguished Professor Tebello Nyokong, who was surprised about what we can see under these spectrometers, notably the Raman spectrometer and X-ray photoelectron spectroscopy (XPS). Distinguished Professor Nyokong was specifically interested in the fact that what was postulated could now be proven spectroscopically."

Unbeknownst to Philani Mashazi at the time, Distinguished Professor Nyokong started to write proposals to acquire some of these specialised machines.

THE LURE OF ACADEMIA

Meanwhile, Philani began working at Mintek in 2007. Two years later, there was a massive national outbreak of measles in South Africa, with Gauteng as its epicentre. At the time, there was only one laboratory doing measles testing: the National Institute for Communicable Diseases (NICD).

"I found a way to diagnose the virus via electro-chemical tests, where you simply take a throat swab and use that to get a positive or negative result for measles. That became the subject of my PhD."

By 2013, Philani had successfully graduated with his Doctorate while working full time, and he enjoyed the various challenges at Mintek. But eventually, he found the lure of academia too strong to resist.



"My mind was increasingly inclined towards knowledge generation, and imparting knowledge, not doing research because it's going to make money in the short term."

It was around then that he stumbled across an advert for the post of Senior Lecturer in the Chemistry Department at Rhodes University, and immediately applied.

"I got the job and I was very happy. It's one of those times where you think, I wouldn't trade this for anything."

AFRICA'S DIVERSE GENOME

Philani Mashazi loves working with his Postgraduate students and Postdoctoral fellows.

"So far I've graduated six Masters and four PhD students, with another cohort of nine in the lab. We are attracting researchers from all over the world. We've had students recently coming from Belgium to spend about four months with us, just to access the facilities that we have here at Rhodes University in the Institute for Nanotechnology Innovation. We have had researchers from Poland recently too.

"In my current group I've got a Malawian, a Zambian, Zimbabwean, and a number of South African students. I'm strong believer that diversity brings excellence. In Distinguished Professor Nyokong's group, which I also work with, there are students from all over the continent of Africa."

This is a critically important knowledge hub for the continent. As Professor Mashazi explains:

"Africa has a far more diverse genome than Europe and North America, where most drugs are developed and tested. What works on one continent might not work in Africa. We are looking at the patient-specific treatment and levels of toxicity, which is often indicated by weight loss and hair loss in cancer treatment. It's becoming more and more important that we don't just adopt medication. Instead, we get the regime and then adjust it internally to see what works for the African continent. It really is very exciting."

WELDING DELICATE MACHINES

The African and other foreign students, Postgraduates and Postdoctoral fellows, generally return to their own countries to teach, says Professor Mashazi.

"Many are on sabbaticals or come to upgrade their qualifications, or to deepen their research. Most come with an Honours degree. Some have an MSc, but generally it would have been a taught Masters. Very few have had access to machines like these, or at least on a very minimal level. They seek out the experience of actually doing experiments in the lab.

"The students need the experience of working with these delicate pieces of equipment. They run their own analyses. We are just there to guide the experiments, the interpretation of the results, to understand what we are seeing, and to alert them to the potential niche areas that would be attractive in the international world.

"We empower them, and we publish with them so they get their names out there. We are boosting excellence in the field."

To limit the overburdening of the equipment, some students are trained as advanced operators, explains Professor Mashazi.

"So students tend to help one another, and that's a system that works very well."

THE ULTIMATE DREAM

There is a scenario that Professor Mashazi envisages over and over. It is that of individualised or precision medicine, where every individual has their levels of biological markers mapped. An annual visit to a doctor, a few drops of blood, saliva or tears, and the doctor can see a real life picture emerge of that person's health.

"The doctor would tell you that your body is showing biochemical reactions that are producing certain molecules. You might be predisposed to a certain kind of cancer. Or a biomarker might show that a cardiac arrest is a real danger, long before you clutch your chest and fall to the ground. You can treat and monitor your health issues before they become a problem. You can lengthen and improve the quality of your life.

"This could transform doctor-patient relations. For me, that is the most important. You would have someone look at your patient history and say: we haven't seen this kind of concentration in this particular biological molecule, but now it's emanating as very important. How can we mitigate the risk?"

"It's going to be revolutionary. Obviously it will take some years, but I'm really looking forward to just seeing how the results are revealed, as we go through the research.

"So in an ideal world, each individual would have his or her own medical profile with the antigens, the neurotransmitters, and various biomarkers in their blood. And then you'd be able to see the spiking or sinking in terms of concentrations. This is what we need to do."

SCREENING ON PAPER

The body fights cancer all the time. Every day, up to five cells in your body will turn cancerous, but your immune system corrals and kills them before they can multiply. Some eventually do manage and outwit our inner defence systems and continue to grow uncontrollably. Even so, the levels of antigens and autoantibodies in the blood reveal their presence.

It is these that Professor Mashazi wants to stop before they can become a real threat to health, before they metastasise. One of the most promising parts of his current research shows that detection could be done far more cheaply than is currently the case.

Imagine a world where a few small drops of blood on a piece of paper, treated with embedded biosensors, could check your biomarkers and give you early warning of impending threats via a smartphone. For example, if a biomarker indicates that a heart attack is imminent, you could book yourself into a clinic for observation.

This is the most recent, and very promising, part of his research work.

YOUNG PROFESSOR, TOP UNIVERSITY

During 2020, Philani Mashazi was chosen as the Rhodes academic to be part of the first Department of Higher Education and Training's Future Professors Programme. It has been a great honour, he says.

As he puts, "This is the opportunity I have been waiting for. I feel it will help me grow as a research scientist and my scholarly output will without a doubt increase."

Being Deputy Director of the Institute for Nanotechnology Innovation (INI) means straddling the fields of nanoBiosensors and Chemistry. Professor Mashazi is extremely proud of the fact that Rhodes University is the top institute in South Africa, and among the leading universities in the world in this cutting edge field of nanotechnology and diagnostic medicine.

"Thanks to Distinguished Professor Nyokong, Rhodes is unique in the world for having all these specialised pieces of equipment under one roof. It is one of our great selling points. We are a one-stop-shop facility. You can measure materials using UV, mass spectrometer, TOF-SIMS, XPS, EPR, all in one place, which means you can go much further in your research.

"That has been the strength of what we have at Rhodes University."

By Julienne du Toit



VICE-CHANCELLOR'S BOOK AWARD

The New African Narrative

Dr Bongani Nyoka has been awarded the Rhodes University Vice-Chancellor's Book Award for 2021 for his ground-breaking study of African intellectual Archie Mafeje.

Dr Bongani Nyoka, a lecturer in the Department of Political and International Studies at Rhodes University, has produced *The Social and Political Thought of Archie Mafeje*, unearthing new insights into the work of the acclaimed pan-African scholar.

Dr Nyoka's innovative approach to the teachings of Eastern Cape-born Archie Mafeje explores his views and studies on the nature of social sciences as they are applied to African countries, the question of land and agrarian issues in Sub-Saharan Africa, revolutionary theories and politics in general on the continent.

In her motivation for the award, Dr Nyoka's colleague Sally Matthews says:

"This book discusses and engages with the ideas of an important (but under-recognised) contributor to social and political thought: Archie Mafeje. He was a creative and courageous thinker at a time when black scholars were marginalised and denigrated.

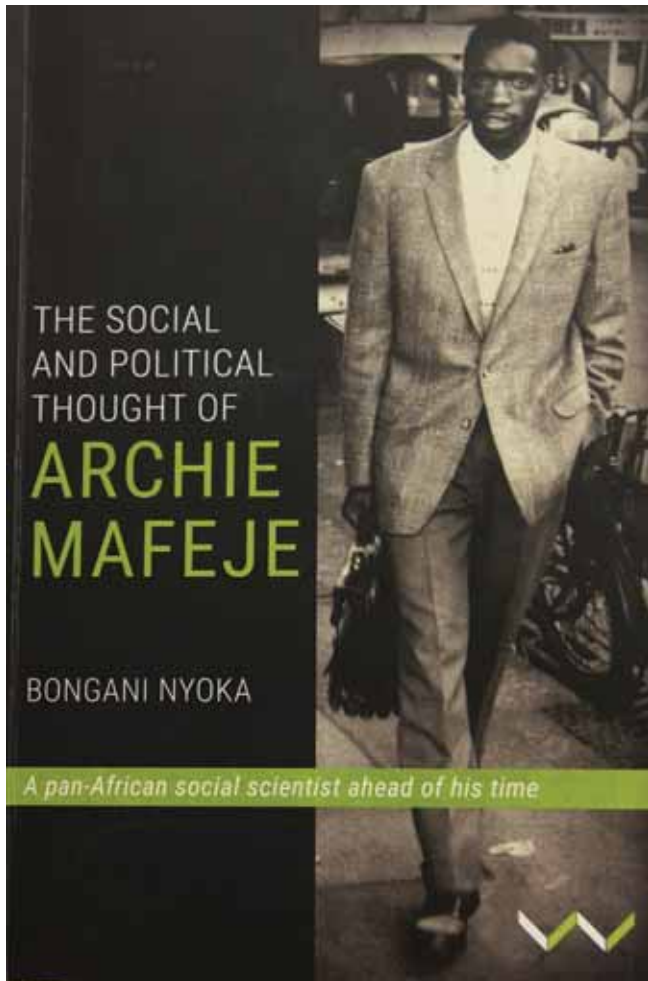
"At a time when the topic of decolonising the curriculum is the subject of much debate, this book helps us retrieve and reconsider the ideas of a pioneering scholar of the 20th Century while also contributing to current debates in social and political theory."

In the introductory section of the publication, Dr Nyoka writes:

"At the moment, South African intellectual debates are stale. This is partly because we do not reflect on old ideas, and to freshen our debates we should revisit the ideas of intellectuals like Mafeje.

WHO WAS ARCHIE MAFEJE?

Archibald Mafeje was born in Ngcobo, Eastern Cape, on March 30, 1936. Parent-educators were his earliest mentors: his father was a headmaster and his mother a schoolteacher.



Mafeje's very first influence outside his family was Nathaniel 'Tshutsha' Honono at Nqabara Secondary School, before he (Mafeje) moved to Healdtown. Honono was one of the leaders of the Cape African Teachers' Association and the All-African Convention - affiliates of the Unity Movement.

And when Archie Mafeje was sent to high school in nearby Healdtown, he was influenced by the legendary history teacher, Livingstone Mqotsi.

Hailing from the Keiskammahoek district in the former Ciskei (now Eastern Cape), Mqotsi gained multiple university degrees in the course of his long career, from Fort Hare, Rhodes University and the University of the Witwatersrand.

His time at Healdtown, however, was cut short by the Nationalist Government when he attacked the Apartheid system of Bantu Education. In an outspoken paper, he argued that Bantu Education was creating a slave-class in the service of its white minority masters.

After that, the State hounded Mqotsi wherever he applied for a job. Nevertheless, by now he was a hardened political activist and joined the Non-European Unity Movement, working for its newspaper, *Ikwezi Lomso (The Morning Star)*.

Livingstone Mqotsi was eventually served banning orders under the Suppression of Communism Act, after which he fled South Africa and spent many years teaching in the United Kingdom. All throughout, however, he kept his ties with the Unity Movement. He returned to the Eastern Cape from exile in 2001, wrote a number of novels and works of non-fiction and died in 2009.

Mqotsi was known during his activist years as a mentor to young political exiles. Not only was his home used as a safe house for activists, but because he allowed them access to his large library, it was also seen as a place of general enlightenment.

ACADEMIC PATH

Once he completed high school, Archie Mafeje enrolled at Fort Hare University and studied Zoology for a year. But he had a special attraction to Social Anthropology and, in 1956, moved to the University of Cape Town (UCT), where he successfully completed his Undergraduate, Honours and Masters studies in the subject.

At UCT, Mafeje also became interested in politics, joining the Non-European Unity Movement (NEUM) and the Society of Young Africans (SOYA).

In 1963, he spoke at a meeting which was deemed an 'illegal gathering', was arrested and taken to Flagstaff, Eastern Cape, for trial. Before proceedings began, however, he was simply fined and dispatched back to Cape Town.

MONICA WILSON

That same year, he joined celebrated social anthropologist Monica Wilson in a three-year research project on Langa Township in Cape Town, which would result in a published book called *Langa: A Study of Social Groups in an African Township*.

Born in 1908 in Lovedale, Eastern Cape, Monica Wilson was the daughter of Scottish Presbyterian missionaries. In 1935 she was wed to anthropologist Godfrey Wilson, working with him in East Africa for more than three years. Then, after stints at Fort Hare and Rhodes University, she joined the Department of Social Anthropology at UCT, serving as Head of Department from 1952 to 1973.

By now, she had done studies and papers on social change in Africa, also participating in the Keiskammahoek Rural Survey on lifestyles and land tenure in the former Ciskei 'homeland'.

Monica Wilson concentrated on traditions and rituals of the African communities she worked with throughout the continent.

She once said:

“Rituals reveal values at their deepest level. It is the values of the group that are revealed. I see in the study of rituals the key to an understanding of the essential constitution of human societies.”

Both Livingstone Mqotsi and Monica Wilson, two of Archie Mafeje’s leading mentors, possessed an abiding concern for the welfare of rural Eastern Cape communities.

In later years after the Langa project, however, Mafeje was to change his views on the nature of how Anthropology was practised, published and taught in South Africa and, eventually, in all of Africa. His work and insights had the effect of raising the bar in the academic practice of Social Anthropology.

He would also be seen as the custodian of the studies of African culture, history, awareness and identity.

THE ‘MAFEJE AFFAIR’

After completing his MA in Social Anthropology, Archie Mafeje was then offered the post of Senior Lecturer in Social Anthropology at UCT, but his appointment was rescinded after direct government interference.

This move initiated a campus protest, where both academic staff and members of the student body demonstrated in support of Archie Mafeje, and the University’s right to freely appoint lecturers.

Deeply disappointed, Mafeje left South Africa and signed on for a PhD in Anthropology at the University of Cambridge. After a period as an assistant lecturer at Cambridge, he was appointed Head of the Sociology Department at the University of Dar Es Salaam in Tanzania.

“There, he met a lot of radical scholars, many of them Marxist like he was,” says Dr Nyoka. “During this period, the world was into a new concept called decolonisation, and radical scholars were talking about decolonising knowledge. Archie Mafeje was part of that cohort.”

“What I find interesting about Archie Mafeje is that he wasn't just talking about decolonising and rejecting European knowledge, but he was trying to find alternatives.”

“Anthropology began to be seen as the study of the cultural ‘other’. The discipline was called the ‘hand-maid of colonialism’. Archie said it was no use turning Anthropology into the black sheep of the social sciences, and that they were all basically Eurocentric.”

“He said we should begin the study of social sciences anew, and this would have to emerge from the African societies themselves. He called it The African Ethnology.”

A good example of this new, home-grown study of Africa is the fact that Archie Mafeje and the intellectual scholars he interacted with were far from parochial in their outlook.

“One of the things I really admire about Mafeje and his group of peers is that when they left their home country they became intellectually worldly. Many of our academic scholars go overseas, but they come back home for fieldwork and write a thesis on an aspect of their home country. But these guys were writing about other countries, they were interested in what intellectuals were doing in other parts of the world.”

THE CONTEXT OF TRIBALISM

“In the late 1960s, when Archie Mafeje went to work at the University of Dar Es Salaam, he published an article on tribalism,” says Dr Nyoka.

“A lot of people say he rejects the idea of tribe as an entity, but he does not. He simply says the idea of a tribe is anachronistic on the African continent. It’s outdated to talk about a tribe in modern times, because there are no self-contained African societies.”

“He recognises that it was actually colonialism (the Berlin Conference of 1894, which arbitrarily drew up the borders for Africa) that created tribes in a sense that they froze people into artificial borders. In the article, Archie Mafeje claims:

- The idea of tribalism is European in its origin insofar as it was used by colonialists to divide and conquer Africans;
- It was used by anthropologists insofar as it validated colonialism;
- It is used by African leaders themselves for their own political ends;
- That ordinary Africans themselves have come to believe in the idea of different tribes. He says they are under false consciousness.”

A discussion of Mafeje’s critique of the ideological function of tribalism is important for a number of reasons, Dr Nyoka told *New Frame* in an interview.

“First, his essay on tribalism effectively established a radical break with his early liberal functionalism, although it constitutes a thematic critique of anthropological concepts, rather than a programmatic critique of the social sciences as such.”

“Second, his analysis of the concept of tribe has been widely misunderstood; this chapter discusses precisely what he had in mind. He did not reject the entity or the institution of tribe as non-existent; rather, he rejected it as an anachronism. The object of his critique was, essentially, the ideology of tribalism.”

THE ROLE OF THE BARD

One of the papers Archie Mafeje penned in the late 1960s was titled *The Role of the Bard in a Contemporary African Society*.

"It was part of his thematic critique of the anthropological anachronism that reduced African societies to tribes," writes Dr Nyoka in his latest book on the intellectual legend. Mafeje drew parallels between the European bard and the isiXhosa *imbongi*.

"In anthropological literature and linguistics, the bard is reduced to a praise singer," says Dr Nyoka. "Mafeje concludes that this is a misplaced assessment because bards are socio-political critics more than praise-poets and argues that anthropologists and linguists are 'over-emphasising the wrong aspect of the institution'".

In his article, Archie Mafeje quotes the poems of one Melikhaya Mbutuma, an *imbongi* of the abaThembu paramount chief, Sabata Dalindyabo. For the sake of discussion and reader clarity, he translates them into English.

"In citing these poems, Mafeje illustrates the role of the bard as a mediator between two social categories, the ruler and the ruled," Dr Nyoka writes.

BUGANDA, UGANDA

For his PhD, Archie Mafeje went to the massive Ugandan province of Buganda to research the issues of land and agrarian reform.

Buganda is a kingdom within a country: Uganda. It has a royal history that stretches back more than a millennium, except for the 30-year gap between 1963 and 1993 when late president Milton Obote abolished the system of kingship in Uganda. The kings were later restored under the rule of President Yoweri Museveni.

Mafeje traced the history of land policy and development in this province of about seven million people, which is primarily agrarian in nature. He concentrated on the 'colonial century' and its aftermath, discovering a system of "tiered dependence".

"Having acquired land, a small producer would have to pay tribute and dues to his overlord and serve him as a craftsman, housebuilder and warrior. The chiefs served the king by supervising the population, collecting taxes and raising armed forces in order to raid neighbouring states, with the spoils usually shared between the elite and the king.

"This, Mafeje argues, created an 'economy of predation' rather than one of production."

After Buganda became a British Protectorate in 1894, the question of land tenure became a primary issue between the Bugandan chiefs and colonial Britain. In 1900, a raft of new land laws was passed.

"This created all sorts of problems insofar as it inaugurated a new type of property relations in which land became a commodity which could be bought or sold at the discretion of the individual," writes Nyoka. "There was also the generation of continuous wealth through the exploitation of hired labour".

In 1903, a labour-intensive monoculture crop was introduced: cotton. It would not be too long before coffee was farmed on a large scale as well.

"The people of Buganda were forced to work and increase production for the British imperialists, but in spite of the increase in production, the Bugandan economy proved to be a case of 'growth without development'. There was no investment in people. The value of production was shipped to Britain. The landowners and chiefs were the only native beneficiaries."

In time, relations between the chiefs and the British became strained, and the colonials formed a stronger bond with the small producers of Buganda. This group was later re-defined as 'progressive farmers', but still the peasant class was excluded from the benefits of a bustling agri-economy.

"Buganda not only illustrates a symptomatic and qualitative case of colonial intrusion on agrarian revolution, but also demonstrates how colonial intrusion led to the agricultural crisis and lack of food security in post-independence Africa," writes Dr Nyoka.

"It is clear that one of Archie Mafeje's great dreams is that new knowledge systems from Africa will emerge, for instance, on questions of land tenure and agrarian reform.

"Many people seem to think that land is property. Mafeje says land in Africa is not considered to be property. His work appears in the context of the search for an African mode of production."

WARM RECEPTION FOR THE NEW BOOK

Dr Nyoka's latest book has been favourably reviewed in academic circles. Siseko H Kumalo of the Department of Political Science at the University of Pretoria says:

"*The Social and Political Thought of Archie Mafeje* is a rich toolkit from which to draw when thinking about the project of re-imagining our disciplines and their responsiveness to the call for decolonisation.

"By diving into this treatise, the reader comes to the conclusion that Nyoka's initial prognosis that 'at the moment South African intellectual debates are stale', is not only true, but his analysis also gives us a way of remedying the situation.

"For the contemporary student of the Arts, Humanities and Social Sciences, I would highly recommend this book as a starting point."

By Chris Marais



Terms and Conditions

Professor Graham Glover is the Rhodes University Faculty of Law Researcher of the Year for 2021, based on a wide variety of activities and outputs over a three-year period from 2018 to 2020.

When Professor Graham Glover used to walk into the first Undergraduate Legal Theory class of the year, he would hand a typed sheaf of paper to each student and announce:

“Right, everyone! Here’s a document I need you all to sign quickly - I have to rush it back to the Administration offices.”

After the papers had been signed, he would say:

“Who actually read the document?”

Invariably, few hands would go up. Then he’d tell them:

“Now turn it over and look at what it says on the back.”

The details in the ‘small print’ on the back of their signed documents held some shocking terms and conditions, which included the following points:

1. “I am familiar with the official starting and ending times of lectures, and that these times are calculated by reference to the official South African Standard Time as measured by the watch of the lecturer, who is not bound by any clocks or timing devices on the wall in the venue, particularly if these clocks or timing devices are, in his view, incorrect.
2. I agree that once seated I will remain in attendance, and that while the lecture is running, the venue is not a place to be entered and departed at will like a train station for toilet breaks, or for any other reason. I undertake to ensure that all my ablutions or any potential negative consequences of a hangover or illness are under control prior to the class, so that I shall be able to give full attention to my class work for the forty-five minutes of the lecture.
3. I shall not whisper, talk or fool around. I shall pay attention and not use the class as an opportunity to sleep or do work

PROFESSOR GRAHAM GLOVER

TERMS AND CONDITIONS

for other courses. I shall not use class time to view or send e-mails, smses, twitter messages, WhatsApp messages, nor shall I Facebook, or Instagram, or engage with any internet resource other than one relevant to the work of the class. I shall not disrupt the class by leaving the venue to take calls received or to make calls, or otherwise interact with my cell phone or laptop for any other reason whatever.

4. I accept that I am enrolled at Rhodes to study hard, and that studying is my only and absolute priority. Whenever there is a choice between academic work and other activities, I shall absolutely prioritise my academic work, and shall be obliged not to participate in any other activities of a personal, social, sporting or cultural nature.
5. I accept that if I breach this term, that I will not have properly done the work of the class, will have wasted my parents' or benefactors' money, and that I shall publicly admit that the resultant failure that may occur is completely my fault."

LIFE IS A CONTRACT

"The most significant interface people have with the law on a daily basis is contractually," says Professor Glover. "So the first lesson I teach my students about Contract Law is: read before you put pen to paper. If you don't, you can end up in big trouble and sign your life away.

"I once passed around attendance slips before a test, where it said 'By signing this, I acknowledge that I will get 0% for this test' - and they all signed."

Right through history, contracts between people and countries have underpinned the base of society, determining the outcome essential dynamics like war, peace, ownership of property and style of government.

For instance the Magna Carta of 1215, in which English kings had their wings clipped and the government was to be installed at the citizens' pleasure, once held great promise of being a perpetual compact between power and the people. Despite the fact that most of its terms are no longer in effect, the Magna Carta has become the catchphrase of an ideal democratic society.

"Contracts usually work so well that one doesn't really notice them," says Professor Glover. "Contract law is the basis of our socio-economic operations. It does a good job, and that's why we have it and use it.

GOOGLE AND THE SOCCER WORLD CUP

"Did you know that every time you search for something on Google, you're entering into a contract with terms and conditions? When you use Google's service, you are actually

contracting them for that service, which allows them to do a lot of things you possibly have no idea about contractually. So while you're not paying for the service in the classic sense of the term, they are legally using your information, they're selling it to advertisers."

Professor Glover has kept a ticket from one of the games played during the 2010 Soccer World Cup in South Africa.

"I like to use this when I'm face-to-face with my students," he says. "You simply went online, bought a ticket for a match and didn't think twice. However, attached to that ticket was a host of terms. Let's say you were a person who attracted the attention of the cameras at the venue and you were photographed cheering in the stands. If you bought a ticket and were attending the match, you signed your rights to that image over to FIFA (the French acronym for the International Federation of Association Football) in perpetuity.

"So they could take that particularly excitable shot of you jumping around in the stands, and use it for advertisements for every Soccer World Cup in the future - with no compensation."

A LOVE FOR TEACHING

Graham Glover is the Zimbabwe-born son of two teachers, who instilled in him a passion for the classroom.

"We came down south in 1984, when my father landed a post as Head of Geography at DSG and St Andrew's in Grahamstown (now Makhanda)," he said. "My mom was a remedial teacher, I went to St Andrew's Prep and College and, in 1992, I arrived at Rhodes University, taking History, Law, Latin and English as First Year BA subjects.

"I had no idea I would end up with a Law degree, only that I preferred the Humanities. I ultimately majored in Law and History, moved on to what was then a Postgraduate LLB degree and, in 1995, had to decide between legal practice and academia.

"Most of my colleagues were keen to get out there and practise law, doing corporate work or going to the law courts as attorneys. Neither option held any appeal for me at all, and then I began to realise I had inherited my parents' teaching genes. I was also really enjoying the academic side of Law."

Graham Glover continued his studies and was then taken on by the Law Faculty as a part-time lecturer.

"And then, in October 1998, at the age of 24, I was offered a permanent lecturing post at Rhodes University," he says. "By that time I was registered for an LLM, which I then converted into a Doctorate."

THE THESIS

His Doctoral thesis was titled *The Doctrine of Duress in the Law of Contract and Unjustified Enrichment in South Africa*.

The Introduction to the thesis reads:

“This thesis analyses the doctrine of duress and its application in the law of contract and unjustified enrichment in South Africa. Following an initial examination of the historical development of the doctrine from its roots in Roman and Roman-Dutch law, the study focuses on the current legal position in the two areas of law under review, identifies the substantive and formal deficiencies in the current approach, and suggests, using comparative authorities, how the law might be developed.

“As far as the law of contract is concerned, after exposing the difficulties inherent in the current approach, and placing the doctrine in its proper context in the South African law of contract generally, it is argued that the duress doctrine finds its juridical basis in the principle of good faith.

“A more modern and coherent test for duress is then proposed: one that concentrates on the question whether an illegitimate threat was made, which induced a contract in that it left the

other person no reasonable choice but to succumb to the proposal.

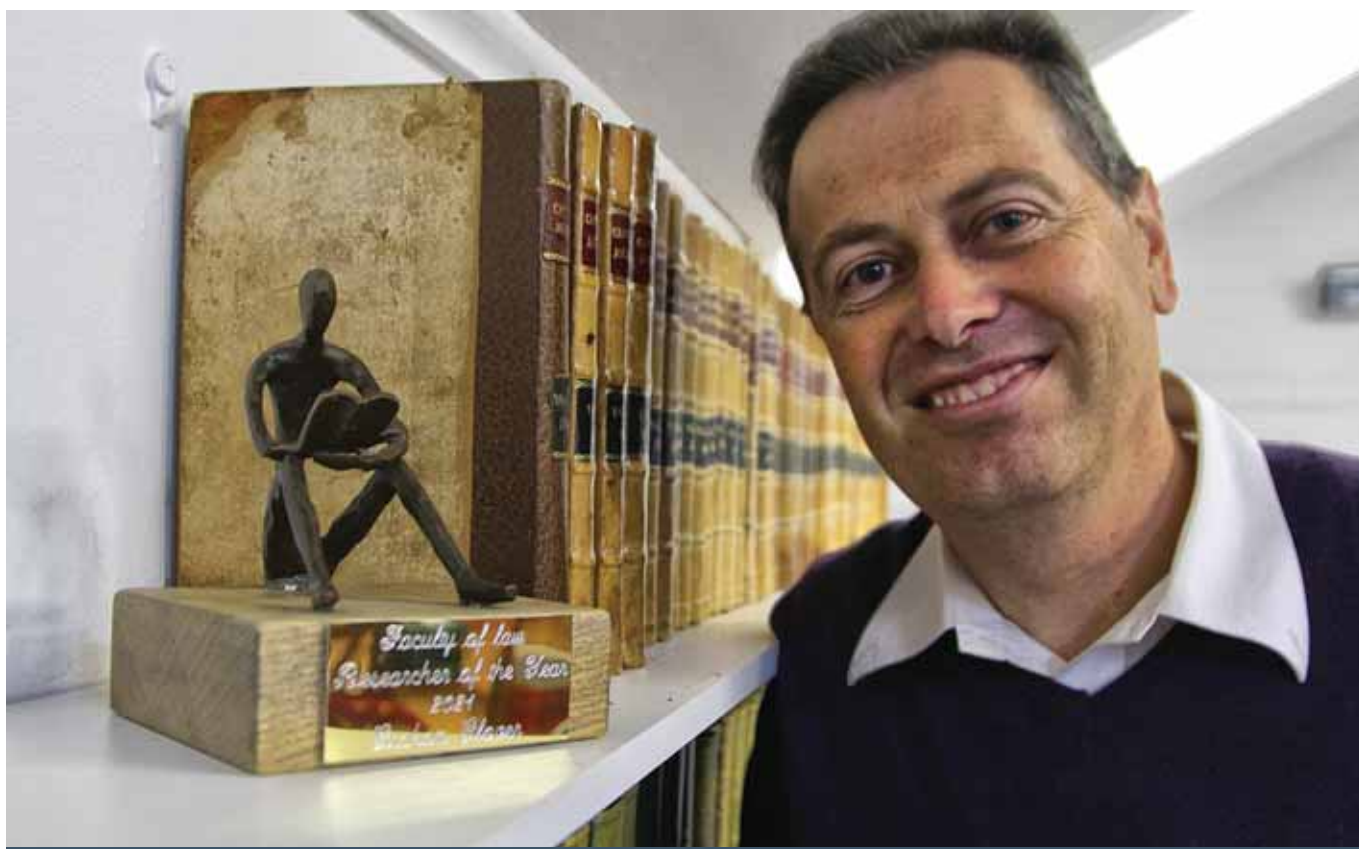
“Additionally, the need for South African contract law to recognise and deal with cases of economic duress is emphasised. The study then shifts to an examination of the position in situations where non-contractual performances have occurred under duress: cases that are decided in terms of the principles of the law of unjustified enrichment.”

THE MENTOR

“My primary supervisor was the-then Dean of Law at Rhodes University, Professor Rob Midgley,” says Professor Glover. “But my mentor was Professor AJ Kerr, an expert in the field of Contract Law.”

The late Professor Alastair James Kerr was an Advocate of the High Court of South Africa, Professor Emeritus and Fellow at Rhodes University, and one of a select group of South Africa's leading legal scholars.

Born in South Lancashire, Scotland, Professor Kerr spent most of his life in South Africa. He had a long association with Rhodes University as a student and then academic, from 1939 (when



“I have taken over, to completion, one of his books, *The Law of Sale and Lease*,” says Professor Glover. “I am currently working on a new edition of his *Law of Agency* book. But as far as papers are concerned I am a long way behind him in that I have only published 30 so far.”

it was still a University College) until 1990, when he was Dean of the Law Faculty.

In 1993, Professor Kerr was officially granted the honorary status of Senior Counsel, making him one of the 11 top academic lawyers in South Africa.

By then, he had published more than 100 papers in accredited journals and written a number of books, including *The Principles of the Law of Contract*.

LEGAL PUBLISHING

The *South African Law Journal* is the second-oldest law journal of its kind in the world, having been launched in 1884. It has been described by the publishers, Juta and Co., as "the legal showcase for new ideas, changing attitudes and shifting emphases in South Africa".

The world's oldest ongoing law journal is the *University of Pennsylvania Law Review*, founded in the 1850s. The *British Law Quarterly Review* is one year younger than the *SA Law Journal*, which is also three years older than the *Harvard Law Review*.

Professor Glover has been editing the *SA Law Journal* since 2009.

"It comes out in four parts every year, and is made up of contributions from legal academics locally and abroad," says Professor Glover. We take submissions that have been pre-screened, peer-reviewed and edited. There is a 60 percent rejection rate and the print run is 1 000 copies. Of course, more and more people are using the Journal's electronic version these days.

"Acceptance depends on quality of writing, relevance to the South African legal system and the depth of research. It is not very lucrative, but it has been very valuable for my academic career.

"At some stage of every day, I do some work on the *SA Law Journal*."

DICKENS AND THE EP HERALD

Of all the articles Professor Glover has written, the one that seems to have attracted the most interest relates to a case between the legendary British author Charles Dickens and the *Eastern Province Herald*, based in Port Elizabeth (now Gqeberha).

"I found this case in the Law Library here at Rhodes University," says Professor Glover. "I was actually looking for something else at the time, when I stumbled across *Dickens vs Eastern Province Herald*."

Back in 1861, the EP Herald began publishing extracts from Dickens' *Great Expectations* without the author's knowledge or permission.

"Who would have thought that, in the old days, someone in Britain would find out at someone else in the backwater of the bottom of Africa would be plundering his work? But Dickens caught them out, and successfully litigated against them for copyright infringement.

"Dickens apparently had an incredible network of contacts worldwide, and caught many publications doing the same thing. This happened often in the United States, because that too was a frontier country - they were serialising his work as soon as it was being serialised in the United Kingdom."

In his paper titled *Maybe the Courts are not such a 'Bleak House' after all?*, Professor Glover relates part of the reply from the editor of the EP Herald:

'Postal facilities in this country are none of the best, and I know that in the absence of an inland book post, in the columns of the *Eastern Province Herald* your tale would find its way to many a farmhouse where *All the Year Round*, or indeed any other periodical, would never enter. I had even thought you might be gratified by such a result, but it appears I was mistaken.'

Professor Glover says:

"In his response, Dickens appears to have been touched by the editor's earnest attempt to apologize, and to explain his actions. But his initial conciliatory tone is matched by evidence of his steely resolve to protect and defend his rights to the hilt, no matter where the violation might occur, and no matter how serious or trivial the infraction."

By Chris Marais



Conspiring at High Speed

More than thirty years ago, Rhodes University opened up the digital gateway linking South Africa to the rest of the world via emails and the internet. Why here and not a larger, better equipped institution? The answer lies in a bootstrapping, maverick approach by Rhodes staff, along with some serendipity, sheer bull-headed persistence, and an “unrepentant hippy” at the end of the line in Portland, Oregon, USA.

In 1965, Rhodes University bought its first computer - a gigantic beast that cost millions of rands and boasted 4.8 whole kilobytes of memory. The ICT 1301 Transistorised Computer was carefully hauled up to the top of the Physics building using a pulley and an I-beam. It was only the second computer ever to be installed at a South African university. The first was at Wits.

The clincher for this particular model (ICT stood for International Computers and Tabulators, later changed to International Computers Limited) was that it was well suited for research. It was chosen by Professor Rolf Braae, who had been recruited from Stellenbosch University specifically to help computerise various departments at Rhodes University, notably Physics.

The 1301 came with its own resident engineer from Cape Town, a man called Mike Lawrie.

“Rhodes signed up knowing they were a bit isolated. Other companies said in their bid that they would send a technician if it was pouring out smoke. ICT said they would put a technician on site, full time. That was me,” said Lawrie.

THE COMPUTER SAYS YES

Professor Emeritus Pat Terry, then a final year Physics and Applied Mathematics student, remembers the day the 1301 arrived.

CONSPIRING AT HIGH SPEED



The lengths Mike Lawrie (left) had to go to to install a computer

"We were all desperate to see what this thing looked like, but we weren't allowed into the building because of Physics prac exams. As soon as we were allowed in, I charged up the stairs with a few other guys and we found Mike Lawrie, dressed in a mechanic's overall, wielding a shifting spanner, busy bolting parts of this huge machine together. It filled the whole top floor."

For the next four years, Lawrie attended BSc lectures, graduating with an Honours degree in Applied Mathematics in 1969. And of course, he kept the 1301 running smoothly, quite often with two hammers, which he still owns.

"If there was a fault, you'd put the wooden side of the one hammer against a circuit board, and you take the other hammer and you go tap tap tap, trying to shake up anything that's loose. When it did, the alarm went off, and you'd home in and find it."

Professor Pat Terry added: "If part of the circuitry went wrong, Mike Lawrie would get his soldering iron and replace it when he'd found the faulty piece. It was real discrete electronics.

None of this modern stuff where at the first sign of a glitch you throw it away and buy a new computer."

THE ERA OF CLANKETY BONK

In 1967, Lawrie, Terry and a Physics Masters student called Howard Williams teamed up to deploy the computing powers of the 1301 for the purposes of a 'dating app'.

"We drew up a questionnaire, and you had to describe yourself in five points," said Lawrie. "Then the computer gave you a list of five or ten names of the opposite sex that you might care to invite to the Arts and Science Ball. It was only a bit of fun, but gee was it a hit! We were the first computer dating service. The students lined up to get their print-outs."

The 1301 was dismantled and replaced in 1969 by the ICL 1901A, which also came with a resident engineer, Mike Bark (inevitably nicknamed Woof). In 1972 Bark oversaw the delicate operation of moving it across to the Struben Building. The first mainframes, along with the 1901A and its successor, the 1902T, all worked on punched cards.

François Jacot-Guillarmod (known to all as Jacot) was one of the first Computer Science students when the course and department started in 1970.

"The decks of punched cards representing your program and data were unmarked in the early days, so you had to become adept at interpreting the holes in the card and reverse engineering its contents. We became very creative in labelling the pack of cards with koki, usually involving bold diagonal stripes, to assist with re-assembly if the rubber band holding it all together broke. Most packs were a few centimetres thick, but as your skills and ambitions advanced, they got bigger and bigger, up to 20 or 30 centimetres thick - a real 'cartastrophe' if they dropped."

Those old computers were also loud. "It was the time of clankety bonk," said Lawrie. "The spinning disc drives were big things. It was like watching your washing go round and round. But we managed to have fun with them, far more so than other universities where they locked their computers away, and didn't let students near them," he added.

HANDS ON

"At Rhodes University, we had a totally different attitude towards computing, student access and security compared to any other university that I know of. I felt the computers were there to be used, not locked up. Otherwise they'd be obsolete before they were worn out. Let's get our money's worth! No one else thought like that."

Deputy Vice-Chancellor of Research and Innovation Dr Peter Clayton remembers how things were when he started his Computer Science, Physics and Mathematics studies as an undergraduate student in 1976.

“Of course, it wasn’t like anyone could just stroll into the computer room. The machine was worth millions of rands. Other institutions wouldn’t allow you in the same room. You might be allowed to look through a window at this hallowed machine.

“But at Rhodes, as long as you did Mike Lawrie’s ‘Learners’ and ‘Drivers’ course, it was fine. You had to know the basics and work under an operator for a while, then you got your ‘Driver’s Licence’. You considered it a privilege when Mike would schedule you to go and sit with the computer at 3 in the morning. It gave you street cred like you won’t believe.”

HEAVEN ON A SCREEN

Mike Lawrie left as resident engineer in 1969, returning to Rhodes in 1971 as director of computing services. In the mid-1970s, he started looking into teletype machines printing on paper rolls for the students and research staff.

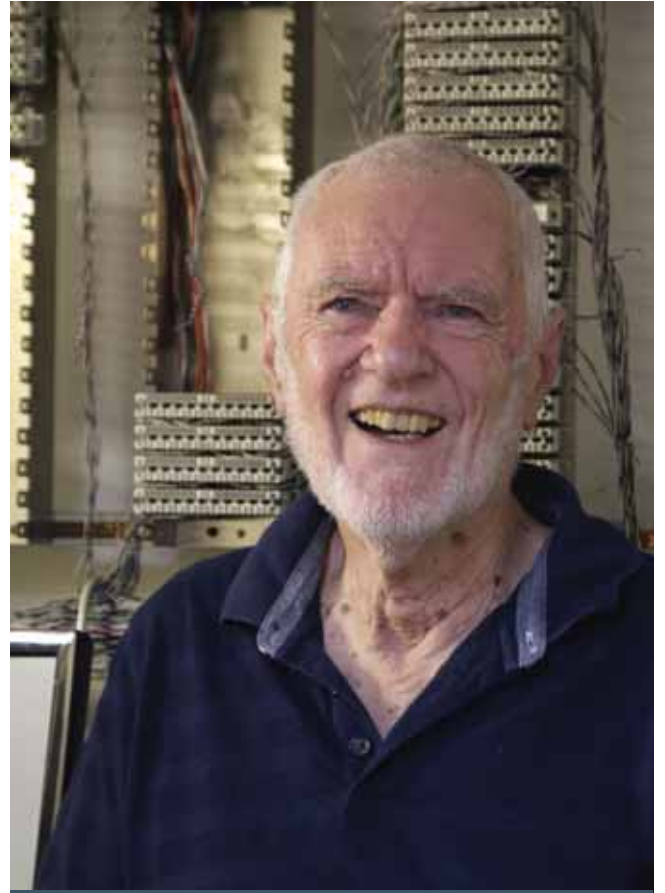
“It was difficult having the students crowding into the computer room, which has got to be air-conditioned anyway, trying to put the cards the right way into the card reader without getting them jammed, and removing the wrong paper from the printer.”

The last iterations of the ICL computers, the 1902T and 1904S, had capacity for multi-processing, but ICL terminals were cripplingly expensive at the time. In the late 1970s, Lawrie hunted down some screens in the UK at the fraction of the normal price, and the Computer Centre team fiddled until they could be made to work.

“Gee, the students liked it,” recalled Lawrie. “No cards, no operators jiggling things. So now you could sit in front of a screen, you’ve got some file space on the computer, and it was heaven. This was an advance no other South African university was making available to their students. None whatsoever.”

Clive Way-Jones, then head of the Electronic Services Unit in the Physics Department, observed that the terminals worked thanks to simple pulses down a wire, and was the first to wonder whether they might work over a longer distance. He suggested to Lawrie they try putting up a cable between the Physics Department and the Struben Computer Centre across the road.

“We tested the signals using an oscilloscope, and they worked perfectly,” said Lawrie.



Mike Lawrie. Photo: Chris Marais

Professor Justin Jonas, now director of the Rhodes Centre of Radio Astronomy Techniques and Technology, remembers that as a result, “Physics was one of the first departments to have its own terminals. We always had our own mini- and micro-computers that also had TV-like screens, before the days of the ubiquitous PC, and we could use these to connect to the mainframe.”

The next big question was: how long could the wires be? It so happened that SA Posts and Telecommunications, soon to become Telkom, had installed telephone cabling throughout Grahamstown (now Makhanda). Lawrie prevailed upon them to link the Struben Computer Centre to his home in Ilchester Road, just over two kilometres away.

This also worked perfectly. From then on, Lawrie and an ever-increasing number of Rhodes University staffers were able to work from home, for the negligible cost of a local lead wire.

Again, nothing remotely like this had been attempted anywhere else in South Africa.

GYPPOS, WORKAROUNDS AND THE CYBERS

A Computer Users Committee was set up. It featured some fiery meetings.

According to Professor Jonas: "There were many robust discussions with Mike around baud rates, parity bits, data bits, start bits and stop bits, basic parameters of the asynchronous serial data transmission protocol that we used. Woe betide anybody who set their new-fangled dot-matrix printer to an 8 data-bit no parity-bit configuration in order to access the extended character sets (like Greek symbols) without his say-so."

In 1981, the last of the ICL mainframes was removed, and in came a smaller, exciting and far more powerful new computer - the Control Data Corporation's Cyber 825.

It cost the University R800 000.

Lawrie and his team were thrilled to find that, unlike an IBM or a Univac or a Burroughs, there were no proprietary peripheral issues.

"The manual said: if you have IBM terminals, plug them in like this. Burroughs terminals, plug them in like that, Univac terminals, glass teletypes, PCs? Here's how to connect them. Help yourself. By absolute luck, we were geared for networking."

Two magnetic tape drives used for backup storage. Magnetic tape storage became obsolete in the 1990s. We now have The Cloud!



As Dr Clayton pointed out: "The whole culture here was one of gyppos and adapting and workarounds. The lack of budget was an enabler."

Lawrie and his team devised a simple form of email. It wasn't a big deal, he said.

"We had to write code - some of it in Cobol - to make it work for the Cyber, but it was fine. Store the mail, send the mail, receive it, reformat it, handle it. So I could send emails to my staff. Sometimes they would even read them."

PLATO AND THE FIXERS

The Cyber had another advantage. It came with an online learning programme called PLATO (Programmed Logic for Automatic Teaching Operations), which Lawrie helped spread to various schools and institutions as far away as Cape Town, Johannesburg and Bhisho.

Rhodes got lucky when the JCI finance company upgraded and donated their lightly used CDC Cyber 825 to the university, for the modest cost of reconfiguring and transport.

"This was a blessing. We moved the PLATO computer-based education systems onto that second Cyber and used the first one as the main research and communications computer," said Lawrie.

Jacot returned to the University in 1983 and became a systems programmer under Lawrie, alongside Dave Wilson, who joined a year later. It fell to Wilson and Jacot to keep the system working. They were The Fixers.

Jacot said: "PLATO is how we cut our teeth on wider area networking. It involved schools and institutions all over the country. We managed to do things like getting 10 terminals in Bhisho linked to a school in Cape Town, that sort of thing, and we worked out how to do it quite cheaply, via Telkom lines.

"As a bonus, PLATO had a messaging system, which meant that users in remote locations could leave messages for other users. This was before emails across a distance, but it enlightened us. Installing PLATO's networking hardware provided good experience in what was useful. And perhaps even more importantly, what was not."

VAX, MEET CYBER

In the mid-1980s, the Physics Department acquired a VAX mini-computer, roughly the size of a washing machine.

Professor Jonas said: "We needed the Starlink software package for radio astronomy, and it only ran on VAX's, made by the Digital Equipment Corporation (DEC). The VAX had an in-house networking system called DECnet, but it communicated only with other VAX machines.

"Because we were doing processing of radio astronomy and ionosphere data on both the Cyber and the VAX computers, we needed to shift data backwards and forwards across the existing terminal lines between Struben and the Physics Department. That's how 'internetworking' between the Cyber and the VAX started," said Jonas.

By then, most South African universities were using IBMs, and they only 'spoke' with one another using a protocol called Network Job Entry (NJE), which was part of the IBM proprietary Systems Network Architecture (SNA). NJE provided applications like file transfer and electronic mail, and became the protocol used by BITNET, a precursor to the eventual Internet protocol, TCP/IP, explained Jonas.

“But the VAX only ‘spoke’ DECNet and the Cyber only ‘spoke’ CDCNet. I had set up a simple file transfer system based on the Kermit protocol, but it provided very limited functionality. Mike looked around and found NJE emulators for both the VAX and the Cyber that would allow more sophisticated applications, and in short order he brought me a magnetic tape containing the Jnet NJE emulator. I installed Jnet on the VAX while Jacot, Dave and Mike installed the corresponding Cyber emulator, and with very little hassle we had the two machines speaking to one another in a third machine’s language. Not only did this allow the VAX and Cyber to communicate - it provided a potential gateway to the international BITNET community.

“When BITNET was usurped by the non-proprietary TCP/IP protocol that underlies the modern Internet, Mike, again, found an emulator for the VAX that was supplied by the Wollongong Group. This would provide seamless access by VAX users to the Internet.”

The Chemistry Department also had a VAX and briefly joined the ‘mini-internet’ at Rhodes.

A STUB LINE

Meanwhile, up north in the old Transvaal, the University of the Witwatersrand, University of Pretoria, Potchefstroom University, the CSIR and the Foundation for Research and Development (FRD, which later became the National Research Foundation or NRF) all had IBM computers and were networked to one another via dedicated lines - seldom used, according to Lawrie. He attended workshops with other universities and there struck up a friendship with Philip Welman of Potchefstroom University (Potch, now North West University).



Professor Emeritus Pat Terry. Photo: Chris Marais

The cultures of the two universities could not have been more different. Potch was politically conservative, and under normal circumstances in the 1980s, would never have engaged in any form of official communication with a liberal, Apartheid-opposing institution like Rhodes.

Lawrie and Welman ignored all politics and became good friends. They were both absolutely convinced that emails and connections were the way to go. Eventually, with help from Vic Shaw of the FRD, Rhodes connected to Potch via a stub line, so joining the network of IBM computers at Potch, Wits, UP and the FRD (then still part of CSIR).

Lawrie was completely fired up about the potential of email, but he struggled to convince many others. Close friends and colleagues didn’t quite see the point of emails when you could just pick up the phone or walk down the corridor and knock on a door. And if that wasn’t possible, there was fax - then the absolute cutting edge of communication technology.

Professor Pat Terry confessed to being one of those Luddites.

THE HIPPEST LECTURER

After Terry had graduated with his PhD in Physics from Cambridge, he returned in 1972 to join the Department of Applied Mathematics under Professor Rolf Braae. Dr Clayton remembers Terry as being “young, hip, and the exciting lecturer.”

In the 1980s, there were many computer languages, including Cobol, Fortran and Pascal. But Modula-2 was better for teaching purposes. Terry was on the international standardisation committee for it and needed to be in constant contact with the other members, as suggestions were made and decisions taken between eight-monthly workshops around the world.

Randy Bush, a software engineer from Portland, Oregon, remembers meeting this “tall, reserved but wry computer scientist from some strange place in South Africa. Professor Terry and I became friends, united against a common enemy - the forces of corruption and complication of an obscure computer language we both loved.”

He added: “In 1988, Pat visited me in my home, and asked me how it was that I and other peers seemed to be conspiring at rather high speed between meetings. I described low-cost computer networking to him.”

FIDONET AND THE SMUGGLED FLOPPY DISCS

As luck would have it, Randy Bush was also the powerhouse behind a small but rather remarkable proto-email network. As Pat Terry described it:

“FidoNet was run by enthusiastic amateurs, who have been responsible right through the history of computing, for doing all sorts of interesting things first. And they worked out how they could intermittently connect their computers onto a geographically distributed network. At 3 in the morning, I think it was, they had what was called Mail Hour. And at that stage, if you were part of the system, your computer had to be connected to its modem and standing by. The computers would literally phone one another up and squirt the email down the phone line, using modems.

“So I came back from that conference with the software on a few precious floppy discs, as they were those days, and then discovered when I got here, that Dave Wilson had had recently managed to contact FidoNet and they were going to explore using this.

“It was just marvellous to walk in and say: I’ve met the King of FidoNet. He’s given us the software and he’s going to help us.”

By that stage, Mike Lawrie was beside himself with frustration. In the late eighties, sanctions against South Africa’s Apartheid government reached new heights with America’s Comprehensive Anti-Apartheid Act. The University of Cape Town had managed to connect to the outside world for three weeks via UUNET before they were cut off. Academics from South African universities, even those opposing Apartheid, were banned from attending overseas conferences.

Lawrie had tried everything to connect with the outside world digitally, and nearly got it right after contacting BITNET. They had promised Lawrie they would not cut South Africa off. But those with power and money at CSIR and the FRD said the cause was useless. Why bother? They would just be cut off again. Lawrie was infuriated at their apathy and their lack of trust.

NEFARIOUS AND JOYFUL

FidoNet then became the final hope for digital connection to the outside world, even though it was considered a bit of a ‘toy’ system. The team quickly created code to route emails from the Cyber to the FidoNet node on a PC in Wilson’s office.

On 2 February 1989, they sent the first email to Randy Bush from the Rhodes Cyber.

As Randy Bush recounted in 2002, on the occasion of his being awarded an Honorary Doctorate from Rhodes University:

“In a few weeks, [Pat Terry] had it working. Soon he wrote to ask if a few of his academic colleagues could also use the net through our connection. I said sure. Within a very few months, use had spread through various parts of Rhodes, nefariously and joyfully propagated by Pat Terry, Jacot-Guillarmod, and others.”

For Mike Lawrie, the 22nd day after connection was even more significant.

“UCT had had their connection for three weeks before someone pulled the plug. No one pulled our plug, ever. That was a very good moment indeed. It was working, and it stayed working.”

As he later wrote in his techno-history of South Africa’s internet, “We really could not believe that we had done better than this. We had broken through the sanctions barrier on a zero budget operation without having to resort to any cloak and dagger exercises. We had also beaten the South African Government of the day, which was desperately trying to control every last form of communication in and out of the country.”

RHODES CONNECTED

The Rhodes staff asked Bush if they could use it to connect further. Apartheid was a major consideration for Randy Bush, who described himself as an “unrepentant hippy”.

“I had been raised to boycott all dealings with South Africa, as well as Franco’s Spain, Salazar’s Portugal and other international pariah states... Serious soul-searching led me to the conclusion that social change was not likely to be accomplished by cutting off communication. So I agreed on the condition that connectivity would be for universities and NGOs, and only those which were not Apartheid-supporting or enforcing.”

Lawrie is convinced - although he concedes there is no way of really knowing - that being connected to the international community via email helped bring Apartheid to an end.

“I’m certain that the ability to email the outside world had a bearing. I helped the guys to send Black Sash reports on the violence and killings in Uitenhage shortly after we connected to FidoNet. On the 21st of March, there had been another shooting, same day as Sharpeville. And those reports were hushed up. But we helped the Black Sash get them out via email from Grahamstown.”

BREAKING NEWS ON RHODOS

In the 23 March 1989 edition of Rhodos, Mike Lawrie published the first news that email from Rhodes University had reached Portland, Oregon. Under the headline: “E-mail: A major breakthrough”, Lawrie wrote:

“The Rhodes computer network is now linked into the electronic mail networks of the academic world. This is a major expansion of a facility that has until now been limited to the universities in the PWV area.

“Rhodes staff and students can now send and receive e-mail from universities and research institutions in the USA, Canada, Britain, Europe, the Middle East, Australasia, South America - i.e. virtually every major and minor e-mail network.”

Lawrie goes on to note that after only three weeks of operation, “more than 100 messages per week are being interchanged on the international link. Much of this traffic is of a test nature at the moment, as people are establishing contacts and are learning how to use the system.”

A number of early email adopters are quoted in the article, including Professor Trevor Letcher of the Department of Chemistry and Biochemistry. He was on sabbatical at Carnegie Mellon University at the time, working on editing a journal.

He raved about “rapid informal communication between research workers in different institutions. It was so very good for me at Carnegie Mellon University to talk to colleagues 1,000km away, without postal delays or the high cost of telephone calls... It is perhaps the most revolutionary thing to have happened in scientific publishing over the past decade.”

Dr Graham Oberem, then Director of the Computer-Based Education Unit was quoted as saying that “ideas can be exchanged with a turnaround time which is often less than 24 hours, results can be discussed and joint papers can be co-authored efficiently”.

Rhodes University staff went on to connect libraries, museums and other research facilities like the SA Institute for Aquatic Biodiversity (SAIAB).

A SOLUTION IN SEARCH OF A PROBLEM

Nevertheless, email was rather slow to take off.

As Jacot put it: “How do you tell people that email will be useful if they’ve never had email before? It was a solution in search of a problem. An egg before the chicken.”

Lawrie added: “Go back to that day when the first guy got a phone. How did he persuade his friend to get a telephone? Eventually I stopped trying to ‘sell’ email. Don’t waste your time telling people something is good. They will see it. Just make it work. Reliably.”

Soon Rhodes was getting enquiries from universities wanting to exchange international emails.

“They said, can we? And we said No; you first need to satisfy the conditions so that Randy Bush will not go to jail under the Comprehensive Anti-Apartheid Act. They had to make declarations, stamped, signed and whatever it is, and then email started flowing from the other universities.”

As Pat Terry said: “We moved from having no international emails to having international email that slowly opened up to other universities in the country, all flowing through a couple of PCs on Rhodes campus.”

Rhodes swiftly became the international email gateway for universities and individuals in Botswana, Namibia, Mozambique, Zimbabwe, Swaziland, Lesotho, Zambia and Ghana.

“FidoNet became the hub for all digital communication for Africa, and soon there was surprisingly heavy use,” added Dave Wilson.

A SECRET WEAPON

Back then all local and overseas digital communication was via telephone lines and modems. It was all via dial-up and desperately slow. It was also cripplingly expensive. Telkom charged by distance, so before long, Rhodes was receiving telephone bills for up to R90 000 a month, fortunately subsidised by the FRD.

No normal finance person would have tolerated it, but Rhodes had another secret weapon: Vice-Chancellor Professor Derek Henderson, who happened to be Africa’s first computer scientist. He had finished his undergraduate degree at Rhodes in 1948, and went on to study at Oxford, then Harvard, graduating with a PhD in computer science - only the twelfth doctoral candidate in the world to receive such a degree at the time. He became Professor of Computer Science at Wits in 1967, then Dean of Science before joining Rhodes University as VC in 1975.

According to Dr Clayton: “The significant thing here is that Henderson knew what the computer guys were doing. So when they started running up incredible phone bills, he didn’t shut them down. He figured there was something special happening, and found money so they could carry on. He was an enabler.”



Professor Justin Jonas and Koda. Photo: Chris Marais

THE EMBRYONIC SYSTEM

Professor Jonas recounted: "The simple twin-wire network that Mike set up became a victim of its own success. The demand for 'serial ports' on the mainframe soon exceeded the available capacity of the machine. So a manual switchboard arrangement was implemented - just like telephone switchboards of old. You had to phone the operator in the computer room to 'get' a line, and he would plug the cable from your department into an available socket (if there was one available).

"There was no easy way to see if a connection was currently active, other than to unplug it and see if there was a reaction from an irate user who had lost their connection.

"Operators yanked the plugs out by their cables, often damaging the plug. So there would be protracted arguments over the phone, with the operator claiming that you were plugged in, but you were unable to connect.

"Mike once personally threw me out of the computer room when I stormed in with my multimeter and soldering iron to fix the broken plugs."

WILY AND INNOVATIVE

Despite being under-resourced and in the constant onrush of new technology, Lawrie, Jacot, Wilson and telecommunications specialist John Stevens made it work. Stevens was their mainstay in dealing with Telkom, said Jacot, adding drily: "Without him, I would have killed several people."

Pat Terry came up with some useful software.

"My one contribution to the whole system was to write a program that would automatically intercept a fairly big message, split it up into smaller pieces, zip these to compress them before sending them separately down the line, where they would be uncompressed, and stitched back together again. As a result, you could send messages around that were longer than the small, one page messages that FidoNet was best suited for. In the spirit of the amateur net, this system was soon in use on many other FidoNet nodes around the world."

Even so, everything that could go wrong frequently did so.

"The worst part was a period of sheer pressure, trying to supply a reliable service with unreliable hardware and software that there wasn't the time or the money to fix," said Jacot. "You had to become wily and innovative about how you do things."

Lawrie, known to give praise only where it's due, still rates Jacot as one of the most incredible technicians he has ever met.

"Jacot made the computers work and kept them working. I would say: Let's see if we can talk to an IBM computer. You only had to give Jacot the slightest sniff of something like that and he'd be after it. Literally fantastic. He thrived on that sort of stuff."

In 2011, Jacot wrote down some of his reminiscences of those time:

Francois Jacot-Guillarmod. Photo: Chris Marais



"There were single critical points of failure, and boy did they fail! Equipment used to hang or run out of disk space all the time, and often it'd require two or three trips into the Rhodes computer room of an evening to reboot things and reset modems. Failures that took more than a few hours to resolve caused backlogs that took days to clear out. On more than one occasion, I'd hardly get home before there'd be another hang. This went on for about two years, but it seemed much longer."

But solutions were eventually found.

Wilson added: "The software we used for routing traffic then was very unreliable, and would frequently hang up. This obviously affected all users, and if it happened during the night, there wouldn't be anyone around to get it going again. So I worked with Brian Kemp and the Rhodes Electronic Services department to devise a circuit board that would monitor the transmit line from the PC. If there was no traffic on that line for 90 seconds, it would then conclude it was hung, and automatically send a reboot signal to the PC to get it going again. This worked flawlessly and kept the duration of outages to a minimum."

THE THRILL OF CONNECTION

FidoNet proved to be extraordinarily resilient for a 'toy system'. Pat Terry credits the people involved.

"FidoNet was amazing. The Esprit d'corps of the people using it, and their willingness to help one another was just amazing.

It was eye-opening. They got involved and solved each others' problems. Because it was free, because it worked so effectively if you had a phone connection and a modem, and because there was this network of people to help, it spread around the world. It spread through Africa as well."

By 1990, the computer team realised that in the long run, FidoNet's 'Store and Forward' message system was becoming unsustainable with the growing traffic. Instead, they had to look at 'packet technology', where emails find their own way instead of being sent from computer node to computer node.

Vinton 'Vint' Cerf was called the father of the Internet for coming up with the Internet Protocol that eased these packages through the ether, allowing them to arrive unchanged on the other side. He had devised TCP/IP to improve the functioning of DARPA NET, later ARPANET, the first digital network in the world. Lawrie met Vint Cerf at several international network conferences, and was "given every encouragement by him".

But before live Internet connection, it was necessary to register domain names for the South African Internet, to give a space in which institutions and organisations could register unique names for their sites, and to produce viable email addresses.

The .za part was already fixed, but what about the rest?

According to Jacot: "Mike, Dave and myself had a brief interaction with Randy Bush, who said 'Keep it short and simple', so we arbitrarily decided, with no further consultation, on 'ac.za' for academic institutions, and 'co.za' for commercial organisations. This idea was quickly implemented, and Rhodes became the de facto ZA administrator until it was later outsourced."

FINALLY, THE PING

In late 1991, Telkom and an American communication company called Sprint worked together to connect a low-speed leased line between Rhodes and Randy Bush.

John Stevens remembered that most of the communications happened at three in the mornings, which was working time in America.

One evening in late November 1991, everything was poised and ready. Stevens, Lawrie, Jacot and Wilson were on hand, waiting to send the Ping that would indicate everything was connected between Grahamstown (now Makhanda) and Portland, Oregon.

But nothing happened. No connection.

John Stevens picked up the story:

"Eventually Sprint contacted us and said the pathway was stopping in Port Elizabeth (now Gqeberha). There seemed to be a disconnect there. So at 3 in the morning, I had to wake up the standby technician at Telkom and say, we've got a problem, we need assistance. Not surprisingly, he was incredibly

grumpy about being woken up and said as far as he knew the links to Grahamstown were in place and there should be no problem.

"I said, listen, we've got Sprint online, we are all here, we've got to get this thing up and running, so you need to check what the story is. Louis du Preez very reluctantly went out to the Neil Street Exchange in the middle of the night. Then he phoned me and said someone had pulled the links out. He plugged them back in, and the first Ping went through.

"Once it came alive, it was wow, suddenly we are talking to the United States and the Internet. It was quite a feeling."

At 10.44 next morning, 12 November 1991, Lawrie's team sent their first email to Randy using the TCP/IP line, and history was officially made.

Lawrie remembered: "I have no idea what it's like to take drugs, but we were on a high for months and months."

The relief and elation was swiftly followed by a heady, stressful, rollercoaster year. An ever-growing volume of international internet and email traffic flowed into South Africa and most of its neighbouring countries via Rhodes University.

But eventually, the Eastern Cape's telecommunications system could handle the ever-increasing traffic no longer, and South Africa's primary connection to the world was moved from Rhodes to Wits. In 1995, the South African internet became commercial.

COMPUTER SCIENCE COWBOYS

No one at Rhodes University was paid for, or even set the task of making emails and the internet function.

As Jacot explained: "This was all achieved with no formal budget. There was no money available to buy specialised networking hardware, so we had to make do, using PCs that were considered old even by 1980s standards, ones that were no longer fit for purpose in a teaching or research context."

Yet opening the internet gateway put the university into a different league.

Professor Pat Terry remembered: "It was an exciting time to be at Rhodes, when all this was happening. It was cutting edge and we were the acknowledged leaders in the country, with big cooperation from the University of Natal (Durban) and the people down at the University of Cape Town. The rest followed a bit behind. We retained the crown in that, for a while, people knew it was all happening at Rhodes."

The Internet breakthrough had a direct effect on student numbers signing up for Computer Science, which was by then a fully-fledged department, said Terry.

"I can remember giving a talk at orientation week to all these new students and saying Computer Science is a nice subject to do, you'll be in reasonable sized classes, about 30 or 40 in the class. You'll get to know one another.

"Come registration day, and blow me down if 120 don't come to register. Four times what we thought there would be. Where had they all come from? They streamed across the road in a long queue. And it carried on like that for the next few years."

VINDICATIONS

Dr Clayton added: "We were early adopters, so there were many good 'war stories'. The students liked that. So it wasn't long before we had lots of those early Internet companies, from around the world, coming through and recruiting. Microsoft would come through, Netscape, not sure if Amazon was around, those kinds of names."

Jacot said: "The best part of all this, and what made it worthwhile both then and now, was being a small part of a large and willing community of very different people, all over the country and the world, who did complicated and stressful things again and again, not for any particular recognition or reward, but because it made other things possible."

John Stevens did a tour of Ivy League Universities in the US in 2004. At that stage, Harvard University had a bandwidth of three Gigabits per second while Rhodes was purring peacefully along at a mere two Megabits per second (Mbps).

"The Harvard people couldn't believe it. How on earth could we cope with so little? The average household in America then had two Mbps. We coped because Jacot and his team developed a system that allocated a usage quota of bandwidth to everyone. Each network user, from VC to first year student, had the same amount of allocated international bandwidth. (The modern term for this mechanism is a 'cap'.) We all had to share. We managed to do everything, with all our students and staff, on just two Megs.

"Harvard thought it was brilliant."

Stevens added: "Something else that was very vindicating for me, when I did the United States tour, was to see that Rhodes University was able to provide all the same services as the American universities, with a fraction of the resources.

"We all had to do multiple things, handle multiple facets, technologies, manage them and make them work. In the US, one guy does this, another does that. Here we had to take on all those roles. That's the environment, the way things developed at Rhodes."

WHERE ARE THEY NOW?

Thirty years on, most people have forgotten that Rhodes University first brought the enormous gift of connection to South Africa.

Mike Lawrie left Rhodes to join UniNet in Pretoria in 1994. For a few years after he retired, he remained the sole arbiter of the .ZA domain. He set up and still runs the Internet Service Provider for the retirement village in Garsfontein, Pretoria, where he lives with his wife Christine and many succulent plants. His record of how email and the internet was founded in South Africa can be found on <http://history.internet.org.za>.

Jacot became director of Rhodes University computer services in 2002, and retired in 2014, after which Natalie Ripley took over. Jacot still lives in Makhanda and is busy growing a small forest of edible fig trees from cuttings.

Pat Terry continued teaching a few courses and setting notoriously diabolical examinations after he retired in 2010. He did the university timetable up until 2020 - a tricky job that entailed coordinating subjects, venues and ever-growing student numbers.

Dave Wilson took over from Mike Lawrie as director in 1994, was elected to the Board of UniNet-ZA, then left for America in 1999. He now manages a technical support team for a company that makes communication products for the emergency services and first responder markets. He lives in Massachusetts.

Randy Bush still keeps in touch with his friends at Rhodes University. He and Terry always call on each other's birthdays. Randy Bush has remained a key player in the administration and provision of the world-wide Internet. After living and working in Japan for some years, he has returned to Portland.

John Stevens retired at the end of 2021. He considers it a great highlight of his career to have been part of the team that became a special part of South African internet history. He may continue doing something in the telecommunications field.

Peter Clayton taught Computer Science at Rhodes after doing his PhD in the subject. He is now the longest-serving Deputy VC in the country.

Radio astronomer Justin Jonas became the *de facto* architect of the MeerKAT radio telescope in the western Karoo, a precursor to the international Square Kilometre Array (SKA). The equivalent of half of the world's internet traffic volume pours out of these telescopes, a never-ending torrent of data down glass fibres from the Karoo to Cape Town, flowing on to radio astronomers all around the world.

Jonas is still working on the top floor of the Physics Building, where Rhodes University computing all began.

By Julienne du Toit



Music, He Wrote

As the Rhodes University/Mellon Foundation Artist-in-Residence, internationally acclaimed musician and composer Paul Hanmer has just completed his PhD with the University and is set to graduate. His story is truly remarkable.

The year 1961 saw the birth of Paul Hanmer in Cape Town. That was the same year Winton Marsalis was born, in New Orleans, USA. Both have become jazz legends, in their home countries and abroad.

That year also saw the arrival of the celebrated South African musical *King Kong* in the United Kingdom, with a number of the cast members never returning to South Africa.

The early-Sixties recorded a major exodus of noted South African jazz players who, undermined and harassed by the apartheid regime, migrated to foreign shores. They were making great music, but the government of the day did not see it that way.

"It was sonically subversive because it was an assertion of a non-tribal, urban Black identity, and the ideology of apartheid was that that simply did not and could not exist," commented leading jazz writer and scholar Gwen Ansell, author of *Soweto Blues*.

"All kinds of hideous and identity-erasing horrors were perpetrated on them when they performed," Ansell said. "There are some fairly famous cases of Black musicians being forced to perform behind a screen while a white musician mimed their notes."

Looking back at the early-1960s in South Africa, Paul Hanmer comments:

"A lot of people of colour wanted to get out of here."

A MUSICAL CHILDHOOD

Young Paul Hanmer's home in Crawford, recently renamed Rondebosch East, was a house of sublime musical influences - of all kinds.

"I grew up with Ella Fitzgerald and Louis Armstrong," he said. "But I also grew up with Big Band arrangements, rhythm and blues songs, and classical music. My parents, both teachers, felt that looking towards the West was a way out - out of youth and into adulthood, from innocence to experience, from not knowing things to knowing things, from being unemployable to being employable.

"It was not a case of considering options on the Cape Flats, in Cape Town or even South Africa. They were focussed on a possible future, for my older sisters and me, that was to an extent fed by influences from 'overseas'. My sisters took piano lessons, art lessons and ballet lessons. In 1970, when I was nine, I told my parents it was my turn for piano lessons."

So he began to take classical piano and theory lessons, a musical foundation that would be of immense benefit in years to come.

In the mid-1970s, exiled Abdullah Ibrahim (formerly known as Dollar Brand) recorded the iconic *Mannenberg*, the Cape jazz composition that was an instant hit. The piece became identified with the anti-apartheid struggle and was constantly being played locally and internationally at rallies protesting the policies and actions of the-then South African government. It made an indelible impression on the 13-year-old Paul Hanmer.

"That was one of the first South African music albums brought into our house," he later told composer Michael Blake in a breakfast interview. At the time, he had also been captivated by the sounds of the Paris-based Swingle Singers doing Bach in jazz format.

THE STUDENT BECOMES A SAPPHYRE

In the early 1980s, Paul signed on for a BMus degree at the University of Cape Town (UCT), where the celebrated South African College of Music lecturer Neil Solomon tutored him in piano.

"He changed me from being a young person who always played how he was told to play, to one who had to answer questions about myself and my approach to music - and to make my own decisions."

After two years at UCT, Paul took a leave of absence to join what he thought was going to be an original band.

"But things didn't work out and I was invited to join Taliep Peterson's band, Sapphyre. That's 'sapphire' *met 'n style*," he quipped.

"Our first gig was at the Hotel Elizabeth in Port Elizabeth (now Gqeberha). Our band uniforms were amazingly unsightly: vermilion-coloured shirts with gold thread (Fool's Gold, of course), grey trousers, black socks and grey shoes. Before starting at each residency we we played, we first had to sweep the stage, cleaning up after the band before us. We played the Southern Suns hotel circuit: PE, Plett, Umhlanga and East London.

"But I learned a lot from that time: how to work hard, and what it means to support a family from what you do. I also realised that so many people who love music and who live by music don't necessarily work as classical musicians. They work as musicians in cover bands, playing jazz, R&B and popular songs."

JOHANNESBURG BECKONS

In 1987, Paul Hanmer moved to Johannesburg, and immediately immersed himself in the vibrant club scene of the time. He began to dramatically expand his network of musician friends and associates who hailed from many disciplines, performers like James Phillips from the Cherry Faced Lurchers, singer Jennifer Ferguson, guitarist Ray Phiri and bands like Sakhile and Bayete.

"My first Jo'burg gig was downtown at Kippies, next to the Market Theatre. I was in a duo with Denzel Weale, another pianist-keyboard player. We played the cocktail hour set, warming up the crowd before the main act appeared."

The venue is named after the late saxophone legend, Kippie Moeketsi, who had also been part of the Old Jazz Guard that included Ibrahim, Miriam Makeba and Hugh Masekela.

Another Johannesburg district he was keen to scout out was Rocky Street, in Yeoville, a decidedly dissident cultural neighbourhood during the late-apartheid years. It was the City of Gold's answer to New York City's Greenwich Village, replete with late-night clubs, diners and an intellectually inspiring atmosphere.

"I didn't know Jo'burg at all, so I ended up in Rocky Street, Doornfontein," he said. "Interestingly enough, Doornfontein happened to be where many of the record companies were based at the time."

Unbeknownst to Paul, another young promising musician from Cape Town, McCoy Mrubata, had also arrived in Johannesburg. Both are today regarded as the 'elder statesmen' of South African jazz music, being part of what South African saxophonist

and composer Steve Dyer calls 'The Midwife Generation', age-placed between the Old Guard and the young musicians.

McCoy Mrubata played with many notable musicians in his time, but he was to form a special friendship with Paul Hanmer over a collaborative musical journey that spanned three decades.

When an interviewer asked Mrubata what his most-cherished career memory was, he said:

"Being on stage with my best friend Paul Hanmer."

THE PIANO AND THE TRAINS

In 1991, Paul was about to buy a flat he had been renting in Bellevue East/Observatory. Now it was time to send for the family piano.

"My parents bought a second-hand Görs & Kallmann piano. My sisters and I learned to play on it. They shipped it up to

Jo'burg for me and, although I never bought the flat, I've had the piano with me ever since."

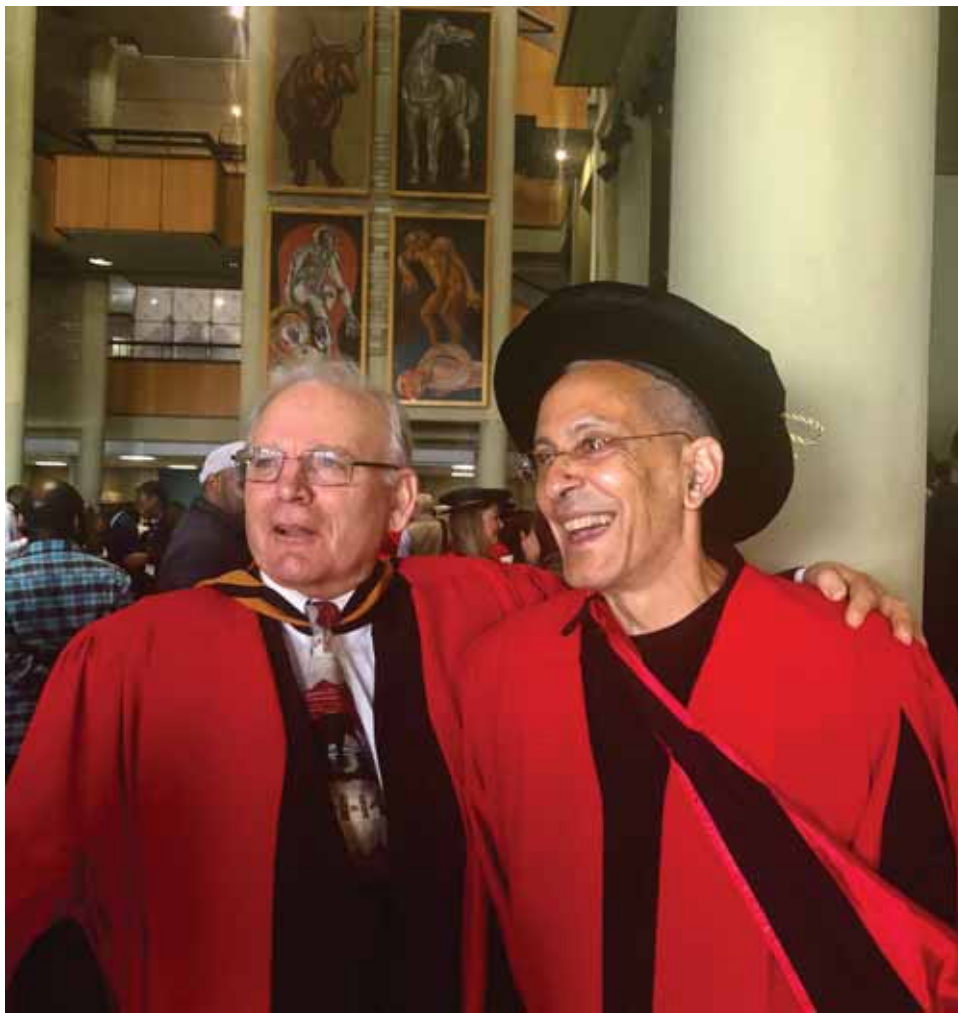
He formed the band Unofficial Language with drummer Ian Herman and bassist Peter Sklair and they recorded two albums together in the mid-1990s.

In 1997, Paul Hanmer produced *Trains to Taung*, his debut album as leader.

"I wanted to know how the early Hammers of this world used to sing and dance around the fire," he said. "I had this idea of a slow train going back in time to Taung, where the first ancient African human skull was found by Professor Raymond Dart.

"A year or so later, I went up to Taung by trans-Karoo train and performed there with McCoy and cellist Kendall Reid."

Trains to Taung was critically applauded as a crossover album that would make jazz more popular to a younger audience. It sold a meagre 200 copies within 30 days of release, but then gathered momentum and shipped more than 1 000 units every month. It went gold in May, 2002. More than 25 years on, Paul Hanmer is still dubbed "The *Trains to Taung* hitmaker" in the music press.



Professor Jeffrey Brukman and
Dr Paul Hanmer

Photo: William Fourie

In his book, *Sounding the Cape: Music, Identity and Politics in South Africa*, author Denis-Constant Martin quotes Paul on the album:

“*Trains to Taung* was written soon after the period when I was having doubts about my music. I wanted to answer the question: where is Paul Hanmer from? Where are all of us from?”

“One way to do that was to take very simple, age-old blocks - the I-IV-V, the marabi chords, which are a basic format for so much music that has come out of this country, in the way that, say, twelve-bar blues has become a format for so much that comes out of America.

“But I thought that sound must be extremely old, because it relates to a lot of folk music from all over the world. It’s like marabi is the mother of a lot of music. I thought of a train going back in time, to that place which marks how ancient the African human heritage is: Taung. The place where the Khoisan made the ancient elements of music, and the place where marabi came about is probably one and the same - it is an imagined space and time.”

After *Trains to Taung*, Paul recorded five more albums: *Windows to Elsewhere* (1998), *Playola* (2000), *Naivasha* (2002), *Water and Lights* (2005) and *Accused No 1: Nelson Mandela* (2006). A duo album featuring Hanmer with McCoy Mrubata entitled *The Boswil Concert* was released in June 2011. In 2020, he launched two new albums: *Morning into Evening*, a set of duos with clarinettist Robert Pickup (South African-born principal clarinettist with the Philharmonia Zurich Orchestra), and *Concordia*, a set of ten new solo piano pieces.

THE CLASSICAL COMPOSER

Another career landmark for Paul was The Bow Project, launched in 2002 by one of the most influential art music composers in South Africa, Michael Blake.

The Bow Project was a four-year project that produced a series of concerts for which musical pieces were commissioned in response to traditional African bow music.

Paul Hanmer and others were asked to transcribe traditional songs by Xhosa uhadi bow player noFinishi Dywili, arranging versions for voice and string quartet. He marks that creative effort as the beginning of his journey of writing for classical musicians, composing *uNtsiki* and *Ntwazana* for The Bow Project.

“During my 20s, I was musically confused,” said Paul. “Over a period of 12 years, I had studied Bach, Mozart, Beethoven and Chopin, all the masters. I now wanted to get rid of my classical training and play South African music.

“Then I realised, hang on, the piano is not an African instrument - it’s Western-origin. So the fact that I’ve studied the musical tradition of that instrument is good. The same goes for the violin and the trumpet - they are Western instruments.

“I realised it was to my advantage to have studied the classics, so I should not try to lobotomise my classical training- I must hang onto it for dear life.”

COMMISSION AND COLLABORATIONS

Over the decades, Paul has collaborated with a large number of other musicians and played in bands that included Tananas and the Cool Friction Band, even performing with popular rock singer-songwriter Wendy Oldfield on the Songlines Tour of 2015 in a well-received fusion of jazz, folk, pop and African rhythms.

Following the Bow Project, Hanmer wrote a string quartet for the Sontonga Quartet and a clarinet quintet for Robert Pickup of the Zurich Opera, the beginning of an ongoing musical collaboration. He also composed a suite of duets for double bass and cello for Leon Bosch, then performing with the Academy of St Martin’s in the Fields. He received multiple commissions from the South African Music Rights Organisation (SAMRO).

In 2014, an all-star group of South African jazz musicians formed a very special band called Uhadi. The group consisted of the late Sibongile Khumalo (voice), McCoy Mrubata (saxophone), Feya Faku (trumpet), Herbie Tsoaeli (bass), Justin Badenhorst (drums) and Paul Hanmer on piano.

They went on extensive tours of the USA between 2014-2016. On one of their tours, Uhadi played a two-week residency at Dizzy’s Club, organised by Jazz at Lincoln Centre in New York City. Apart from performances, the residency also included educational workshops at the David Rubenstein Atrium at Lincoln Centre.

In 2018, Paul Hanmer premiered his *Requiem for The 1st Peoples*, at the St Francis of Assisi church in Parkview, Johannesburg.

“African identity in Hanmer’s requiem is a beautifully nuanced, complex thing,” wrote Gwen Ansell. “He draws not only on African foundation narratives and musical idioms but also on the multiple layered experiences of a composer of colour growing up in an apartheid city where the St Matthew Passion played in his local cathedral. All of those are equally part of him, and inform his music.”

THE MOZART FESTIVAL

Paul Hanmer was chosen as composer-in-residence for the 2012 Johannesburg International Mozart Festival, composing two orchestral works: a single-movement piece for flute and

orchestra, and a triple concerto for violin, jazz trumpet and piano, with string orchestra.

Noted musicologist Professor Jeffrey Brukman, wrote this about the piece:

“Shifting between diverse genres, *Nachtroep* encompasses a unique creative space, resulting in a work that moves across a multiplicity of artistic and performance domains; that merges aspects of classical concerto structure and instrumentation with concepts derived from the baroque *concerto grosso*.

“Inspired by the wide-ranging repertoire of night troupes (*nagtroepe*) parading through Cape Town’s streets during Second New Year’s Day celebrations, this work’s forward-looking design juxtaposes unusual differences such as gavotte and salsa, and romantic-styled melody with passages reminiscent of Barry White.”

THE BRUKMAN CONNECTION

Brukman is Associate Professor in Music Theory and former Head of the Department of Music and Musicology at Rhodes University.

“Although I first encountered Paul Hanmer’s work in any kind of detail when I supervised his Master’s degree in Composition in 2013, I had heard his music before at the National Arts Festival here in Makhanda. There was a piano piece and another for two marimbas, called *Victoria West*.

“I found his work to be strikingly original.”

Brukman would go on to supervise Paul Hanmer’s PhD, and co-ordinate the Rhodes University/Mellon Foundation Artist-in-Residence Programme which featured Paul as the artist-in-residence. He is also working on a book on the life and music of Paul Hanmer, with Dr Nishlyn Ramanna (King’s College, London) as co-author.

“Is he one of the great jazz pianists? Well, you don’t get invited to play, time and time again, at the Lincoln Centre unless you are really good.”

For Paul’s Master’s, he and Professor Brukman communicated mainly via e-mails and telephone calls. Paul had to present three major compositions and a 10 000-word reflexive commentary on them. One of his external examiners awarded Paul an incredible 100 percent mark for his Master’s portfolio, and suggested that Paul should go on to write a symphony, an idea which Professor Brukman later pursued.

“What stood out for me concerning Paul’s work was the fact that he was able to locate his music in South Africa and on the African continent at large,” said Professor Brukman. “You often find South African composers who could be situated anywhere in the world, writing good Western art music.

“But Paul is situated in South Africa. From his music you can pick up the rhythmical and melodic African influences, which all add up to knowing this is unusual music that makes perfect sense. He takes Western instruments and creates a sound world which is not alien to Western music, but adds in a whole new vibrancy. You can tell this is not a man writing music from, say, Edinburgh. Paul is writing music from here, breathing in all the influences he can possibly get from his place of origin.”

CLASSICAL TRAINING PAYS OFF

Brukman said Paul’s classical training was integral to his work as a composer.

“He’s able to notate a full orchestral score, and understand the orchestration around that score. For instance, he can work knowing which woodwind instruments to blend together to make the sound he requires. If you haven’t got that orchestration background as a classical musician, you would not know how to do that.

“He can take his ideas and put them down on paper. He can do things which many well-trained musicians cannot do. For instance, in his triple concerto, he has sections where the piano soloist goes off and plays improvisatory sections, just like a jazz pianist would. And Paul has notated those improvisatory sections, which is something unique because when it’s played, it sounds like it has been formulated on the spot.”

His *Requiem for The 1st Peoples*, a string quartet and a symphony made up the composition elements of his PhD submission. The symphony is sub-titled *From the Old World*. Now, however, he was faced with having to write an extensive reflexive commentary on his own compositions - a process many musicians find utterly daunting and, at times, painful.

“Writing a reflexive commentary on your own creative process takes another kind of thinking,” said Professor Brukman. “It’s very difficult for composers to first create the music (a different dimension of mental acuity) and then go back and look at what they’ve written on the spot, and turn that into an analysis.

“But the international examiners’ reports were glowing. They were supremely complimentary of his writing of music and how he has structured his commentaries on each piece.”

Three North American examiners were selected for Paul’s PhD: one is a Nigerian-born composer and ethnomusicologist with special knowledge in the links between Western and African musical elements, another is a young, Florida-based composer with a wide repertoire of musical styles and idioms.

“Then there’s the Texas-based composer,” said Brukman. “He has written many works which draw on Western, Mexican and South American influences.

“So they all have an affinity with what Paul is doing, and they were all blown away by what he wrote.”

INVALUABLE KNOWLEDGE

Dr William Fourie is the Post-graduate Co-ordinator in the Music Department at Rhodes University. His special focus lies in experimental art music in the post-apartheid era.

"I first met Paul Hanmer back in 2013, while working for an NPO called New Music South Africa," he said. "Paul and I were on a panel evaluating submissions for the International Society of Contemporary Music festival that year. He was really involved in the new music scene, despite being from a classical and jazz background. So I knew him only from the performance and compositional world."

"I went overseas to further my studies and, when I returned, I was delighted to hear that Paul Hanmer was now a PhD student at Rhodes University. He is exactly the type of person we need in our institution. It bolsters our standing both as a university and an academic community. We learn so much when knowledge like his is codified in a reflexive commentary."

"The insights delivered in a document of that size, the thoroughness and rigorous way of reflecting on his own process, will sustain a generation of scholars working on his music. This is Paul Hanmer thinking deeply about his own practice - these are rare insights."

By Chris Marais

Hanmer's Wordplay

Paul's composition titles often reveal his social awareness, quirky sense of humour and eccentric wordplay:

"*Water and Lights* is, on one level, about the bills you get from the municipality. But it's also about moving away from fossil fuels and managing our scarce water resources;

"*Tiekiemonster* is a word from my home neighbourhood in Rondebosch 'Middle' East, referring to the little trinkets you used to get in children's lucky packets;

"*Gracie's Place* was a strawberry farm in the Western Cape, where my parents first met;

"*24, Maraisburg Road* is the Jo'burg address of my brother-in-law;

"*Game Reserve Effect* comes from my wife, Angela. You aren't allowed to take fresh milk into a game reserve, so you have to take evaporated milk. As a result, everything you eat ends up with that distinctive taste;

"*Laundry Day?* That was about how the police raided Liliesleaf Farm north of Jo'burg and arrested Nelson Mandela and his fellow ANC members. The cops arrived in a laundry van;

"*Bobbejaanland* was something I saw on a billboard on the way from Schiphol Airport to The Hague, advertising a chain of pre-schools in Holland. It was founded by a certain Mr Bobbejaan."



Peak Performance

Rhodes University's Department of Human Kinetics and Ergonomics is playing a major role in changing how South Africans treat their bodies - on the sports field, in the workplace and with activities of daily living.

Ever-increasing physical strains experienced in elite international sporting arenas and injuries in the workplace (including the digital-world curse of sitting still for too long) has made the study of the human body in motion a critical one.

This growing need could well be the reason that the Department of Human Kinetics and Ergonomics at Rhodes University has a cohort of more than 40 Postgraduates, working on different projects to address these problems.

"Our students love this course because, although it's tough, it's also multi-disciplinary," says Associate Professor Candice Christie.

THEORY AND PRACTICE

There are few people more qualified to lead this ground-breaking department at Rhodes University which Associate Professor

Christie did as HoD from 2011 until 2016. Stepping back from her HoD role in the middle of 2016 enabled her to focus more on her research and in particular her Cricket Research Group of which she is the Principal Investigator; a group which includes coaches, academics from across the global, members of Cricket South Africa, Gary Kirsten Cricket and the Gary Kirsten Foundation as well as local schools within Makhanda. Professor Christie has the academic credentials and the practical experience to match.

She holds an Undergraduate degree in Human Movement Studies (Nelson Mandela Metropolitan University) and a BSc (Med)(Hons) Exercise Science (Biokinetics) degree from the University of Cape Town. Her MSc and PhD degrees and her Postgraduate Diploma in Higher Education were completed at Rhodes University and today she is a highly regarded National Research Foundation (NRF) Rated scientist.

ASSOCIATE PROFESSOR CANDICE CHRISTIE PEAK PERFORMANCE

But it was her five-year stint at the Sports Science Institute of South Africa (SSISA) in Cape Town that gave Associate Professor Christie the hands-on, extra-academic and practical experience that has rounded off her expertise.

The Institute, of which the well-known Professor Tim Noakes is co-founder, promotes peak sports performance and prevention of sports injuries among South Africans. The oft-quoted strategy at SSISA is "Wellness, Performance, Education and Research". It hinges on the "execution, application and dissemination" of science and works for athletes in all disciplines. Her mentors here include Professors Mike and Vicki Lambert who continue to mentor her today.

"Without them, I would never have got this love of academe - their support, friendship and generosity to provide opportunities is unwavering," Associate Professor Christie says.

BIOKINETICS IN PORT ALFRED

"Then my husband bought a supermarket franchise in Port Alfred and we moved back to the Eastern Cape," says Associate Professor Christie.

"At that stage, I had no academic career aspirations, so I opened up a biokinetics practice in Port Alfred."

Biokinetics is therapy that operates on individualised exercise and physical activity. It aims to rehabilitate aspects of the body and promote a healthy quality of life through movement.

"Physiotherapy takes care of the first phase of acute rehabilitation and then biokinetics focusses on strengthening exercise to get the individual ready for activities of daily living or sport," says Professor Christie.

The term 'biokinetics' is a combination of two Greek words: *bio* (life) and *kinesis* (movement). The profession originated in South Africa and went through several names and phases until the early 1980s. In 1983 it was recognised as a medical discipline by the SA Medical and Dental Council, and four years later the South African Association of Biokinetics was established.

The earliest form of what became known as biokinetics began back in the 1930 when the South African Defence Force set up an interdisciplinary physical fitness and performance enhancement programme in conjunction with a team of doctors, physiotherapists, physical education instructors and occupational therapists.

The practice has now also been taken up in countries like the United Kingdom, India and Australia.

A VISIT TO RHODES UNIVERSITY

Not long after moving to Port Alfred, Associate Professor Candice Christie paid a visit to Rhodes University's Department of Human Kinetics and Ergonomics in Grahamstown (now-Makhanda) and was shown around by the HOD at the time, Professor Pat Scott.

This Department was first established in 1945, based on a one-year diploma in Physical Education. In 1982, its name was changed to Human Movement Studies and in 1996 it became the Department of Human Kinetics and Ergonomics.

"With each of these changes, the curriculum has changed but not in an organised and systematic manner but rather on an individual lecturer level," Associate Professor Candice Christie writes in a departmental mission statement. "To further compound this, we are a multidisciplinary department focusing on human movement and so we have modules within our course covering physiology, biomechanics, anatomy, ergonomics, to name a few."

At the time of her visit to Rhodes University, the Physiology lecturer in the Department was about to leave.

"Professor Scott asked me to take over the course," says Associate Professor Christie. "This is how I discovered my love for academia. Professor Scott provided me the opportunity to become an academic and was also a major mentor in my life."

A year later, she was offered a permanent position in the Department, and simultaneously began her Masters studies in Ergonomics. While her initial research interests at the Department of Human Kinetics were within the field of Human Factors and Ergonomics, her love of Sports Science never went away and on completion of her PhD she then went back to the type of research she started at UCT while including some HFE work in the early years post-PhD. Her research at UCT looked at high fat feeding in ultra-endurance cyclists with her sample being an elite sample competing in the local Argus cycle tour.

"As the HKE department is so multi-disciplinary, it is quite a lonely journey as I am the only staff member in the department focused specifically on Sports Science, and so most of my collaborations are with other researchers within South Africa and, globally," says Professor Christie.

"This does not detract from the amazing work the staff in the department are doing. We are represented on numerous national and international forums and our research is diverse, impactful, and socially responsive. With a cohort of only 5 academic staff,

we have over 40 Postgraduate students a number which has grown over the years due to the exceptional work ethic and commitment of the staff. This is, however, not sustainable and for us to continue on this trajectory we definitely need more manpower - that is a work in progress!"

ON THE CRICKET FIELD

It is in the sporting arena of elite- and school-level cricket that Candice Christie is perhaps best known outside of her University environs.

It is interesting that in the small town of Makhanda and within the Department of Human Kinetics and Ergonomics (HKE) at Rhodes University, one of the largest cricket research groups in the world is housed. The foundation of this research group comes from the Department of Sport and Recreation, South Africa's logo: "*From Grassroots to Protea*".



Associate Professor Candice Christie and Elrico de Bruyn.
Photo: Chris Marais

South Africa produced many great cricketers who came from the Eastern Cape, a province regarded as one of the poorest in the country, with a regrettably high unemployment rate. The HKE Cricket Research Group aims to assist with employment opportunities in the Makhanda (Grahamstown) area and evoke this rich culture of success and passion.

With generous support from the National Research Foundation, Candice Christie started the group in 2010 and established a research niche.

"The group presents their work at many national and international conferences and was awarded a contract to manage the Protea's Men's and Women's side workload data. This resulted in a successful collaboration with Gary Kirsten Cricket and the Gary Kirsten Foundation; with the goal to provide cricket ecosystems in Joza, a local township in Makhanda.

"The purpose of these cricket and coaching development initiatives is to ensure that we produce results, are sustainable and enrich the lives of our community.

"The Foundation objectives we espouse are:

- Identify and discover talented individuals in disadvantaged communities.
- Provide opportunities for teams and individuals from disadvantaged communities to receive quality cricket coaching from locally sourced, developed and accredited coaches.
- Implement coaching development programs for aspiring cricket coaches to earn a sustainable income and service the needs of the cricketing community.
- Create opportunities for schools to offer cricket as an extramural activity through the provision of coaches and cricket facilities.
- Effective utilization of municipal sports and community facilities."

Notwithstanding their community engagement endeavours, the HKE Cricket Research Group is involved in dynamic projects, such as the development of a prototype bat sleeve, to improve batting performance. Strategically placed sensors aim to measure the accuracy of ball placement on the bat, the force generated to hit the ball as well as the angle of bat swing. This work is done in collaboration with the Departments of Physics and Electronics and Computer Science. The group seeks to establish long-term strategic collaborations with partners in and outside the academic world, further the development sport, continue ground-breaking research and continue our relevance on a regional, national and international level.

"Sport has the power to change the world" Nelson Mandela.

A CONNECTION WITH GREG KING

"My concentration on cricket happened by default," says Candice. "In 2000 I was doing my Masters here at Rhodes



Michaela Davies and Bonolo Masoka testing repetitive strain in the laboratory of the Department of Human Kinetics and Ergonomics. Photo: Chris Marais

University and met a former Border cricket player called Greg King, also studying in the Department of Human Kinetics and Ergonomics. He later became Border's strength and conditioning coach, going on to the same position with the Proteas national men's team and then the Chennai Super Kings in India.

"Greg wanted to do a study on thermos-regulation on batters, looking at skin temperature, core temperature, and sweat loss in response to hot and cold environments while batting.

"I assisted him with the data collection and grew to love the performance side of the sport, the injury side and the science behind rehabilitation. In the course of the, I obviously had to learn the ins and outs of the game."

CRICKETING INJURIES

To an outsider, the game of cricket often appears to be a squad of players lounging in a sun-drenched stadium, occasionally chasing a well-struck ball to the outfield. Most of the fielding team's action seems to be confined to the pitch-side interaction between bowler, batter and wicket keeper. And even that can look a little lackadaisical at times.

But players constantly suffer from head injuries, fractures, strains, sprains, bruising and even, on occasion, open wounds. They sometimes have to play Test matches in countries with hot, humid climactic conditions and are susceptible to dehydration, heat stress and sun damage.

Not only do cricket players have to keep fit and supple to play the game, they also have to wear the correct protective clothing on the field. The application of all these safeguards (and injury rehabilitation) represents the disciplines of Sports Science and Human Factors and Ergonomics perfectly.

"Our elite players have a heavy game-load," says Candice Christie. "So it's crucial to have good support staff standing by to attend to them when required."

"Fast bowlers seem to take the most strain on the field. We lose a lot of fast bowlers while they're still at school, because many schools do not have the same kind of player-management structures they have at elite levels. Youngsters start playing cricket at nine years of age, and if they're fast bowlers, most of them have had stress fractures by the age of 16. However, the fact that schoolchildren do other sports like water polo and often have academic stresses, makes it difficult to gauge their cricket work load."

Candice says the stop-start nature of cricket play (intermittent activity) adds to injury potential.

"And then you have the situation say, mainly at elite level, where a fast bowler is taking wickets regularly and the coach wants to keep playing him, match after match. That's when medical staff step in, and there is often tension between the two camps. Unfortunately, coaching often tends to win over the medical side."

Associate Professor Christie's Cricket Research Group has been to every Medicine and Science in Cricket World Congress since it was in South Africa in 2003. In 2015 she took a cohort of four Postgraduates students with her and, in 2019, Candice Christie led a cricket research group to the 6th World Congress of Science and Medicine in Cricket Conference at Loughborough University in the UK. The purpose of the conference was to bring together sports scientists, physiologists, academics, students, administrators and coaches all interested in current research into the sport.

The South African team gave oral presentations on player workloads, sleep behaviours during high-level games and the time-of-day effects on the performance of adolescent fast bowlers.

THE BATTING SLEEVE

"As mentioned earlier, we have also gone into pre-prototype development of a batting sleeve that measures many new and useful aspects of bat-ball contact," says Candice. "This project involves collaboration with Gary Kirsten's cricket academy, the

Physics and Electronics Department, our Computer Science people, human movement experts and coaches.

In her funding application, Candice described the project thus:

“It is aimed at developing a light-weight, cricket bat sleeve prototype which can be placed on the face of any cricket bat with correlating prototype sensors that can be placed inside the front panel of a bat.

“These will measure the accuracy of ball placement on the bat, force generated to hit the ball as well as the angle of bat swing. From this, and based on the flight path of the ball, a performance outcome may be measured. This information will be displayed on a prototype software application for real-time feedback.”

According to Associate Professor Christie, the real-time feedback would be of great value to all players, cricket coaches, parents and broadcasters.

“It could be used to improve coaching, player experience and fan experience, by making the game more tangible to viewers and spectators on their smartphones.”

KEEPING CHILDREN HEALTHY

The Department also runs a Young Warriors cricket development programme with members of Gary Kirsten Cricket, who have come on board to offer free coaching to coaches. The other members of the programme include the Rhodes University Community Engagement Office, Kingswood College, St Mary Waters Primary School, Grahamstown Primary School and George Dickerson Primary School.

“In the poor rural schools of the Eastern Cape, where there is a great passion for cricket, concrete pitches are the most convenient to set up,” she says. “Three of the less privileged schools in the Makhanda area also play midweek matches against Kingswood College, which has superb facilities. This gives their players essential game time.

“But in general, schools in our poorer areas are in dire need of basic sporting facilities like netball courts and jungle gyms.”

THE GREATEST ASSET

Her major passion is Postgraduate students; involving them in all that her research work and research grants enable.



Associate Professor Candice Christie, RU Department of Human Kinetics and Ergonomics.

Photo: Chris Marais

“Most of my publications contain Postgraduate students as co-authors and I ensure they submit their work to conferences and travel to (a) gain experience in articulating their work to a broader audience and (b) to provide them with the opportunities to form their own collaborative networks looking to their futures. The students are what drive me to be better and they are my greatest asset - investing in them is investing in myself.”

By Chris Marais



The Academic Cyber Sleuth

Professor Stephen Flowerday of the Rhodes University Department of Information Systems is the Faculty of Commerce Research Awardee of 2021. His mission is to teach the world how to keep its computer systems secure.

A deep grounding in the field of communications and computing, and an accountant's eye for figures and systems, have given Professor Stephen Flowerday the perfect skills needed to navigate the intense world of cybersecurity.

In addition, he is a prolific researcher and presenter, having authored and co-authored more than 120 refereed publications in a career spanning close to two decades.

"My research interests lie in behavioural information security, information security management, and cybersecurity," Professor Flowerday says.

"I am also a reviewer for conference publications, an editor and a reviewer for several academic journals, and I serve on multiple panels of the South African National Research Foundation (NRF)."

In recent years, he has become fascinated by the human urge to "click", which is exploited every second of the day by cybercriminals. But first, he had to dedicate decades of training, real-life experience and skills acquisition to become an accomplished cybercrime fighter.

OLD SCHOOL EXPERIENCE

Based on the North Coast of KwaZulu-Natal, Professor Flowerday's mother was a schoolteacher and his father an electrical engineer. The family then moved to East London and Stephen completed his secondary education at Cambridge High School.

"In 1984, I was conscripted into the SA Navy," he says. "I went on my first typing and telex courses, acquiring proficiency skills

PROFESSOR STEPHEN FLOWERDAY THE ACADEMIC CYBER SLEUTH

that included Morse code. I even learnt how to use the naval semaphore flags.

“The Navy was constantly intercepting Morse code communications from passing ships in those days, and we had to sit and transcribe them all. As a national serviceman, I could only get to a ‘confidential’ level - to have access to the ‘secret’ and ‘top secret’ information, I would have had to be a Permanent Force member.

“Even so, I think we servicemen probably did intercept some interesting messages from, in particular, the Russian ships passing through our waters. But as soon as you picked those up, you would have to hand them in to your Petty Officer and you’d never hear any more about them.”

He also remembers that, during his Navy days, the fax machine at his Salisbury Island, Durban, base was “a classified instrument”.

“It was kept in our office in a large secure case, and was very complicated to operate. When a fax had to be sent or received, an officer would come along, the key to the big box dangling from his belt. He would unlock it, we as communications people would send the fax, and then he would lock it up again. That was communications technology in the mid-1980s.”

EARLY CAREER

After his military service, Stephen Flowerday landed a job with an accounting firm, but it did not resonate with him.

“I was also registered with the University of South Africa (Unisa), doing a Bachelor of Accounting (BCompt.) degree,” he says. “It is a highly specialised Undergraduate programme that centres on Accounting Science. In this course, you specialise in processing large amounts of financial data.

“However, at the company I first worked for, I noticed many of my older colleagues had little or no personal computer (PC) knowledge. My Navy experience came in handy, in this regard.”

Flowerday went on to another company, where his job mostly involved administration work - at first.

“That company then decided to make the transition to a networked PC environment,” he says. “I knew quite a bit about this already so, even though they had their own technical people, I was able to install the software, help network it and set up their printers. Back then, general office people did not have these skills.”

Then someone suggested he should do this kind of work on a permanent basis.

“And that’s how I morphed into the field. Eventually, the company sent me to install a system at the Orange Lake Country Club in Kissimee, Florida, USA. The client was a hotel chain that was opening up many new resorts, and computer network systems had to be installed in all of them.”

Meanwhile, Stephen Flowerday kept studying. His next academic step was a BSc in Business Administration from Century University in the United States.

A REMARKABLE OFFICE ADDRESS

“At the end of 1993, we moved over to the United Kingdom, where I got a job as a management consultant and business analyst - but I was actually implementing computer systems. By then, all the major companies were changing over from mainframes to PCs, and I had already done this twice before. And I was also fortunate that I had the basic accounting background was familiar with systems that the technical people didn’t understand.”

The auspicious address of his new employer was No. 1, London Bridge.

“By now, we were living in Oxfordshire, in a village called Wheatley,” Stephen Flowerday says. “I was also studying for my MBA at Oxford Brookes University in Oxford. I would either catch the train into London or drive to the airport, if I was to fly out.”

Part of his new job involved a two-year stint in central Europe (Hungary, Slovakia, Czech Republic and Poland) installing enterprise resource planning (ERP) systems in the client company.

“An ERP system links all the systems within the company concerned, from stock management to sales to finances,” he says. “I specifically used German software technology called SAP that manages business operations and customer relations.”

The wide range of SAP software included supply chain management, human capital management, product lifecycle management and financial systems.

“I travelled up and down in cars, trains and planes between these four countries and went back home to Oxfordshire on weekends. The flights there and back were mostly five hours long, so I would get home at 10pm on a Friday and leave again at 4am on Monday.”

NO CARTOON SOCKS, PLEASE

He found the City of London corporate culture interesting - and strangely habit-forming.

“In other words, you could not wear cartoon socks. You wore dark socks, and I had a suit for every working day of the week, either charcoal grey, dark blue or a shade of black. It was the British Way. And yes, there were cufflinks.

“I still tend to dress like that.”

Consultants like Stephen Flowerday were ‘body-shopped’ out to clients on specific project. Body-shopping, by corporate consultancy definition, is the practice of firms recruiting information technology experts in order to contract their services out on a tactical short- or long-term basis.

“They charged us out by the hour and you had to do everything by the rules,” he says.

“Every couple of years, when there was a new project in the office, Human Resources would take us through behaviour protocols. We’d sometimes have pizza together with new arrivals, and the HR people would observe us from behind a one-way mirror. Afterwards, they would meet with us and advise us on our social skills.

“I went from setting up the PC networks to setting up the business procedures,” he says. “This involves the whole journey, from selling something to where it updates the ledger, updates the financials, pays the taxes, and makes sure that the stock is current. All those modules fall under Enterprise Resource Planning - ERP.

“In those days, it was all about re-engineering the business processes to move into more efficient, effective ways by updating everything.”

His company, Computing Resource Centre, was taken over by Callcentric, which was established with venture capital, and here Stephen Flowerday was both an application manager and the youngest director in the firm.

“Callcentric helps companies enhance cash flow quickly through an unmatched combination of software, advisory services, and payments that transform how companies purchase, pay, and get paid.”

RETURN TO SOUTH AFRICA

However, Stephen and Jacqui’s third child was expected by Christmas, 1999. And Jacqui had had enough of raising children in gloomy England with an often-absent father.

“By now, we’d also bought a house along the Nahoon River in East London,” he says. “Jacqui, tired of the British weather, was determined that we should live there.”

So, for about two months, Stephen tried commuting between Europe and South Africa every second weekend, staying for four days and returning once more.

“It just didn’t work out. I heard about a job going at Port Elizabeth Tech (now part of Nelson Mandela University) teaching ERP systems, and within a year I was the manager of their campus in East London.

“The Dean then said that if I wanted to remain in academia, I should do a PhD. So I did a PhD in IT Audit through the University.”

His Doctoral thesis was on Continuous Auditing, running all the ERP systems in real time.

“I then joined the University of Fort Hare’s East London campus as the Head of Department for Information Systems,” says Professor Flowerday. “And in January, 2018, I was employed by Rhodes University as a Professor in the IS department.

“I thrive on working where IT and business intersect, and I believe that my strengths lie in the information systems arena. My business experience has served me well, and my reading and interests tend to favour management, commerce, and the digitization of society.

“This has in turn influenced my research since I have found it easier to publish in fields in which I have more confidence and depth. My technical skills have provided me with a solid foundation in information systems; however, any competitive advantage I may have achieved comes primarily from working with people.”

DIRTY CYBER TRICKS

Professor Flowerday cites his research interests as cybersecurity, behavioural information security, and information security management.

“Most vulnerabilities in computers are human-based and not in the technology,” he says. “One of my PhD students is working on a paper about Optimism Bias. He is the CIO of a company with about 750 staff members, and his firm has experienced a number of phishing attacks in the past.”

Posing as a trustworthy entity, a digital attacker contacts his intended victim by email, telephone or text message in order to gain sensitive information like credit card details and personal passwords. This is a world that also includes terms like malware, proxies, spyware, adware, botnets and spam.

“That student surveyed 240 of his staff and found that 110 of them displayed Optimism Bias. That’s when you believe that nothing will ever happen to you, whereas the average person

accepts that both good and bad happens to them. The Optimism Bias group - many of them in his IT department - were more vulnerable to phishing attacks.

“Phishing is just a scam to get your credentials to gain access to your bank account, or to open accounts in your name. Do you know how many people in this country have been blacklisted because they made purchases without knowing it? You can even buy other peoples’ credit card numbers on the Dark Web.”

THE DARK SIDE

While most internet users only use the surface web, others use custom software to access what is known as the Dark Web, part of another digital ecosystem called the Deep Web.

Also known as the Darknet Market, this part of the internet is infamous for trading in illegal activities and products like weapons, identity fraud resources, pornography, instruments of terrorism, human trafficking, and the illicit drug economy, with cryptocurrency as the preferred manner of payment. This is where blackmailers and hackers also sell their services. There are even social media platforms linked to the Dark Web.

Security awareness training (SAT) is one of Professor Flowerday's research specialties. This specifically involves teaching staff members in a company about the various tricks used by internet fraudsters, and guiding them into best-practice behaviour.

“I would do penetration testing with the staff to find the company's weak link,” he says. “I look for those who are in debt and need money, and they are often extroverts (optimists). You phish them by sending an email with a link, and if they click on it the link can infect their PC with malware, e.g. a keylogger that collects their login credentials.

“I also do IT governance, because it fits with security and compliance. For an example of IT governance, let's talk about a health information system in places like the United Kingdom, where all your medical data is centralised. Here I would apply access control, while giving attending doctors as many rights as possible, so they can treat you properly. But there's only so much of your personal information the nurse, your employer or even your family are allowed access to.”

COLLABORATIONS WITH STUDENTS

Professor Flowerday is particularly proud of the students with whom he has collaborated on various papers relating to cybersecurity.

“I work and publish with my top students,” he says. “They know what I'm doing, and they have had experience as tutors and teaching assistants.”

“We've done a lot of research on passwords and passphrases, and this new era of social media, where companies offer services for free, while making money by selling your personal data.

“Google, for instance, is actually very predatory. They search through all your emails, they claim they do it for keywords, for reasons of national security and to ensure you receive content that would interest you. However, how does Google, whose parent company is called Alphabet, become worth two trillion dollars?”

“They see what you watch on Netflix or YouTube, what you tick, like, swipe left, your location, where you live, they know where you're going next Tuesday night. They pick up on your regular patterns because you have habits which show up on your smartphone and credit card purchases.”

One research paper produced by Heather Parker and Professor Flowerday was titled *Contributing factors to increased susceptibility to social media phishing attacks*, and concluded thus:

“Certain people are more susceptible to phishing attacks on social media as a result of their online habits, information processing, ICT knowledge and personality traits. As such, these identified people should be more aware that they fall into this susceptibility group and thus should behave more cautiously when engaging on social media platforms.”

When asked to sum up his career thus far, Professor Flowerday says:

“My cybersecurity insights have been influenced by the typical management drive for productivity, optimisation, and efficacy. Accordingly, my understanding of management principles relating to people, processes, and technology has dovetailed with my specific research area.

“Additionally, my academic qualifications, management consulting background, and tenure as a faculty member in commerce have provided me with a solid foundation. In this context, I continue to conduct research and supervise postgraduate students.”

By Chris Marais



Art, Memory and Blank Pages of History

Associate Professor Maureen de Jager, HOD of Fine Art at Rhodes University, has completed a ground-breaking practice-based PhD project after a research journey of personal and historiographical discovery.

In what is believed to be the first fully practice-based Fine Art PhD project in South Africa, Associate Professor Maureen de Jager, Head of the Department of Fine Art at Rhodes University, focussed on aspects of the South African War, and how the conflict was later mythologised and selectively re-told by Afrikaner Nationalist conventions of the early to mid-1900s.

Titled *Refocusing the South African War through praxis*, her PhD comprised a series of 11 original, hand-bound artist's books and three performative interventions. It was exhibited at the National Archives of the UK in June 2019, for her PhD examination. It was then exhibited again, together with a new series of four books (produced in 2021) on the National Arts Festival Main Programme in 2021.

Maureen's interest in the South African (Anglo-Boer) War was initially piqued when her father translated an important family memoir from the original Afrikaans to English for her and her sisters.

Clan biographies and family journals are, possibly, the most treasured legacies anyone could leave behind for generations of relatives to follow. They are an essential part of knowing one's origins - and what could shape the future.

The family memoir in question was that of Maria Anna de Jager, Boer fighter Johan de Jager's wife and the mother of five children by the time she was captured in August, 1901 in the Paul Roux area of the Orange Free State (now Free State Province).

ASSOCIATE PROFESSOR MAUREEN DE JAGER
ART, MEMORY AND BLANK PAGES OF HISTORY

In a journal, written more than 40 years after the end of the South African War, Maria de Jager records:

I will never forget the flight of that morning and can still picture it vividly. God alone knows what we went through. I wasn't feeling very well and everything went like the wind. Each tried to get through the gullies ahead of the other. Girls and boys on horses, some with a younger brother or sister on the horse with them to try to escape. Women and children on open carts, mothers and children on wagons, old men on horseback, racing to escape. Men and beast in flight over earth and gully to escape.

"However, my great-grandmother was pregnant at the time, later giving birth to a baby boy in the Winburg concentration camp," says Maureen. "He lived for ten days before he succumbed, from bronchitis (according to the Winburg camp register).

"Shortly thereafter, her two-year-old child died. Then two of her other children died, on the same day, within an hour of each other."

The journal entry:

They eventually died in Grandfather's square tent, within an hour of each other on the evening of Sunday 22nd December. That after Stienie Botha stayed with them while I cleaned up a bit in the round tent. When I got back, I lay down across their bed - Grandfather had two large beds. I was very tired, exhausted, and fell asleep, dreaming that I was dying in their place. I awoke feeling totally confused and a woman took me by the arm and led me outside to get some fresh air.

When we emerged from between the tents we were quite close to the wire and two armed soldiers threatened to shoot us unless we turned back immediately. It was almost too much for me, two children dead, two dying, and to be threatened with rifle and bayonet when all I wanted was a bit of fresh air to ease my grief.

"Within three months, my great-grandmother lost four children," says Maureen.

In 1943, Maria de Jager penned her memoir, making a hand-written copy for each of her children, one of them being for her youngest, Moritz, born after the war. His copy was eventually inherited by his son Johan (Maureen's father), who translated it into English for his daughters.

"My father, an Afrikaner, had married my very English-speaking mother, Peggy O'Connor, and so my sisters and I had been brought up as English speakers," says Maureen.

"There's also a copy of Maria's memoir in the Anglo-Boer War Museum in Bloemfontein," she says. "I worked with our inherited document for a decade."

Maureen also had two historic family photographs of that time. One was of Maria de Jager and her five children, with an inscription on the back that reads:

Konsentrasiekamp, Winburg 1901.

"Then there is a death portrait of her 10-day-old baby boy, and it looks like he's sleeping, holding a single flower in his hand."

In response to the memoir, Maureen produced *Maria's Story*, which comprised an exhibition of mixed-media artworks (including large works on steel, found object sculptures, video, text-based installations, an artist's book and a performance).

It was exhibited on the National Arts Festival Main Programme in 2012 and at the Oliewenhuis Art Museum in 2014.

A DISTANCE PHD

Maureen de Jager studied Fine Art at the University of the Witwatersrand, and then taught at the Greenside College of Design for two years. In 2002, she came to Rhodes University as a Sculpture lecturer in the Fine Arts department.

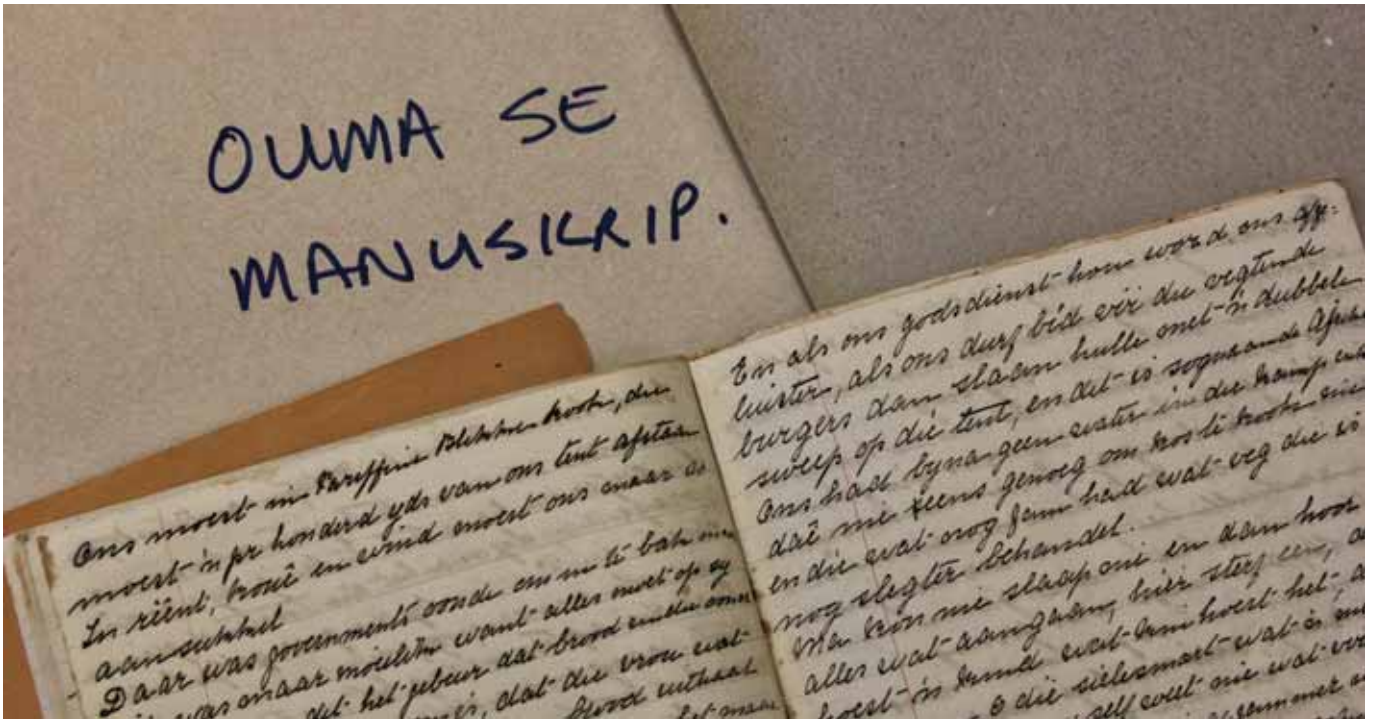
"In 2017 I was appointed Head of Department," she says. "By then I had been distance-working for my PhD through Kingston University in the UK for about a year. The Deputy Vice Chancellor of Research, Dr Peter Clayton, had nudged me, as a mature student, towards a PhD.

"At that time, PhD Fine Art courses were popping up in South Africa. However, I didn't really want to be a guinea pig in a start-up academic programme."

Maureen did some intense investigations and eventually came upon Kingston University, which runs a well-established PhD Fine Art programme and accepts part-time, not-in-attendance students.

"I wanted to go where I could immerse myself in a reputable and established Fine Art PhD programme and bring that knowledge back to Rhodes University."

"During the course of my studies, I stayed at Rhodes, lived in Makhanda and went to London twice a year, usually for five weeks at a time. All in all, graduation included, I did ten trips to the UK and back."



Part of the family memoir of Maria Anna de Jager.

She was partly funded by the Oppenheimer Memorial Trust, which awards scholarships for postgraduate study at Master's, Doctoral and Postdoctoral levels. The candidate preference is for "South African nationals who are high achievers with proven records of academic excellence".

THE PRACTICE-BASED PROGRAMME

One of the other reasons Maureen had decided to study at Kingston University was that they offered a practice-based PhD programme.

"Your regular PhD is normally thesis-only, and the research is generally entirely text-based. Within Fine Art, there are a number of practice-led programmes, meaning there's a body of practice which leads the investigation, but the research endeavour resides primarily in the text-based thesis that accompanies that body of work. The thesis, usually a conventional document, is what ends up being archived. Practice-led Fine Art research work means you produce an exhibition and then step outside of your practice to compile a text document that reflects on the exhibition of the work.

"The Kingston University practice-based model is very different because the methodology of practice underpins the entire study holistically. You resolve your thesis as a creative artefact. It is a manifestation of a creative endeavour, as opposed to something that sits outside of it.

"The practice-based model still involves the writing and the reflective work, that kind of critical positioning and, like any

PhD, makes a contribution to new knowledge. But the form in which that is all manifest is part of the creative endeavour.

"And so, for my PhD, I made artist's books."

THE ART OF THE ARTIST'S BOOK

One of the aims of making an artist's book is to create something that is portable and interactive, easy to share. In this form of book-making, the details of the materials used are critical: size, paper stock, font and type, artwork, varying shapes, found objects that merge literature and visual art.

The form goes back nearly 250 years, with the poet-visionary (and self-publishing printer) William Blake regarded as the pioneer. He realised that an artistic combination of text and image in a bespoke book meant a closer connection between author-artist and the reading public.

Blake, just like any independent small publisher through time, was passionate about keeping control of the entire creative process. This may have been financially crippling, but it also allowed him to make the first personalised artist's books.

As the artist's book evolved through generations to come, typography was manipulated, the advent of photography brought on new possibilities, sculpture and installation art became factors, and new ideas kept flowing into the field. By the late 20th Century, the definition of an artist's book was clear: the book is intended as a work of art in itself.

THE RESEARCH

"Another reason I wanted to get my PhD through Kingston University was because much of the material I wanted to work with, in the context of the South African War, was in the British National Archives in Richmond, London," she says.

"Doing archival research in South Africa and then in the UK, and using that research material to generate my artworks, the gaps and omissions in the records became very clear to me. Archives have a semblance of offering us the truth about the past, being comprehensive. Yet, if you dig deep enough, you will find there are so many silences and gaps."

"As I was looking at the history of the South African War, I became very interested in the way in which the African concentration camps had been written out of certain records. The Afrikaner Nationalist re-interpretation of the war gave it a very particular slant. It was at that stage, during the 1930s and 1940s, that the Boer concentration camps were being mythologised as deliberate acts of genocide on the part of the British. And it was also during this period that my great-grandmother wrote her memoir."

Maureen de Jager refers to the work of social historian Elizabeth van Heyningen, who wrote *The Concentration Camps of the Anglo-Boer War: A Social History*.

The comprehensive study by Van Heyningen places the history of the camps within the global context of colonialism, the state of British public health at the time, and the rise of military professionalism in the UK. It also deals with the existence and state of the black African concentration camps at the time.

"So while I was researching, I kept coming across the absences around black concentration camps," says Maureen. "But I was also reckoning with my ambivalence as an Anglicised Afrikaner, part of a Boer-descended race now speaking in the coloniser's tongue."

"At the same time, I developed an immense admiration for great-grandmother Maria's tenacity, endurance and her beautiful style of writing."

THE BOOK OF HOLES

Before gaining access to the British National Archives, Maureen had to apply for a reader's card and, before being allowed into the Reading Room, had to watch a video on the proper handling of the archives.

"You go in there, completely sensitised on how to deal with the records," she says.

"I had ordered a folder of documents to do with the South African War: original letters by Emily Hobhouse, telegrams, reports, statistics of death and newspaper clippings. And they were all held together by a Treasury tag that looked like it had been violently forced through the pages.

"I fixated on that area of damage, where the Treasury tag rips through the paper. I was doing all this research about damage and a damaging history, thinking about the holes in that history, and here was a physical manifestation of that.

"So I took macro lens photographs of each page where the Treasury tag made an irregular punch hole. The photographs were then transformed into one of my artist's books, WO 32/8061 (*The Book of Holes*), where you see sequential images of the Treasury tag, the holes it made and at the same time you're picking up on all this contextual information - a War Office crest, statistics on infant mortality, and so forth. But there are holes in the history.

"To add another element, it was made as a book with uncut pages. If you wanted to see every page of the first clean copy of the book, you would have to take a paper knife, insert it into the uncut seams and rip, resulting in a deckled edge."

A deckled edge is book-binding jargon for "the rough untrimmed edge of paper left by a deckle or produced artificially".

"That was a way of highlighting the notion of the damage in this history - you have to do damage to access the contents. You have to literally 'manhandle' the book, in the same way that archived documents are 'handled history'."

THE HONOUR BOOK

Maureen's research in the archives, locally and in the UK, was a two-level investigation.

"On the one hand, I was trying to get information," she says. "But I was also looking for visual clues and resonances I could work with, like repeated motifs and sub-texts."

"The idea for the next book, *The Honour Book*, came when I opened a box of British war reports and, paging through these documents, I noticed they would inevitably begin with:

I have the honour, Sir, to report...

"That is followed by a gruesome and detailed depiction of a particular battle, and then it would end like this:

I have the honour, Sir, to be your dutiful (or humble) servant...

"There is a hidden tale in the document, with honour as a preface, horror as a mid-section and honour as a postscript. So I went through all the reports again and took macro photographs of every mention of the word 'honour'."

Maureen asked her local doctor to draw some of her own blood and give it to her.

“Why?” the doctor wanted to know.

“Artwork”, she replied.

“I took closeup photographs of my blood, digitally layering the blood images onto the ‘honour’ images and gradually increasing the colour density so that midway through what became *The Honour Book*, the images grow pinker and redder, until eventually you lose the word ‘honour’ and you are left just with the blood.

“So there was a symbolic reference to my blood, my DNA, in the book. On the back cover, I embossed a notorious quote by Cecil John Rhodes that says:

If there be a God, I think that what he would like me to do is to paint as much of the map of Africa as British Red as possible.

THE LONDON EXHIBITION

“Those were just two of the 11 artist’s books I made in this series,” says Maureen. “When I first embarked on this endeavour, I knew I would have to get an exhibition over to London. I didn’t have the budget to move a collection of large pieces, so I set myself the challenge of designing an exhibition that would fit into a suitcase. I also wanted to work with the idea of being itinerant, moving between spaces. Here, I thought of the British soldiers coming to fight on South African soil, with little more than a trunk for luggage.

“So, once in London, I took my suitcase up to the Archives, unpacked the boxes and that was my PhD exhibition. It was

set up so people could handle the books, and there was a video showing me paging through the books, handling them.”

BRINGING IT HOME

“I was awarded my PhD in October 2019,” says Maureen. “I went over to London in January 2020 for my graduation, walked across the stage in my graduation gown, came back home and a month later the whole world (affected by the COVID-19 pandemic) shifted sideways.

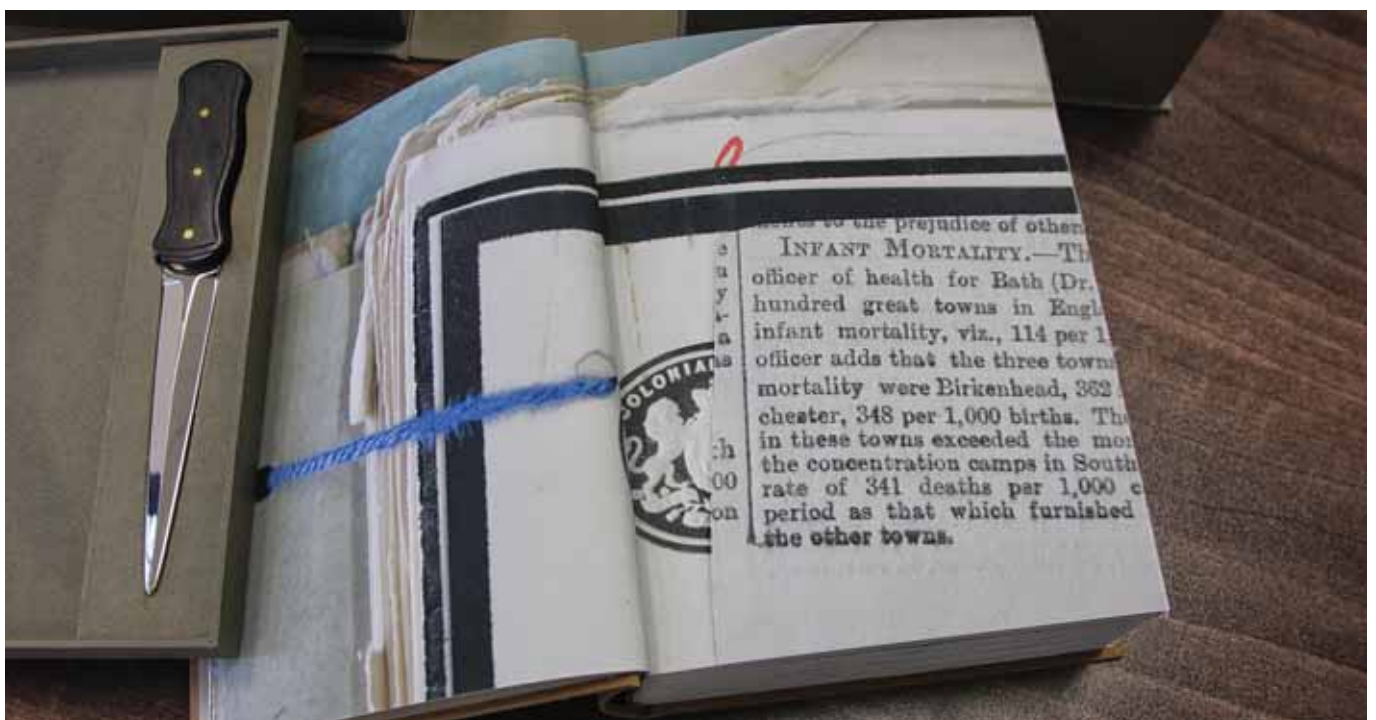
“It was amazing! I sometimes say to people that I congratulate myself less on my achievement, but more on my impeccable timing.”

Many of her fellow doctoral candidates were not so lucky. Because of pandemic restrictions on movement, they were unable to access the archival research needed or visit the places essential to their fieldwork and studies.

During 2020, Maureen developed a practice-based Fine Art programme for Rhodes University. Her programme was awarded a generous grant by the Oppenheimer Memorial Trust that has so far funded a scholarship for one PhD candidate.

“I have also been talking to Kingston University about opportunities for an informal KU-RU partnership, where my PhD students would go over to the UK for a period of time, and two advisors from Kingston would come here.”

By Chris Marais



Part of Maureen de Jager’s PhD thesis, entitled *Refocusing the South African War through praxis*.



The Chemical Mystery of Life

What happens to your body when you fall in love? Why does your heart beat faster when you get a fright? How does your brain send a signal to your hand so that your fingers pick up a pen? When you swallow an anti-malaria pill, how does it kill the parasite? Biochemistry is a fundamental description of what it means to be a living human being. It was this puzzle that drew **Professor Heinrich Hoppe** into his field of study.

Heinrich Hoppe describes himself as being a “fairly asocial bookworm, a nerd” in his teenage years. While growing up in Krugersdorp, his favourite outing was to the local library, where he would devour book after book on military history. Heinrich was particularly intrigued by the Roman and Napoleonic Wars, as well as the two World Wars.

He might have ended up studying military campaigns for the rest of his life were it not for one solitary misfiled book among all the battle tomes.

A BIOCHEMICAL REVELATION

“I pulled out this Biochemistry textbook and started paging through it. I didn’t fully comprehend what I was seeing, but I

understood enough to realise that Life, and what we know as being alive, is just a series of chemical reactions happening in the body. To me that was a mind-blowing thought. And I wanted to know more about this.”

His family did not have enough money for university fees. But the Atomic Energy Corporation (AEC) was advertising bursaries to aspiring biochemists. The conditions were somewhat onerous - he would have to spend all holidays at Pelindaba (the research site of the AEC outside Pretoria), and then would have to work back the bursary over a number of years. Heinrich applied, was accepted and signed up for a BSc at Rand Afrikaans University (RAU, now University of Johannesburg).

PROFESSOR HEINRICH HOPPE

THE CHEMICAL MYSTERY OF LIFE

While studying, Heinrich developed another passion - for chemistry. He might have switched his postgraduate study and career to it were it not for a phone call from the head of the Isotope Production Centre at AEC, saying they had signed him up for Honours in Medical Biochemistry at UCT.

“They wanted biochemists because they were interested in developing radioactive drugs for cancer therapy. It’s funny how your whole life can change because of a five-minute phone call. I said, okay, that sounds good. And off I went to study medical biochemistry.”

He took a break from academia to complete his two years’ compulsory military service, six months of which was spent in Grahamstown, and the rest at Pelindaba.

STUDYING MALARIA

“I wanted to carry on studying after that, and around that time, I came across a malaria research programme at the University of Pretoria. Just the way they described the research really interested me. So that’s how I got into malaria research, which I’m still involved in.”

The disease was the subject of his Masters, which was converted into a PhD.

“Malaria is an incredibly underrated disease. I don’t think South Africa or the developed world has a notion of its impact. Between 200 and 300 million people contract it every year, and around 600 000 people die annually, the overwhelming majority of them children under the age of five. In many afflicted countries in central and western Africa, up to 40% of all hospital admissions and deaths may be due to malaria.

“In terms of absolute deaths, malaria doesn’t rank as high as something like tuberculosis or even HIV. But in terms of prevalence, how many people get it and get sick every year, it has a massive effect on the economies where it occurs. If you contract malaria, you feel sick, miserable, you cannot work, you cannot be productive.

“Infection rates are incredibly high. I knew a scientist from Angola who visited my lab a few years ago and who had contracted malaria five times in one year. There it’s absolutely normal. If you have flu-like symptoms, you just assume you have malaria and pop a malaria tablet. The numbers seem surreal because they’re so big.”

ACQUIRING THE TOOLS

Heinrich returned to UCT as a Postdoctoral Fellow, this time to study tuberculosis.

“When you’re a biochemist or any other scientist, it’s really about the practical skills you gain. How you solve scientific problems using experimental techniques. What exactly you apply it to doesn’t necessarily matter that much. Obviously, I had to become familiar with TB issues. But to be an effective researcher means you are literally learning to do work with your hands, to conceptualise, perform and interpret experiments. Those are the real skills you acquire, and they can then be applied in various study fields or diseases.”

One postdoc was swiftly followed by another. Heinrich was thoroughly enjoying his life, with plenty of friends, a happy marriage and a house in Gordon’s Bay. He was picking up a surfing habit. All was well in his world except for one nagging question. Could he really make it in world class academic research?

There was only one way to answer that. Heinrich found a possible post at Yale University in the USA, and sent in his application. He was accepted.

THE WORLD’S MOST SUCCESSFUL PARASITE

The post was at Yale’s Medical school, with the head of the section on Infectious Diseases, and Heinrich set to work on a fascinating pathogen called *Toxoplasma gondii* - sometimes referred to as the most successful parasite in the world.

Toxoplasma lurks quietly in the brain and muscle tissue of many species - mammals, amphibians and birds. It is found in around one quarter of the world’s human population, mostly in regions where undercooked meat is eaten. It lives undetected, inactive and mostly harmless unless the individual has a compromised immune system. Then it is deadly.

Scientific papers have detailed how the parasite seems to alter the behaviour of infected mice, causing them to be more active and reckless. This attracts the attentions of domestic cats, the only hosts in which Toxoplasma can reproduce sexually.

In pregnant women, the parasite can cause disabilities in the growing foetus.

It so happened that Heinrich worked in a research laboratory headed by a medical doctor who was completely work-driven,

an eccentric who literally gnawed at his wrists when irritated by personal conversations from his staff members.

TWO INTENSE YEARS

The level of work commitment was staggeringly high, says Heinrich.

“Look, I worked hard because I knew I had two years and I had to make them count - like most foreign postgraduates anywhere in the world, I suppose. As a foreigner, you know that this is your break, your opportunity. So I worked seven days a week, ten hours a day, easily.

“I remember my wife dropping me at work on Christmas day. It was snowing, and I thought there was going to be no one else there. No. I walked into that building and everywhere, there were people with white coats, doing experiments.”

Heinrich said he was fortunate that his own project went extremely well, and the outcomes of the work were published in two journals, including *Nature Cell Biology*. The head of his research lab at Yale wanted Heinrich to stay on and manage the group. But by then Heinrich had realised that work was not life.

He returned to South Africa, and another malaria study postdoc at UCT’s Clinical Pharmacology Division in Groote Schuur Hospital, funded for five years by a Wellcome Trust Senior International Research Fellowship.

By the end of the project, he was approached by the CSIR. They needed a cell biologist in their newly established malaria research unit at their headquarters in Pretoria. Heinrich was now 45 years old, and his entire scientific career had been one research contract after the next.

“I moved back to Pretoria for the first permanent job of my life. I was also exposed to drug discovery research for the first time. I was appointed as head of the pharmacology research group, essentially testing compounds for activity against cancer or malaria. I learnt a lot about product development, how complicated, rigorous and challenging it is compared to academic research.”

THE SURPRISES OF RHODES UNIVERSITY

In 2011, Heinrich left the CSIR to join Rhodes University as Associate Professor of Biochemistry. Most of his life, until then, had been spent in bigger cities.

“I arrived at night, and saw almost no lights along the road from the airport to town. I thought, Oh my word, this place is in the middle of nowhere! Then I came over the hill and saw the town, the whole of Grahamstown (now Makhanda) in my field of vision, without even moving my head. The entire town is smaller than Moreleta Park in Pretoria, the suburb I’d been living in. That created a bit of anxiety in me, because it was a big lifestyle change.

“I remember my first day at Rhodes University, walking to work - another novelty. I came out of my block of flats, and there was a cow wandering across the bowling green. It was so surreal. “And that’s where it dawned on me. This is going to be fun. This is going to be an adventure. This is so different from anything else I have experienced.”

It would also be the first time Heinrich had ever taught.

“I was really surprised at how much I enjoyed it. If I spent the rest of my career just teaching, that would be fantastic. Also, because the University is relatively small, we can really expose our students to practicals and procedures that they wouldn’t necessarily get access to at bigger universities. So the training here is more intense.

“I am convinced that if you walk away with any BSc degree from Rhodes, undergrad to PhD, you don’t have to stand back for a foreign university or prestigious university anywhere in South Africa. You’re probably getting better training here than you would at those institutions.”

GRAND CHALLENGES

The other surprise for Heinrich was the high standard of research at Rhodes, particularly among his closest colleagues.

“It’s a small university, but the research performance is way better than you would expect. In any typical department, you’d expect one or two highly successful scientists. But across the board we’ve got people in this department who are exceptional researchers.”

If proof were needed, it came in the form of 2021’s inaugural Bill & Melinda Gates Foundation Grand Challenges Africa awards, which recognises and supports African scientists involved in drug discovery. Eight scientists from across the continent were honoured, all winning generous funding for two years.

Three of the awardees were South Africans, all of them from the same department at Rhodes University. Apart from Heinrich Hoppe, the others were his colleagues, Professor Adrienne Edkins, Associate Professor in the Biochemistry and Microbiology Department and SARChI Chair; and Professor Özlem Tastan Bishop, Director of the Research Unit in Bioinformatics, hosted within the department.

THE TRIALS AND TRIBULATIONS OF DRUG DISCOVERY

Heinrich had encountered drug discovery for the first time at CSIR, and realised what a completely different form of research it was.

“There’s a saying in the pharmaceutical industry: if you’re going to fail, fail early. Because the later you fail the more expensive it becomes.”

So different are the two forms of pharmaceutical research (academic vs applied research) that Heinrich offers a course in it at Honours level so that students understand the staggeringly complicated process of getting a chemical compound from the lab into humans and onto the market.

“One of the things I say is that 80% or 90% of the time, whatever you try is going to fail, because that’s the way research works. Normally, you are wrong. Your ideas are wrong, and your experiments don’t work. And you can’t always predict that. There’s quite a significant portion of luck involved with research.”

Heinrich points out that the discovery and development of a single successful drug can take ten to fifteen years and can cost up to US\$500 million upwards, just for the research alone.

RESISTANCE AND QUININE

The first effective drug for malaria (Quinine) was found in the bark of the cinchona tree of South and Central America. In around 1620, Peruvian tribespeople revealed its healing powers to Spanish Jesuit missionaries, which is why cinchona was later called Jesuit Bark.

Quinine was synthesised into a new compound, called Chloroquine, in the 1940s. It was safe, cheap, and highly effective as an anti-malarial drug. Some have said that Chloroquine alone may have saved more lives in the history of the human race than any other medical intervention. But all pathogens evolve to become resistant. The malaria parasite is no exception.

“Now Chloroquine is useless, because resistance grew,” says Heinrich. Then came Mefloquine (Lariam), but there were neurological side effects. The introduction of antifolates like pyrimethamine and sulfadoxine also led to resistance. Now the most effective treatment involves Artemisinin, adapted from a natural plant used in Chinese traditional medicine. But even there, we are seeing the first signs of resistance from South East Asia.

“That is why we always have to have another drug in the pipeline. Fortunately, there are some. One of them, discovered by a team at UCT, the first drug out of Africa to pass pre-clinical development, is at the human trial stage.”

HUNTING THE MAGIC BULLET

There are several ways of finding a likely-looking drug from the millions of possible chemical compounds.

Forty years ago, the vast majority of drugs were obtained directly from plants and other natural sources, or modified from them by chemical synthesis. Since 1994, half the approved drugs are still based on natural products. Their usefulness was

originally identified by examining products used in traditional medicine (ethno-pharmacology).

Nowadays, many are found simply by testing random collections of synthetic chemical compounds.

“In most of the research I’ve been doing for the past ten years, I’m not the main attraction. I’m in the supporting cast. What happens is that there are a lot of chemists, both at Rhodes and other universities, who synthesise compounds, or extract them from plants. They need someone to test these compounds, to see if they have any biological activity. And that’s where I come in.

“We grow the parasites in the laboratory. The chemist sends me compounds, and I would see if there are any that can kill malaria parasites, or African sleeping sickness parasites, or whatever the pathogen is. Then you test them against human cells for cytotoxicity, because it doesn’t help if the compounds also kill humans.

“Besides collaborating with chemists, you can actually buy commercial compound collections these days. They are libraries with thousands upon thousands of random combinations of chemicals. You can buy them and test them and hopefully you find one that works. Pharmaceutical companies literally test millions at a time. The problem is the cost involved. A library or collection of a thousand compounds will set you back around R100 000 or more.”

But finding a promising compound in the lab is just the start. Will it be effective as a medication?

A DRUG IN THE BODY

“The holy grail is to find something that can be taken orally, because that’s the easiest. Injecting millions of malaria sufferers, for example, is not ideal.

“Even then, how does the chemical compound in the medication interact with your body? It needs to dissolve, get through your stomach and intestinal tract and then into your blood stream. It has to distribute throughout your tissues. And all this time, your body is trying to get rid of it, using enzymes to change the compound, modify and excrete it.

“As far as your body is concerned, this is a foreign substance that is potentially toxic. It wants to get rid of it. So even there, the chances of a compound that you find in the lab becoming a drug that is able to resist modification and excretion, as well as having no serious side-effects, is just incredibly small. Of course, that doesn’t mean we shouldn’t try.

“Drug discovery is an excellent way of training students and publishing papers. So academically, that’s another good reason to get involved.

“But if the reason you became a biochemist is because you want to cure cancer or malaria, you have to be realistic. Your chances are going to be very slim.”

FINDING THE TARGET

There is another way of testing for likely compounds, one that Heinrich and other members of the department, like Professor Özlem Tastan Bishop, are using.

Broadly speaking, when a medicinal or drug compound enters the body, and then enters the pathogen, it binds to a specific protein, and alters the function of that protein. The protein it binds to is the target.

“Target-based drug discovery means I’m not going to test the effect of compounds against a whole organism (bacterium, virus, parasite, fungus or cancer cell, for example). Instead, I’m going to pick a protein and try to find compounds that inhibit the function of the target protein. How many proteins are there? Well, that’s the challenge. In a typical human cell, there could be 10 000 to 15 000 different proteins. Even in a malaria parasite, there are probably upwards of 5 000 different proteins.

“So this is a very complex drug discovery approach. How do I know which protein to pick? And how do I know for sure that this protein is a good target? If I inhibit the functioning of this protein with a compound, will it actually have the effect that I want? So you have to do a lot of experimentation, to confirm that. As you can imagine, this is a much more difficult form of drug discovery, but people are going more and more in that direction.

“There is one big advantage. If I’m looking for a compound that will bind to and inhibit a particular protein, if I know the structure of the protein, which isn’t that difficult to find, I can, using a computer, predict which compounds are going to bind to it. So I don’t have to just randomly screen compounds and hope for the best,” explains Professor Hoppe.

COMPUTER-AIDED DRUG DISCOVERY

“You can say: Here’s my protein target, and then use software to predict which of those millions of compounds that are commercially available will be able to bind to the protein. And then narrow it down and say, okay, it looks like there are fifteen compounds here that might work. So you only have to buy those ones and test them in the lab. That’s why people are opting for this approach. And I think it will work more often as people are constantly refining the algorithms.”

“This computer-aided drug discovery also helps refine the compound. You can see, okay it binds, but it’s not really a good fit. So by using a computer, you can find how to modify the compound to improve the fit. That’s the other advantage.

“The difficulty is that you have to do a lot of research to confirm that the target you’ve chosen is actually a good target for the disease you’re interested in. And that’s actually very complex.”

Professor Hoppe received the Grand Challenges Award for a particular malaria target he is working on, a process called target validation. It entails finding compounds that inhibit the target, and then confirming that the compounds have the desired effect - in this case killing malaria parasites.

“So far it is looking very promising as a potential anti-malaria target. But it will still require years of research.”

By Julianne du Toit



The Political Sociology of Popular Music

Extensive research and academic output of published work on popular music, popular culture and censorship of music in South Africa in the 1980s has taken **Associate Professor Michael Drewett** of the Rhodes University Department of Sociology and Industrial Sociology on a long and fascinating journey.

On 12 September 1977, the death in police detention of South African Black Consciousness Movement leader Steve Biko shocked the country and the world at large. A few years later, former lead singer for the British band Genesis, Peter Gabriel, wrote, recorded and began performing the song *Biko* live, in honour of the late activist. To many, it was a conscience call to turn against the apartheid state.

As a schoolboy in Johannesburg and then East London, Michael Drewett had typically white South African Western-leaning musical tastes, ranging from pop singers like Cliff Richard to groups like Exile. He had never heard of Steve Biko until Gabriel released the song in his honour.

"I was in Standard Seven (Grade Nine) when I heard *Games without Frontiers*, a song from Gabriel's third album, on Capital Radio," says Professor Drewett of the Rhodes University Department of Sociology and Industrial Sociology.

"I imported the album, and came across the *Biko* track. Then the South African government banned the song. I wanted to know more about Steve Biko the man, and why the song had been banned."

Michael Drewett and a friend decided to write an essay on Steve Biko, and approached one of the more liberal teachers at his school for information on him. The teacher pointed the boys in the direction of the library of the *Rand Daily Mail*,

Johannesburg's legendary anti-apartheid newspaper.

Helen Zille, a young reporter at the *Rand Daily Mail*, had exposed the truth behind Biko's death, which was due to police brutality. The government was outraged, the RDM stood by its story, the newspaper was censored and the subsequent inquest concluded only that Biko had died of "serious head injuries".

The Editor of the *Daily Dispatch* in East London, Donald Woods, had been a personal friend of Steve Biko. He managed to obtain photographs of Biko's body showing his injuries in detention. Banned and fearing for his life, Woods soon fled to Britain and continued campaigning against the SA government.

"The eyes of the world are watching now," Gabriel sang in *Biko*, referring directly to the oppressive apartheid regime.

THE BIKO EFFECT

"My friend and I both left the RDM library as changed people," Michael says. "We had the Biko cuttings copied, posted them on the classroom blackboard, and presented a speech on the song and others which had been banned in South Africa.

"As far as the *Biko* banning was concerned, it was the first time I had come across political censorship in South Africa. It was also, I understand, the song that sparked Steven van Zandt's interest in what was going on here."

Van Zandt, an actor and guitarist with Bruce Springsteen's E Street Band, heard the song in a Los Angeles venue and it had an immediate effect on him. In 1985 he wrote and produced the protest song *Sun City*, recorded by a group called Artists United Against Apartheid, whose members vowed never to perform at the infamous South African 'homeland' venue.

"Many years later, I was in Montreal, Canada, having just presented a paper on Gabriel at a conference," says Michael. "Coincidentally, he was booked to play a concert in Montreal at the time - so I went. And later, when I was checking in at the Departures section of the airport, I bumped into Peter Gabriel and we had a very interesting chat. So when we did the *Cutting Grooves* exhibition on South African music censorship at the National Arts Festival in 1999, he sent along a signed copy of the album, which included the *Biko* track."

In 2010, Michael Drewett co-edited *Peter Gabriel: From Genesis to Growing Up*, with colleagues Sarah Hill of Cardiff University and Kimi Kärki of the University of Turku, Finland. The book explored themes within Peter Gabriel's work, both as a multi-skilled musician and an activist.

A BODY OF WORK

Drewett has painstakingly researched and written much about the dynamics of local activist-musicians, the South African Directorate of Publications and the methods used by the national broadcaster (SABC) to censor songs they found objectionable in the South Africa of the 1980s.

Besides the various projects relating to Steve Biko and Peter Gabriel, he has amassed an impressive body of work. For example, in the decades since beginning his research, he has:

- Co-ordinated an exhibition on popular music censorship in South Africa (National Arts Festival, Grahamstown/Makhanda 1999);
- Produced, researched and co-scripted a documentary film on anti-apartheid musician, Roger Lucey;
- Researched and written extensively about the origins and members of the independent Shifty Records label;
- Joined a number of local and international organisations that deal with freedom of musical expression;
- Uncovered the factual manipulations behind the making of the *Searching for Sugar Man* documentary featuring US musician Sixto Rodriguez;
- Written a paper exploring how popular music presented contesting narratives of the South African 'Border War' of the 1970s and 1980s.

"The time-gaps between my research and my published work are often quite wide," says Drewett. "That's part of my process: I like to research a subject thoroughly before writing something and submitting it for publication."

THE DESPERATE DECADE

In many ways and on a number of fronts, South African Grand Apartheid truly began to unravel in the 1980s, resulting in a declared State of Emergency in 1985, renewed annually until 1990. It was a decade of general resistance and government suppression.

The media were increasingly shackled, to an extent where it became illegal to cover civil unrest and police action. The alternative press became ever more creative in finding legal loopholes to bring news to the nation - and the world outside.

Some South African musicians found it impossible to simply stand by, singing Western cover versions while their country burned. They, too, devised innovative ways of giving voice to their protest.

“Ever since coming to power in 1948, the apartheid government attempted to consolidate the racial domination it inherited from previous colonial governments through a repressive system that relied on government legislation as well as police harassment,” writes Michael Drewett in a paper titled *Exploring ‘Space’ in Censorship Battles: The Case of Popular Musicians in 1980s South Africa*.

“Operating within this historic framework, popular musicians were regularly victims of government censorship and harassment, yet many nevertheless refused to be silenced.”

THE SADF PITCH

One of the mainstays of the SA government during the 1980s was the security force structure, the SA Defence Force, which consisted of a minority of permanently employed soldiers but mainly made up of conscripted civilians.

By the 1980s, it was clear that South Africa’s military forays into Angola and its actions in northern Namibia (then called South West Africa) might soon spread into the country’s townships in support of the police units already operating there.

In his paper titled *The Construction and Subversion of Gender Stereotypes in Popular Cultural Representations of the Border War*, Michael Drewett examines the pro- and anti-SADF propaganda of that era, and the songs that accompanied the opposing sides.

Central to the government’s message to young white male conscripts was that military service would transform them from boys to men, who would protect home and hearth.

“Not only did many conscripts accept the ideal of militarised masculinity, but made a fetish of it, in the process reproducing it on a general level so that it became an intrinsic component of a hegemonic white South African male identity,” writes Drewett.

“Thus parents would proudly send their sons to the army to turn them into real men, and it became the mother’s duty to support her son. Her patriotic duty was to supply sons for the country’s defence.

“Furthermore, younger white South African women were encouraged to admire the strength, bravery, patriotism and discipline of white soldiers serving in the SADF.”

SUPPORTING ‘THE BORDER WAR’

These pro-war sentiments were echoed in locally-produced songs, many of them taking the narrative form of a letter from home to a serviceman “somewhere on the border”.

At the broadcast axis of this “support for the troops” were radio programmes like *Forces Favourites* on the English Service of the SABC. The presenter, the late Pat Kerr, would read messages from loved ones to their boys in uniform. This shored up the belief, in the Operational Area, that civilian backing for their military service was strong.

“Compilation albums commemorating the military request programmes were released, comprising cover versions of some of the most popular songs requested,” writes Michael Drewett. “One of these was *Soldier Boy* and other *Forces Favourites* which included a sleeve note message from Pat Kerr. The SADF so appreciated Pat Kerr’s contribution through the *Forces Favourites* programme that in 1982 the State President awarded her the Order of the Star of South Africa for exceptional service of military importance.

“Another compilation was called *Forces Favourites* and included a skimpily dressed blonde woman wearing a military helmet, holding a rifle and smiling at the camera. The suggested symbolism is that sexy women back at home supported the war effort and were attracted to military men. In the photograph the woman cradles a rifle in the absence of her loved one. Sexual connotations linked to the rifle are probably also implied.”

In the same paper, Drewett discusses the ways the SADF manipulated the male image into one in which a soldier was seen as manly, tough and heroic. This was not only designed to sway the minds of parents and sweethearts, but also to play into the late-teen fantasies of the young white men being targeted.

“The truly masculine man was one who was brave, courageous and prepared to fight on the border, as depicted on the front of a South African Border Patrol tee-shirt which proclaimed ‘Be a man among men’.

“The army was clearly constructed as a profoundly gendered space occupied by men performing masculine acts. The SADF thus engaged itself in a process of ‘dispelling gender ambiguities and maintaining clear distinctions between masculinity and femininity’”.

RESISTANCE IN A SONG

However, in the 1980s, there was growing pushback against national service. This movement found its focal point in the End Conscription Campaign (ECC). It aimed at matching all the pro-war material being inspired (and often sponsored) by the SADF.

“Stop the Call-Up” posters began to do the rounds.

“The ECC posters and cartoons in the mid-to-late 1980s stressed the non-thinking, conformist nature of the military,” writes Drewett. “In a sense their argument was that real men are creative and thinking, not prisoners of a non-questioning system. Often stereotypically strong and disciplined male soldiers would be shown to be incomplete, dehumanised or disturbed because of militarisation.”

And then the resistance music began to pop up. Bands like the Cherry Faced Lurchers, The Aeroplanes and The Kalahari Surfers mocked the “boys to men” army conceit. James Phillips (as Bernoldus Niemand) penned and sang the iconic *Snor City*, parodying South Africa’s military and political seat of power: Pretoria. The *snor* (moustache) came to represent government-guided conformism.

In the late-1970s, a strident young rock-folk protest singer called Roger Lucey arrived in Johannesburg, and his contribution to the anti-call-up movement was a song called *The Boys are Back in Town*.

THE ROGER LUCEY STORY

Lucey, at his peak, was the poster boy for South African protest folk music, playing in Johannesburg clubs like Mangles, The Chelsea and L’Chaim. His words cut straight to the bone, there was no dilly-dallying with cute metaphor and allegory when he sang about the gritty side of the Apartheid matrix.

His album, *The Road is Much Longer*, was well-received and shipped off to retail outlets. However, it wasn’t long before Roger Lucey simply fell out of circulation.

“For me at the time, it was like the lights winking out, one by one - and you have no idea why,” says Roger. “No one’s returning your phone calls, your gigs dry up and, perhaps worst of all, your record company doesn’t want to know you.”

The Road is Much Longer disappeared from the record shop racks and was banned by the regime.

Roger went off the local musical radar screens and re-appeared in silk and satins with a band called the Zub Zub Marauders. He reinvented himself again as a country singer by the names of Tighthead Fourie (complete with cowboy shirt in ANC colours), dropped away for a while and suddenly popped up as a television sound- and camera man covering conflict zones around the world.

More than 17 years later at the Truth and Reconciliation hearings, a bespectacled, bearish security cop called Paul Erasmus admitted to having personally sabotaged Roger Lucey’s career, following orders from his superiors.

Paul Erasmus went to work with what he called his “little bag of dirty tricks”. He teargassed Lucey’s regular Braamfontein gig spot, Mangles, via the air-conditioner duct. He did the rounds of the record shops and confiscated all copies of *The Road* he could find. He threatened club owners with drastic police action if they booked Roger.

While living in Crown Mines, a popular and trendy artists’ village at the time, Roger started getting unwelcome visitations.

“I woke to find my bedroom full of armed policemen one night” he writes in his first book, *Back in from the Anger*. “I thought I was dreaming. They moved silently around the house as if they didn’t notice me, whispering as they emptied cupboards and rummaged through drawers.”



A selection of music albums produced by South African activist-artists in the 1980s.

STOPPING THE MUSIC

Like Roger, Michael Drewett first read about Paul Erasmus' actions in 1995, when extracts from his book, *Confessions of a Stratcom Hitman*, were published in the *Mail & Guardian* newspaper.

"I later contacted Roger, and eventually got an interview with Paul Erasmus," he says. "I was linked with a Danish organisation called Freemuse (Free Musical Expression) who were interested in what was going on in South Africa. I told them about the Lucey-Erasmus story. That discussion eventually turned into a documentary called *Stopping the Music*, in which Paul and Roger met for the first time in the flesh.

"Doug Mitchell from the Rhodes Journalism Department and I made this film, which had its world premiere at the Danish Film Festival in 2002. Roger, Paul, Doug and I all attended. Then we went on to the Freemuse conference and out of that, Roger and Paul kept getting invited to places like Zanzibar, Sweden, Turkey and Lebanon, to speak about reconciliation."

In a recent interview, Roger Lucey said the documentary had been "very cathartic", bringing closure to the question of how his budding musical career had been ended shortly after it began.

The story later became part of Drewett's intensive 2004 PhD thesis, which was titled *An Analysis of the Censorship of Popular Music within the Context of Cultural Struggle in South Africa during the 1980s*.

MUSIC CENSORSHIP IN SOUTH AFRICA

In 2003, Michael Drewett contributed a chapter to a book called *Policing Pop*, edited by Martin Cloonan and Reebee Garofolo. It was titled *Music in the Struggle to End Apartheid: South Africa*, and it outlined SA music censorship in the 1980s.

"I begin with the mechanisms of censorship and then consider strategies of resistance," Drewett writes in his introduction. "Not all instances of censorship were overtly political, but they were always framed by, and took place within, an extreme legal-political system."

"No matter what their message was, censored musicians developed strategies to reach as wide an audience as possible. In doing so, they articulated and transformed culture, opening spaces in which particular forms of artistic expression emerged. I conclude with a brief overview of the changes that have taken place since 1994. Not only did cultural struggle play a part in local changes, but musicians attempting to overcome censorship in other parts of the world can learn important lessons from the South African experience."



He refers at length to the pivotal Publications Act of 1974, which led to the establishment of the Directorate of Publications and the Publications Appeal Board.

"With the declaration of consecutive states of emergency in the mid-1980s, the state was further empowered to ban material," Drewett writes.

"Despite all the mechanisms in place, music was, in fact, rarely banned by the Directorate of Publications. Fewer than 100 music records were actually banned at this level during the 1980s. The main reason was that the directorate itself did not go in search of material to ban: It only responded to complaints received."

LEAVE IT TO THE NATIONAL BROADCASTER

The state-owned SABC, however, ruled the national airwaves and had absolute control over its broadcast content.

"Like the Directorate of Publications, it was concerned with political and rebellious messages, blasphemy, and overtly sexual lyrics but went even further by actively supporting the government's ideology of separate tribes, independent homelands, and cultural purity.

"Thus, no slang or mixing of languages was permitted, and groups like Sankomota - whose members sang in a variety of languages - suffered as a result."

The SABC records committee marked 'Avoid' alongside each record track it found objectionable.

"We don't ban songs - we just don't play them," were the famous words of committee member Roelf Jacobs.

THE INDEPENDENTS

But the voices would not be stilled. In the 1980s, one heard them live in dingy little folk clubs in the cities of South Africa, at huge live concerts and on independent radio stations like Radio 702 and Capital Radio, and via maverick labels like Shifty Records.



Legendary radio rock deejay Chris Prior, one of the pioneer broadcasters of Capital Radio in Port St Johns.

Even though the independent radio stations generally stuck to the dictum of the Directorate of Publications, they did not self-censor like the SABC.

“Consequently, in the 1980s in particular, Juluka, Via Afrika, and other groups who were not played on SABC were played on Capital - the more liberal of the two independents,” writes Drewett.

“I was with Capital for their first two years,” says veteran disc jockey Chris Prior. “It was bliss. We were based in Port St. Johns, on the Transkei coast. I body-surfed every day, and played rock & roll on the radio every night. The studio was situated in the old Port Captain’s house, overlooking the town. It was the vibiest studio I’ve ever worked in.”

THE PHD (2004)

Michael Drewett’s 360-page PhD thesis, for the degree of Doctor of Philosophy, deconstructs the censorship of popular music in South Africa in the 1980s.

“Much of the work done for my PhD has led to other papers,” he says. “For instance, the subject of resistance to censorship brought me into contact with Lloyd Ross and others from Shifty Records. I collaborated with Lloyd in 2013 when they staged their 30th anniversary celebrations in Johannesburg. I also did all the interviews with the Shifty artists for the South African History Archive (SAHA), using the material from those interviews in my own research as well.”

QUESTIONS ABOUT *SUGAR MAN*

In 2013, Swedish film director Malik Bendjelloul’s *Searching for Sugar Man*, won the Academy Award for Best Documentary Feature. The film track’s American musician Sixto Rodriguez’ career revival.

“Various claims were made about the relationship between Rodriguez’ album *Cold Fact* (in particular) and the development of an anti-apartheid rebelliousness among white South African youth in the 1970s and 1980s,” writes Michael Drewett in his 2021 paper titled *Rodriguez, apartheid, and censorship: cold facts, and fiction*.

“Although the film had some amazing moments, I was disappointed,” says Drewett. “There was just so much stuff in there that I knew was wrong. So I embarked on an investigation that led me to write the paper. In the course of that, I discovered so much that was wrong with the film.

“For instance, they film is a sequence supposedly showing the original vinyl copy of *Cold Fact* where various banned tracks had been scratched (rendering them unplayable) by the SABC. I went to the SABC myself and discovered they had never actually had a vinyl copy of the album.

“My paper is not anti-Rodriguez, it’s questioning how the film was made. When you film something in the Wits University Library and call it the Censorship Archives of the SABC, when you scratch your own record and pretend it was done by the SABC, a documentary should not make up stuff like that. They forced their film into a narrative that lost the real story.”

MUSIC CENSORSHIP AFTER APARTHEID

Another Postdoctoral paper written by Michael Drewett is *Exploring Transitions in Popular Music: Censorship from Apartheid to Post-Apartheid South Africa*.

In it, he concludes:

“While censorship is no longer a common occurrence in South Africa, the mechanisms do exist to prevent people from freely singing and listening to whatever they want to.

“As a result of the demise of the apartheid government and the acceptance of a democratic constitution, South Africa has clearly progressed from an extremely censorial and controlled musical terrain to one that allows far greater freedom.

“As much as South Africa has embraced a democratic system, the mere existence of censorship boards and mechanisms of censorship means that when certain people hear music that offends them, rather than dealing with the issues raised by the musicians, they simply appeal to the censors to repress the music, almost as if wishing it away, without confronting the underlying issues dealt with by the lyrics.”

By Chris Marais



The Marine Medicine Chest

The world's next lifesaving antibiotic will almost certainly come from the sea. Marine Natural Resources Research SARChI Professor **Rosie Dorrington**, her colleagues and students are exploring ways Southern Africa's ocean biodiversity might one day save lives.

Sponges are among the ocean's oddest animals. They are rooted to the sea floor like plants, capturing drifting food particles from circulating seawater. In fact, they are colonies of living beings, rather than individuals. Sponges are also remarkable survivors.

One of their more bizarre superpowers is an ability to reconstitute themselves, even if shredded through something as fine as a flour sieve. As Margo and Professor George Branch wrote in their book *The Living Shores of Southern Africa*, this is like "asking bits of boerewors to get together and form cows."

But this singular talent pales when compared to their powerful self-defence systems. Because they cannot move away from

threats, sponges need highly effective weapons against predators and pathogens.

"Their defence is chemical warfare," explains Rosemary Dorrington, SARChI Professor for Marine Natural Products Research at Rhodes University, in the Department of Biochemistry and Microbiology.

EXQUISITELY SPECIFIC

Over 400 million years, sponges have evolved to repel nibbling fish as well as the unwanted attentions of predatory nudibranchs, and infection from disease-causing pathogens. Their weapons of choice are poisons.

PROFESSOR ROSIE DORRINGTON THE MARINE MEDICINE CHEST

"These compounds, or natural products, are exquisitely specific to the target," says Professor Dorrington. "They kill bacterial pathogens, inhibit viral activity, and prevent parasitic infections. These compounds must be extremely active and fast-acting, because the instant they are released, they are obviously diluted by millions of litres of water."

In the early days of marine natural products research, defensive sponge compounds were targeted for anti-cancer drugs.

"That's still continuing, but our current focus is on antibacterial compounds - basically new antibiotics - because there is a major problem with drug resistance."

Fortunately, one of the most biodiverse regions in the world, and an extraordinary place to seek out marine natural products, happens to be close to Rhodes University: Algoa Bay.

"It's halfway between the subtropical and the temperate zones, so you get lots of species transported in from the tropics by the Agulhas current. And with climate change and all the ships coming in and leaving, species that wouldn't normally have been there are starting to gain a foothold in the bay. New species evolve where life is tough, because they have to adapt. There's a rich biodiversity, and every time we go out into the field, we find new forms of life producing chemistry that has not been described before."

LANDLUBBER ORIGINS

Professor Dorrington is fascinated by marine life. She will find any excuse to head off for a field trip on research vessels operated by the South African Institute for Aquatic Biodiversity, where she is a Research Associate. But her personal background began far away from the sea.

She was raised on a fruit and flower farm near Porterville by a mother so committed to farming that she traded in her ocean cruise honeymoon tickets to the Far East so that she could buy land, completely surprising her new husband, a veterinary surgeon.

"I was incredibly fortunate to come from a family where my parents never tried to impose any restrictions on what my brother and I should aim for. They sent me to St Cyprian's School (for "Young Ladies") in Cape Town, where it was never questioned that we would go out and make something of our lives."

By the time she was 19, Rosemary was diagnosed with Stargardt's Disease, which leads to the slow, irreversible loss of central vision in both eyes - the area of sight typically used for reading, or looking down a microscope.

"It doesn't help to wear glasses, because it's not a question

of focus. The middle of my field of vision is mostly fuzzy, making reading difficult. But the brain compensates. I have an iPad and a Kindle to read books. I enlarge text on screens. Modern technology offers all sorts of solutions."

Undeterred by this challenge, she opted for a life of research, starting with Agriculture at Stellenbosch University.

THE INVISIBLE WORLD, AND TENNESSEE BLUES

While busy with her undergraduate degree, Rosemary Dorrington developed a fascination for how things work at a molecular level. The University of Cape Town's Department of Microbiology, headed by Professor Dave Woods, was then acknowledged as being at the cutting edge. She approached him about doing Postgraduate studies in the discipline.

Rosemary had to do a six-month crash course in microbiology before being accepted for Honours. She went on to study for her Masters and her PhD in Microbiology at UCT, supervised by Dave Woods and later by Professor Doug Rawlings, both alumni of Rhodes University.

"I also wanted to do genetics, so in 1991 I applied and was accepted to do a Postdoctoral Fellowship at the University of Tennessee in Memphis, which had a leading laboratory in yeast molecular biology. I was particularly interested to find out how *Saccharomyces cerevisiae*, otherwise known as Brewer's Yeast, was able to switch genes on and off. How does it 'decide' that?"

While her work, the music and people of the American South and the scenery fascinated her, Dorrington was staggered by the cutthroat nature of academic science in the US.

"It was nasty, very competitive, and I was unprepared for it. I remember that when I arrived, my boss said to me: 'You must take off one Sunday a month. I insist.' And I did work hard, in part because I couldn't afford to do anything else. It was a difficult three years."

A GOOD PLACE TO BE

As she was nearing the end of her Postdoctoral Fellowship, Professor Dorrington received a faxed job offer from Professor Ralph Kirby, then head of Microbiology at Rhodes University, whom she knew from her years at UCT.

"It was December 1993, and I wasn't sure it was the right time to come back. So I phoned Dave Woods, and said, what do you think? He told me: If you're serious about being an academic, and you're serious about coming back to South Africa, then Rhodes is a good place to be. I arrived here in the middle of 1994. I thought I'd be here for three years, but I've been here ever since."



Professor Rosie Dorrington and Postgraduate Students in their Laboratory. Photo: Chris Marais

Dave Woods became Rhodes University's Principal and Vice-Chancellor in 1996, and Professor Dorrington has never regretted her decision to stay.

"I'm very proud of this University. Of course, all institutions go through ups and downs, but from an academic and research point of view, Rhodes really is a good place to be. It's small, so what we lack in critical mass, we make up for in creativity and ingenuity. I also think it's much easier to be heard at Rhodes. Or maybe I'm just difficult to ignore!"

SECRETS OF THE COELACANTH

Professor Dorrington spent years working in the field of virology at Rhodes University, and had no idea she would eventually be drawn into marine research. But in 2003, she found herself bobbing about on an old fishing boat, the RV *Algoa*, hunting for coelacanths off Sodwana. The idea was to harvest enough tissue or blood to sequence the genome. Unlike humans, fish have nucleated red blood cells - and therefore DNA - in their blood.

"I was the South African who got the material for sequencing the coelacanth. In 2003 they accidentally caught one in the Comores Islands, which I had visited the year before to help Comorian scientists prepare for just such an event. We had left blood vials with them, and the DNA was of good enough

quality to launch the Coelacanth Genome Project with collaborator Dr Chris Amemiya and others in the USA.

"It was a dream project that received the enthusiastic support of Marjorie Courtney-Latimer, then a spritely 93-year-old, who had discovered the first living coelacanth in 1937."

The draft coelacanth genome was published in the journal *Nature* in 2013. The theory was that this remarkable fish was the closest relative of the marine animal that gave rise to the tetrapods (including us) on the one hand, and the ray-finned fish on the other.

"So while it predated the evolution of fishes and land animals, the coelacanth became 'left behind' in the deep ocean. For 400 million years, there was no need for it to adapt to changing environments. And the genes proved that the theory was exactly right. The coelacanth genome is a snapshot of what we looked like at the time, which is particularly interesting from a developmental point of view. Why do we have limbs, and how did they arise? Importantly, it also showed how our immune systems have evolved.

"Maybe it was the coelacanth that made me realise that being at sea was something really special."

TEAM MARINE

Developing a potential new drug from the ocean is a process that takes a small academic village.

"You have the marine biologists who are searching for places where they can find new species with potentially novel compounds; you've got the chemists who are saying okay, is there a new compound in that sponge? You've got the

microbiologists who are asking what is making it? And then you have the genetic engineers who are going to persuade the bugs to make the compounds.

“Then the next step: you’ve got the people who are going to take the process out of the research laboratory into the factory, and potentially develop it so it can become a commercial product. You can see why we have to work as a team. One person cannot do everything.”

Most of the current effort is going into gene sequencing.

“Actually, we call it Next Generation gene sequencing. Imagine taking the entire Encyclopaedia Britannica, photocopying all the pages ten or twenty times, throwing them in a pile, and then using a computer to piece them all back together again. Then we can use those massive digital data sets to search for those recipes.”

HOW MANY TUBEWORMS DOES IT TAKE?

Now that sedentary animals like sponges, sea squirts and tubeworms have been found to have all sorts of interesting and very useful compounds, some practical considerations are needed.

These marine natural products are often only produced in trace amounts.

As an illustration of the logistics involved, a unique tubeworm was found lurking on the Agulhas bank. Its tiny body contains a compound that has potent anti-cancer properties. To provide enough of the compound for clinical trials, 400kg of these tube worms had to be dredged up, crushed and concentrated in order to make 200 milligrams of the active compound - barely enough for a phase 1 chemical trial.

“How many of these tubeworms are there? We have no idea. They are found at a fair depth. Generally, the problem is that you can’t go and dive out a sponge or tubeworm every time you need more useful compounds. How then do you supply enough that you can develop a useful product in every pharmacy at a reasonable price, yet not wipe out an entire species in the process?”

Clearly, the answer lies in finding out how the sponge or tubeworm makes the specific compound, and then replicating the chemical recipes in the laboratory.

MICROBIAL FACTORIES

What makes things easier - in theory, at least - is that the sponges seldom make these toxins or defence chemicals themselves. They mostly have hired guns for that - symbiotic microbes that live within them, much as *E-coli* and various bacteria live within our guts.

In return for a cosy home and specialised nutrients, these bacteria (and fungi) typically help to digest food or in the case of a sponge, provide scarce vitamins and assist with self-defence.

“So that’s why it’s handy to be a molecular microbiologist working in this field. I know how bacteria function, and how genes get switched on and off.”

Once a promising compound is found, its biological activity is tested, and its target is identified. If there are potentially useful compounds, the next step is to ascertain how they are made in the native organism.

They are often made in microbial factories, but it’s not always as simple as that. Sometimes a number of microbes in a sponge might collaborate, each one making part of a compound. Or the microbe makes part of it, and then the sponge modifies it.

By deciphering the genetic code of these microbes and analysing how they might make their compounds, scientists can theoretically give these secret recipes to lab bacteria (such as *E-coli*) so that they can make the compounds in a flask, leaving the delicate marine environments undisturbed.

“Basically, we are saying to the bacteria: I know you don’t normally do this, but here is a recipe you can reproduce,” says Professor Dorrington. “The compounds can be tremendously complex, though, and many are very difficult to replicate in a laboratory.”

A COMMUNITY OF PRACTICE

A big part of why Professor Dorrington is committed to Rhodes and remaining in the Eastern Cape, is proximity to Algoa Bay and research support through the SA Institute for Aquatic Biodiversity (SAIAB).

“As an Honorary Research Associate at SAIAB I have access to state of the art marine and genomics research infrastructure. SAIAB operates research vessels, they have a remote operating vehicle, and they’ve got one of the best ROV operators for our difficult coastal conditions.”

She also works with oceanographers and marine biologists at the SA Environmental Observation Network (SAEON), based on the Ocean Sciences campus of Nelson Mandela University in Gqeberha. This and several other research projects are part of a Community of Practice that pulls together specialists in the area of marine spatial planning.

“This takes in the socio-economics, the biology, sustainability, basically everything together, with Algoa Bay as our pilot project.

“I really enjoy the opportunity to see my research in the broader context of science and society, and being able to play a role in the sustainable development of our Blue Economy.

“Being a scientist means being naturally curious about how things work. The amazing part is making a discovery, and knowing something new that nobody else knows. You might be the only person in the world who knows that fact. In a world with more than seven billion people. How cool is that?”

“In our case, we’re studying how cells work, how life evolved on the planet, and how it’s going to go forward.”

STROMATOLITES AND THE HALO

Almost four billion years ago, the Earth’s cyanobacteria mastered the nifty trick of photosynthesis. For aeons, they absorbed energy from hydrogen in water and released oxygen, then a toxic gas. Around 3.3 billion years ago, in shallow seas, they learnt another trick - how to live in colonies or communities. They banded together with other blue green algae and micro-particles (sand) by making their surface areas slightly sticky. They slowly assembled themselves into large pillowy rock-like structures, and carried on exuding oxygen, a bubble or two at a time.

Stromatolites had long been noted in the fossil record, but in 1961, scientists were astounded to find living specimens off Shark Bay in Australia. These went on to become a rather unusual tourism attraction, despite the fact that they are no more charismatic than rounded rocks in shallow, hypersaline water. Still, these are the Earth’s oldest lifeforms, and are found in only a handful of other places in the world.

In the early 2000s, the area between Algoa Bay and Oyster Bay was added to this very exclusive club. Here scientists found tufa stromatolites, actively calcifying in tidal pools where

salty seawater combines with calcium carbonate-rich groundwater to form an ideal environment where they can grow and flourish.

“A few years ago, my SAEON collaborator said: you need to look at the stromatolites. Because like the sponges, the stromatolites have their own microbial communities, and they are chockful of ideas for new compounds.

“We’ve been isolating bacteria from stromatolites along the coast, as well as the sponges, and found bacteria that are really good at producing antibiotics.”

When Alexander Fleming discovered a broad-based antibiotic in the form of penicillin in 1928, he recognised its effectivity because there was a clear space, a halo, around the fungus, where no bacteria grew.

Professor Dorrington leads the way to her Microbiology Laboratory where Postdoctoral Fellows and Postgraduate students are working on bacteria isolated from the marine environment.

And there, on a counter, is something quite unmistakable: a halo of clear space within a bacterial culture on a Petri dish. There lies, perhaps, the next antibiotic the world so desperately needs.

By Julienne du Toit



From Left: Tshepiso Seshoeshoe, Gabriella Solomons, Tumi Tsele, Wakisa Kipandula, Asisipho Dloboyi, Tarryn Swart and Professor Rosie Dorrington. Photo: Chris Marais



Mentors, Molecules and Microbes

Need a cheap, effective way of dealing with sewage? One that also generates jobs and yields good fertiliser? What about turning coal heaps into fertile soil? Or capturing greenhouse gases (carbon dioxide and methane) from industrial chimneys and turning it into biomass? And isn't there a way of keeping fruits and vegetables fresh for longer? For every one of these challenges, **Professor Keith Cowan** of Rhodes University's Institute for Environmental Biotechnology (EBRU) might say: There's a biological solution for that.

On a planet staggering under climate change, food and energy insecurity, water and land pollution, it seems impossible to imagine that we already have solutions, ready to be deployed.

"In fact, we've got many of the answers to life's problems, but no one wants to believe it," says Keith. "I really can't explain this. Everyone you speak to has the same kind of resigned philosophy about South Africa and the way the world is going. But energy follows thought. So if that's what you think, then that is what will happen. We need to change people's ways of thinking about things."

Keith has spent decades in South Africa and abroad, thinking about and seeing the marvels that biologicals and micro-

organisms can accomplish. His current post-graduate students are engrossed in research that turns coal dumps into a fertile soil-like material within a few years, and purifies sewage and acid mine water while simultaneously producing biogas and biofertiliser. For good measure, they also trap climate change-causing carbon dioxide.

STARTING WITH ORTHOPAEDICS

Like all young South African men in the 1970s, Keith was conscripted into the military after he matriculated from Potchefstroom Boys High. He disliked everything about the experience except the fact that he had been sent to Bloemfontein to learn how to be a medical orderly.

"I had the good luck to work in the operating theatre alongside Colonel Tony Dippenaar. He was a wonderful orthopaedic surgeon who awoke in me a waning interest in science. I seriously considered studying medicine, as a result."

Instead, Keith impulsively decided to head for Rhodes University. He opted for a BSc, and decided that if he didn't like it, he'd simply move somewhere else. Instead, he found himself rather charmed by this "rather Hogwarts-y institution with 2 000 students, where we wore gowns for dinner every night".

THE ANDROMEDA STRAIN

He was even more charmed once he had found a mentor in the form of Frank Robb, then a senior lecturer in the Department of Microbiology.

"When I first walked into his office, here was this chap with a scraggly beard, a tatty red jersey, worn-out jeans and his mountaineering boots resting on his desk. We got on immediately. He was interested in so many things. I asked him one day why he became interested in biology and microbiology. He said he was infatuated with the book *The Andromeda Strain*, by Michael Crichton. Once he had read that book, he knew he was going to be a microbiologist."

Keith immediately headed out to buy and read *The Andromeda Strain*. Microbiology became one of his majors.

He then met his second and perhaps most influential mentor at Rhodes University in the form of British plant biochemist, Dr Ian Railton. Through Ian, Keith also realised that teaching could be enjoyable. Indeed, Keith was appointed as a temporary lecturer to take charge of plant physiology courses in 1986/87 while Ian was away on a sabbatical at UCLA.

"Ian was one of those dramatic, perhaps theatrical lecturers. Each class was a fascinating episode of discovery. He hated being interrupted. If you put your hand up it broke his train of thought, so more often than not, you were ignored. But what and how he taught was memorable. His lecture series on the discovery of messenger RNA in plants is as fresh in my mind today as it was almost 40 years ago. He gave the context of scientific discoveries, the scientists themselves and the human angle. And that's become my philosophy too - to give folks a little more than is written down. If you can provide a vision of the circumstances and context, more than just the formulae and molecules, then it has a way of infusing the wealth of a subject."

Ian supervised Keith's PhD on hormone metabolism in higher plants.

"He is probably the person most responsible for me eventually pursuing an academic/research career. My doctoral research was specifically on abscisic acid metabolism. It was a highly productive relationship and I dearly cherish the experience I gained."



Professor Keith Cowan, Rhodes University's Institute for Environmental Biotechnology (EBRU). Photo: Chris Marais

"Ian was a meticulous scientist and a competent researcher, always interested and ever-willing to discuss aspects of my research. He allowed me to find my own way, mistakes and all - for the most part."

"By the time my PhD was accepted, we had published seven or eight papers."

MICROALGAE, CELL STRESS AND DUNALIELLA

In 1987, after submitting his thesis, Keith took a break for six months and headed to Europe, there to hitch-hike around on a shoestring in an effort to educate himself in matters worldlier than the laboratory space could offer.

He returned to South Africa with the intention of heading back overseas for a Postdoctoral fellowship, but while on a visit to

Rhodes to finalise his thesis and visit friends, he received a job offer, a junior lectureship post in the Department of Plant Sciences - later renamed Botany.

His new office was next to that of Peter Rose (later professor and founding director of EBRU), who was setting up Biotechnology as a subject at honours level at Rhodes while working on a rather remarkable salt-loving micro-alga called *Dunaliella*. This alga thrived in bright light conditions and boasted high levels of the pigment beta-carotene, a proto-ingredient of vitamin A and a powerful anti-oxidant.

THE PROMISE OF BETA-CAROTENE

Other forms of beta-carotene were available, but these were synthetic and typically produced using health-threatening solvents like hexane. By contrast, *Dunaliella* yielded a pure, high value substance. Keith was also researching plant carotenoids in relation to formation of abscisic acid which accumulates in plants under conditions of temperature and osmotic stress, so it was relatively easy for him and Peter to collaborate on the project. This culminated in a factory set up by Sasol outside Upington to produce Beta-Carotene.

"It was a fantastic project which took me not only to Sasolburg and Upington but to the Weizmann Institute of Science on a nine-month sabbatical. And in between, a short visit to the Norwegian Institute of Technology, Trondheim. I realised from this research that you could generate a production facility that would yield reasonably good returns. This was the first demonstration, to me, of a full biotechnology value chain."

OFF TO KZN

His third mentor appeared in 1993. Professor Andy Cairns, head of Crop Science at the University of Natal, Pietermaritzburg visited Keith in his laboratory at Rhodes while vacationing at Riet River.

"Andy was also interested in abscisic acid but for different reasons. For a long time, it had been suspected that abscisic acid played a major role in controlling seed dormancy. Andy, a crop physiologist, wanted to better understand the relationship between soil molybdenum concentration, seed abscisic acid concentration and grain seed dormancy in wheat."

And so commenced a long-lasting academic relationship that still persists, says Keith.

"It was also likely why, in 1994, I was asked to apply for the position of senior lecturer in plant physiology in the Horticultural Sciences Department at the University of KwaZulu-Natal's

Faculty of Agriculture and Agribusiness Faculty in Pietermaritzburg.

FRUIT AND NUTS

On route to the interview in Pietermaritzburg, Keith was met at the airport by the then incumbent head of department, Professor Nigel (Wally) Wolstenholme. He was to become a fourth mentor. Wally introduced Keith to the intensive horticultural production of avocados, citrus, kiwi fruit and macadamia nuts, as well as the world of academic departmental administration.

"Wally was and remains the finest head of department that I was privileged to work alongside," says Keith. "He shouldered almost all administrative tasks to allow his staff the freedom to pursue excellence in both teaching and research."

Keith was appointed acting head of department for a year while Nigel enjoyed a sabbatical. During that time, he learned the essentials of this very demanding office.

"From then into the early 2000s, I did a lot of work supported by the Avocado Growers' Association, the Citrus Growers' Association and the National Research Foundation, mostly in collaboration with Nigel Wolstenholme, on avocado. We were trying to dissect the biochemical/molecular aspects contributing to the 'small fruit problem' in avocado, by examining aspects of isoprenoid metabolism.

"We stumbled upon a most interesting group of molecules, the seven carbon sugars and their respective polyols, and sought to understand why avocado in particular was such a prolific accumulator of these sugars, which include mannoheptulose and perseitol. In citrus, we wanted to understand more about the molecules that impart intense orange colouration during fruit ripening, specifically the xanthophylls and particularly violaxanthin, neoxanthin and the apo-carotenoid beta-citraurin.

"I also worked closely with Andy Cairns on pre-harvest sprouting in cereals. This is where grain crops, specifically wheat in this example, are exposed to soil conditions that limit uptake of certain minerals or make these inaccessible, together with climatic conditions. The result is that seeds in the ear sprout before they've ripened. Seeds germinate in situ or shortly after harvest while in storage. This spoils the crop and results in lost revenue for growers."

THE SWEDISH WAY

When the avocado and citrus projects were drawing to natural closure in 2000, the Cowan family decided to move to Sweden, in part so that the children could come to know Keith's wife Yvonne's origins. Both her parents were Swedish, and had run the popular Juice Bar in Grahamstown's High Street for many years.

"Within weeks of having arrived in Stockholm, I was offered a contract post at the Swedish University of Agriculture Science (SLU) in Uppsala, in the Institute of Plant Physiology and Forest

Genetics. I was given charge of the courses in natural resource management and plant production. It was right up my alley, and I loved the way the University operated.

"I had the same students for ten-week blocks, for eight hours a day, five days a week, but with strict limits on student numbers. In my case, there were no more than 70 seats available for natural resources course, and 20 for plant production. The Swedish authorities seem to know and understand what kind of job absorption capacity there is for these students, and I was training people who were bespoke, for a particular career.

The working conditions for academics can be tough, though.

"No grant funding essentially means no work. So there is continual change and flux, which is sometimes bad from the people point of view, but fantastic from an ideas point of view. If you can just maintain some affiliation, the constant infusion of new thinking is as invigorating as a holiday."

It was while seeking a permanent university position in Sweden that Keith stumbled into the post of senior scientist with a start-up in the USA in another university town: Madison, Wisconsin. Nutra-Park was a US-based biotechnology subsidiary of the well-known South Korean heavy construction company, Doosan.

THE POWER OF PHOSPHOLIPIDS

"Yvonne and our three daughters stayed in Sweden, and I travelled back and forth for six weeks at a time. We worked like that for quite a long time. Eventually they wanted me there full-time.

"Nutra-Park was involved with commercialisation of natural phospholipids as plant growth regulators; specifically, a molecule called lyso-phosphatidylethanolamine or simply LPE, and their flagship formulation, SignaFresh, was basically a product to keep fruit and vegetables fresher for longer.

Keith remained at Nutra-Park until its forced closure in 2007. He then returned to Sweden and while consulting in the biotechnology field, he and Peter Rose re-connected. Peter invited Keith to visit Grahamstown in late 2007 to discuss the possibility of assuming leadership of the Institute for Environmental Biotechnology, Rhodes University (EBRU).

FROM THE GROUND UP

"I had no real intention of coming back to South Africa, but Peter was persuasive and the R&D scene in South Africa in 2007 appeared attractive."

Since they had last worked together in 1995, Peter had started a project with the Water Research Commission and had built what is called an integrated algal pond system (IAPS) in Belmont Valley at the Grahamstown Wastewater Treatment Works. It was a pilot project, paid for by the WRC. Some of the land had been contributed by what is now the Makana Municipality, and Rhodes University were the managers.

Within the first two years he had successfully won substantial funding from Sasol, Novus International and Anglo Operations to investigate various bioremediation strategies. This included sequestration of carbon dioxide by microalgae and energy derivation; in situ formation of high lipid and protein (microalgal) biomass from co-feeding and utilisation of bespoke commercial formulations; and a re-examination at commercial scale of Fungcoal for rehabilitation of coal dumps and mining-disturbed land.

PURIFICATION WITH ALGAE

Keith also approached the WRC, the original funder of the EBRU wastewater treatment project. They agreed to underwrite an additional study to re-evaluate the technology.

"We used the algae system as a model in several projects. We also got several students involved - two or three PhDs and Masters. It was a patchwork job, fixing what was needed to make it work. Surprisingly, after fifteen years of the system just sitting there, almost not used, we were able to completely confirm the original designs, the specifications, and even the water quality that emerged. It was a really good project."

LESSONS FROM BELMONT

The next step was to implement IAPS in a working municipality, and here the project hit a wall.

Keith and Richard Laubscher, a senior researcher at EBRU, wrote an article on the various efforts in *Water Sewage and Effluent Journal* in 2019. Reasons for the lack of uptake in various towns - including Grahamstown, Bedford, Boesmansriviermond, Hamburg, Alice, Tarkastad and Barberton - baffled the writers.

Yet the simplicity of the system, its efficiency, potential for downstream job creation, and good quality irrigation water meant it should have been widely accepted and successfully utilised.

The IAPS project at Belmont Valley was then dealt a death blow when Makhanda's own Wastewater Treatment Works began to fail from 2014 onwards.

"There is currently little or no sewage being processed at the Belmont plant, which is the major WWTW for Makhanda. If Belmont Valley WWTW doesn't function, EBRU can't function, because there is no sewage. And without sewage, the algae and associated projects are non-starters."

Professor Cowan had to wind up the project in 2019, and is now working with five Postgraduate students, researching various other aspects related to bio-remediation.

STUDENTS WHO CHANGE THE WORLD

One PhD candidate is exploring the use of bacteria harvested from Belmont Valley for plant growth-promoting properties in an effort to develop a novel bio-fertiliser.

“The microbes are placed into the soil to enhance plant growth and to reduce reliance on fossil fuel derived fertilisers.”

Another interesting project from Keith’s laboratory is exploring the conversion of small molecules (e.g. acetate and carbon dioxide) into methane - natural gas, usable as fuel. “We are targeting flue gas and organic acid waste streams. These are scrubbed and either the CO₂ or acids are used as substrates for bespoke reactors containing bacteria that have been enriched to produce CH₄ (methane).”

Additional PhD research projects seek to determine the origin and spread of antimicrobial resistance by examining proliferation of antibiotic resistance genes in the environment.

Professor Cowan has no intention of stopping his brand of scientific magic with molecules and microbes.

“I’m chewing on the idea of doing another PhD. I might join a lab for few years. I’ve got a new idea, and if I can prove it, this will be a game-changer for farming, land rehabilitation and food security, particularly given the ever-diminishing supply of arable land.

“I think this is the key to our future.”

By Julienne du Toit



2021 Rhodes University
RESEARCH REPORT

Departments



Centre for Higher Education Research, Teaching & Learning (CHERTL)

Dr Amanda Hlengwa
Acting: Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Centre for Higher Education Research, Teaching and Learning contributes to the academic project at Rhodes University through a range of staff and student development programmes. In addition, CHERTL staff members supervise a number of Postgraduate scholars whose projects focus on critical issues in the field of higher education. Centre staff conduct research in the field of academic staff development, educational technologies, early-career scholars, knowledge in the curriculum, social justice in higher education, academic literacies and student access to knowledge practices in higher education.

POSTGRADUATES / GRADUATIONS

In the April 2021 graduation ceremony, 21 academics graduated with a Postgraduate Diploma in Higher Education (PGDip (HE)). This is a NQF level 8 (Honours equivalent) qualification. The qualification is undertaken part-time over two years. CHERTL offers three different PGDip (HE) programmes. The following breakdown outlines how many students graduated from each of the programmes in 2021:

- PGDip (HE) - Rhodes University cohort: 3 graduates of those 1 with Distinction
- PGDip (HE) - Academic Developers cohort: 15 graduates of those 8 with Distinction
- PGDip (HE) - National cohort: 5 graduates of those 1 with Distinction

In October 2021, one CHERTL doctoral scholar, Dr Leanne Browning, graduated with her PhD.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Given the uncertainty of (particularly international) travel, CHERTL did not physically host any distinguished guests in 2021. Instead, we invited guests to facilitate various seminars held during our triannual Doc Weeks.

2021 DOC WEEKS

Due to the uncertainty of travel, CHERTL held all three of their 2021 Doc Weeks online. The March Doc Week focused on *Decolonial Research Methodologies in Higher Education* and CHERTL was delighted to have the following distinguished scholars contribute to the programme: Dr Shannon Morreira (UCT), Emeritus Professor Kathy Luckett (UCT), Mr Siseko Kumalo (UP), Dr Manjeet Ramgotra (SOAS), Professor Michalinos Zembylas (Open University of Cyprus), Emeritus Professor Vivien Bozalek (UWC) and Dr Savo Heleta (NMU). The July Doc Week centred on *Creative Research Methodologies in Higher Education* and included sessions led by a selection of top South African researchers including Professor Tamara Shefer (UWC), Dr Daniela Gachago (UCT) and Dr Sherran Clarence (RU), as well as CHERTL staff members. CHERTL co-hosted the October Doc Week with colleagues from the Education Faculty, this time focusing on *Evidence, Quality and Analysis*. The team invited PhD graduates to join the week to share their experiences of completing their PhDs and the organising team facilitated a number of interactive sessions and workshops.

SIGNIFICANT RESEARCH ALIGNED EVENTS

In 2021 Dr Sherran Clarence (CHERTL Research Associate) published the following book: *Turning Access into Success: Improving University Education with Legitimation Code Theory* (Routledge). This book consolidates a number of year's work in academic staff development, providing explanations and practical strategies for how Legitimation Code Theory can enhance the development of teaching and learning in universities.

SUBSIDY-EARNING PUBLICATIONS BY CHERTL STAFF AND RESEARCH ASSOCIATES

Clarence, S.

Clarence, S. (2021) *Turning access into success. Improving university education with Legitimation Code Theory*. London: Routledge. ISBN: 9780367335618.

Clarence, S. (2021) Towards a theoretical framework for exploring emotion in doctoral education: Critically exploring familiar narratives in student experiences. In: Rule, P., Bitzer, E. and Frick, L. (eds.). *The Global Scholar: Implications for postgraduate studies and supervision*. (pp. 215-229). Cape Town: African Sun Media. ISBN: 9781991201225.

Clarence, S. and van Heerden, M. (2021) Changing curriculum and teaching practice: a practical theory for academic staff development. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building Knowledge in Higher Education - Enhancing Teaching and Learning with Legitimation Code Theory*. (pp. 145-161). London: Routledge. ISBN: 9780367463328.

Chiappa, R.P.

Chiappa, R.P. (2021) Finding academic jobs in stratified countries: The effects of social class of origin in the development of academic networks for Chilean PhDs. In P. Rule, E. Bitzer, & L. Frick (eds.). *The global scholar: Implications for postgraduate studies and supervision*. Stellenbosch: SunMedia. ISBN: 9781991201232.

Ellery, K.

Ellery, K. (2021) Widening access in science: Developing both knowledge and knowers. In: Maton, K. and Martin, J.R. (eds.). *Teaching Science: Knowledge, Language, Pedagogy*. (pp. 187-214). London: Routledge. ISBN: 9780815355755.

Knowles, C.R.

Knowles, C.R. (2021) With Dreams in Our Hands: An African Feminist Framing of a Knowledge-Making Project with Former ESP Students. *Education as Change*. 25 (2021). p. 1-22.

Pallitt, N. and Kramm, N.

Krull, G., Ganas, R., Pallitt, N., Kramm, N. and Riley, A. (2021). Reimagining support for learning and teaching in post-covid-19 South African higher education. *African Perspectives of Research in Teaching & Learning*. 5(1). p. 129-146.

Pallitt, N.

Pallitt, N., Gachago, D. and Bali, M. (2021) No Size Fits All: Design Considerations for Networked Professional Development in Higher Education. In: Dohn, N.B., Hansen, J.J., Hansen, S.B., Ryberg, T. and de Laat, M. (eds.). *Conceptualizing and Innovating Education and Work with Networked Learning*. (pp. 53-71). *Research in Networked Learning*. New York: Springer. ISBN: 9783030852405.

Romero-Hall, E., Correia, A.P., Branch, R., Cevik, Y.D., Dickson-Deane, C., Chen, B., Liu, J.C., Tang, H., Vasconcelos, L., Pallitt, N. and Thankachan, B. (2021) Futurama: Learning Design and Technology Research Methods. In: Romero-Hall, E. (ed). *Research Methods in Learning Design and Technology*. New York: Routledge. ISBN: 9780429260919.

Quinn, L.

Quinn, L. (2021) The role of assessment in preparing academic developers for professional practice. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building Knowledge in Higher Education: Enhancing Teaching and Learning with Legitimation Code Theory*. (pp. 255-271). London: Routledge. ISBN: 9780367463328.

Vorster, J.

Vorster, J. (2021) Academic development: autonomy pathways towards gaining legitimacy. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building Knowledge in Higher Education - Enhancing Teaching and Learning with Legitimation Code Theory*. (pp. 272-289). London: Routledge. ISBN: 9780367463328.

Musara, E., Grant, C. and Vorster, J.A. (2021) Inclusion as Social Justice: Nancy Fraser's Theory in the South African Context. In: Mullen, C.A. (ed.). *Handbook of Social Justice Interventions in Education*. (pp. 39-58). Switzerland: Springer Nature Switzerland. ISBN: 9783030358587.

Wilmot, K.

Wilmot, K. (2021) 'Fail early and fail fast': the value of group supervision for doctoral candidates. *Higher Education Research and Development*. 2021 (1). p. 1-15.

Wilmot, K. (2021) Learning How to Theorize in Doctoral Writing: A Tool for Teaching and Learning. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building Knowledge in Higher Education: Enhancing Teaching and Learning with Legitimation Code Theory*. (pp. 126-141). London: Routledge. ISBN: 9780367463328.

Wilmot, K. and McKenna, S. (2021) Putting Knowledge at the centre: The uptake of Legitimation Code Theory in higher education studies in South Africa. In: Huisman, J. and Tight, M. (Eds.) *Theory and Method in Higher Education Research, Vol. 7*. (pp. 147-160). Bingley: Emerald Publishing Limited, Bingley. ISBN: 9781802624427.

Winberg, C., McKenna, S. and Wilmot, K. (2021) 'Nothing So Practical as Good Theory': Legitimation Code Theory in Higher Education. In: Winberg, C., McKenna, S. and Wilmot, K. (eds.). *Building Knowledge in Higher Education: Enhancing Teaching and Learning with Legitimation Code Theory*. (pp. 1-18). London: Routledge. ISBN: 9780367463328.

Winberg, C., McKenna, S. and Wilmot, K. (eds). (2021) *Building knowledge in higher education: Enhancing Teaching and Learning with Legitimation Code Theory*. London: Routledge. ISBN 9780367463335.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Chiappa Baros, R.P.

Chiappa Baros, R.P. and Finardi, K.R. (2021) Coloniality Prints in Internationalization of Higher Education: The Case of Brazilian and Chilean International Scholarships. *SOTL in the South*. 5 (1). p. 25-45.

Pallitt, N.

Networked Learning Editorial Collective (NLEC): Gourlay, L., Rodríguez-Illera, J.L., Barberà, E., Bali, M., Gachago, D., Pallitt, N., Jones, C., Bayne, S., Børsen Hansen, S., Hrastinski, S., Jaldemark, J., Themelis, C., Pischetola, M., Dirckinck-Holmfeld, L., Matthews, A., Gulson, K.N., Lee, K., Bligh, B., Thibaut, P., Vermeulen, M., Nijland, F., Vrieling-Teunter, E., Scott, H., Thestrup, K., Gislev, T., Koole, M., Cutajar, M., Tickner, S., Rothmüller, N., Bozkurt, A., Fawns, T., Ross, J., Schnaider, K., Carvalho, L., Green, J.K., Hadzizijusovic, M., Hayes, S., Czerniewicz, L. and Knox, J. (2021) Networked Learning in 2021: A Community Definition. *Postdigital Science and Education*. 3, p. 326-369. <https://doi.org/10.1007/s42438-021-00222-y>.

RESEARCH PAPERS PRESENTED AT ACADEMIC/SCIENTIFIC CONFERENCES (NON- PEER REVIEWED PROCEEDINGS)

Chiappa, R.P.

Chiappa, R.P. Producción o reproducción de las élites en la carrera académica: Un análisis exploratorio en el campo de la economía. *Conferencia COES*. 16 November 2021.

Chiappa, R.P. Ongoing attempts to decolonize curriculum and pedagogy: Is it even possible? (Keynote). *Scholarship of Teaching and Learning Conference*. Central University of Technology, 7 October 2021.



Centre for Postgraduate Studies (CPGS)

Professor Sioux Mckenna
Director: CPGS

Photo: Dirk Pieters

INTRODUCTION

The Centre for Postgraduate Studies is an institutional resource supporting Postgraduate scholars, supervisors, Postdoctoral Fellows and emerging researchers. Its activities are funded through the DHET's University Capacity Development Grant and the centre works to contribute to the research-rich environment of the institution.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The Centre for Postgraduate Studies' suite of initiatives included ten (10) fully accredited short courses offered online. The evaluations of these courses indicate their excellent quality and the waiting lists for each indicates their popularity. The number of courses offered is constrained by the extent of the DHET UCDG funding. The 2021 courses were: *Disseminating Knowledge through publication* (offered twice), *Introduction to Nvivo* (offered twice), *Strengthening Postgraduate Supervision*, *Introduction to Research Basic* (offered twice), *Introduction to Research Advanced* (offered twice), and *Introduction to Knowledge Syntheses and Systematic Reviews*. The centre also offered 30 (thirty) online workshops on issues as diverse as *Managing your Supervisor* to *Experimental Design*. These are facilitated by staff from across the institution.

Despite the constraints of COVID, the CPGS was able to offer several writing support initiatives including online Pomodoros, writing groups and mindfulness sessions every week. One writing retreat was offered at the end of 2021. The Postgraduate Liaison Committee was active with 38 departments identifying representatives who assisted in the running of the #3MT (Three Minute Thesis) and who represented Postgraduates on various committees.

Given the inability to offer a face-to-face Postgraduate conference, in 2021 the CPGS once again ran the Three Minute Thesis competition. We also participated in the national #3MT for the second year and once again won the competition. Visit the RU #3MT site here: <https://sites.google.com/ru.ac.za/3mt-2021>. All the entries can be viewed here: <https://www.youtube.com/playlist?list=PL-9EuAvBH-sBRPkqLCKHn4fNC4xdlvRqq>.

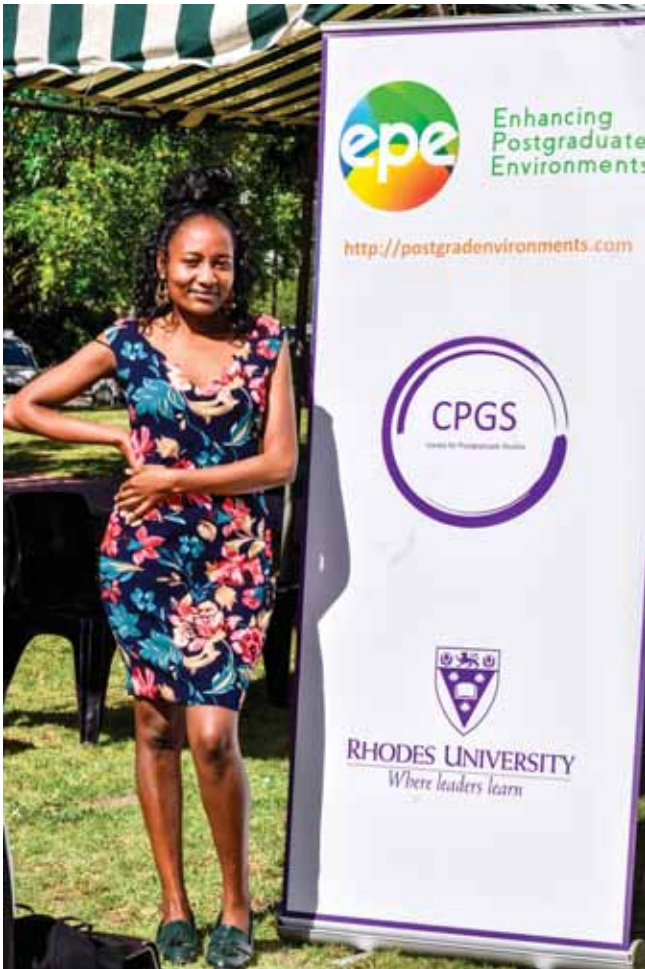
The CPGS continues to make educational videos which are viewed by thousands of people around the world as well as being useful resources for supervisors and Postgraduate students in the university. Here are two of the eight videos produced in-house in 2021.

Why do we reference and how do I avoid plagiarism?
<https://postgradenvironments.com/2021/05/12/how-to-avoid-plagiarism/>

What is intentional plagiarism and why do people do it?
<https://postgradenvironments.com/2021/05/12/what-is-intentional-plagiarism/>

An NRF Rating mentorship programme was offered for the first time in 2021, which entailed pairing people applying for rating for the first time with established researchers. A series of Early Career Researcher workshops were also offered and very well received. There is a need for a more coherent approach to developing research capacity in Postdoctoral Fellows and Early Career Researchers, which will be a key focus in 2022.

The CPGS was commended in the CHE (Council of Higher Education) review of the Doctorate at Rhodes University as being integral to the quality of doctoral education in the university, for example: "During the virtual site visit, the doctoral students expressed much appreciation for the range of support and



3 Minute Thesis event.
Photo: Centre for Postgraduate Studies



developmental programmes provided by the CPGS" (Page 14), "the Doctoral students were most complimentary of the work being done by the CPGS, confirming that a range of activities including engagements with editors of local newspapers on improving writing skills, discussion forums, etc. were scheduled throughout the year" (page 27), "Doctoral students and alumni were most appreciative of the conducive environment and the support structures. Special mention was made of the work done by the CPGS" (page 43).

The report also commended the CPGS for running the international *Strengthening Postgraduate Supervision* course, which "received very positive feedback from staff members who attended the course" (page 19). The panel recommended making this course compulsory for all supervisors but we are of the view that this will undermine of the value of the course. Instead efforts are being made to ensure a strong uptake across Faculties. An overview of the course can be seen here: <https://www.youtube.com/watch?v=cOlu0Ujdda0>.

The panel also noted that "the CPGS is staffed with just a Director and an administrative assistant. It is therefore worthy to note that the successful implementation of the range of

initiatives relies on the voluntary participation of scholars and supervisors from across the institution, which is highly commendable" (Page 14).

Sioux McKenna continued as the South African lead on the EU funded *Creating Postgraduate Collaborations* project. Rhodes University's participation in 2021 consisted in running shared workshops with Kenyan colleagues, attending a 'meta-Summer school' online and sharing supervision materials. We also received an Association of Commonwealth Universities grant of R20 000 which was used to produce materials for Early Career Researchers.

The CPGS hosted two (2) book launches in 2021. In March, Research Associate Sherran Clarence's book *Turning access into success* was launched and in July, Chrissie Boughey and Sioux McKenna's book *Understanding Higher Education* was launched. This latter book is open-access. <https://www.africanminds.co.za/understanding-higher-education/>.

The book launch for *Understanding Higher Education* took the form of a panel comprising Professor Sizwe Mabizela, Vice-Chancellor of Rhodes University; Professor Fikret Adaman, Department of Economics, Boğaziçi University, Turkey; Professor Paul Ashwin, Centre for Global Higher Education, Lancaster University, United Kingdom; Professor Jo-Anne Vorster, Centre for Higher Education Research, Teaching and Learning, Rhodes University, South Africa; and Dr Lillian Omondi, Department of Sociology and Anthropology, Maseno University, Kenya.

BOOKS/CHAPTERS/MONOGRAPHS

Boughey, C. and McKenna, S.

Boughey, C. and McKenna, S. (2021) *Understanding Higher Education: Alternative Perspectives*. Cape Town: African Minds. ISBN: 9781928502210.

Bozalek, V.G.

Bozalek, V.G. (2021) Rendering each other Capable : Doing response-able research responsibly. In: Murriss, K. (ed.). *Navigating the Postqualitative, New Materialist and Critical Posthumanist Terrain Across*. London: Routledge. p.135-149. ISBN: 9780367484705.

Bozalek, V.G. and Hölscher, D. (2021) Higher Education hauntologies and spacetime-mattering: Response-able and non-innocence in the times of pandemic. In: Bozalek, V., Zembylas, M., Motala, S. and Hölscher, D. (eds.). *Higher Education Hauntologies: Living with Ghosts for a Justice-to-come*. London: Routledge. p.171-186. ISBN: 9780367527846.

Bozalek, V.G., Zembylas, M., Motala, S. and Hölscher, D. (2021) Introduction. In: Bozalek, V., Zembylas, M., Motala, S. and Hölscher, D. (eds.). *Higher Education Hauntologies: Living with Ghosts for a Justice-to-come*. London: Routledge. p.1-10. ISBN: 9780367527846.

Bozalek, V.G. and Zembylas, M. (2021) Towards a 'response-able' pedagogy across higher education institutions in post-apartheid South Africa: an ethico-political analysis. In: Bozalek, V., Zembylas, M. and Tronto, J.C. (eds.). *Posthuman and Political Care Ethics for Reconfiguring Higher Education Pedagogies*. London: Routledge. p.27-37. ISBN: 9780367463601.

Bozalek, V.G. (2021) Propositions for Slow social work. In: Bozalek, V. and Pease, B. (eds.). *Post-Anthropocentric Social Work: Critical Posthuman and New Materialist*. London: Routledge. p.83-94. ISBN: 9780367349653.

Bozalek, V.G. and Pease, B. (2021) Towards post-anthropocentric social work. In: Bozalek, V. and Pease, B. (eds.). *Post-Anthropocentric Social Work: Critical Posthuman and New Materialist*. London: Routledge. p.1-16. ISBN: 9780367349653.

Bozalek, V.G., Zembylas, M. and Tronto, J.C. (2021) Introduction. In: Bozalek, V., Zembylas, M. and Tronto, J.C. (eds.). *Posthuman and Political Care Ethics for Reconfiguring Higher Education Pedagogies*. London: Routledge. p.1-12. ISBN: 9780367463601.

Zembylas, M., **Bozalek, V.G.** and Motala, S. (2021) A pedagogy of hauntology: Decolonising the curriculum with GIS. In: Bozalek, V., Zembylas, M., Motala, S. and Hölscher, D. (eds.). *Higher Education Hauntologies: Living with Ghosts for a Justice-to-come*. London: Routledge. p.11-28. ISBN: 9780367527846.

Bozalek, V.G. and Hoosain, S. (2021) Hauntology, history and heritage - Intergenerational trauma in South Africa displaced families. In: Bozalek, V. and Pease, B. (eds.). *Post-Anthropocentric Social Work: Critical Posthuman and New Materialist*. London: Routledge. p.210-221. ISBN: 9780367349653.

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McKenna, S. Student success and the dominance of the decontextualised learner discourse. *HELM USAF Engage (Invited speaker)*. Online. South Africa. September 2021.

McKenna, S. A PhD for the common good. *UNISA Research Conference (Keynote)*. Online. South Africa. October 2021.



Community Engagement

Diana Hornby
Director

Photo: Dirk Pieters

INTRODUCTION

Rhodes University Community Engagement (RUCE) is a multifaceted division, serving both support and academic roles within the university. The foundational philosophy promoted by the division is that the university is an anchor institution for Makhanda and exists for the public good. To this extent, Community Engagement (CE) reconnects the university with the community through community university partnerships (CUPs) that are authentic and mutually beneficial and key for the integration between research, teaching and community engagement. This integral approach to the academic project has gained traction over the past few years, evident in the growth and interest in adopting engaged research methodologies and incorporating service learning into the teaching course curriculum.

This report focuses on engaged research and related activities and programmes by RUCE for the period January to December 2021.

ENGAGED RESEARCH \ COMMUNITY BASED PARTICIPATORY RESEARCH

Epistemic justice is one of the key principles guiding the programmes of RUCE generally and research in particular. RUCE actively promotes a reciprocal process of knowledge construction and dissemination by fostering knowledge democracy where all who contribute to the making of knowledge are acknowledged. Knowledge democracy connotes a society

in which a wide diversity of actors hold relevant knowledge to address important societal problems. Community Engagement provides the platform for knowledge democracy and epistemic justice especially through community based participatory research (CBPR). RUCE promotes CBPR because it simultaneously supports the developmental role of universities while challenging the 'traditional' notion of research where academia is positioned as the sole producer of knowledge. If universities have to address epistemic injustice, then the formalization of partnerships with community members and organisations, and the knowledge embedded in communities as it pertains to their lived realities has to be acknowledged and valued. CBPR as engaged research has the potential to contribute towards epistemic justice in South Africa through the co-creation of knowledge for social change with local communities who have been and still are oppressed and/or marginalized.

As an emerging discipline, the scholarship of engagement falls broadly within the field of education studies but lends itself to innovative transdisciplinary modes of research. The year 2015 was an important year for RUCE in terms of research, as it saw the registration of the first Postgraduate Masters students in Community Engagement within the department. Continued critical research in the scholarship of engagement is essential for furthering the goals of increasing meaningful collaboration between higher education institutions and the third sector - allowing universities to fulfil their role as institutions which work actively for the public good - as well as fostering civic minded graduates.

1. Engaged Research Projects

1.1 Epistemic Injustice: the nature and meaning of participation

RUCE and IWR (Institute of Water Research) PhD candidate Matebo Ralekhetla have pioneered new ways to continue using



The VC's Distinguished Award for CE 2021, Ms Maponya Maponya giving her formal lecture with Lungelwa Mtshali.

Photo: Community Engagement

participatory approaches throughout the COVID-19 pandemic in her study 'Exploring the nature and meaning of participation in the Tsitsa River catchment: a question of epistemic injustice?' Narrative interviews were conducted using digital technologies with people who are participating in an ongoing government-funded land restoration project called the Tsitsa Project, working in the Tsitsa River catchment, in the Eastern Cape, South Africa. Her study uncovers the different participatory journeys of the people who are part of the Tsitsa project, showing how participatory spaces and processes are shaped by the people who co-constitute them. Mateboho's work demonstrates the profound value of listening to the voices of people who are seldom heard.

1.2 COVID Observatories

This research project aims to document, monitor, and understand how COVID is interacting with multiple stresses to affect the food systems of indigenous and marginalised people, co-generating knowledge and capacity to strengthen resilience. South Africa is one of the study regions of this international project that will take place in collaboration with 14 Indigenous Peoples (IPs) and traditional communities in 10 countries. Four other countries will be part of the research to identify transferable insights.

1.3 The Sea and Tsitsikamma: cultural heritage and meaning of the sea for the people of Tsitsikamma

Tsitsikamma is well known for its marine protected area, but over the years its cultural and historical importance has been neglected and discussions tend to centre on fishing quotas. The Tsitsikamma communities are diverse and have distinct bonds with the ocean. What is the meaning of the ocean to them? The aim of this project is to unpack and, together with community members, represent the meaning of the ocean to them, focusing on both adults and children, a forgotten demographic group in the debates about marine protected areas. Because communities are heterogeneous and we are interested in this diversity, we are using different means of engagement, which will target different members of these communities. The success of the overall goal will be measured through three different processes: digital storytelling; cultural heritage mapping and a summer school for children.

1.4 Digital Storytelling for navigating trade-offs in Conservation

Although the focus of protected areas is biodiversity conservation, the success of these spaces partially depends on stakeholders' and community's support and acceptance. Protected Areas may also not always be the answer: Increasingly, the conservation community is recognizing the critical role of Other Effective Area-based conservation measures (OECMs), areas that may champion framings such as sustainable use, agroecological practices and indigenous landscapes. These conservation areas exist in a specific place, each with its own particular socio-political and historical context and values. Despite being established by law, the human dimensions of the place that is being protected shape not only the design and implication of protected areas but also its impact.

This project aims to use digital storytelling to (i) understand community perspective around protected areas and (ii) translate research for policymakers. This will be done through workshops with community members, researchers and partnering institutions.

2. Research based on RUCE's Nine-Tenths Volunteer Programme

In order to cultivate research with social impact, the RUCE Division launched the Nine-Tenths research group in 2021 comprising of five Honours students. Over the course of the year, each student researcher focused on evaluating a specific aspect of the Nine-Tenths programme, with the intention of providing knowledge for further growth and success of the programme. Research subject areas covered:

- i) Exploring the gaps between secondary and tertiary education and the extent to which the Nine-Tenths programme closes or bridges the gaps. Findings suggest that the Nine-Tenths programme both bridges and closes gaps to varying degrees. This study will continue in 2022 and will incorporate more stakeholder interviews.

- ii) Measurement of the economic value of Nine-Tenths. This project considered to what extent school results improved and what these results meant for future earnings. The study found that the economic value of secondary education in South Africa lies in the quality of passes learners receive. This research continues in 2022, with the aim of establishing a monetary value of the impact of the Nine-Tenths programme.
- iii) Investigating whether the Nine-Tenths programme has been successful in equipping students with the skills required to successfully transition to higher education. Overall, this study found that the Nine-Tenths model shows promise as a means to equalizing access and likelihood of success in higher education.
- iv) The contribution of Nine-Tenths to the decolonisation of higher education in South Africa. Findings suggest that Nine-Tenths contributes to decolonisation of higher

education. However, several barriers to epistemological access confront former mentees.

- v) The impact of mentoring.

The establishment of a research group at the Honours level is encouraging for the promotion of engaged research and it firmly establishes a research element to RUC's Nine-Tenths programme. This successful model will be replicated in other Volunteer programmes as a way of strengthening the nexus between research and community engagement.

SIGNIFICANT RESEARCH ALIGNED EVENTS

- *Book Publication*

The RUC launched its first book by Bezerra *et al.* (2021) titled "*Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*", published by SUN Press. The chapters in this book were originally presented at the 2018 Community Engagement Symposium that had as its theme *Social Innovation through Community Engagement*. The book is a valuable contribution to the scholarship of engagement.

- *Community Engagement Symposium*

The Rhodes University Community Engagement division and the Durban University of Technology organised a Community Engagement Symposium from 19-21 October 2021, focusing on "*The role of Community Engagement in the reimagination of higher education during and post the Covid 19 Pandemic*". The Symposium brought together students, community partners and academics both face-to-face and online. One of the themes of the symposium was *Knowledge and Engaged Research*.



The RU Nine-Tenths Programme was the winner of the 2021 McJannet Prize for Global Citizenship (VC and Project Managers). L-R: Dr Ashley Westaway, Anna Talbot, Vice-Chancellor and Diana Hornby.



Nine-Tenths Programme and Research Project at Ntsika Secondary School. Photo: Community Engagement

- *Knowledge for Change Hub (K4C)*

Three members of the RUCE team and one community partner successfully completed the Knowledge for Change (K4C) mentor training programme in Community Based Participatory Research (CBPR) in 2021. The Knowledge for Change (K4C) Global Consortium for Training in Community-Based Research is an initiative of the UNESCO Chair in Community-Based Research and Social Responsibility in Higher Education, a joint chair supported by the University of Victoria in Canada and the Society for Participatory Research in Asia (PRIA) in India. The course was offered online by the University of Victoria from March to July 2021.

The K4C International Consortium comprises 22 hubs in 16 countries and RUCE is one of the four South African hubs that has participated in the mentor-training programme. After completion of the CBPR course, the team developed an Engaged Research short course for academics, students and researchers. The short course was successfully piloted in October 2021 and formally offered in June 2022. The course will be offered twice a year, once per semester.

In partnership with six NPO organisations, RUCE has co-developed a CBPR course for community partners/members, which will be piloted in the second semester of 2022.

- *Writing Retreats and Research Bank*

RUCE introduced a writing retreat in 2020 and increased this to three in 2021. RUCE will continue with more writing retreats as funds become available. The Rhodes University Research Bank serves as a repository for community identified challenges, needs and issues in Makhanda. RUCE has formed a partnership with the Makhanda Circle of Unity and the Faculty of Education to drive this initiative to ensure that the university, through engaged teaching and learning; and engaged research and engaged citizenship, responds to current community needs

and challenges. The aim is to be proactive in responding to emerging needs and challenges facing Makhanda.

- *Research Associates*

Three Research Associates have been approved by Council and attached to RUCE, in order to boost RUCE's research Professorile and output.

- *Academic Support for Engaged Research*

Preparation of academics and students for engagement with communities is a critical part of RUCE's responsibility. RUCE offers the required support to academics who are involved in engaged research. It offers capacity-building workshops around the design and implementation of an engaged research\CBPR project using the different methods and approaches. Below is a summary of the research outputs in 2021, which reflects encouraging progress.

	2021
Concerts, Exhibitions, Workshops, Events	Thirteen (13)
Peer Reviewed Subsidy-Earning Journal Publications	Three (3)
Peer Reviewed Non-Subsidy Earning Journal Publications	Two (2)
Research Papers at Academic / Scientific Conferences	Twenty (20)
Books / Chapters / Monographs	One (1) Book and Five (5) Chapters
Postgraduate Research	Five (5) PhD Nine (9) Masters Honours
Writing Retreats	Three (3)

BOOKS/CHAPTERS/MONOGRAPHS

Carlos Bezerra, J.

Carlos Bezerra, J. and Shabalala, P. (2021) Identifying and exploring possible challenges encountered by local communities regarding the conservation volunteering activities in Kruger National. In: Bezerra, J., Paterson, C. and Paphitis, S. (eds.). *Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*. Cape Town: African Sun Media. p.249-265. ISBN: 9781991201058.

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McCann, C.M., Talbot, A.L.P. and Westaway, A. (2021) Social Capital for Social Change: Nine-Tenths Mentoring Programme, a Solution for Education (In)justice in South Africa? *International Journal of Educational Leadership Preparation*. 16 (1). p.45-59.

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Carlos Bezerra, J.

Carlos Bezerra, J. and Paphitis, S.A. (2021) Epistemic Injustice and Land Restitution in the Case of Protected Areas: From Policy to Practice in South Africa. *Society & Natural Resources*. 34 (7). p.906-924.

Carlos Bezerra, J. and Paphitis, S.A. (2021) The Constructive Alignment of a service-learning online course/El alineamiento constructivo de un curso online de aprendizaje-servicio. *Edutech*. 1 (78). p.149-164.

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Carlos Bezerra, J.

Carlos Bezerra, J. The role of service-learning in promoting citizenship - reflections from South Africa. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

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Hornby, D. and Maistry, M. Community Engagement and the Cultivation of Humanity: Repositioning the purpose of HE. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

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Matyobeni, T.

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Matyobeni, T. Bridging the gap: Building social cohesion through community-driven digital storytelling. *University Social Responsibility SUMMIT 2021*. Virtual. February 2021.

Matyobeni, T. The how of Digital Storytelling. *Research Seminar*. Virtual. September 2021.

Matyobeni, T. Adapting to the digital present: Social Innovation Hub Digital Resource Center. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

McCann, C.M.

McCann, C.M. Volunteerism: nurturing academic activists, expanding the classroom. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

Ncula, Z.S.

Ncula, Z.S. Oblivious to Observant. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

Nkwinti, N.

Nkwinti, N. Assessment of Community University Partnership, a support provided by Rhodes University. *University Social Responsibility SUMMIT 2021*. Virtual. February 2021.

Nqowana, T.

Nqowana, T. Introduction and implementation of a service learning course during a pandemic: A focus on educational journalism during a pandemic. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

Nqowana, T. Towards sustainable strategies in education during a pandemic: A Case Study of the Parent Engagement Program at Rhodes University. *ARUA Conference*. University of Pretoria, Pretoria. South Africa. November 2021.

Oosthuizen, R.C.

Oosthuizen, R.C. Communities as vital resources in disaster risk management at local government level. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

Oosthuizen, R.C. Scholarship of Engagement. The case of Rhodes University in South Africa. UNESCO World Higher Education Conference, Knowledge for Change. *International Conference*. Barcelona, Spain. 15 to 20 May 2022.

Talbot, A.L.P.

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Talbot, A.L.P. The role of community-university partnerships in elevating city-wide literacy development: A Makhanda case study. *Literacy Association of SA (LITASA)*. Virtual. September 2021.

Talbot, A.L.P. The role of innovative digital provisions in positively transforming community-university partnerships. *13th International Social Innovation Research Conference*. Università Cattolica del Sacro Cuore, Milan. Italy. January 2021.

Talbot, A.L.P. Reggio beyond preschool: Journeying with children as co-constructors of a child-friendly and just society (PED Talk). *30th European Early Childhood Education Research Association (EECERA)*. Virtual. September 2021.

Talbot, A.L.P., McCann, C.M. and Matyobeni, T. Engaging with Social Impact across the Globe: The role of the university in enabling student-driven social impact. *Stellenbosch University Social Impact Colloquium*. Virtual. March 2021.

Talbot, A.L.P., Nel, S.P. and Samela, U.S. Reflections of Student Leader Experiences in the Early Childhood Literacy Development Programme, BuddingQ. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

Yedwa, S.

Yedwa, S. Ukucingisisa: The role of Universities in advocating for social justice - shifting towards sustainable community engagement. *RU/DUT CE Symposium*. Amazwi South African Museum of Literature, Makhanda. South Africa. October 2021.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Carlos Bezerra, J.

Carlos Bezerra, J. and Matyobeni, T. Facilitator . 3-day Photovoice Workshop. *Plastic Pollution*. Knysna. South Africa. 1 - 31 October 2021.

Matyobeni, T.

Matyobeni, T. Facilitator. SAIAB with Fort Hare Honours students. *Environmental Science Communication*. Virtual. 1 - 31 May 2021.

Matyobeni, T. Facilitator. Social Innovation Hub, Three-month Digital Storytelling (DST) workshop for data collection. *Intsomi Parent Reflections*. Social Innovation Hub. 1 January - 1 April 2021.

Matyobeni, T. Facilitator. DST Short Course with RU Applied Theatre organised by Selloane Mokoku. *DST and Applied Theatre*. Virtual. 1 - 31 May 2021.

Matyobeni, T. Facilitator. DST 3-day workshop. *October Monthly SIH Workshop*. Virtual. 1 - 31 October 2021.

Matyobeni, T. Facilitator. DST one-week online workshop monthly workshop. *DST for Environmental Awareness*. Virtual. 15 - 20 March 2021.

Matyobeni, T. Facilitator. DST one-week workshop. *June Monthly SIH Workshop*. Virtual. 7 - 11 June 2021.

Matyobeni, T. Facilitator. One-week online Digital Storytelling (DST) Workshop. *DST Refresher*. Virtual. 15 - 19 February 2021.

Matyobeni, T. Facilitator. DST Short course with Central University of Technology Community Engagement officers organised by Built Environmental Science - Elisha Markus. *Digital Storytelling for Community Engagement*. Virtual. 1 - 31 May 2021.

Matyobeni, T. Facilitator. Elements of DST short course with B.Education, Professional Studies organised by Nhlanhla Mpofu. *My Best Teacher*. Virtual. 1 - 30 September 2021.

Matyobeni, T., Nkwinti, N. and Samela, U.S. Facilitator. DST 3-day workshop with UFS CE. *DST for Community Engagement*. UFS, Bloemfontein. South Africa. 26 - 29 September 2021.

Matyobeni, T., Talbot, A.L.P. and Carlos Bezerra, J. Facilitator. Two 3-Day DST workshops as part of data collection. *The meaning of the Tsitsikamma*. Tsitsikamma, Tsitsikamma. South Africa. 1 - 30 April 2021.

Oosthuizen, R.C.

Oosthuizen, R.C. Facilitator. Engaged Research. Research that is responsive to societal challenges. *Research Seminar*. Centre for Postgraduate Studies, Psychology Honours and Masters Students, Nine -Tenths Research group. In person and virtual. April and September 2021.

Oosthuizen R.C., Carlos Bezerra J., Nqowana T. *UNESCO. Knowledge for Change. Community-Based Participatory Research. Mentor Training Programme*. University of Victoria, Canada. Virtual. March to July 2021.

Lortan D., Maistry M., **Oosthuizen, R.C., Hornby D., Padayachee K.** UNESCO Knowledge for Change Afrikan Hub. K4C Southern Hub. *Online Retreat*. 27 - 28 August 2021.

Oosthuizen R.C. Cohort 6 Mentor presenter. *Rhodes University, Southern Hub Engaged Research. UNESCO. Knowledge for Change. Community Based Participatory Research*. Mentor Training Programme Cohort 7. University of Victoria, Canada. Virtual. March to July 2021.

Oosthuizen R.C. Guest panellist. UNESCO World Higher Education Conference. Faculty of Medicine, University of Barcelona. *People Centred Health Care. The case of Rhodes University in the multi stakeholder response to the Covid 19 pandemic in Makhanda South*. International Conference. Barcelona, Spain. 15 - 20 May 2021.

Talbot, A.L.P.

Talbot, A.L.P. Facilitator. Performance Piece. *The youngest member at the table: An introspective performance piece on the journey to becoming an engaged citizen*. Amazwi South African Museum of Literature, Makhanda. South Africa. 19 - 21 October 2021.



The Social Innovation Hub dialogues involving local Youth.

Photo: Community Engagement



Library Services

Nomawethu Danster
Director: Library Services

Photo: Dirk Pieters

INTRODUCTION

The report is a reflection of how the Library performed in the implementation of research related strategic objectives in support of the academic project during the 2021 academic year. One of the Library KPAs is to support the research agenda of the University. The Library Faculty Liaison Teams seek to understand the faculty research focus areas and interests through a Faculty Liaison program, design and develop a suite of services and collections focused on the research foci and interests of Faculties. The Digital Scholarship Unit established in 2021 has developed its focus around advancing Open Scholarship and has been integral in enhancing research support in this focus area.

RESEARCH ALIGNED ACTIVITIES

Digital Scholarship Services

The appointment of the Principal Librarian: Digital Scholarship in February 2021 led to the establishment of the Library's Digital Scholarship Unit. One of the strategic objectives of the Rhodes Library is to ensure security, accessibility and preservation of scholarly communication for optimal discoverability and visibility. This objective is underpinned by the philosophy of open Science and open scholarship. The Digital Scholarship unit together with the Faculty Liaison teams are fundamental in this role.

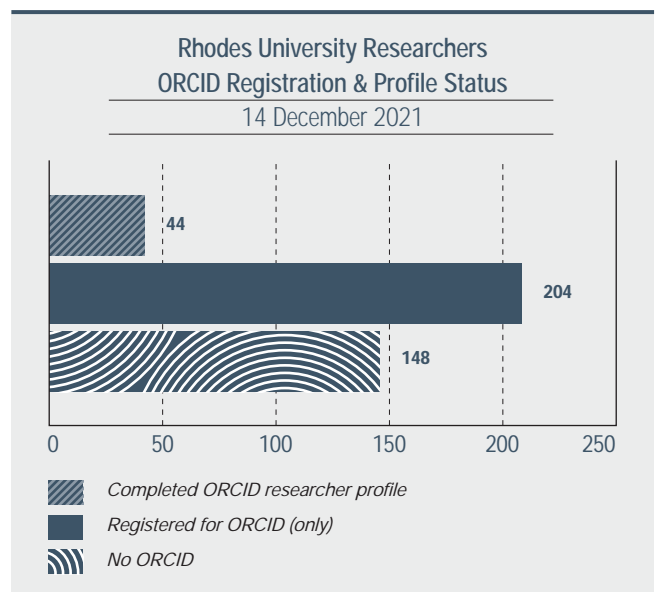
Scholarly Communication

- Online Researcher Identities

ORCID provides a persistent digital identifier (an ORCID ID)

that a researcher owns and controls, and that distinguishes a researcher from every other researcher. One can connect the ID with his/her Professional information - affiliations, grants, publications, peer review, and more. The figure below shows that of the 496 academics at Rhodes University, 248 have registered their ORCID; 44 of these academics have build their complete ORCID researcher Professorile. ORCID was recently upgraded and now has a new interface for Registering an ORCID and for building the ORCID Professorile. Consequently, the Digital Scholarship Unit revisited and updated the *ORCID How-To Video series* in early November.

Figure 1: ORCID registrations 2021



RHODES DIGITAL RESEARCH COMMONS

The Library hosts and manages the Institutional Digital Rhodes Research Commons as the University's Central repository system. Two thousand nine hundred and ninety-two (2 992) Objects were uploaded in 2021 which brings the total number of these objects in this repository to 28 202. The list of objects consist of research outputs, research data sets, primary

resources for research, open educational resources, and published articles.

- **Rhodes Repository for theses, articles, books and book chapters, and conference papers:**

The total number of research outputs available on the Rhodes Digital Commons as at the end of 2021 totals 13 472 items.

Table 1: Growth of Rhodes Digital Objects

SYSTEM APPLICATION	DIGITAL UNIT OR COLLECTION	PROJECT/NOTES QUANTITIES	ITEMS (AS AT END OF 2020)	ITEMS (ADDED IN 2021)	TOTAL COLLECTION STATUS	
RHODES DIGITAL COMMONS						
	Research Respository <i>(Rhodes Vital)</i>				13 476	
	Archival Respository <i>(Cory Vital)</i>				6 874	
	ILAM Respository				6 357	
	SAIAB Respository				162	
Subtotals			23 941	2 928	26 869	
Rhodes Research Data	Rhodes General				84	
	Zoology & Entomology				12	
	ELRC				8	
	CHERTL				1	
	Geography				1	
	Library					1
Subtotals			57	50	107	
Rhodes Hosted Journals	African Music	Issues			42	
		Articles			1 046	
	Southern African Journal of Gerontology	Issues				17
		Articles				148
	Toposcope	Issues				2
		Articles				32
Subtotals	Journal Titles Hosted		2	2	3	
	Total Issues		60	1	61	
	Total Articles		1 212	14	1 226	

Rhodes Research Data & OERs

In 2021 research data items for the following researchers have been uploaded to the Research Data repository (Figshare):

- Sukhmani Mantel: how to upload objects to Figshare
- Candice Owen (submission approval)

In addition to 57 objects in December 2020, 50 objects were uploaded in 2021 which brings the total number of objects in this repository to 107. This is a 46% growth in the number of items loaded from 2020 in 2021.

*Table 2: Top 23 countries visiting Rhodes Research Data portal
Top 23 countries and 29 unknown visited the repository in 2021*

Visits by Country	
United States	16 318
South Africa	1 249
Netherlands	1 095
France	840
China	572
Germany	164
Sweden	151
Russia	150
Austria	118
Ukraine	54
United Kingdom	53
Canada	38
Ghana	30
Unknown	29
Finland	27
Ireland	24
Norway	21
Switzerland	19
Romania	16
Australia	12
Zimbabwe	12
Italy	10
Brazil	9
Singapore	9

Table 3: Usage of Rhodes hosted journals

Rhodes Hosted Journals (OJS)		
Journal Title	Identifiers	Downloads
African Music: Journal of the International Library of African Music	0065-4019 2524-2741	258 755
Southern African Journal of Gerontology	1019-8016	39 892
Toposcope	1011-1948	252

Rhodes hosted Journals: Downloads statistics: African Music: Journal of the International Library of African Music (258 755); Southern African Journal of Gerontology (38 892); Toposcope (252).

• Rhodes University Theses and Dissertations

Rhodes University Library, as mandated by Council, provides public access to all theses and dissertations produced at Rhodes University. The 7 464 theses and dissertations include all theses authored by Rhodes University and Rhodes University College materials. As of 2020, all doctoral theses and dissertations are also registered with CrossRef to enhance discoverability of these materials.

• Honours Project

At the request by Dr Elron Fouten (Lecturer and Honours Research Coordinator in the Department of Psychology), the Library manages a space on the institutional repository for Honours projects. This is deemed an important means to further enhance discoverability and access to valuable knowledge commons. In 2021 there were 11 Honours projects in the repository.

RESEARCH RELATED PROJECTS

1. Zietsman/Goniwe Inquest

In 2020 the Foundation for Human Rights re-opened the Cradock Four matter, as contained in Judge Zietsman's Inquest. The Foundation as well as the NPA approached Rhodes Library to make accessible the Zietsman/Goniwe Inquest documentation held at the Cory Library. These resources were made accessible to the Foundation and the NPA respectively. Making these records accessible is integral to the Library's mission as an institution for the pursuit of truth and knowledge for the betterment of humankind.

2. The African Multiple Clusters of Excellence (AMCE)

Dr Sulayman Sowe and Professor Cyrus Samini, representatives from the AMCE, visited and met with staff at the Library during the week of the 27th to 30th September 2021. The site visit provided the opportunity to meet with colleagues, discuss and showcase the extent of collections that are being considered, and consider the challenges within the cluster. In addition, the visit was used as an opportunity to talk to the various policies and processes (including digital scholarship) of scholarly integrity and how this might affect the cluster.

3. Fidelior™

Rhodes, through the Rhodes University Libraries, has entered into an agreement with Iontafoa Intelligence Ltd., to participate in a trial partnership with one of their services Fidelior™. Fidelior™ is a digital service that aims to enhance trust in publishing, responding to calls from the scholarly community for a service that can automate the process of checking and flagging references in a manuscript that are possibly questionable or predatory in nature.

DISTINGUISHED VISITORS / LOCAL AND INTERNATIONAL VISITS

- **Dr Barney Pityana** led the team from the Thabo Mbeki Foundation (29th July 2021). The Thabo Mbeki Foundation, led by Dr Barney Pityana, and Eastern Cape University stakeholders are collaborating to keep the “Lovedale Press” as a live institution.
- **Dr Sulayman Sowe** and **Professor Cyrus Samini**, representatives from the African Multiple Clusters of Excellence (AMCE), visited and met with staff at the Library during the week of the 27th to 30th September 2021.

The following distinguished researchers/guests visited the Cory Library for Humanities Research:

- **Professor Cynthia Kros** - Associate Professor, University of the Witwatersrand and Honorary Research Associate to the Archive and Public Culture Research Initiative (APC)

- **Professor Alan Mabin** - Research Fellow, Centre for Advancement of Scholarship, UP
- **Professor Gary Minkley** - History Professor, UFH
- **Dr Jongi Klaas** - Department of International Relations and Cooperation, Pretoria
- **Mr M Dingwayo**: Director, Human Resource Utilization and Capacity Development; Department of Public Works & Infrastructure: Bisho, Eastern Cape.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Formation of the Library Research Support Group

Library Services witnessed the formation of the Library Research Forum with representatives from the Library (Library Director, Head Librarian: Technical services and Principal Librarian: Digital Scholarship), Director of the Centre for Postgraduate Studies Professor S McKenna, Director of CHERTL: Professor J Voster, Chair of the Research Ethics Committee, Professor E Rosenberg, Director of Research Office, Ms J Roberts. The first meeting of this forum was held on 1st June and the 2nd on 15th June 2021. Professor Rosenberg shared the Research Ethics Policy for Research Involving Human Participants, a policy that was adopted by the Council in May 2021.



Postgraduate Commons.

Photo: Vuyo Ntamo



DEPARTMENT OF Accounting

Edward Horn
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Department had a quiet research year in 2021 due to the focus on the delivery of the South African Institute of Chartered Accountants (SAICA) accredited professional program.

The primary research stream in the Department of Accounting remains the Master of Commerce degree, specialising in Taxation. Professor Lilla Stack continued her success in supervising Postgraduate students, with three (3) Masters students and one (1) PhD candidate graduating from the Department in 2021. Mr Richard Poole co-supervised one (1) of the Masters students that graduated from the Department in 2021.



Above: Accounting lecture.

Left: Auditing project collaboration with Coventry University. Left: Enrico Coleman. Right: Siyolise Mahlangeni.

Photo: Department of Accounting





DEPARTMENT OF Anthropology

Associate Professor
Michelle Cocks
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Active research engagements in the Anthropology Department were once again severely impacted and compromised by the regulations imposed by the COVID-19 global pandemic. Professor Aswani was on his sabbatical during this time and could not be involved in active research because of the travel restrictions. This meant that he was only able to carry out two fieldtrips to the El Hierro, Canary Islands, Spain in April and the second to El Hierro in August - September 2021, funded by NO CRISES (Negotiating Ocean Conflicts among Rivals for Sustainable and Equitable Solutions) which he leads. The project proposes to use a mixed method approach and cross-case study comparison to assess the origin, drivers, and mitigation strategies of ocean conflicts for better resource use and management in the future.

POSTGRADUATES / GRADUATIONS

2021 saw our first cohort of Postgraduate Diploma in Heritage Management students graduating. Four (4) students in total, one (1) of which received a distinction.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Dominique Santos collaborated with Return to Origin and Amazwi Museum in a Goethe Institut/British Council funded project to produce the 'Sustainable Together' exhibition featuring stories from the Ekuphumleni community, Kenton-On-Sea. The exhibition - both visual and sonic - built on community workshops

to explore how sustainable practices relating to food security and community resilience could only be possible where community heritage, history and cultural integrity were valued. The exhibition travelled to Amazwi Museum and was featured in the Literature, Heritage and Ecology Program. It will now feature in a collaborative process between Amazwi, Return to Origin and the Ekuphumleni community via an educational event at local schools. The work contributes to research on sustainability, the importance of bio-cultural diversity, self-esteem, a sense of belonging and acknowledgement of historical trauma as key to creating truly sustainable and resilient communities in the face of global challenges. The project is currently being developed into a book, and has resulted in digital resources for community, public and academic use being produced.

See below links for digital exhibition and press coverage of the project, and a selection of images showing the process of workshoping, intergenerational storytelling, ritual and public exhibition:

<https://amazwi.museum/exhibit?post=Sustainable-Together>

<https://www.goethe.de/ins/za/en/kul/sup/sto/rto.html>

<https://www.bizcommunity.com/Article/196/849/219465.html>

<https://returntoorigin.org.za/natures-mirror/>



The exhibition space provided a focal point for the wider community to visit, share and celebrate stories of growing food, the land, connection to nature, and innate community expertise regarding future sustainability rooted in respect for self and the wisdom of ancestral knowledge.

Photo: Department of Anthropology

BOOKS / CHAPTERS / MONOGRAPHS

Cocks, M.

Cocks, M.L. and Shackleton, C.M. (2021). Situating Biocultural Relations in City and Townscapes: Conclusion and Recommendations In: Cocks, M.L. & Shackleton, C.M. (eds). *Urban Nature: Enriching Belonging, Wellbeing and Bioculture*. London, United Kingdom: Earthscan/Routledge. p.241-268. ISBN: 9780367427570.

Cocks, M. and Shackleton, C.M. (2021) *Urban Nature: Enriching belonging, wellbeing and bioculture*. London: Routledge. ISBN: 9780367427570.

Cocks, M., Shackleton, C.M., Walsh, L.S., Haynes, D.R., Manyani, A. and Radebe, D.S. (2021) Decolonisation of nature in towns and cities of South Africa: Incorporation of biocultural values. In: Cocks, M.L. and Shackleton, C.M. (eds.). *Urban Nature: Enriching belonging, wellbeing and bioculture*. London: Routledge. p.60-70. ISBN: 9780367427570.

Shackleton, C.M. and Cocks, M.L. (2021) Urban nature and biocultural realities. In: Cocks, M.L. and Shackleton, C.M. (eds.). *Urban Nature: Enriching Belonging, Wellbeing and Bioculture*. London: Routledge. p.1-10. ISBN: 9780367427570.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Aswani, S.

Miñarro, S., Reyes-Garcia, V., Aswani, S., Selim, S., Barrington-Leigh, C.P. and Galbraith, E.D. (2021) Happy without money: Minimally monetized societies can exhibit high subjective wellbeing. *PLoS ONE*. 16 (1). p.1-15.

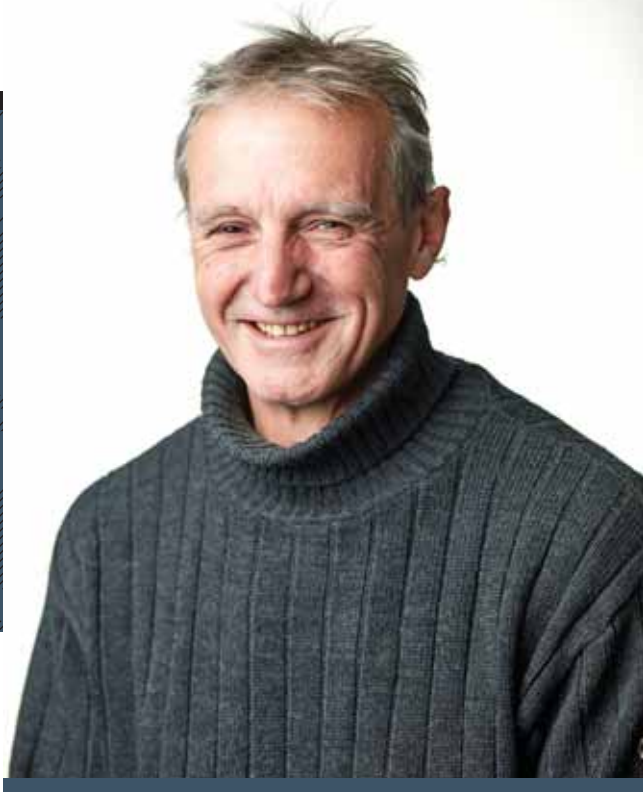
Aswani, S. and Coupland, J.C.

Palmer, M.R., Shagude, Y.W., Roberts, M.J., Popova, E., Aswani, S. and Coupland, J.C. (2021) Marine robots for coastal ocean research in the Western Indian Ocean. *Ocean and Coastal Management*. 212 (2021). p.1-15.

Taylor, S., Aswani, S., Jiddawi, N., Coupland, J.C., James, P.A.S., Kelly, S., Kizenga, E., Roberts, M. and Popova, E. (2021) The complex relationship between asset wealth, adaptation, and diversification in tropical fisheries. *Ocean and Coastal Management*. 212 (2021). p.1-10.

Cocks, M.

Manyani, A., Shackleton, C.M. and Cocks, M. (2021) Attitudes and preferences towards elements of formal and informal public green spaces in two South African towns. *Landscape and Urban Planning*. 214 (0). p.1-11.



DEPARTMENT OF Biochemistry and Microbiology

Professor Heinrich Hoppe
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The department of Biochemistry and Microbiology hosts eleven (11) academic staff members, including two (2) DST/NRF SARCHI Chairs in the Molecular and Cellular Biology of the Eukaryotic Stress Response (Professor Adrienne Edkins) and Marine Natural Products Research (Professor Rosemary Dorrington). The staff members include Professor Özlem Tastan Bishop, the Director of the Research Unit in Bioinformatics (RUBi), while Professor Edkins also directs the Biomedical Biotechnology Research Unit (BioBRU), which includes two staff members of the Biotechnology Innovation Centre. All staff members are actively engaged and a total of thirty (30) MSc and forty-eight (48) PhD students were registered in the department in 2021.

Research conducted by individual research groups spans a wide range of topics and sub-disciplines. Basic biomedical research projects include natural product and synthetic chemistry drug discovery programmes using computational and laboratory-based methods aimed at pathogenic bacteria, breast cancer, malaria, trypanosomiasis, tuberculosis, HIV, SARS coronavirus, diabetes and obesity. It further includes research into the stress response machinery of cancer and cancer stem cells, as well its role in Kaposi's sarcoma-associated herpesvirus biology, the interaction of picornaviruses, TB bacteria and *Salmonella* bacteria with host cells, and the identification of viruses associated with gastroenteritis in water sources. Research into biotechnological applications includes the investigation of mycorrhizal fungi for application as biofertilizers in horticulture, agriculture and

forestry, the use of enzymes to generate prebiotics, foods/feeds and products of biomedical significance, the exploitation of insect viruses for agricultural pest control, and studying microbiome contributions to aquaponic crop production. An additional research field is an investigation of soil microbial ecology in Antarctica. The easing of lockdown restrictions in response to the COVID pandemic allowed full access to research facilities by staff and Postgraduate students, although larger groups had to introduce rotation systems to limit crowding in laboratory spaces. The department contributed to 71 authored or co-authored peer-reviewed journal articles in 2021.

POSTGRADUATES / GRADUATIONS

Marcel van der Merwe, a Microbiology PhD graduate of 2020, was invited to attend the 2021 International Congress on Invertebrate Pathology and Microbial Control and 53rd Annual Meeting of the Society for Invertebrate Pathology held virtually in Tours, Loire Valley, France, where he presented his PhD research on yeast-baculovirus mutualism for FCM control.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Continuing travel and conference restrictions imposed by the COVID pandemic precluded international visits to and from the department.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Professor Brett Pletschke was awarded a National Research Foundation (NRF) B2 rating in 2021. In addition, he was selected by the CSIR/TIA/DSI to host one of five national Nodes of the Industrial Biocatalysis Hub (IBH). Initial funding of R 3 million over 3 years has been awarded to the Rhodes node (one of three larger nodes). The key objectives of each



Front Row: Yamkela Ntantiso, Chiamaka Okeke, Chiratidzo Chamboko, Tendai Muronzi, Maureen Tendwa, Professor Özlem Tastan Bishop, Dr Allan Sanyanga, Dr Rolland Tata on the occasion of the VC Distinguished Senior Research Award lecture presented by Professor Tastan Bishop.

Photo: Department of Biochemistry and Microbiology

IBH node are to provide a platform for industrial assimilation of biocatalysis technology and embarking on collaborative projects with enterprises to localize and develop technology in biocatalysis for implementation at a commercial scale. Professor Pletschke's research will focus on exploiting kelp. The main use of kelp (a brown seaweed) has been as a raw material for the extraction of the hydrocolloid alginate for the food industry. Kelps are also well known as a rich source of seaweed-derived functional food ingredients (nutraceuticals). These compounds possess various biomedical applications such as anti-oxidant, anti-HIV, anti-cancer, anti-diabetic, anti-obesity, anti-inflammatory, and blood lipid and cholesterol reduction. In addition, some kelp-based industries are already actively producing valuable products in the market from kelp, such as plant growth promoters. By hosting a Node of the IBH, Professor Pletschke's lab at Rhodes University - in collaboration with the kelp processing industry - will focus on using enzymes and biocatalysis to generate kelp-derived extracts (bio-based products, nutraceuticals, etc) for improving plant growth and combating diseases such as diabetes, obesity, and cancer.

Professor Özlem Tastan Bishop initiated and spearheaded the formation of a consortium for rapid COVID-19 drug development in Africa, which was awarded funding by the Gates Foundation Grand Challenges Africa programme through the Science for Africa Foundation. The consortium includes Professors Adrienne Ekins and Heinrich Hoppe in the department of Biochemistry and Microbiology, and collaborators in Cameroon and Kenya. The project combines computational and laboratory-based approaches to identify inhibitors of coronavirus drug targets, to investigate the effects of mutations in drug targets on virus-human cell interactions and drug resistance, to establish cell-based systems to investigate attachment and invasion of host cells by coronavirus variants, and to identify human proteins that could potentially be targeted to suppress coronavirus replication.

CONCERTS / EXHIBITIONS / PERFORMANCES / WORKSHOPS / EVENTS

Edkins, A.L.

Edkins, A.L. Invited Oral Plenary Talk. Hsp90 regulation of fibronectin ECM dynamics in vitro. *FASEB Virtual Conference on Extracellular and Organismal Proteostasis in Health and Disease*. Virtual. 3 - 4 February 2021.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Abrahams, G.L.

Nwahara, N., Abrahams, G.L., Prinsloo, E. and Nyokong, T. (2021) Folic acid-modified phthalocyanine-nanozyme loaded liposomes for targeted photodynamic therapy. *Photodiagnosis and Photodynamic Therapy*. 36 (2021). p.1-11.

Blatch, G.L.

Shonhai, A. and **Blatch, G.L.** (2021) Heat Shock Proteins of Malaria: Highlights and Future Prospects. *Advances in Experimental Medicine and Biology*. 1340 (2021). p.237-246.

Dutta, T., Pesce, E.R., Maier, A.G. and **Blatch, G.L.** (2021) Role of the J Domain Protein Family in the Survival and Pathogenesis of Plasmodium falciparum. *Advances in Experimental Medicine and Biology*. 1340 (2021). p.97-123.

Brooks, M.

Gu, C., Huang, W., Li, Y., Li, Y., Yu, C., Dai, J., Hu, W., **Brooks, M.**, Xie, L., Liao, X., Qin, L. and Xiaoyong, L.i. (2021) Green Manure Amendment Can Reduce Nitrogen Fertilizer Application Rates for Oilseed Rape in Maize? Oilseed Rape Rotation. *Plants*. 10 (2640). p.1-13.

Chakraborty, A. and Edkins, A.L.

Chakraborty, A. and Edkins, A.L. (2021) HSP90 as a regulator of extracellular matrix dynamics. *Biochemical Society Transactions*. 49 (6). p.2611-2625.

Chebon-Bore, L.J., Sanyanga, T.A., Manyumwa, C.V., Khairallah, A. and Tastan Bishop, O.

Chebon-Bore, L.J., Sanyanga, T.A., Manyumwa, C.V., Khairallah, A. and Tastan Bishop, O. (2021) Decoding the Molecular Effects of Atovaquone Linked Resistant Mutations on Plasmodium falciparum Cytb-ISP Complex in the Phospholipid Bilayer Membrane. *International Journal of Molecular Sciences*. 22 (4). p.1-32.

De La Mare, J.A. and Edkins, A.L.

Kimani, S., Chakraborty, S., Irene, I., **De La Mare, J.A., Edkins, A.L., du Toit, A., Loos, B., Blanckenberg, A., Van Niekerk, D., Costa-Lotufo, L.V., Aruljothi, K.N., Mapolie, S. and Prince, S.** (2021) The palladacycle, BTC2, exhibits anti-breast cancer and breast cancer stem cell activity. *Biochemical Pharmacology*. 190 (2021). p.1-17.

Diallo, B.N., Glenister, M., Musyoka, T.M. and Tastan Bishop, O.

Diallo, B.N., Glenister, M., Musyoka, T.M., Lobb, K.A. and Tastan Bishop, O. (2021) SANCDB: an update on South African natural compounds and their readily available analogs. *Journal of Cheminformatics*. 13 (37). p.1-14.

Diallo, B.N., Swart, T., Hoppe, H.C. and Tastan Bishop, O.

Diallo, B.N., Swart, T., Hoppe, H.C., Tastan Bishop, O. and Lobb, K.A. (2021) Potential repurposing of four FDA approved compounds with antiplasmodial activity identified through proteome scale computational drug discovery and *in vitro* assay. *Scientific Reports*. 11 (1413). p.1-15.

Dingle, L.M.K., Laming, D., Swart, T., De La Mare, J.A., Hoppe, H.C. and Edkins, A.L.

Mbaba, M., **Dingle, L.M.K., Zulu, A.I., Laming, D., Swart, T., De La Mare, J.A., Hoppe, H.C., Edkins, A.L. and Khanye, S.D.** (2021) Coumarin-Annulated Ferrocenyl 1,3-Oxazine Derivatives Possessing *In Vitro* Antimalarial and Antitrypanosomal Potency. *Molecules*. 26 (5). p.1333.

Dorrington, R.A.

Adamson, C.S., Chibale, K., Goss, R.J.M., Jaspers, M., Newman, D.J. and **Dorrington, R.A.** (2021) Antiviral drug discovery: preparing for the next pandemic. *Chemical Society Reviews*. 50 (1). p.3647-3655.

Cowan, D.A., Burton, S.G., Rybicki, E.P., Williamson, A.L., **Dorrington, R.A.** and Pepper, M.S. (2021) Viruses, variants and vaccines. *South African Medical Journal*. 111 (5). p.1-12.

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Lior, C., Hodge, F., De-Souza, E.A., Bourboulia, D., Calderwood, S.K., David, D., Drummond, D.A., **Edkins, A.L.**, Morimoto, R.I., Prahlad, V., Rechavi, O., Sistonen, L., Wilson, M., Wiseman, R.L., Zanetti, M., Scherz-Shouval, R., van Oosten-Hawle, P. and Taylor, R. (2021) The 2021 FASEB Virtual Catalyst Conference on Extracellular and Organismal Proteostasis in Health and Disease. *FASEB Journal*. 35 (6). p.1-8.

van Oosten-Hawle, P., Bergink, S., Blagg, B., Brodsky, J., **Edkins, A.L.**, Freeman, B., Genest, O., Hendershot, L., Kampinga, H., Johnson, J., De Maio, A., Masison, D., Morano, K., Multhoff, G., Prodromou, C., Prahlad, V., Scherz-Shouval, R., Zhuravleva, A., Mollapour, M. and Truman, A.W. (2021) First Virtual International Congress on Cellular and Organismal Stress Responses, November 5-6, 2020. *Cell Stress and Chaperones*. 26 (0). p.289-295.

Flanagan, S.P., Fogel, R., Edkins, A.L., Ho, L.S.J. and Limson, J.L. (2021) Nonspecific nuclear uptake of anti-MUC1 aptamers by dead cells: the role of cell viability monitoring in aptamer targeting of membrane-bound protein cancer biomarkers. *Analytical Methods*. 13 (0). p.1191-1203.

Edkins, A.L. and Boshoff, A. (2021) General Structural and Functional Features of Molecular Chaperones. *Advances in Experimental Medicine and Biology*. 1340 (2021). p.11-73.

Hlalukana, N.P., Magengelele, M., Malgas, S. and Pletschke, B.I.

Hlalukana, N.P., Magengelele, M., Malgas, S. and Pletschke, B.I. (2021) Enzymatic Conversion of Mannan-Rich Plant Waste Biomass into Prebiotic Mannoooligosaccharides. *Foods*. 10 (1). p.1-16.

Isaacs, M. and Hoppe, H.C.

Seggota, K.C., Isaacs, M., Hoppe, H.C., Seldon, R., Warner, D.F., Khanye, S.D. and Kaye, P.T. (2021) Propylphosphonic acid anhydride-mediated amidation of Morita-Baylis-Hillman-derived indolizine-2-carboxylic acids. *Journal of Chemical Research*. 45 (7-8). p.674-678.

Kimuda, M.P., Tastan Bishop, O. and Hoppe, H.C.

Muller, R.H., Gerwel, T.M., **Kimuda, M.P., Tastan Bishop, O., Veale, C.G.L. and Hoppe, H.C.** (2021) Virtual screening and *in vitro* validation identifies the first reported inhibitors of *Salmonella enterica* HPPK. *RSC Medicinal Chemistry*. 12 (0). p.1750-1756.

Oluwafemi, K.A., Phunguphungu, S., Gqunu, S., Isaacs, M., Hoppe, H.C., Klein, R. and Kaye, P.T. (2021) Synthesis and trypanocidal activity of substituted 2,4-diarylquinoline derivatives. *ARKIVOC*. VIII (2021). p.277-285.

Kalinski, J.C.J., Parker-Nance, S., Waterworth, S. and Dorrington, R.A.

Kalinski, J.C.J., Krause, R.W.M., Parker-Nance, S., Waterworth, S. and Dorrington, R.A. (2021) Unlocking the diversity of pyrrolo-iminoquinones produced by *Latrunculid* sponge species. *Marine Drugs*. 19 (2). p.1-23.

Kasozi, N., Abraham, B.M. and Wilhelmi, B.

Kasozi, N., Abraham, B.M., Kaiser, H. and Wilhelmi, B. (2021) The complex microbiome in aquaponics: significance of the bacterial ecosystem. *Annals of Microbiology*. 71 (1). p.1-13.

Kasozi, N. and Wilhelmi, B.

Kasozi, N., Wilhelmi, B. and Kaiser, H. (2021) The effect of the addition of a probiotic mixture of two *Bacillus* species to a coupled aquaponics system on water quality, growth and digestive enzyme activity of Mozambique tilapia, *Oreochromis mossambicus*. *Journal of Applied Aquaculture*. 00 (2021). p.1-19.

Kasozi, N., Kaiser, H. and Wilhelmi, B. (2021) Effects of '*Bacillus*' spp. on Lettuce Growth and Root Associated Bacterial Community in Small-Scale Aquaponics System. *Agronomy Journal*. 11 (5). p.947.

Khairallah, A., Ross, C. and Tastan Bishop, O.
Khairallah, A., Ross, C. and Tastan Bishop, O. (2021) GTP Cyclohydrolase I as a Potential Drug Target: New Insights into Its Allosteric Modulation via Normal Mode Analysis. *Journal of Chemical Information and Modeling*. 61 (2021). p.4701-4719.

Knox, C.
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Dele Abdissa Keneni (PhD student), Dr Jarmo Kalinski (Postdoctoral Fellow) and Dr Alexandros Polyzois (Postdoctoral Fellow) Commissioning of the new Marine Natural Products Chemistry laboratory of the antimicrobial drug discovery hub.

Photo: Department of Biochemistry and Microbiology

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DEPARTMENT OF Biotechnology and the Biotechnology Innovation Centre (RUBIC)

Associate Professor Earl Prinsloo
Head of Department

Photos: Dirk Pieters



Professor Janice Limson
Director

INTRODUCTION

The Biotechnology Innovation Centre (RUBIC) made significant strides in all of its core programmes of Postgraduate research and teaching, technology transfer and innovation, and in science engagement. A particular highlight for RUBIC was the graduation of thirteen (13) Postgraduate students, including an unprecedented achievement for the department, with seven (7) Masters students receiving the degree with distinction.

The global COVID-19 pandemic continued to challenge our programmes, but also provided unique opportunities for greater collaboration, locally and internationally. With hybrid and online formats for meetings, seminars and conferencing, several enriching experiences for staff to collaborate and forge partnerships were realised. An important development for the Biotechnology Innovation Centre was the formal announcement of its selection to house one of five Department of Science and Innovation NanoMicro Manufacturing facilities for the development and manufacture of diagnostic tests for rapid disease detection and monitoring.

POSTGRADUATES / GRADUATIONS

RUBIC hosted twenty-four (24) Honours, Masters and PhD students in 2021. The Centre graduated four (4) Honours (including 1 distinction), eight (8) Masters (including 7 distinctions) and one (1) Doctoral (Jan Kruid) candidate across two graduation ceremonies.

SIGNIFICANT RESEARCH AND INNOVATION ALIGNED EVENTS

The BioSens Research Group, which currently hosts the UNICEF Innovation Diagnostics Laboratory, led by Professor Limson and Associate Professor Fogel, continued to work towards the realisation of new technology that can address real societal challenges. Professor Limson, who serves as the SARChI: Biotechnology Innovation & Engagement will oversee the DSI Nano-Micro-Manufacturing Facility for paper-based diagnostics along with Associate Professor Ronen Fogel. The pair have invested substantial efforts in the development of novel aptamers, molecules which can be generated to detect a wide range of pathogens with high affinity and specificity. A PCT application for their work on CD4 binding aptamers was filed in 2021. The DSI NanoMicro Manufacturing facility will launch in 2022 and with the development of rapid diagnostic tests (especially those focusing on water and animal and human health), will bring to fruition the core Chair themes of science engagement, engaging students in science communication, tools for co-creation and direct societal benefit of biotechnology.

Associate Professor Boshoff continued in her role as Head of Department until mid-year while overseeing a well-established research programme in parasite molecular biology and drug discovery where her students continue to shed light on the molecular mechanisms of the human and animal parasites that cause Malaria and Trypanosomiasis.

Professor Prinsloo Labs working in the development of specialised tumour and organ-on-chip milli- and microfluidic devices, was further enhanced by the acquisition of a specialised microextrusion FELIX BIOprinter. Professor Prinsloo returned to the role of Head of Department in July following sabbatical during which he was engaged in establishment of new methodologies for stem cell biotechnology, additive manufacturing, and tissue engineering.

SCIENCE ENGAGEMENT

Newer forms of online collaboration created opportunities for co-creation of new knowledge and understanding in unprecedented ways in 2021. Professor Limson was invited to join a group of seven international artists and scientists from the USA and South Africa (including Zolani Mahola, formerly of Freshly Ground, illustrator Jaleel Campbell and artist Xolani Madinda) to co-create narratives on the topic of "Race, Space and the Environment". This co-creation activity, hosted by Ken Harper of Syracuse University culminated in a webinar engaging both artists and scientists, and was live-streamed in April 2021 to a diverse audience. Trans-disciplinarily was a central theme for the Chair in Biotechnology Innovation & Engagement in 2021. Working with Community Engagement and researchers from both the humanities and Journalism, the Chair research engaged residents in several communities at the Amakhala Game Reserve as part of a process to develop fit-for-purpose technology to fulfil needs identified by communities as part of the engagement process. A collaboration with the School of Journalism and Media studies successfully engaged journalism students in research to mediate discussion between communities and scientists about new products for the sugarcane industry, paving the way for similar such studies to involve and engage impacted communities around new technology, tools and processes.

PATENTS

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Prinsloo, E.

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DEPARTMENT OF Botany

Associate Professor Craig Peter
Head of Department

Photo: Dirk Pieters

INTRODUCTION

After the upheavals of 2020, 2021 saw many of us venturing back into the field. Dr Ethan Newman, who joined us at the beginning of 2020, and Professor Craig Peter were able to complete their research into the evolution of the remarkable three-dimensional anther mimics that are present on the petals of *Tritonia laxifolia*. Dr Newman received funding from the Rhodes University Capacity Development Programme as well as funding from the Botanical Education trust to investigate speciation in the Cape geophytes.

The Rhodes University Elevated CO₂ Facility (RUECES), under the leadership of Professor Brad Ripley, continued collaboration with Colin Osborne (University of Sheffield), Caroline Lehmann (Royal Botanic Garden Edinburgh & University of Edinburgh), Nikki Steven (Oxford University), and Dr Tiffany Pillay (Rhodes University). This work is funded by a National Ecological Research Council grant looking at the effects of drought and elevated CO₂ on the interactions between savanna trees and grasses. The RUECF continues to be supported by the Department of Science and Innovation and the NRF, securing a further three years of funding.

Dr Tiffany Pillay was awarded an NRF Thuthuka grant from 2021 to 2023, for research on the expansion of broad-leaf thicket species into savanna, a collaborative project with Professor Susi Vetter (RU) and Dr Andrew Davies of Harvard University (USA). This collaboration has allowed the use of the Carnegie Airborne Observatory (CAO) Alpha system to collect high spatial resolution hyperspectral images over semi-arid savanna in the Eastern Cape. In 2021 Dr Pillay also initiated a

collaboration with Professor Brad Ripley, to investigate the effect of rain event size on water source partitioning of important bush encroaching species.

Professor Julie Coetzee and her water weeds research team have experienced great success with water hyacinth control on the Highveld, at Harteespoort and Roodeplaat Dams in particular. Through a mass rearing and inundative release campaign, together with stakeholders at the dams, hundreds of thousands of water hyacinthoppers, *Megamelus scutellaris* were released over the summer of 2020/2021. This resulted in the reduction of water hyacinth on the dams to less than 5% cover. However, germination of water hyacinth seeds in spring, in October 2021, allowed the plant to increase in cover on these systems, but a continual monitoring and release programme will ensure the plant is sustainably managed.

After her first attempt at sabbatical was foiled by COVID, Susi Vetter enjoyed academic leave from April to December 2021. Her research activities focused on the functional ecology and evolution of thickets and savannas in sub-Saharan Africa, including processes of thicket formation within savannas. She visited Ghana for two weeks in November to collect data on functional traits of thicket, forest and savanna trees and was hosted by Mohammed Armani (Kwame Nkrumah University of Science and Technology). A collaboration with Kyle Dexter (Edinburgh University), Sally Archibald (Wits) and Vera de Cauwer (Namibia University of Science and Technology) examines the floristic and ecological relations between moist forest, savanna and dry forest/thicket vegetation types in sub-Saharan Africa, while closer to home, she is working with Muthama Muasya (UCT) on an analysis of the floristic affinities between subtropical thicket and other biomes in South Africa. Susi was also invited by Alex Fajardo (Universidad de Talca, Chile) to collaborate on a global study of the twig-leaf allometry known as Corner's Rules.

POSTGRADUATES / GRADUATIONS

A number of our students excelled in 2021. **Aviwe Matiwana**, a PhD candidate in the department, contributed to a paper in *Nature Ecology & Evolution* which showed that unequal funding opportunities have had an impact on our understanding of the fossil record of the planet. **Sarah Raubenheimer** published a chapter of her PhD research which shows that under the elevated CO₂ scenarios of the near future, fires will become less frequent but more intense. **Nompumelelo Baso**, also working on a PhD, was the lead author of a paper from her PhD research which shows that controlling invasive plants under elevated CO₂ conditions may become more challenging.

Long-tongued flies are a peculiar and special group of South African pollinators. They have long been thought to be important pollinators of some species of the massive Cape genus, *Erica*. **Giorgio Lombardi**, published a chapter of his MSc thesis, providing the first experimental evidence for long-tongued fly-pollination in *Erica aristata*. **Sage Wansell** presented work from her MSc at the *National Symposium on Biological Invasions - virtual symposium* in May 2021 and won the runner-up prize for the best presentation.

Perhaps the most remarkable student achievement of 2021 was that of **Katharine Houry**, a third year in the department. Following the work from her third-year research project, Katharine applied to the Botanical Education Trust for funding to work on the molecular systematics of the *Gladiolus carneus* species complex in her Honour's year. Her application was successful, and she received a grant of R 25 000 to support her Honours project in 2022!

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Professor Julie Coetzee was invited to present a plenary at the West African Symposium on Biological Invasions, Saint Louis, Senegal, in December 2021, on the management of invasive macrophytes in southern Africa. Due to COVID restrictions, she presented the paper virtually.

Professor Susi Vetter was an invited speaker in the international workshop "Grazing in Future Multi-scapes: From Thoughtscapes to Landscapes, Creating Health from the Ground Up" 30 May - 5 June 2021 held (virtually) at Lincoln University, New Zealand.



From left: Phillip Torto, Emefa Akpabli, Michael Morvey, Susi Vetter, Edfua Dei and Ishmael Kweku during a visit to Shai Hills, Ghana. Photo: Department of Botany

BOOKS AND BOOK CHAPTERS

Lubke, R.A.

Lubke, R.A. and de Moor, I. *Guide to the natural and cultural history of Grahamstown/Makhandla*. WESSA Makhandla Branch. ISBN 978062088409-9.

Parker, D., Irwin, P. and Lubke, R.A. (2021). Conservation areas and nature reserves [ch 9]. In: Lubke, R.A. and de Moor, I. *Guide to the natural and cultural history of Grahamstown/Makhandla*. p89-109. WESSA Makhandla Branch. ISBN 978062088409-9.

De Moor, I., Lubke, R.A. (2021). History of Grahamstown [ch 12]. In: Lubke, R.A. and de Moor, I. *Guide to the natural and cultural history of Grahamstown/Makhandla*. p89-109. WESSA Makhandla Branch. ISBN 978062088409-9.

Lubke, R.A. (2021). Trees of Grahamstown Streets [ch 19]. In: Lubke, R.A. and de Moor, I. *Guide to the natural and cultural history of Grahamstown/Makhandla*. p89-109. WESSA Makhandla Branch. ISBN 978062088409-9.

De Moor, I., Lubke, R.A. (2021). Hikes and trails around Grahamstown [ch 21]. In: Lubke, R.A. and de Moor, I. *Guide to the natural and cultural history of Grahamstown/Makhandla*. p89-109. WESSA Makhandla Branch. ISBN 978062088409-9.

Lubke, R.A., Dold, A.P., Peter, C.I.

Lubke, R.A., Dold, A.P., Peter, C.I. (2021). Plants and vegetation of the Grahamstown region [4]. In: Lubke, R.A. and de Moor, I. *Guide to the natural and cultural history of Grahamstown/Makhandla*. p89-109. WESSA Makhandla Branch. ISBN 978062088409-9.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Adebowale, A.

Musvuugwa, T., Dlomu, M.G. and Adebowale, A. (2021) Big Data in Biodiversity Science: A Framework for Engagement. *Technologies*. 9 (3). p.1-20.

Botha, C.E.J.

Botha, C.E.J. and Murugan, N. (2021) Changes in structure and dimension of plasmodesmata in the phloem loading pathway in *Tecoma capensis* (Bignoniaceae) - locating the polymer trap. *South African Journal of Botany*. 140 (2021). p.76-86.

Coetzee, J.A.

Coetzee, J.A., Bownes, A., Martin, G.D., Miller, B.E., Smith, R., Weyl, P.S.R. and Hill, M.P. (2021) A review of the biocontrol programmes against aquatic weeds in South Africa. *African Entomology*. 29 (3). p.935-964.

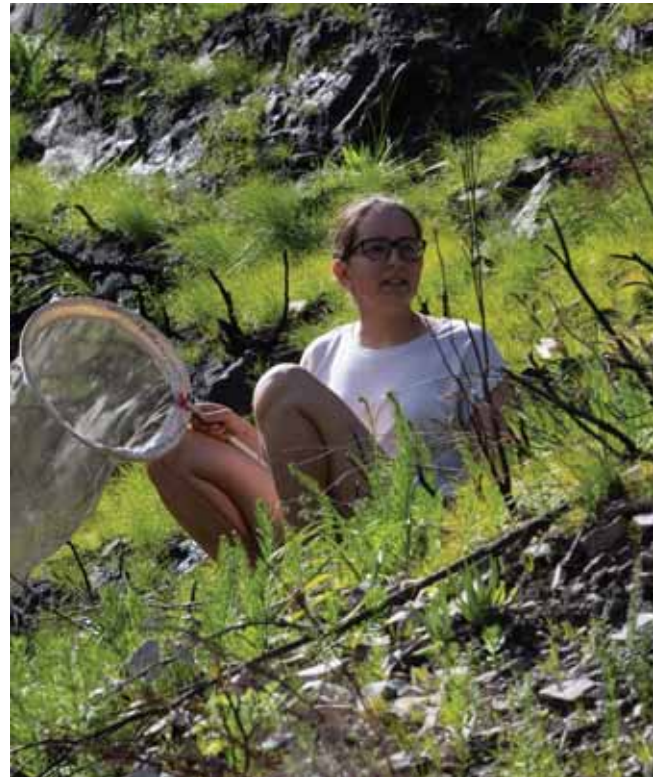
Olckers, T., Coetzee, J.A., Egli, D., Martin, G.D., Paterson, I.D., Sutton, G.F. and Wood, A. (2021) Biological control of South African plants that are invasive elsewhere in the world: A review of earlier and current programmes. *African Entomology*. 29 (3). p.1005-1029.

van Noort, S., Smith, R. and Coetzee, J.A. (2021) Identity of parasitoid wasps (*Hymenoptera*, *Braconidae* and *Eulophidae*) reared from aquatic leaf-mining flies (*Diptera*, *Ephydriidae*) on invasive Brazilian waterweed *Egeria densa* in South Africa. *African Invertebrates*. 62 (1). p.287-314.

Reid, M.K., Naidu, P., Paterson, I.D., Mangan, R. and Coetzee, J.A. (2021) Population genetics of invasive and native *Nymphaea mexicana* Zuccarini: Taking the first steps to initiate a biological control programme in South Africa. *Aquatic Botany*. 171 (April 2021). p.1-9.

Maseko, Z., Coetzee, J.A. and Hill, M.P. (2021) Population dynamics of the biological control agent, *Eccritotarsus catarinensis* Carvalho (Miridae) on *Pontederia crassipes* Pellegrini and Horn (Pontederiaceae) at a seasonally cold site. *African Entomology*. 29 (1). p.307-310.

Hussner, A., Heidebuchel, P., Coetzee, J.A. and Gross, E.M. (2021) From introduction to nuisance growth: a review of traits of alien aquatic plants which contribute to their invasiveness. *Hydrobiologia*. 848 (2021). p.2119-2151.



Honours student Katharine Khoury catching pollinators in the Langeberg Mountains as part of a larger project looking at biotic and abiotic drivers of diversification in the *Gladiolus carneus* species complex in the Western Cape.

Photo: Department of Botany

Harms, N.E., Knight, I.A., Pratt, P.D., Reddy, A.M., Mukherjee, A., Gong, P., Coetzee, J.A., Raghu, S. and Diaz, R. (2021) Climate Mismatch Between Introduced Biological Control Agents and Their Invasive Host Plants: Improving Biological Control of Tropical Weeds in Temperate Regions. *Insects*. 12 (6). p.1-22.

Hill, M.P., Zachariades, C., Conlong, D., Coetzee, J.A., Paterson, I.D., Miller, B.E., Foxcroft, L.C. and van der Westhuizen, L. (2021) The role of mass-rearing in weed biological control projects in South Africa. *African Entomology*. 29 (3). p.1030-1044.

Coetzee, J.A. and Ripley, B.S.

Baso, N.C., Coetzee, J.A., Ripley, B.S. and Hill, M.P. (2021) The effects of elevated atmospheric CO₂ concentration on the biological control of invasive aquatic weeds. *Aquatic Botany*. 170 (2021). p.103348-103354.

Dold, A.P.

Martinez-Azorin, M., Dold, A.P., Crespo, M.B. and Alonso-Vargas, M.A. (2021) New combinations in *Hyacinthaceae* subfam. Ornithogaloideae. *Phytotaxa*. 524 (1). p.59-64.

Lombardi, G.C. and Peter, C.I.

Lombardi, G.C., Midgley, J.J., Turner, R.C. and Peter, C.I. (2021) Pollination biology of '*Erica aristata*'. First confirmation of long-proboscid fly-pollination in the *Ericaceae*. *South African Journal of Botany*. 142 (2021). p.403-408.

Matiwane, A.

Raja, N.B., Dunne, E.M., Matiwane, A., Khan, T.M., Nätscher, P.S., Ghilardi, A.M. and Chattopadhyay, D. (2021) Colonial history and global economics distort our understanding of deep-time biodiversity. *Nature Ecology & Evolution*. 2021 (2021). p.145-154.

Newman, E.

Newman, E., Johnson, S.D. 2021 A shift in long proboscis fly pollinators and floral tube length among populations of *Erica junonia* (Ericaceae). *South African Journal of Botany*. 142, 451-458.

Newman, E., Govender, K., van Niekerk, S. and Johnson, S.D. 2021 The functional ecology of bat pollination in the Africa sausage tree *Kigelia africana*. *Biotropica*. 53(2), 477-486.

Pillay, T.

Pillay, T., Cramer, M.D., Ward, D. and Mureva, A. (2021) Differential effects of nutrient addition and woody plant encroachment on grassland soil, litter and plant dynamics across a precipitation gradient. *Pedobiologia*. 85 (150726). p.1-9.

Prevec, R.

Pretorius, A.I., Labandeira, C.C., Nel, A. and Prevec, R. (2021) Latest Permian insects from Wapadsberg Pass, southern Karoo Basin, South Africa. *Austral Entomology*. 60 (3). p.560-570.

McLoughlin, S. and Prevec, R. (2021) The reproductive biology of *glossopterid gymnosperms* - A review. *Review of Palaeobotany and Palynology*. 295 (2021). p.1-22.

Raubenheimer, S.L., Simpson, K., Carkeek, R.H. and Ripley, B.S. (2021) Could CO₂-induced changes to C4 grass flammability aggravate savanna woody encroachment? *African Journal of Range and Forage Science*. 39 (1). p.1-15.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

KEYNOTE

Coetzee, J.A.

Coetzee, J.A. 2021. Managing invasive macrophytes in southern Africa. *West African Symposium on Biological Invasions*. Saint Louis, Senegal, 14-17 December 2021. http://www.thewasabi.net/keynote_speaker.

Smith R., Coetzee J.A. and Hill M.P. 2021. Finding middle ground - Measuring aquatic macrophyte community response to *Egeria densa* biological control in South Africa. *ASLO Aquatic Sciences Meeting. Aquatic Sciences for a Sustainable Future: Nurturing Cooperation*. 22-27 June 2021. Virtual Meeting.

Kinsler, D.L., McGregor, G.K., Coetzee, J.A. and Hill, M.P. 2021. Remote Sensing as a monitoring tool for Water Hyacinth (*Pontederia crassipes*) in the context of the biological control release programme at Hartbeespoort Dam, South Africa. *ASLO Aquatic Sciences Meeting. Aquatic Sciences for a Sustainable Future: Nurturing Cooperation*. 22-27 June 2021. Virtual Meeting.

Motitsoe, S.N., Coetzee, J.A., Hill, M.J., and Hill, M.P. 2021. Biological control of *Salvinia molesta* (D.S. Mitchell) drives aquatic ecosystem recovery, a mesocosm study. *ASLO Aquatic Sciences Meeting. Aquatic Sciences for a Sustainable Future: Nurturing Cooperation*. 22-27 June 2021. Virtual Meeting.

Schneider, S., Coetzee, J., Braga, R., Harpenslager, S.F., Hilt, S., Immerzeel, B., Köhler, J., Misteli, B., Padiál, A., Petruzzella, A., Sebola, K., Thiébaud, G., Thiemer, K. and Vermaat, J. 2021. A cross-continent multidisciplinary assessment of aquatic weed problems in times of Covid-19: how MadMacs tackled travel restrictions. *ASLO Aquatic Sciences Meeting. Aquatic Sciences for a Sustainable Future: Nurturing Cooperation*. 22-27 June 2021. Virtual Meeting.

Coetzee, J.A., Miller, B. and Hill, M.P. 2021. Where's the water hyacinth? *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Kinsler, D., Coetzee, J.C., Hill, M.P. and McGregor, G. 2021. Remote Sensing as a monitoring tool for Water Hyacinth (*Pontederia crassipes*) in the context of the biological control release programme at Hartbeespoort Dam. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Motitsoe, S.N., Coetzee, J.A., Hill, J.M. and Hill, M.P. 2021. Invasive alien aquatic plants management: Ecosystem recovery and restoration. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Paper, M., Coetzee, J.A. and Hill, M.P. 2021. Chewers or phloem-feeders...who takes the biggest 'bite' out of water hyacinth under elevated CO₂? *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Petruzzella, A., and Coetzee, J.A. 2021. MadMacs: Mass development of aquatic macrophytes - causes and consequences of macrophyte removal for ecosystem structure, function, and services. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Reid, M.K., Naidu, P., Paterson, I.D., Mangan, R. and Coetzee, J.A. 2021. Population genetics of invasive and native *Nymphaea mexicana Zuccarini*: taking the first steps to initiate a biological control programme in South Africa. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Sandenbergh, E. and Coetzee, J.A. 2021. Distribution, density and reproductive potential of *Iris pseudacorus* (yellow-flag) in South Africa. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Smith, R., Coetzee, J.A., and Hill, M.P. 2021. The status of the submerged aquatic weed *Egeria densa* in South Africa. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Wansell, S., Geerts, S. and Coetzee, J.A. 2021. The invasion biology of *Pontederia cordata* L. (Pontederiaceae) in South Africa. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Mnciva, S., Coetzee, J.A. and Coombes, C. 2021. Enhancement of *Megamelus scutellaris* Berg (Hemiptera: Delphacidae) by naturally occurring phytopathogens for biological control of *Pontederia crassipes* (C. Mart) Solms (Pontederiaceae) in South Africa. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Rogers, D., Martin, G.D. and Coetzee, J.A. 2021. The tuber-feeding weevil *Listronotus frontalis* as a candidate biological control agent for the invasive semi-aquatic plant *Sagittaria platyphylla* within South Africa. *National Symposium on Biological Invasions - virtual symposium*. 5 - 7 May 2021.

Miller, B.E., Coetzee, J.A., Kinsler, D., and Hill, M.P. 2021. Inundative release techniques: how mass releasing a biocontrol agent lead to the reduction of water hyacinth on Hartbeespoort Dam. *22nd Hybrid Congress of the Entomological Society of Southern Africa*. 28 June - 1 July 2021. Tshipise, Forever Resort, Limpopo.

Mnciva, S.T., Coetzee, J.A., and Hill, M.P., 2021. Will a sublethal dose of Glyphosate herbicide in combination with a biocontrol agent, *Megamelus scutellaris* (Berg.) (Hemiptera: Delphacidae) enhance control of water hyacinth, *Pontederia crassipes* (Mart) Solms (Pontederiaceae) in South Africa? *22nd Hybrid Congress of the Entomological Society of Southern Africa*. 28 June - 1 July 2021. Tshipise, Forever Resort, Limpopo.

Vetter, S.

Vetter, S. With Power comes responsibility: a rangelands perspective on Forest Landscape Restoration (invited). *Grazing in Future Multi-Scapes: From thoughtscapes to landscapes, creating health from the ground up*. Lincoln University (virtual), Lincoln. New Zealand. June 2021.



3rd-year student Matthew Moir painting flowers of *Cyrtanthus obliquus* near Botha's Hill to study the effect of removing colour signals involved in pollinator attraction on plant reproductive success.

Photo: Department of Botany



DEPARTMENT OF Chemistry

Associate Professor Rosa Klein
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Department of Chemistry, host to the Institute for Nanotechnology Innovation (INI), has continued to achieve excellence in all aspects of research in 2021.

Associate Professor Philani Mashazi became the fourth member of the Department to receive the Vice Chancellor's Research Award, Associate Professor Kevin Lobb published a paper in Nature's Scientific Reports that was ranked in the top 100 chemistry papers, and a Masters student in Professor Lobb's laboratory (Bienfait Isamura) received the award for the best Masters thesis. In addition, the Department continued to build for future success with the installation of the new Single Crystal X-ray Diffractometer and crystal analysis suite under the leadership of Dr Vincent Smith.

POSTGRADUATES / GRADUATIONS

As mentioned above, Mr Isamura was selected from all the MSc graduates as the student who wrote the most outstanding thesis. He wrote about a computational study of the Diels-Alder reaction, identifying new ways of understanding the mechanism. Of the seven Masters students who submitted their theses in 2021, five obtained their degrees with distinction, tribute to the incredible hard work of the students and their supervisors. The outstanding achievement of eight doctoral graduates in 2021 is similarly due to the innovative leadership of our researchers, and we are very proud of what they have achieved.

PUBLICATIONS

BOOKS / CHAPTERS / MONOGRAPHS

Nyokong, T.
Dumoulin, F., **Nyokong, T.** and Brothers, P. (2021) Volume 1: Biomedical. In: Dumoulin, F., Nyokong, T. and Brothers, P.J. (eds.). *Porphyrim Science by Women*. Singapore: World Scientific Publishing Co. Pty. Ltd. p.1-399. ISBN: 9789811223570.

Dumoulin, F., **Nyokong, T.** and Brothers, P. (2021) Volume 2: Synthesis, Characterisations and Properties. In: Dumoulin, F., Nyokong, T. and Brothers, P.J. (eds.). *Porphyrim Science by Women*. Singapore: World Scientific Publishing Co. Pty. Ltd. p.402-813. ISBN: 9789811223570.

Dumoulin, F., **Nyokong, T.** and Brothers, P. (2021) Volume 3: Materials, Sensors, Energy and Catalysis. In: Dumoulin, F., Nyokong, T. and Brothers, P.J. (eds.). *Porphyrim Science by Women*. Singapore: World Scientific Publishing Co. Pte. Ltd.. p.816-1312. ISBN: 9789811223570.

Sewry, J.D.
Asheela, E., **Ngcoza, K.M.** and **Sewry, J.D.** (2021) The use of easily accessible resources during hands-on practical activities in rural under-resourced Namibian schools. In: Ramnarain, U. (ed.). *School Science Practical Work in Africa*. London: Routledge. p.14-31. ISBN: 9780367202798.

PATENTS

Sen, P. and **Nyokong, T.**
Sen, P. and **Nyokong, T.** (2021) *Use of novel phthalocyanine compounds for the treatment of diseases*. South Africa. 2021. 2021/09915.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Adeniyi, O.K., Nwahara, N., Mwanza, D., Nyokong, T. and Mashazi, P.N.

Adeniyi, O.K., Nwahara, N., Mwanza, D., Nyokong, T. and Mashazi, P.N. (2021) Nanohybrid electrocatalyst based on cobalt phthalocyanine-carbon nanotube-reduced graphene oxide for ultrasensitive detection of glucose in human saliva. *Sensors and Actuators B-Chemical*. 348 (2021). p.1-13.

Babu, B., Mack, J. and Nyokong, T.
Babu, B., Mack, J. and Nyokong, T. (2021) A heavy-atom-free ?-extended N-confused porphyrin as a photosensitizer for photodynamic therapy. *New Journal of Chemistry*. 45 (2021). p.5654-5658.

- Babu, B., Ochappan, T., Ali, T.A., Mack, J., Nyokong, T. and Sethuraman, M.G. (2021) Photodynamic activity and photoantimicrobial chemotherapy studies of ferrocene-substituted 2-thiobarbituric acid. *Bioorganic & Medicinal Chemistry Letters*. 40 (2021). p.1-5.
- Babu, B., Mack, J. and Nyokong, T. (2021) Naked Eye and Colorimetric Detection of Cyanide with a 1,3-Diethyl-2-thiobarbituric Acid Substituted Ferrocene Chemosensor. *ChemistrySelect*. 6 (2021). p.1448-1452.
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- Bokosi, F.R.B., Beteck, R.M. and Mbaba, M.
- Bokosi, F.R.B., Beteck, R.M., Mbaba, M., Mtshare, T.E., Laming, D., Hoppe, H.C. and Khanye, S.D. (2021) Design, synthesis and biological evaluation of mono- and bisquinoline methanamine derivatives as potential antiplasmodial agents. *Bioorganic & Medicinal Chemistry Letters*. 38 (April). p.127855.
- Bokosi, F.R.B., Beteck, R.M. and Tshiwawa, T.
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- Bokosi, F.R.B., Beteck, R.M., Tshiwawa, T. and Lobb, K.A.
- Bokosi, F.R.B., Beteck, R.M., Jordaan, A., Seldon, R., Warner, D.F., Tshiwawa, T., Lobb, K.A. and Khanye, S.D. (2021) Arylquinoline-carboxamides: Synthesis, *in vitro* and *in silico* studies against *Mycobacterium tuberculosis*. *Journal of Heterocyclic Chemistry*. 58 (11). p.1-12.
- Centane, S. and Nyokong, T.
- Centane, S. and Nyokong, T. (2021) Impedimetric aptasensor for HER2 biomarker using graphene quantum dots, polypyrrole and cobalt phthalocyanine modified electrodes. *Sensing and Bio-Sensing Research*. 34 (2021). p.1-10.
- Chiyumba, C.N., Mack, J. and Nyokong, T.
- Musikavanhu, B., Muthusamy, S., Zhu, D., Xue, Z., Yu, D., Chiyumba, C.N., Mack, J., Nyokong, T., Wang, S. and Zhao, L. (2021) A simple quinoline-thiophene Schiff base turn-off chemosensor for Hg²⁺ detection: spectroscopy, sensing properties and applications. *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*. 264 (5). p.1-9.
- Daramola, O.A., Krause, R.W.M. and Siwe Noundou, X.
- Dlamini, Z.W., Vallabhapurapu, S., Daramola, O.A., Tseke, P.F., Krause, R.W.M., Siwe Noundou, X., Mahule, T.S. and Vallabhapurapa, S.V. (2021) Resistive Switching in CdTe/CdSe Core? Shell Quantum Dots Embedded Chitosan-Based Memory Devices. *Journal of Circuits, Systems and Computers*. 30 (12). p.1-16.
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- Dube, E., Soy, R.C., Shumba, M. and Nyokong, T. (2021) Photophysical behaviour of phenoxy propanoic acid functionalised zinc phthalocyanines when grafted onto iron oxide and silica nanoparticles: Effects in photodynamic antimicrobial chemotherapy. *Journal of Luminescence*. 234 (2021). p.1-10.
- Ezekiel, C.I., Bapolisi, A.M. and Krause, R.W.M.
- Ezekiel, C.I., Bapolisi, A.M., Walker, R.B. and Krause, R.W.M. (2021) Ultrasound-triggered release of 5-fluorouracil from Soy lecithin echogenic liposomes. *Pharmaceutics*. 13 (6). p.1-14.
- Jokazi, M., Mpeta, L.S. and Nyokong, T.
- Jokazi, M., Mpeta, L.S. and Nyokong, T. (2021) Electrocatalytic activity of manganese tetra 4-aminophenyl porphyrin in the presence of graphene quantum dots. *Journal of Electroanalytical Chemistry*. 901 (2021). p.1-10.
- Khene, S.M.
- Zeki, K., Lokmac?, E., Dogu, E., Khene, S.M., Salih, B. and Canl?ca, M. (2021) Photophysical/chemical properties of [Tetrakis 6-(tert-butyl)-2,3-dihydrobenzo [b] [1,4] dioxine] phthalocyaninato] In(III) and Zn(II) with very high singlet oxygen quantum yield. *Inorganica Chimica Acta*. 527 (2021). p.1-9.
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- Waleguele, C.C. and Krause, R.W.M. Waleguele, C.C., Tchuente Tchuemogne, M.A., Fotsing Fongang, Y.S., Ngatchou, J., Kezetas Bankeu, J., Ngouela, A.S., Tsamo, E., Sewald, N., Krause, R.W.M. and Lenta, B.N. (2021) Bioguided isolation of antiplasmodial secondary metabolites from *Persea americana* Mill. (Lauraceae). *Zeitschrift Fur Naturforschung Section C-A Journal of Biosciences*. 77 (3-4). p.1-19.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Babu, B., Mack, J. and Nyokong, T.

Babu, B., Prinsloo, E., Mack, J. and Nyokong, T. Synthesis, characterisation and photodynamic activity of Sn(IV) triarylcorroles with red-shifted Q bands. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Britton, J., Matshitse, R., Ngoy, B.P., Managa, M., Mack, J., Khene, S.M. and Nyokong, T.

Britton, J., Matshitse, R., Ngoy, B.P., Managa, M., Mack, J., Khene, S.M. and Nyokong, T. The use of Detonation Nanodiamonds for Optical Limiting and Photodynamic Therapy. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Centane, S. and Nyokong, T.

Centane, S. and Nyokong, T. The Antibody Assisted Detection of Human Epidermal Growth Factor Receptor on a Cobalt Porphyrin Organic Framework and Gold - Graphene Quantum Dots Modified Electrode. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Mack, J. and Nyokong, T.

Oyim, J., Murage, M., Derese, S., Mack, J., Nyokong, T. and Amuhaya, E.K. Development of Photoactive Materials for Water Decontamination Using Photodynamic-Antimicrobial Chemotherapy. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Mack, J., Kubheka, G., May, A.K., Dubazana, N.P.Y., Ndebele, N., Ngoy, B.P. and Nyokong, T.

Mack, J., Kubheka, G., May, A.K., Dubazana, N.P.Y., Ndebele, N., Ngoy, B.P. and Nyokong, T. Optical limiting properties of azaBODIPY and BODIPY dyes on the nanosecond timescale. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Managa, M., Ngoy, B.P. and Nyokong, T.

Managa, M., Ngoy, B.P. and Nyokong, T. Photophysical properties and photodynamic therapy activity of porphyrin conjugated to graphene quantum dot. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Mapukata, S. and Nyokong, T.

Mapukata, S. and Nyokong, T. Using Magnetic Nanoparticles to Improve the Bacterial Photoinactivation Properties of an Asymmetrical Zinc Phthalocyanine towards *Staphylococcus aureus*. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Mashazi, P.N. and Tshenkeng, K.T.C.

Mashazi, P.N. and Tshenkeng, K.T.C. pH Sensitive Electrochemical Sensor for Catecholamine Detection and Screening of Ascorbic Acid. *72nd Annual Meeting of the International Society of Electrochemistry*. International Conference Center Jeju (ICC Jeju) (Virtual Meeting), Jeju Island. Korea. August 2021.

May, A.K., Ngoy, B.P., Mack, J. and Nyokong, T.

May, A.K., Ngoy, B.P., Mack, J. and Nyokong, T. Optical Limiting and Femtosecond Pump-Probe Transient Absorbance Properties of a 3,5-distyrylBODIPY Dye. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Mpeta, L.S. and Nyokong, T.

Mpeta, L.S. and Nyokong, T. Conjugation of Cobalt Phthalocyanines to Reduced Graphene Oxide via Click Chemistry for Enhanced Electrocatalysis. *72nd Annual Meeting of the International Society of Electrochemistry*. International Conference Center Jeju (ICC Jeju) (Virtual Meeting), Jeju Island. Korea. August 2021.

Nkhahle, R. and Nyokong, T.

Nkhahle, R. and Nyokong, T. A Comparative Study on Symmetrical and Asymmetrical Cardanol-based Cobalt Phthalocyanines. *72nd Annual Meeting of the International Society of Electrochemistry*. International Conference Center Jeju (ICC Jeju) (Virtual Meeting), Jeju Island. Korea. August 2021.

Nnaji, N.J., Nwaji, N., Mack, J. and Nyokong, T.

Nnaji, N.J., Nwaji, N., Mack, J. and Nyokong, T. Ball-type phthalocyanines and reduced graphene oxide nanoparticles as separate and combined corrosion inhibitors of aluminium in HCl- Experimental



Mr Monde Mafani, Senior Technical Officer in the Chemistry Department. Photo: Department of Chemistry

and computational approaches. *72nd Annual Meeting of the International Society of Electrochemistry*. International Conference Center Jeju (ICC Jeju) (Virtual Meeting), Jeju Island. Korea. August 2021.

Nwahara, N., Adeniyi, O.K., Mashazi, P.N. and Nyokong, T. Ternary Heterojunction Assisted Photoelectrocatalytic Degradation of Orange G using Visible Light Responsive TiO₂ - Graphene Oxide Nanosheets - Zn Phthalocyanine. *72nd Annual Meeting of the International Society of Electrochemistry*. International Conference Center Jeju (ICC Jeju) (Virtual Meeting), Jeju Island. Korea. August 2021.

Nwahara, N., Managa, M. and Nyokong, T. Oxygen Self-Sufficient Liposomal Systems for Photodynamic Therapy. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Nxele, S.R. and Nyokong, T. The Development of a Simple, Novel Aptasensors using Quantum Dots-Phthalocyanine Nanoconjugates and an Aptamer for the Electrochemical Detection of Prostate Specific Antigen. *72nd Annual Meeting of the International Society of Electrochemistry*. Virtual Meeting. International Conference Center Jeju (ICC Jeju), Jeju Island. Korea. August 2021.

Nxele, S.R., Oluwole, D.O. and Nyokong, T. The Use of Push Pull Co(II) Phthalocyanine in the Presence of Graphitic CarbonNitride Quantum Dots for the Electrooxidation of L-cysteine. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Nyokong, T. Lifetime achievements in the field of Phthalocyanine Chemistry (Award Lecture). *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York (Virtual Meeting). USA (Virtual Meeting). June 2021.

Openda, Y.I., Sen, P., Managa, M. and Nyokong, T. Phthalocyanine-Carbon Nanomaterials Conjugates as Photosensitisers in Photodynamic Antimicrobial Chemotherapy. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Sindelo, A. and Nyokong, T. Development of Magnetic Nanoparticles-Phthalocyanine Conjugates for Photoinactivation of Bacteria. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Soy, R.C., Babu, B., Oluwole, D.O., Nwaji, N., Mack, J. and Nyokong, T. Photophysical and photodynamic therapy activity of chloroindium(III) tetraarylporphyrins and their gold nanoparticle conjugates. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

Soy, R.C., Mack, J. and Nyokong, T. Photodegradation of levofloxacin in water by porphyrin immobilized on glass wool. *11th International Conference on Porphyrins & Phthalocyanines (ICPP-11)*. Hyatt Regency Buffalo/Hotel and Conference Center (Virtual Meeting), Buffalo, New York. USA. June 2021.

DISTINGUISHED VISITORS

Naran, B., Meddeb, M., Torretton, J.-P. and Cavalier, P. Ms B Naran, Dr M Meddeb, Dr J-P Torretton and Dr P Cavalier. French Embassy, Pretoria, South Africa. *Collaboration*. November 2021.



DEPARTMENT OF Computer Science

Professor George Wells
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Research activity in the Department of Computer Science was somewhat curtailed during 2021, due to the continuing COVID-19 pandemic and associated restrictions on University programmes and travel. However, staff and Postgraduate researchers were productive and innovative, persevering under difficult conditions to produce research and complete degrees.

The Department's research is largely conducted under the auspices of the Telkom Centre of Excellence in Distributed Multimedia, which has provided a supportive research environment since 1997. The end of 2021 saw the retirement of Professor Alfredo Terzoli who supported the work of the CoE in several roles, most notably as the head of the Centre in recent years. His experience and contribution will be greatly missed, but he continues to contribute to several research projects as an Emeritus Professor.

The work of the Telkom Centre of Excellence is focused on a number of key areas, namely:

Convergence

(Professor Alfredo Terzoli and Dr Zelalem Shibeshi)

This group focuses on the rich intersection of legacy telecommunication systems and organisations and the Internet. The main research theme is 'Software Defined Networks, Network Function Virtualisation, Cloud and Fog computing for 5G networks'.

Security and Networks

(Professor Karen Bradshaw, Stones Dalitso Chindipha, Professor Barry Irwin and Dr Alan Herbert)

The Security and Networks Research Group (SNRG) concentrates in the areas of Information Security and Computer Networks, both crucial in modern computing and telecommunications.

Parallel and Distributed Computing

(Professor Karen Bradshaw and Professor George Wells)

One of the most established areas of research in the Department, this group focuses on the ever-present and vital theme of parallel and distributed computations, in particular the use of GPUs for high performance computing and concurrent programming in the Java programming language.

Intelligent Robots

(Professor Karen Bradshaw)

This group focuses on Artificial Intelligence and Machine Learning techniques applied to robots and drones.

ICT for Development

(Professor Alfredo Terzoli, Dr Nomusa Dlodlo and Dr Zelalem Shibeshi)

This group focuses on a long-term, multidisciplinary effort to introduce meaningful and sustainable ICT in impoverished rural and peri-urban areas of South Africa. The group is currently also working in the areas of the Internet of Things and Blockchain applications.

Computer Vision

(James Connan and Dr Dane Brown)

Image Processing and Machine Learning are the research focus areas of this group.

Software Design, Modelling and Reliability

(Dr Yusuf Motara)

The Software Design and Development group focuses on finding ways in which the next generation of software and software development can be conceptualised, designed, taught, and implemented.

Bioinformatics

(Professor Philip Machanick)

Rhodes University Bioinformatics (RUBi) Research Group is an interdisciplinary group based in the Department of Biochemistry and Microbiology and focuses on collaborative research to produce computational outcomes of biological significance.

Distributed Audio Networks

(Professor Richard Foss)

The Audio Networks group deals primarily with the management and control of audio streams to be used in large sound installations such as stadiums, studios, and convention centres.

POSTGRADUATES / GRADUATIONS

Our top Postgraduate student, who received the Centre of Excellence Prize for the Best Research Student in Computer Science in 2021, was Louise Poole. She received her MSc with distinction for a thesis entitled *A Multispectral and Machine Learning Approach to Early Stress Classification in Plants*.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Professor Karen Bradshaw continued her collaboration with the Nelson Mandela African Institute of Science and Technology (NMAIST) in Arusha Tanzania, where she assists with the supervision of Postgraduate students.

SIGNIFICANT RESEARCH ALIGNED EVENTS

In October 2021, Professor Richard Foss worked on an exhibit together with the Mosquito Research Unit at UP, the UP Fine Art Department and a UP Music Department composer, Miles Warrington. This utilised the immersive sound system (ImmerGo) developed by Professor Foss' research group to spatialise 32 tracks of mosquito sounds that were recorded and transformed by Miles Warrington. This interdisciplinary collaboration has been submitted as a creative output, and will be the subject of a joint paper

PUBLICATIONS

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Brown, D.L. and Bradshaw, K.

Brown, D.L. and Bradshaw, K. (2021) Deep Palmprint Recognition with Alignment and Augmentation of Limited Training Samples. *SN Computer Science*. 3 (1). p.1-17.

Tholanah, R.S. and Shibeshi, Z.S.

Tholanah, R.S., Shibeshi, Z.S., and Khalid, K. (2021). Performance Evaluation of Routing Protocols for Opportunistic Networks: An Energy Efficiency Perspective. *Research Briefs on Information & Communication Technology Evolution (ReBICTE)*. Vol. 7, Article No. 6. (30 September, 2021). DOI:10.22667/ReBICTE.2021.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Bradshaw, K.

Loyani, L.K., Bradshaw, K. and Machuve, D. (2021) Segmentation of Tuta Absoluta's Damage on Tomato Plants: A Computer Vision Approach. *Applied Artificial Intelligence*. 35 (14). p.1107-1127.

Brown, D.L.

Brown, D.L. (2021) Deep Face-Iris Recognition Using Robust Image Segmentation and Hyperparameter Tuning. *Lecture Notes on Data Engineering and Communications Technologies*. 75 (1). p.259-275.

Brown, D.L. and Connan, J.

Brown, D.L. and Connan, J. (2021) A Robust Portable Environment for First-Year Computer Science Students. *Communications in Computer and Information Science*. 1518 (1). p.88-103.

Connan, J. and Brown, D.L.

Connan, J., Brown, D.L. and Watkins, C.A. (2021) Using Technology to Teach a New Generation. *Communications in Computer and Information Science*. 1518 (1). p.114-128.

Machanick, P.

da Rocha, J.E.B., Othman, H., Botha, G., Cottino, L., Twesigomwe, D., Ahmed, S., Drögemöller, B.I., Fadllemola, F.M., Machanick, P., Mbiyavanga, M., Panji, S., Wright, G.E.B., Adebamowo, C., Mogomotsi Matshaba, M., Ramsay, M., Simo, G., Simuunza, M., Tiemessen, C.T. and et al, (2021) The Extent and Impact of Variation in ADME Genes in Sub-Saharan African Populations. *Frontiers in Pharmacology*. 12 (April). p.366.

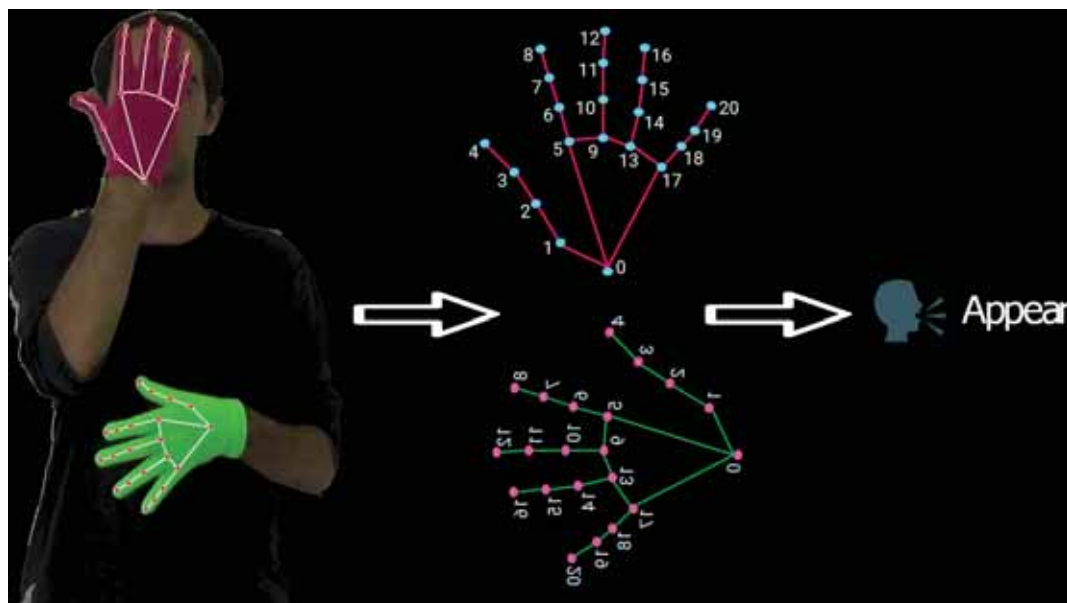
Machanick, P. (2021) Revisiting early-stage COVID-19 strategy options [version 3; peer review: 2 approved]. *F1000Research*. 9 (327). p.1-20.

Motara, Y.M.

Motara, Y.M. (2021) High-Level Modelling for Typed Functional Programming. *Lecture Notes in Computer Science*. 12834 (2021). p.69-94.



A multi-speaker configuration that was used to move wing-beat sounds of mosquitoes around a venue space. Computer programs were used to transform these sounds, arrange them into a composition, and to control their time-dependent mix levels. This was a joint project with the University of Pretoria Fine Arts and Music Departments, and was intended to promote the work of the Malaria Research Institute. Photo: Department of Computer Science



Skeletal hand annotation during pose estimation. Hand positions are normalised towards robust sign-language recognition and translation. This example shows the result of an Argentinian sign for "Appear".

Photo: Department of Computer Science

PEER-REVIEWED PROCEEDINGS

Brown, D.L.

Brown, D.L. Mobile Attendance based on Face Detection and Recognition using OpenVINO. *ICAIS 2021*. Pichanur, Coimbatore. India. March 2021.

Brown, D.L. and Lidzhade, I.

Brown, D.L. and Lidzhade, I. Handwriting Recognition using Deep Learning with Effective Data Augmentation Techniques. *icABCD 2021*. Virtual Event Durban, Virtual Event Durban. South Africa. August 2021.

Buwa, L., Shibeshi, Z.S. and Terzoli, A.

Buwa, L., Shibeshi, Z.S. and Terzoli, A. An Application to Support end-users of wi-fi Hotspots in the Township of Makhanda, 2021 *International Conference on Electrical, Communication and Computer Engineering (ICECCE), 2021*. pp. 1-6, doi: 10.1109/ICECCE52056.2021.9514200.

Chindipha, S.D. and Irwin, B.V.W.

Chindipha, S.D. and Irwin, B.V.W. Feasibility Study: Computing Confidence Interval (CI) for IBR Data Using Bootstrapping Technique. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Chindove, H.E. and Brown, D.L.

Chindove, H.E. and Brown, D.L. Adaptive Network Intrusion Detection using Optimised Machine Learning Models. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Chindove, H.E. and Brown, D.L. Adaptive Machine Learning Based Network Intrusion Detection. *icARTI '21*. Virtual Event Mauritius, Virtual Event Mauritius. Mauritius. December 2021.

Dlodlo, N. and Terzoli, A.

Muriithi, S.M., **Dlodlo, N. and Terzoli, A.** An Application to Support end-users of wi-fi Hotspots in the Township of Makhanda. 2021 *International Conference on Electrical, Communication and Computer Engineering*. Pakistan. November 2021.

Kazembe, L. and Bradshaw, K.

Kazembe, L. and Bradshaw, K. An Enhanced Data Analysis Framework. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Lewis, M.D. and Bradshaw, K.

Lewis, M.D. and Bradshaw, K. Configuring a Single-board Parallella Cluster for Parallel Execution of Benchmarks. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Mjoli, S. and Dlodlo, N.

Mjoli, S. and Dlodlo, N. Exploring the use of IoT and blockchain technology in a 3rd generation bicycle sharing platform within a smart university campus. *AIP Conference Proceedings*. 2409 (1).

Mjoli, S. and Dlodlo, N. Exploring the integration of blockchain technology and IoT in a smart university application architecture. *2021 International Symposium on Electrical, Electronics and Information Technology*.

Muchatibaya, H., Terzoli, A. and Dlodlo, N.

Muchatibaya, H., Terzoli, A. and Dlodlo, N. A Review of the Siyakhula Living Lab's Network Solution for Internet in Poor Communities. *IST Africa 2021*. 10 - 14 May 2021, ISBN: 978-1-905824-66-3.

Poole, L.C. and Brown, D.L.

Poole, L.C. and Brown, D.L. Investigating Popular CNN Architectures for Plant Disease Detection. *icABCD 2021*. Virtual Event Durban, Virtual Event Durban. South Africa. August 2021.

Poole, L.C., Brown, D.L. and Connan, J.

Poole, L.C., Brown, D.L. and Connan, J. Early Dehydration Detection Using Infrared Imaging. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Shibeshi, Z.S. and Terzoli, A.

Ngwenya, S., **Shibeshi, Z.S. and Terzoli, A.** Improving User Experience in Community Networks using a Browser Extension. *Southern Africa Telecommunication Networks and Applications Conference (SATNAC 2021)*. Drakensberg. South Africa. November 2021.

Solani, D.J. and Bradshaw, K.

Solani, D.J. and Bradshaw, K. A methodology for sentiment analysis from Twitter feeds. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Terzoli, A. and Shibeshi, Z.S.

Terzoli, A. and Shibeshi, Z.S. Implementing a Content-Based Routing Framework for Application Integration on to Teleweaver Application Server. *2021 IST-Africa Conference (IST-Africa)*. Africa. May 2021.

Van Staden, J.M. and Brown, D.L.

Van Staden, J.M. and Brown, D.L. An Evaluation of Machine Learning Methods for Classifying Bot Traffic in Software Defined Networks. *SATNAC 2021*. Champagne Sports Resort, Drakensberg. South Africa. November 2021.

Van Staden, J.M. and Brown, D.L. An Evaluation of YOLO-Based Algorithms for Hand Detection in the Kitchen. *icABCD 2021*. Virtual Event. Durban. South Africa. August 2021.

Wells, G.

Wells, G., Nxozo, M. and Tait, B.L. ICT Education. *49th Annual Conference of the Southern African Computer Lecturers' Association (SACLA 2020)*. Virtual, Makhanda. South Africa. July 2021.

Zvidzayi, T., Terzoli, A. and Dlodlo, N.

Zvidzayi, T., Terzoli, A. and Dlodlo, N. LTSP Client Image Maintenance: Utilising a Virtualisation Player to Support Educators to Directly Manage Classroom Applications. *IST Africa 2021*. 10 - 14 May 2021, ISBN: 978-1-905824-66-3.



DEPARTMENT OF Drama

Associate Professor
Heike Gehring
Head of Department

Photo: Dirk Pieters

INTRODUCTION

2021 was an active research year for the Drama department, despite the severe impact that the Covid-19 pandemic had on the performing arts. Staff and students were active in creative as well as written outputs. Many of the creative works grappled with ways in which theatre could be reimagined in response to a Covid-19 context, by either finding models for effective online performances or by adjusting face-to-face performances to comply with Covid-19 restrictions, such as social distancing or mask wearing.

The first production of the year was the annual Rhodes University Orientation Show, *Going Viral*, designed for 1st year students in collaboration with the Division of Student Affairs. The work, presented in a hybrid form, was designed as an online product that was followed by student discussions. The National Arts Festival (NAF) offered a good opportunity for practice-based research. Here Anton Krueger and guest artist Francois le Roux made a contribution with their "live streamed" work *Ha!Man & Anton - In Fearless Flow*. Other strong NAF contributions were made by Gavin Krastin (as curator and creator) and Alan Parker (as dramaturg) with their works *Arcade2021* and *Swell*. Gavin Krastin was also awarded the prestigious Standard Bank Young Artist Award for his contribution to Performance Art. Two of the department's Masters students, Siyabulela Javu and Nokulunga Ncongwane, also made creative offerings to the festival.

Apart from being featured at the National Arts Festival, staff members were also involved in other festivals - Anton Krueger participated in the *Woordfees Artists' Week*, while Gavin Krastin and Alan Parker were facilitators at the *Creative Practices*

Laboratory in Bloemfontein. Departmental productions were *8 times lonely* directed by Heike Gehring and *Welcome to the Comfort Zone* choreographed by Alan Parker. Anton Krueger also made online paper presentations for Aarhus University in Denmark and the Federal University of Santa Maria in Brazil.

Further highlights were visiting lecturers and performers: Ilana Cilliers directed the Orientation Programme; Nobonke van Tonder offered workshops and created a work with the Postgraduate students, Francois le Roux offered workshops and Jacki Job and Jose Dias gave a face-to-face concert, *And Then ...*, which formed part of a practice-based research project.

POSTGRADUATES / GRADUATIONS

The department's Postgraduate students made a strong contribution to the department's research outputs, creating cutting edge interdisciplinary and multilingual works, both in performative and written form. Masters student Siyabulela Javu co-directed the Orientation Show, *Going Viral*, with Ilana Cilliers. She also created and directed the production *Mafungwashe* for the National Arts Festival. Another National Arts Festival production, was *The Witch's Party*, created and performed by Masters student Nokulunga Ncongwane. Other students that excelled were Julia de Rosenwerth, who received 93% for her final MA mark, Axl Forder, who received 85% and Meghan Harris, who received 75%. Tamarisk Glogauer, a first year Masters student, had her article, "The Motional Improvisation of AI Wunder" published in the *Journal of Performance and Mindfulness*. 4 (1). p.1-3.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Jacki Job visited the department to give a performance as demonstration of a practice-based PhD. She is a lecturer in Dance & Performance Studies at the University of Cape Town.

Extract from *The Witch's Party* by Nokulunga Ncongwane.

Photo: Department of Drama



She is a dynamic, energetic, lateral thinker, focused, autonomous, imaginative, scholastic, and creative, with more than 20 years of professional practical experience and noted for staging complex theatrical concepts in an interdisciplinary fashion. She is accomplished in developing performance methodologies for dancers, actors, and singers. She offers specialist workshops in sound, breath & movement.

José Dias gave a concert and offered a lecture demo at the Drama department. He is a regular presence in all major concert halls and Arts Festivals in South Africa. In recent seasons, international performances have taken him to Portugal, Mozambique, Israel, Switzerland, Belgium, Austria, including extensive tours of the Netherlands and Germany, with repeated appearances in such historic halls as the Berliner Philharmonie, Münchner Philharmonie, Beethovenhalle in Bonn, Baden-Baden Festspielhaus, among many others.

Ivana Cilliers directed the First Year Orientation Show remotely. Cilliers is an award winning multi-disciplinary artist and director for theatre, television and film projects. She starred in the cult hit *Johnny Is Nie Dood Nie*, for which she won a Silwerskerm Award. She founded the production company, *Mount Maak*, which specialises in experimental interdisciplinary performance. Cilliers currently lectures in Screen Acting at Open Window and has recently been seen in *Binnelanders* and the MNET series, *Lioness*.

Nobonke van Tonder offered workshops to Postgraduate students. She is a dancer-psychologist, ontological coach, writer, mentor, and specialist in the field of dynamic transformation. In her work she offers opportunities to unleash what is invisible and intelligible in the human being, group and organisation.

Francois le Roux (the HAIMan) visited the department to offer workshops to Postgraduate students and performed with Anton

Krueger. He is an independent performer, workshop facilitator and music creator who has built an extensive network of support across four continents over the last two decades. With a classical background in music, he has made spontaneous expression his mainstay since the early 1990s and is regarded as one of the world's foremost cello and piano improvisers. He has presented workshops at numerous schools, home school groupings, colleges and universities across the world.

Athina Vahla visited the department to offer Postgraduate workshops. She is a multidisciplinary artist and lecturer producing work internationally, across the UK, Europe, South Africa, Mexico and Japan. Vahla has created large scale site-specific works on an international scale. Some of her commissioned works include productions at the Tate Modern, the Liverpool Tate, the Institution for Contemporary Arts, London, the London Science Museum and the London 2012 Olympics. She has taught extensively for various international institutions.

SIGNIFICANT RESEARCH ALIGNED EVENTS

First Physical Theatre Company - an associate project of the department - initiated extensive interactive projects within the larger Makhanda community. The *BodyForms* programme offered somatic training in various movement forms and produced the work *Arcade2021* (conceptualised and curated by Gavin Krastin for the National Arts Festival).

Ubom! - another associated project of the Drama department - built the capacity of local unemployed practitioners, scholars and students through theatre skills courses. The *Vuka Drama Workshop Programme* offered drama-focused activities for schools. Their children's theatre production, *Betti and the Yeti*, was commissioned for the National Arts Festival Main Programme.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Gehring, H.

Gehring, H. Director. *"8 times lonely"*. Rhodes Theatre Complex, Makhanda. South Africa. 25-26 June 2021.

Krastin, G.J.

Krastin, G.J. Creator/author. Curator. *"Arcade2021"*. New Gallery, 1820 Settler's Monument, Makhanda. South Africa. 8 - 18 July 2021.

Krastin, G.J. Facilitator. Facilitator. *Creative Practices Laboratory*. Die Pepermossie, Bloemfontein. South Africa. 23 July - 1 August 2021.

Krastin, G.J. Creator/author. Artist. *"Swell"*. New Gallery, 1820 Settler's Monument, Makhanda. South Africa. 8 - 18 July 2021.

Krueger, A.

Krueger, A. Artist in Residence, Writer and Performer. Collaborated on a text for a short show directed by Neels van Jaarsveld. Participated in live improvisations with operatic performances organized by Tony Bental. Read at the official poetry event on Friday 9 April. Performed in the streets as part of a troupe of clowns on 9-10 April. Participated in workshops with artists from all over the country. *Toyota SU (Stellenbosch University) Wordfees Artists' Week* (Flikker & Flash). Stellenbosch, Cape Town. South Africa. 6 - 11 April 2021.

Krueger, A. Performer / Producer. Halman & Anton in Fearless Flow. *National Arts Festival, Main Festival*. Online, Makhanda. South Africa. 19 - 21 July 2021.

Parker, A.C.

Parker, A.C. Choreographer. *Welcome to the Comfort Zone*. Rhodes Box Theatre, Makhanda. South Africa. 28 - 29 October 2021.

Parker, A.C. Facilitator. *Creative Practices Laboratory*. Die Pepermossie, Bloemfontein. South Africa. 23 July - 1 August 2021.

Parker, A.C. Dramaturg. *Arcade2021*. New Gallery, 1820 Settler's Monument, Makhanda. South Africa. 8 - 18 July 2021.

Parker, A.C. Dramaturg. *Swell*. New Gallery, 1820 Settler's Monument, Makhanda. South Africa. 8 - 18 July 2021.

OTHER PUBLICATIONS

Krueger, A.

Krueger, A. (2021) When? In: *New Contrast Literary Journal*. South Africa: New Contrast.

Krueger, A. (2021) Better Than Starbucks Poetry and Fiction Journal. In: *'Eulogy for Willem Huyzers'*. South Africa: Poetry and Fiction Journal.

DISTINGUISHED VISITORS

Krastin, G.J.

Krastin, G.J. Rhodes University and the Standard Bank Young Artists Awards, Johannesburg, South Africa. *Speaker and panelist on "The Essentials: the arts, music and the food of life" at Wits University's Department of Family Medicine and Primary Care*. November 2021.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Glogauer, T.

Glogauer, T. (2021) The Motional Improvisation of AI Wunder. *Journal of Performance and Mindfulness*. 4 (1). p.1-3.

Krueger, A.

Krueger, A. and Wunder, A. (2021) 'Don't educate them out of educating themselves: A Conversation with AI Wunder'. *Journal of Performance and Mindfulness*. 4 (1). p.1-15.

Krueger, A. (2021) Editorial. *Journal of Performance and Mindfulness*. 4 (1). p.1-10.

Krueger, A. and Morrish, A. (2021) "The idea that something new might happen is completely obvious: A Conversation with Andrew Morrish". *Journal of Performance and Mindfulness*. 4 (1). p.1-22.

Krueger, A. and Nachmanovitch, S. (2021) 'Comfortable with being uncomfortable' or 'You, me & the latency': A Conversation with Stephen Nachmanovitch? *Journal of Performance and Mindfulness*. 4 (1). p.1-13.

Krueger, A. and Madson, P.R. (2021) 'Attention Aligned with Action': A Conversation with Patricia Ryan Madson. *Journal of Performance and Mindfulness*. 4 (1). p.1-14.

Krueger, A. and Worley, L. (2021) 'It's more like peeling away the layers of the onion, than putting a container around the onion': A Conversation with Lee Worley. *Journal of Performance and Mindfulness*. 4 (1). p.1-13.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Krueger, A.

Krueger, A. 'Experimenting with Texts Arising from the Improvising Body'. *This Mortal Body*. UWC, Cape Town. South Africa. April 2021.

Krueger, A. Improvisation and Mindfulness: Implications for Teaching Creativity. *4th biannual International Conference on Mindfulness (ICM2021) Diversity and Equality*. Online, Aarhus University. Denmark. July 2021.

Krueger, A. 'The Voice in Your Head: A Live Zoom Show'. *2nd Seminar on Performing Arts and Contemplative Practices: Contemplation, Performing Arts and Coexistence*. Online, Federal University of Santa Maria. Brazil. May 2021.



Nipho Nxumalo and Sivu Wani in extract from the play "In the Blood" by Suzan-Lori Parks directed by Honours student Lyndre Bonhomme. Photo: Department of Drama.



DEPARTMENT OF Economics and Economic History

Professor Jen Snowball
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Although 2021 research activities continued to be somewhat disrupted by COVID-19 restrictions, members of the Department have continued to be involved in local, national, and international research activities.

POSTGRADUATES / GRADUATIONS

Congratulations to Dr Tamaryn Friderichs, a Lecturer in the Economics Department, who graduated with her PhD in 2021. The title of the thesis was "Human capital in the context of high levels of inequality in South Africa" and was one of the first PhDs by publication that has been produced in the Commerce Faculty.

The Environmental and Natural Resource Economics Focus Area (ENREFA) also celebrated the graduation of several masters students, including James Marriner and Brett Mason.

For the first time in 2021, the Postgraduate conference for Honours students was run online. Invited guest speakers were Ms Busi Sibeko who is an economist and researcher at the Institute for Economic Justice (IEJ), and Mr Stuart Theobald, co-founder and executive chairman of Intellidex, a research-led consultancy that specialises in capital markets and financial services with offices in Sandton, London, and Boston. The conference was organised by a committee of students from the Economics Honours class, guided by Professors Keeton and Snowball. The conference went well, and all the Honours students presented and discussed their research. Although clearly not as interactive as an in-person conference, it taught students valuable online presentation skills and protocols.

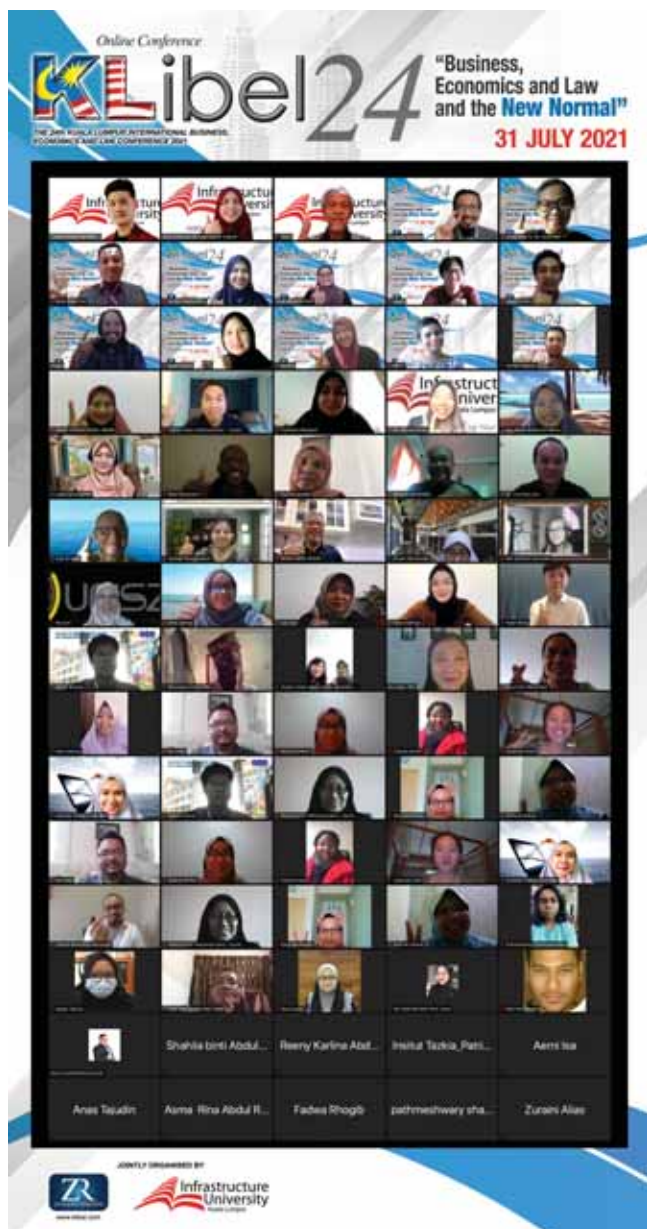
DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Staff in the Department were active in both internal and external research activities in 2021. Professor Tsitsi Mutambara presented her study examining the regional intensity of trade in Africa from 2001-2018 and the implications for intra-Africa trade in the African Continental Free Area (AfCFTA) at the second Commerce Research Colloquium in 2021. Professor Mike Rogan presented a paper entitled, "The Impact of the COVID-19 pandemic on research methodologies: Learnings and challenges" at a conference hosted by the Institute of Social Studies Trust in Delhi in April 2021.

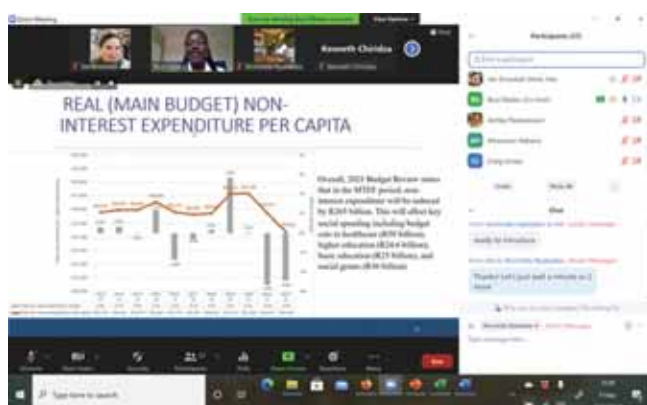
The Masters in Financial Markets programme had a number of graduates and research related activities in 2021. Dr Sibanisezwe Khumalo published an article with Ms Abongile Bom entitled "Monetary Policy Credibility and Inflation Expectations: Exploring an unconventional channel in South Africa"; Ms Bom is now a registered PhD student in the Department and a member of staff. The Economics Society of South Africa held an online conference in 2021, at which several members of staff presented their work, as well as a Masters in Financial Markets student, Simon le Roux.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Rhodes University is a partner in the South African Cultural Observatory (SACO), which is a national research organisation funded by the Department of Sport, Arts and Culture. In 2021, a Rhodes team took a leading role in producing the Cultural and Creative Industries mapping project that is one of the flagship SACO outputs. It includes researchers in the Department of Economics (Jen Snowball, Niki Cattaneo, Mike Rogan), Professor Mike Burton from the Mathematics Department, and external researchers (Serge Hadisi and Andre Gouws). Postgraduate students from the Department worked on the



Associate Professor Tsitsi Effie Mutambara was at the KLibel 24, Online Conference. Business, Economics and Law and the New Normal.



Ms Busi Sibelo (Institute for Economic Justice), presenting her work at the Economics Honours student online conference in 2021.

Photo: Department of Economics and Economic History

project as interns (Ayabonga Qhubani, Michelle Makokove, Nandipha Fumbatha and Nqobile Nzimande).

Still in the area of cultural economics, the “Future Festivals South Africa” Project was an international collaboration with colleagues from King’s College, London, funded by the Arts and Humanities Research Council, UK. Rhodes University team members were Jen Snowball, Delon Tarentaal, and Fiona Drummond (who is a PhD student in the Department of Economics). The aim of the project was to analyse the impact and adaptation strategies of South African arts festivals to the 2020 and 2021 COVID-19 crisis. The project used a variety of research methods, such as online surveys and key stakeholder interviews, Google Analytics, GIS mapping and “futuring” to answer the research questions. Results were shared with festival partners via a project website and via an online workshop held in May.

With Professor Mike Rogan as the Principal Investigator, the Economics department has been a partner in a Canadian International Development Research Centre (IDRC) grant entitled ‘Rapid response: Evidence to mitigate socio-economic impacts and promote recovery from COVID-19’ - Grant No. 109486-001. The grant was used to conduct a two-wave panel survey of selected groups of informal workers in 12 cities (10 in the Global South, one in Europe, and one in the United States). The aim was to identify the differentiated impacts of the pandemic on groups of workers in diverse segments of the informal economy.

Professor Rogan and Dr Friderichs were also commissioned to design and implement a nationally representative technical and vocational education and training (TVET) college tracer study. The study is part of a broader 5-year TVET research programme to measure employment outcomes across South Africa’s 50 TVET colleges and across selected qualifications and vocational programmes. It will be the largest and most geographically representative survey on TVET outcomes to date and is funded by the Department of Higher Education and Training (DHET) through the National Skills Fund (NSF).

BOOKS/CHAPTERS/MONOGRAPHS

- Drummond, F.J. and Snowball, J.D.**
Drummond, F.J. and Snowball, J.D. (2021) Rural cultural and creative industry clustering: The Sarah Baartman district, South Africa. In: Hracs, B., Comunian, R. and England, L. (eds.). *Developing Creative Economies in Africa*. London: Routledge. p.115-132. ISBN: 9780367481940.
- Rogan, M.**
Rogan, M. and Skinner, C. (2021) The South African Informal Economy. In: Oqubay, A., Tregenna, F. and Valodia, I. (eds.). *The Oxford Handbook of the South African Economy*. New York: Oxford University Press. p.757-777. ISBN: 9780192894199.
- Snowball, J.D. and Ndhlovu, R.M.E.**
Snowball, J.D. and Ndhlovu, R.M.E. (2021) Glocal economic development, and the cultural and creative industries: Case studies from the Eastern Cape Province in South Africa. In: Sirayi, M., Kanyane, M. and Verdini, G. (eds.). *Culture and Rural-Urban Revitalisation in South Africa*. London: Routledge. p.129-151. ISBN: 9780367703684.
- Snowball, J.D., Drummond, F.J. and Antrobus, G.G.**
Snowball, J.D., Drummond, F.J., Antrobus, G.G. and Drummond, J. (2021) The role of cultural festivals in regional economic development: A case study of Mahika Mahikeng. In: Scherf, K. (ed.). *Creative Tourism and Sustainable Development in Smaller Communities*. Calgary: University of Calgary Press. p.79-107. ISBN: 9781773851884.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

- Mccann, C.M.**
Mccann, C.M., Talbot, A.L.P. and Westaway, A. (2021) Social Capital for Social Change: Nine-Tenths Mentoring Programme, a Solution for Education (In)justice in South Africa? *International Journal of Educational Leadership Preparation*. 16 (1). p.45-59.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

- Bom, S.A. and Khumalo, S.A.**
Bom, S.A. and Khumalo, S.A. (2021) Monetary Policy Credibility and Inflation Expectations: Exploring an unconventional channel in South Africa. *African Journal of Business and Economic Research*. 16 (3). p.305-325.
- Friderichs, T.J., Keeton, G.R. and Rogan, M.**
Friderichs, T.J., Keeton, G.R. and Rogan, M. (2021) Measuring human capital using in South Africa using a socioeconomic status human capital index approach. *Development Southern Africa*. 10.1080/0376835X.2021.1941779 (10.1080/0376835X.2021.1941779). p.2-18.
- Maluleke, M. and Fraser, G.**
Maluleke, M., Fraser, G. and Hill, M.P. (2021) Economic evaluation of chemical and biological control of four aquatic weeds in South Africa. *Biocontrol Science and Technology*. 31 (9). p.896-911.
- Marire, J.**
Abel, S. and Marire, J. (2021) Competition in the insurance sector? An application of Boone indicator. *Cogent Economics & Finance*. 9 (1). p.1-13.
- Marire, J.** (2021) Effect of changing business R&D expenditure mix on productivity of the South African national system of innovation. *African Journal of Science, Technology, Innovation and Development*. 2021 (1). p.1-12.
- Marire, J.** (2021) Comparative Analysis of Richard H. Tawney and Thorstein B. Veblen's Conceptions of Property. *Journal of Economic Issues*. 2021 (4). p.1-14.

- Ntsonge, S. and Fraser, G.**
Ntsonge, S. and Fraser, G. (2021) Shielding Rural Migrants from Unemployment-induced Poverty: The Informal Prickly Pear Market. *Journal of Human Ecology*. 74 (1-3). p.8-19.
- Phakathi, S., Fraser, G. and Marire, J.**
Phakathi, S., Sinyolo, S., Fraser, G. and Marire, J. (2021) Heterogeneous welfare effects of farmer groups in smallholder irrigation schemes in South Africa. *African Journal of Agricultural and Resource Economics*. 16 (1). p.27-45.
- Phakathi, S., Marire, J. and Fraser, G.**
Phakathi, S., Sinyolo, S., Marire, J. and Fraser, G. (2021) Farmer-led institutional innovations in managing smallholder irrigation schemes in KwaZulu-Natal and Eastern Cape Provinces, South Africa. *Agricultural Water Management*. 248 (2021). p.1-19.
- Rogan, M.**
Rogan, M., Chen, M., Grapsa, G., Ismail, G., Valdivia, M., Alfery, L., Harvey, J., Ogando, A.C., Reed, S. and Roeber, S. (2021) COVID-19 and informal work: Evidence from 11 cities. *International Labour Review*. 10 (1111). p.1-42.
- Ogando, A.C., Rogan, M. and Moussie, R.** (2021) Impacts of the Covid-19 pandemic and unpaid care work on informal workers' livelihoods. *International Labour Review*. 10 (1111). p.1-36.
- Snowball, J.D.**
Snowball, J.D., Collins, A.L. and Nwauche, E. (2021) Ethics, values and legality in the restoration of cultural artefacts: the case of South Africa. *International Journal of Cultural Policy*. <https://doi.org/10.1080/10286632.2021.1995377>
- Snowball, J.D., Collins, A. and Nwauche, E.** (2021) Examining restitution and repatriation options for cultural artefacts: an empirical enquiry in South Africa. *International Journal of Cultural Policy*. <https://doi.org/10.1080/10286632.2021.1995378>
- Snowball, J.D. and Tarentaal, D.**
Snowball, J.D., Tarentaal, D. and Sapsed, J. (2021) Innovation and diversity in the digital cultural and creative industries. *Journal of Cultural Economics*. 45 (1). p.705-733.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

- Friderichs, T.J., Keeton, G.R. and Rogan, M.**
Friderichs, T.J., Keeton, G.R. and Rogan, M. Decomposing household income inequality in South Africa by human capital determinants. *Economics Society of Southern Africa*. Virtual. September 2021.

OTHER PUBLICATIONS

- Snowball, J.D.**
Snowball, J.D. and Gouws, A. (2021) Measuring the impact of the COVID-19 Crisis on the Cultural and Creative Industries in South Africa: One year on. In: *Measuring the impact of the COVID-19 Crisis on the Cultural and Creative Industries in South Africa: One year on*. Port Elizabeth: South African Cultural Observatory.
- Snowball, J.D. and Antrobus, G.G.**
Snowball, J.D. and Antrobus, G.G. (2021) The Challenges of Pivoting to Digital: The COVID-19 shut down and cultural festivals and events. In: *The Challenges of Pivoting to Digital: The COVID-19 shut down and cultural festivals and events*. Port Elizabeth: South African Cultural Observatory.



FACULTY OF Education

Professor Eureta Rosenberg
Dean of Faculty

Photo: Chris Marais

INTRODUCTION

Notwithstanding the Covid-19 pandemic, the Education Faculty, consisting of the Department of Education and CHERTL, graduated 33 Masters and 16 PhD students in 2021, making it one of the most prolific producers of Postgraduate students in the University. The pandemic made travel difficult or impossible, but scholars did not stop engaging. Instead, they migrated online and, in some ways, had as many if not more national and international research collaborations than ever.

The DSI/NRF South African Numeracy Chair at Rhodes, Professor Mellony Graven, convened, and chaired a plenary panel titled “Mathematics education reform post 2020: Conversations towards building back better” at the 14th International Congress on Mathematical Education (ICME). ICME is the largest gathering of mathematics educators in the world and an invitation to do an ICME plenary is one of the most prestigious in the field. In Language in Education, Associate Professor Nhlanhla Mpofo initiated a new collaboration with the University of Antwerp for research on the Learning impact of translanguaging in multilingual content-based instruction classrooms. The project will include exchange visits and support for Postgraduate students from South Africa and Belgium. The Environmental Learning Research Centre convened a National Environmental Skills Summit to share and receive feedback on the outcomes of the mid-term review of the National Biodiversity Human Capital Development Strategy, a national study by Professor Eureta Rosenberg with Faculty alumni and research associates.

The SARChI Chair in Global Change, Transformative Social Learning and Green Skills Pathways, Distinguished Professor Heila Lotz-Sisitka, convened a symposium of its NRF Community of Practice (CoP) comprised of no fewer than 11 SARChI Chairs with a focus on Social Learning and Sustainable Development. The Department also co-hosted the annual conference of the International Association for Critical Realism, a body that is particularly important in much of the Faculty's scholarly work.

Nonetheless, scholars were deeply affected by the pandemic and its impacts on society. Several were moved to start or join community engagements which also had a research dimension. An example is the *iQonga loThungelwano loLuntu* COVID-19 learning and solidarity network led by several Rhodes scholars and associates. Taryn Pereira-Kaplan, Buhle Francis, Monde Ntshudu and Thomas Salmon shared research reflections on this extraordinary engagement, at a conference hosted by the Mauritius Institute of Education.

Another more longstanding but equally extraordinary collaboration, the Fundisa for Change Teacher Education programme, which over the years engaged all of South Africa's Education Faculties, in 2021 saw a book publication edited by Associate Professor Ingrid Schudel, Dr Zintle Songwaru, Dr Sirkka Thsinginwamwane and Distinguished Professor Lotz-Sisitka. The book consists of 19 chapters with 20 authors, 14 of whom are Rhodes affiliates, showcasing the research not only of staff but of former students, several of whom joined the programme as practising teachers. A second book publication was led by Associate Professor Lausanne Olvitt, Distinguished Professor Heila Lotz-Sisitka, Professor Ingrid Schudel, Emeritus Professor Rob O'Donoghue and Dr Dylan McGarry, with Emeritus Professor Bob Jickling from Lakehead University, Canada. Titled *Environmental Ethics: A Sourcebook for Educators*, this book is becoming a reference point on ethics more broadly, for

colleagues across the Department. It is one more example of the extraordinarily engaged scholarship of the Education Department, which continued and, in some ways, intensified during the Covid years.

The NRF renewed the award to the DSI/NRF SARCHI Chair in Global Change, Transformative Social Learning and Green Skills Pathways, which started its second five-year cycle in 2021. This Chair convenes an NRF COP (Community of Practice) on Social Learning and Sustainable Development consisting of 11 Research Chairs from six Universities, as well as an Early Career Network of 20 Masters and PhD scholars.

The DSI/NRF SARCHI SA Numeracy Chair achieved particular success with its research-informed programme *Mathematics Mental Starters Assessment Project (MSAP)* which is a collaboration between the two numeracy Chairs in South Africa, Professor Mellony Graven from Rhodes and Professor Hamsa Venkat of Wits, and the national Department of Basic Education. This work was translated into all official languages, allowing for the programme to be scaled across all provinces. MSAP provincial data shows statistically significant improvements in learners' post-tests performance following the mental strategies intervention.

POSTGRADUATES / GRADUATIONS

The scholarship of our 2021 graduates reflected key trends affecting the field in the preceding years, particularly in the under-resourced and rural contexts that characterise many of the communities served by the Department's research.

Among these trends is the introduction of technology in education, which is both welcomed, and viewed with some trepidation, with fears that technology might come to replace good teaching. It is therefore important that we research the relationship between good teaching and the use of technology in the classroom. Dr Beena Deepak Mavani's doctoral study (awarded in 2021) is an example of such a research. Supervised by Professor Marc Schafer, in the SARCHI Mathematics Chair, Dr Deepak Mavani conducted a critical analysis of how Dynamic Geometry Software may enhance the teaching of Mathematics, building on Professor Schafer's research programme on the role of visualisation in Mathematics Education. The study found that in order to harness the inherent visual capacity of computer technology such as GeoGebra applets in teaching mathematics, teachers need to make use of skill sets that they are not necessarily accustomed to and trained for. The integration of technology into teacher practice thus not only poses challenges of a technical nature but also of a pedagogical and epistemological nature. In the context of a rural and impoverished environment, this doctoral study interrogated how self- and co-developed GeoGebra applets can optimally be used as visualization tools to develop conceptual understanding of Euclidean geometry theorems. The research helps us understand the complexities of interweaving technology into a teaching environment that is under-resourced and unsupported.

Another broad trend of relevance to education is a growing awareness of the impacts of climate change and the need for education and training to address the causes and impacts of climate change, particularly in Southern Africa. Dr Robson Mukwambo's doctoral study on complexities affecting household food security in Nyanyadzi Irrigation Scheme in the Manicaland Province of Zimbabwe took the scholar back to the farming community where he grew up. He studied the mediation of expansive learning - learning 'what is not yet there' - to understand how best educators can support communities whose crops and livelihoods are severely affected by climate induced changes. Given complexities such as governance and donor relationships, gender and socio-cultural practices, the transfer of technical knowledge is not enough, hence exploring the concept of expansive learning, first developed by one of the Department's long-standing international collaborators, Professor Yro Engestrom of the CRADLE centre at the University of Helsinki in Finland.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The Department's participation in the South African Education Research Association's 2021 conference was a research highlight. No fewer than 29 Rhodes staff and students presented papers, two books published out of Rhodes were launched, and Distinguished Professor Heila Lotz-Sisitka did a keynote address.

The Environmental Learning Research Centre in collaboration with the Centre for Researching Education and Labour at Wits University, hosted the 2021 Annual Conference of IACR, the International Association for Critical Realism: (Re) Envisaging Emancipatory Research, Science and Practice, held online on 20 - 24 September 2021.

The One Ocean Hub is a research collaboration involving scientists, lawyers and activist-scholars from several South African universities and Strathclyde University in the UK, led by Dr Dylan McGarry. The Rhodes members of the One Ocean Hub held a panel discussion titled "Citizen led research and mapping through the Coastal Justice Network - towards community led conservation and sustainable livelihoods", in a side event at the 26th Conference of the Parties of the United Nations Framework Convention on Climate Change. The event was organised by Rhodes Research Associates at the Strathclyde Centre for Environmental Law and Governance, and the Independent Redress Mechanism of the Green Climate Fund.

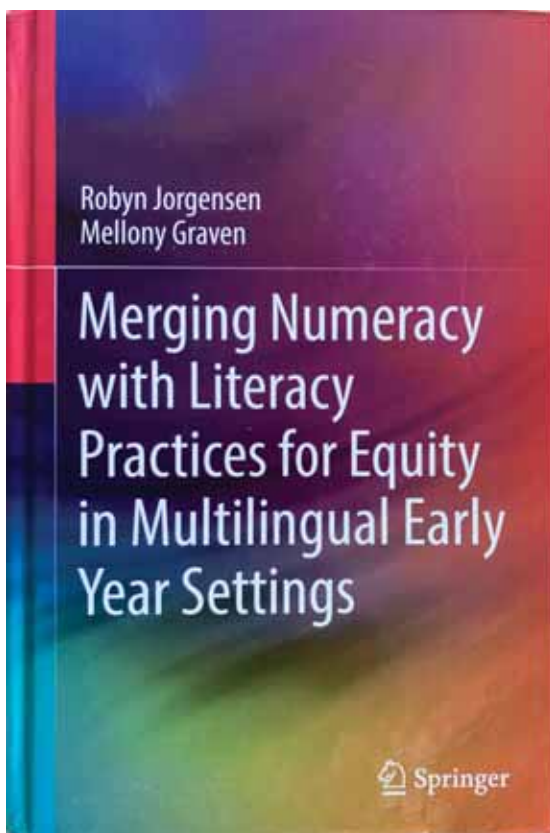
Education Faculty members in Mathematics and Science participated in the 29th Annual conference of SAARMSTE, the Southern African Association for Research in Mathematics, Science and Technology Education (hosted online by National University of Lesotho). Dr Samukeliso Chikiwa and Professor Mellony Graven; Drs Lise Westaway and Pamela Vale presented long papers based on their research. Professor Graven, Dr Vale, doctoral student and teacher Tarryn Lovemore, Demi Edwards, Tammy Booysen, Dr Chikiwa, and doctoral student

PUBLICATIONS

BOOKS/CHAPTERS/MONOGRAPHS

Wellington Hokonya, all presented Short Papers. Representing the Department's Science Education programme, Professor Kenneth Ngcoza and students also presented at the 29th Annual Conference of SAARMSTE. In their 2021 Postgraduate Progress Reports, Professor Ngcoza's students adjudged their conference attendance to be both motivational and formative.

In conclusion - The scholars in the Education Department and wider Education Faculty (see also the report from CHERTL) have managed to maintain their scholarly presence in the national and international arena and their interactions with other researchers during 2021. They have in some cases intensified their engagements with local and regional teacher, farmer, and youth networks and with broader communities. They have produced scholarly products to document and share this work, as the Research Returns table shows. Publication numbers are somewhat down from 2020, reflecting at least in part the lag of the shock that was 2020.



Brundrit, S. and Schudel, I.

Brundrit, S. and Schudel, I. (2021) Teacher contexts as amplifiers and filters to environmental pedagogical content knowledge within a Professional development system. In: Schudel, I., Songqwaru, Z., Tshiningayamwe, S. and Lotz-Sisitka, H.B. (eds.). *Teaching and learning for change: Education and sustainability in South Africa*. Cape Town: African Minds. p.305-318. ISBN: 9781928502241.

Chitsiga, C. and Schudel, I.

Chitsiga, C. and Schudel, I. (2021) An Examination of the Nexus between Environmental Knowledge and Environmental Learning Processes. In: Schudel, I., Songqwaru, Z., Tshiningayamwe, S. and Lotz-Sisitka, H.B. (eds.). *Teaching and learning for change: Education and sustainability in South Africa*. Cape Town: African Minds. p.148-164. ISBN: 9781928502241.

Pereira, T., Francis, B. and Salmon, T.

Duma, M., Pereira, T., Sisitka, L., Ntshudu, M., Francis, B. and Salmon, T.: Reflections from *iQonga loThungelwano loLuntu*, an Eastern Cape based COVID-19 learning and solidarity network. In: Kulundu-Bolus, I., Chakona, G. and Lotz-Sisitka, H. (2021). Stories of collective learning and care during a pandemic: Reflective research by practitioners, researchers and community-based organisers on the collective shifts and praxis needed to regenerate transformative futures. Grahamstown: *Transforming Education for Sustainable Futures (TESF) and the Environmental Learning Research Centre (ELRC)*. <https://doi.org/10.5281/zenodo.5704833>.

Graven, M.

Jorgensen, R. and Graven, M. (2021) *Merging Numeracy with Literacy Practices for Equity in Multilingual Early Year Settings*. New York: Springer. ISBN: 9789811677663.

Lambrechts, T., O'Donoghue, R.B. and Schudel, I.

Lambrechts, T., O'Donoghue, R.B. and Schudel, I. (2021) Assisting Learners to Take Up Agency in Problem-Solving Activities. In: Schudel, I., Songqwaru, Z., Tshiningayamwe, S. and Lotz-Sisitka, H.B. (eds.). *Teaching and learning for change: Education and sustainability in South Africa*. Cape Town: African Minds. p.183-200. ISBN: 9781928502241.

Lotz-Sisitka, H.

Tshiningayamwe, S. and Lotz-Sisitka, H. (2021) Enhancing Capabilities of Life Sciences Teacher: Professional Development, Conversion Factors and Functionings in Teachers' Professional Learning Communities. In: Schudel, I., Songqwaru, Z., Tshiningayamwe, S. and Lotz-Sisitka, H.B. (eds.). *Teaching and learning for change: Education and sustainability in South Africa*. Cape Town: African Minds. p.275-290. ISBN: 9781928502241.

Shumba, O., Mandikonza, C. and Lotz-Sisitka, H. (2021) Advancing Assessment Thinking in Education for Sustainable Development with a Focus on Significant Learning Processes. In: Schudel, I., Songqwaru, Z., Tshiningayamwe, S. and Lotz-Sisitka, H.B. (eds.). *Teaching and learning for change: Education and sustainability in South Africa*. Cape Town: African Minds. p.201-222. ISBN: 9781928502241.

Lotz-Sisitka, H. and Thomas, K.E.

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Ngwabe, A.H., Schafer, M. and Dongwi, B.L. Exploring how Geogebra software can be used as a visual mediator between preservice teachers mathematical pedagogical content knowledge and their teaching practice. *The 14th International Congress on Mathematical Education (ICME)*. East China Normal University, Shanghai. China. July 2021.

Nkomo, S.A.

Nkomo, S.A. and Nkomo, D. Dictionaries as tools for literacy development in the Foundation Phase. *3rd UWC Annual Conference on Early Childhood Literacy Development*. Virtual Conference, N/A. South Africa. October 2021.

Pereira, T., Francis, B., James, A., Tshiningayamwe, S. and McGarry, D.

Pereira, T., Francis, B., James, A., Erwin, K., Bezera, J., Tshiningayamwe, S. and McGarry, D. (30 June, 2021) Ocean Storytelling: Alternative ways of knowing the sea and why these are important for ocean governance. *MARE (Centre for Maritime Research) People and the Sea*. Virtual Conference, June 2021. <https://marecentre.nl/2021-conference/>

Pereira, T.

Pereira, T. (14 September 2021). 'Solidarity with Ocean Defenders: Reflections on the potential and limits of politically engaged scholar activism in transdisciplinary research'. *International Transdisciplinary Conference*. <https://transdisciplinarity.ch/de/aktuell/itd21/>. Virtual conference, September 2021.

Vale, P.

Vale, P. Can length measurement estimation activities contribute to learners' improvement in number line estimation tasks? *International Congress of Mathematics Education - 14*. Shanghai, China, Shanghai. China. July 2021.



DEPARTMENT OF Environmental Science

Professor Gladman Thondhlana
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Department produced a sizeable number of publications. These consisted of thirty-four (34) papers in peer-reviewed subsidy earning journals, twenty-one (21) book chapters and two (2) peer-reviewed conference proceedings. Staff participated in various research conferences and workshops both locally and internationally and served on several national and international organizations.

POSTGRADUATES / GRADUATIONS

Two (2) MSc and three (3) PhD students graduated in 2021. As usual, Postgraduates were significant contributors to the outputs of the department. During 2021 five (5) former and current PhD students (Garekae, H. Menelisi F., Amoako, E.A., Likongwe, P., Angwenyi, D.), five (5) Masters (Manyani, A., Radebe, D.S.; Mutumbi U; Williams, S.P., King, A.T.) and three (3) Honours (Pamla, A., Arnoldi, M., Mabusela, A.) were lead or co-authors on journal publications and book chapters. We regard this as a vital part of the research process, which also strengthens the research experience and credentials of the Postgraduates after they leave the department.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Conferences

- **Martins, V., Shackleton, C.M. and de Vos, A.** 2021. Bushmeat hunting by rural communities in the Eastern Cape. (Paper). *South African Wildlife Management Association annual conference*. July, East London.

- **Shackleton, C.M.** 2021. Urban forestry for poverty alleviation: a pressing issue for African urban planning and sustainability. (Paper). *1st African Forum on Urban Forestry*. 5 - 9 July, virtual.
- **Du Toit, M., Cilliers, S.S., Shackleton, C.M. and Davoren, E.** 2021. What the Global North needs to know about urban ecology in the Global South. (Paper). *3rd World Conference of the Society for Urban Ecology*. 7-9 July, Poznań (Poland).
- **Thondhlana, G., Mubaya, C.P., McClure, A., Amaka-Otchere, A.B.K. and Ruwanza, S.** 2021. Facilitating Urban Sustainability through Transdisciplinary (TD) Research: Lessons from Ghana, South Africa, and Zimbabwe (Paper). *International Transdisciplinary Conference*. September 2021 (Virtual).
- **Thondhlana, G.** 2021. What have the academic establishments, both in the Global South and North, and got to learn from the Global South and non-academics about doing research for sustainability? *Sustainability Research & Innovation Congress (SRI)*. (Virtual) June 12-15, 2021.
- **Thondhlana, G., Amaka-Otchere, A.B.K. and Ruwanza, S.** 2021. The challenges of undertaking transdisciplinary research from a university perspective (paper). *International Symposium on Society and Resource Management*. June 2-7, 2021 (Virtual).

Highlights

- Dr De Vos was a co-editor, and co-authored several chapters, in the landmark textbook, the *"Routledge handbook of methods for Social-Ecological Systems"*. This long-awaited open-access handbook was Routledge's most downloaded open-access book for 2021. Other departmental staff and associates (Dr Cockburn, and Professors Charlie and Sheona Shackleton) also contributed chapters.

- The Sustainable Wildlife Economy Project (SWEP) (<https://www.wildeconomy.org/>) launched in early 2021. This SANBI-led transdisciplinary project seeks to understand how wildlife-based land uses contribute to sustainable land management, socio-economic development and biodiversity conservation, for the purpose of informing more fit-for-purpose policy for this sector. In 2021, the project trained 37 young research assistants to conduct 137 surveys on wildlife ranches, agricultural farms and protected areas in the Eastern Cape Province. Dr Alta De Vos is a research co-lead on this project.
- Dr Alta De Vos participated as a lead author on Chapter 6 of the International Panel on Biodiversity and Ecosystem Services (IPBES) Values Assessment.
- Postdoctoral Fellow Dr Beatriz Bellon and Dr Alta De Vos, together with collaborators from the University of Angers, France, conducted several workshops with academics and practitioners in May 2021 on the use of an Earth Engine application for calculating species occupancy probability. <https://coexistland.users.earthengine.app/view/coexistland>
- Professor Gladman Thondhlana was involved in the development of guidelines on human-wildlife conflict and co-existence with the IUCN SSC the Human-Wildlife Conflict & Coexistence Specialist Group.
- Professor Charlie Shackleton was a review editor for Chapter 3 of the *IPBES international assessment on Sustainable use of Wild Species*. The year was a landmark for Charlie Shackleton with the publication of two separate books, one on *Urban Ecology in the Global South* (Springer) and another on *Urban Nature: Enriching belonging, wellbeing and bioculture* (Routledge). He was on the organising committee of 1st World Forum on Forests in Africa organised by FAO. He was invited as a contributing author onto the *IUFRO international assessment on Forests & Human Health*.



Honours students during a field trip.

Photo: Department of Environmental Science

BOOKS/CHAPTERS/MONOGRAPHS

Cockburn, J.

McGarry, D.K., Weber, L., James, A.K., Lotz-Sisitka, H., Temper, L., Moser, S., Shelton, R., Kuany, K., Cockburn, J., Bengtsson, S., Turhan, E. and Khutsoane, T. (2021) The pluriversity for stuck humxns: A queer ecopedagogy & decolonial school. In: Russell, J. (ed.). *Queer Ecopedagogies: Explorations in Nature, Sexuality, and Education*. Cham: Springer. p.183-218. ISBN: 9783030653682.

Shackleton, S., **Carlos Bezerra, J., Cockburn, J.** and Reed, M. (2021) Interviews and surveys. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.107-118. ISBN: 9780367898403.

Davoren, E. and Shackleton, C.M.

Davoren, E. and Shackleton, C.M. (2021) Urban ecosystem disservices in the Global South. In: Shackleton, C.M., Cilliers, S.S., Davoren, E. and du Toit, M.J. (eds.). *Urban Ecology in the Global South*. Switzerland: Springer. p.265-292. ISBN: 9783030676506.

De Vos, A.

Biggs, R., **De Vos, A.**, Preiser, R., Clements, H., Maciejewski, K. and Schlüter, M., 2021. *The Routledge handbook of research methods for social-ecological systems*. (p. 526). Taylor & Francis.

Schluter, M., **Biggs, R.**, Clements, H., **De Vos, A.**, Maciejewski, K. and Preiser, R. (2021) Synthesis and emerging frontiers in social-ecological systems research methods. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.453-480. ISBN: 9780367898403.

Hitchert, T., **Biggs, R., De Vos, A.** and Peterson, G. (2021) Scenario development. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.163-175. ISBN: 9780367898403.

Hichert, T., **Biggs, R.** and **De Vos, A.** (2021) Futures analysis. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.148-162. ISBN: 9780367898403.

De Vos, A., Preiser, R. and Masterson, V. (2021) Participatory data collection. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.119-134. ISBN: 9780367898403.

Clements, H., **De Vos, A.**, Maciejewski, K., Preiser, R. and Schluter, M. (2021) How to use this handbook. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.64-81. ISBN: 9780367898403.

De Vos, A., Maciejewski, K., Bodin, O., Norstrom, A., Schluter, M. and Tengo, M. (2021) The practice and design of social-ecological systems research. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.1-494. ISBN: 9780367898403.

Clements, H., **De Vos, A.**, Folke, C., Manyani, A., Maciejewski, K., Martin-Lopez, B., Preiser, R., Selomane, O., Schuler, M. and Biggs, R. (2021) What are social-ecological systems and social-ecological systems research? In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.3-26. ISBN: 9780367898403.

Mograbi, P.J.

Clements, H., Esler, K., Henry, D., **Mograbi, P.J.**, Norstrom, A. and Reynolds, C. (2021) Ecological field data collection. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.95-106. ISBN: 9780367898403.

Shackleton, C.M.

Shackleton, C.M., Schreckenberger, K., Shackleton, S. and Luckert, M. (2021) Livelihood and vulnerability analysis. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.440-450. ISBN: 9780367898403.

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Shackleton, C.M., Cilliers, S., Du Toit, M. and **Davoren, E.** (2021) The need for an urban ecology of the Global South. In: Shackleton, C.M., Cilliers, S.S., Davoren, E. and du Toit, M.J. (eds.). *Urban Ecology in the Global South*. Switzerland: Springer. p.1-26. ISBN: 9783030676506.

Du Toit, M., **Shackleton, C.M.**, Cilliers, S. and **Davoren, E.** (2021) *Urban Ecology in the Global South*. Switzerland: Springer. ISBN: 9783030676506.

Shackleton, C.M., Manyani, A. and Radebe, D.S.

Cocks, M., Shackleton, C.M., Walsh, L.S., Haynes, D.R., Manyani, A. and Radebe, D.S. (2021) Decolonisation of nature in towns and cities of South Africa: Incorporation of biocultural values. In: Cocks, M.L. and Shackleton, C.M. (eds.). *Urban Nature: Enriching belonging, wellbeing and bioculture*. London: Routledge. p.60-70. ISBN: 9780367427570.

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Shackleton, S.E., Carlos Bezerra, J., Cockburn, J. and Reed, M.F. (2021) Interviews and Surveys. In: Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski, K. and Schluter, M. (eds.). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge. p.526. ISBN: 9780367898403.



Dr Cockburn, Dr De Vos, Professor Thondhlana, Dr Ruwanza and Professor Shackleton in the field with students.

Photo: Department of Environmental Science

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Amoako, E.A. and Gambiza, J.

Amoako, E.A. and Gambiza, J. (2021) Effects of fire on the population structure and abundance of *Anogeissus leiocarpa* and *Vitellaria paradoxa* in a West African savanna parkland. *Acta Oecologica*. 112 (1). p.1-11.

Arnoldi, M. and Shackleton, C.M.

Arnoldi, M. and Shackleton, C.M. (2021) The potential influence of commercial plant nurseries in shaping the urban forest in South Africa. *Urban Forestry and Urban Greening*. 64 (0). p.1-7.

Bellon De La Cruz, B.

Amiot, C., Santos, C., Arvor, D., **Bellon De La Cruz, B.**, Fritz, H., Harmange, C., Holland, J., Melo, I., Metzger, J.-P., Renaud, P.-C., Roque, F., Souza, F. and Pays, O. (2021) The scale of effect depends on operational definition of forest cover: Evidence from terrestrial mammals of the Brazilian savanna. *Landscape Ecology*. 0 (0). p.1-16.

Blanco, J., **Bellon De La Cruz, B.**, Barthelemy, L., Camus, B., Jafre, L., Masson, A.S., Masure, A., de Oliveira Roque, F., Souza, F.L. and Renaud, P.C. (2021) A novel ecosystem (dis)service cascade model to navigate sustainability problems and its application in a changing agricultural landscape in Brazil. *Sustainability Science*. 17 (2021). p.105-119.

Cockburn, J.

Sellberg, M., **Cockburn, J.**, Holden, P. and Lam, D. (2021) Towards a caring transdisciplinary research practice: Navigating science, society and self. *Ecosystems and People*. 17 (1). p.292-305.

Cockburn, J.

Chambers, J., Wyborn, C., Klenk, N., Ryan, M., Serban, A., Bennett, N., Brennan, R., Charli-Joseph, L., Fernandez-Gimenez, M., Galvin, K., Goldstein, B., Haller, T., Hill, R., Munera, C., Nel, J., Osterblom, H., Reid, R., Riechers, M., Spierenburg, M., Tengo, M., Bennett, E., Brandeis, A., Chatterton, P., **Cockburn, J.**, Cvitanovic, C., Dumrongrojwatthana, P., Paz Duran, A., Gerber, J., Green, J., Gruby, R., Guerrero, A., Horcea-Milcu, A., Montana, J., Steyaert, P., Zaehring, J., Bednarek, A., Curran, K., Fada, S., Hutton, J., Leimona, B., Pickering, T. and Rondeau, R. (2021) Co-productive agility and four collaborative pathways to sustainability transformations. *Global Environmental Change*. 72 (102422). p.1-17.

Chambers, J., Wyborn, C., Ryan, M., Reid, R., Riechers, M., Serban, A., Bennett, N., Cvitanovic, C., Fernandez-Gimenez, M., Galvin, K., Goldstein, B., Klenk, N., Tengo, M., Brennan, R., **Cockburn, J.**, Hill, R., Munera, C., Nel, J., Osterblom, H., Bednarek, A., Bennett, E., Brandeis, A., Charli-Joseph, L., Chatterton, P., Curran, K., Dumrongrojwatthana, P., Paz Duran, A., Fada, S., Gerber, J., Green, J., Guerrero, A., Haller, T., Horcea-Milcu, A., Leimona, B., Montana, J., Rondeau, R., Spierenburg, M., Steyaert, P., Zaehring, J., Gruby, R., Hutton, J. and Pickering, T. (2021) Six modes of co-production for sustainability. *Nature Sustainability*. 4 (2021). p.983-996.

Cockburn, J. (2021) Knowledge integration in transdisciplinary sustainability science: Tools from applied critical realism. *Sustainable Development*. (2021). p.1-17.

Cockburn, J., Thondhlana, G. and Cundill, G.

Schoon, M., Chapman, M., **Cockburn, J.**, **Thondhlana, G.**, **Cundill, G.** and *et al.* (2021) On the frontiers of collaboration and conflict: how context influences the success of collaboration. *Ecosystems and People*. 17 (1). p.383-399.

Cundill, G.

Vincent, K. and **Cundill, G.** (2021) The evolution of empirical adaptation research in the global South from 2010 to 2020. *Climate and Development*. 20 (2020). p.1-15.

Cundill, G., Singh, C., Adger, W.N., Safra de Campos, R., Vincent, K., Tebboth, M. and Maharjan, A. (2021) Toward a climate mobilities research agenda: Intersectionality, immobility, and policy responses. *Global Environmental Change*. 69 (2021). p.1-7.

Ward, C.D., **Cundill, G.**, Midgley, G.F. and Jarre, A. (2021) Drawing on diverse knowledge systems to enhance local climate understanding in the Southern Cape, South Africa. *Ecology and Society*. 26 (4). p.1-36.

De Vos, A.

Shumba, T., **De Vos, A.**, Esler, K., Clements, H. and Biggs, H. (2021) The influence of biophysical and socio-economic factors on the effectiveness of private land conservation areas in preventing natural



Dr Aletta De Vos with some participants of Sustainable Wildlife Economy Project training.

Photo: Department of Environmental Science

land cover loss across South Africa. *Global Ecology and Conservation*. 28 (2021). p.1-12.

De Vos, A. and Shackleton, C.M.

Clements, H.S., **De Vos, A.**, Bezerra, J.C., Coetzer, K., Maciejewski, K., Mograbi, P.J. and **Shackleton, C.**, 2021. The relevance of ecosystem services to land reform policies: Insights from South Africa. *Land Use Policy*. 100, p.104939.

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Sardeshpande, M., Hurley, P., Mollie, E., **Garekae, H.**, Dahlberg, A., Emery, M. and **Shackleton, C.M.** (2021) How people foraging in urban greenspace can mobilize social-ecological resilience during Covid-19 and beyond. *Frontiers in Sustainable Cities*. 3 (686254). p.1-8.

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Kiaka, R., Chikulo, S., Slootheer, S. and **Hebinck, P.** (2021) 'The street is ours'. A comparative analysis of street trading, Covid-19 and new street geographies in Harare, Zimbabwe and Kisumu, Kenya. *Food Security*. 13 (5). p.1263-1281.

Almekinders, C.J.M., **Hebinck, P.**, Marinus, W., Kiaka, R.D. and Waswa, W.W. (2021) Why farmers use so many different maize varieties in West Kenya. *Outlook on Agriculture*. 50 (4). p.406-417.

Hebinck, P. (2021) Land and grazing disputes and overlapping authorities in Namibia. *Journal of Legal Pluralism and Unofficial Law*. 53 (3). p.356-366.

van der Wulp, C. and **Hebinck, P.** (2021) Fighting fences and land grabbers in the struggle for the Commons in N ? a Jaqna, Namibia. *African Affairs*. 120 (480). p.417-443.

King, A.T. and Shackleton, C.M.

King, A.T. and Shackleton, C.M. (2021) Working in poverty: Informal employment of household gardeners in Eastern Cape towns, South Africa. *Development Southern Africa*. p.1-15.

Likongwe, P. and Garekae, H.

Likongwe, P., Chimaimba, F., Chiotha, S., Madevu, T., Kamuyango, L. and Garekae, H. (2021) Urban community power: enhancing urban forest diversity and reversing ecosystem disservices in Zomba city, Malawi. *Land*. 10 (1258). p.1-19.

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Mabusela, A., Shackleton, C.M. and Gwedla, N. (2021) The distribution of selected woody invasive alien species in small towns in the Eastern Cape, South Africa. *South African Journal of Botany*. 141 (2021). p.290-295.

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Manyani, A., Shackleton, C.M. and Cocks, M. (2021) Attitudes and preferences towards elements of formal and informal public green spaces in two South African towns. *Landscape and Urban Planning*. 214 (0). p.1-11.

Mutumbi, U., Thondhlana, G. and Ruwanza, S.

Mutumbi, U., Thondhlana, G. and Ruwanza, S. (2021) Reported behavioral patterns of electricity use among low-income households in Makhanda, South Africa. *Sustainability*. 13 (7271). p.1-17.

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Shackleton, C.M. and De Vos, A. (2021) How many people globally actually use non-timber forest products? *Forest Policy and Economics*. 135 (2022). p.1-9.

Shackleton, C.M. and Gwedla, N.

Shackleton, C.M. and Gwedla, N. (2021) The legacy effects of colonial and apartheid imprints on urban greening in South Africa: Spaces, species, and suitability. *Frontiers in Ecology and Evolution*. 8 (0). p.1-12.

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Sinasson Sanni, K.G., Shackleton, C.M., Teko, O. and Sinsin, B. (2021) Ecological patterns and effectiveness of protected areas of *Mimusops* species' habitats under climate change. *Global Ecology and Conservation*. 27 (0). p.1-14.

Sinasson Sanni, K.G., Shackleton, C.M. and Sinsin, B. (2021)

Nationwide Assessment of Population Structure, Stability and Plant Morphology of Two *Mimusops* Species along a Social-Ecological Gradient in Benin, West Africa. *Forests*. 12 (2021). p.1-16.

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Shephard, K., Thondhlana, G., Wolff, L., Belluigi, D.Z., Rieckmann, M. and Vega-Marcote, P. (2021) On the Nature of Quality in the Contexts of Academic Publication and Sustainability. *Frontiers in Education*. 6 (2021). p.1-10.

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Thondhlana, G., Mubaya, C.P., McClure, A., Amaka-Otchere, A.B. and Ruwanza, S. (2021) Facilitating urban sustainability through Transdisciplinary (TD) research: Lessons from Ghana, South African and Zimbabwe. *Sustainability*. 13 (0). p.1-18.

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Pullanikkatil, D., Thondhlana, G. and Shackleton, C.M. (2021) The cultural significance of plant-fiber crafts in Southern Africa: A comparative study of Eswatini, Malawi and Zimbabwe. *Forests Trees and Livelihoods*. (2021). p.1-18.



Honours students during a field trip.

Photo: Department of Environmental Science

Williams, S.P. and Thondhlana, G.

Williams, S.P., Thondhlana, G. and Wei Kua, H. (2021) Behavioural interventions yield electricity savings among high-income households in Johannesburg, South Africa. *Energy & Environment*. (2021). p.1-16.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Shackleton, C.M.

Shackleton, C.M. Urban forestry for poverty alleviation: A pressing issue for African urban planning and sustainability. *1st African Forum on Urban Forestry*. Online. July 2021.

Shackleton, C.M. and Davoren, E.

Shackleton, C.M. and Davoren, E. What the Global North needs to know about urban ecology in the Global South. *3rd World Conference of the Society for Urban Ecology*. Poznan. Poland. July 2021.



DEPARTMENT OF Fine Art

Associate Professor
Maureen de Jager
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Department of Fine Art had a productive research year. Outputs generated by our staff, Postgraduates, and SARCHI Research Associates and Fellows comprised eighteen publications (several of them subsidy-earning); participation in twenty-three solo or group exhibitions and exhibition talks; and ten conference presentations. In addition, members of the Department hosted - and were hosted as - high-Professorile visitors in various contexts.

In 2021 the National Research Foundation SARCHI Chair in Geopolitics and the Arts of Africa, headed by Professor Ruth Simbao, was renewed and upgraded to a Tier 1 Chair. Eight international Research Associates from Nigeria, Uganda, Brazil, Jamaica, China and Australia, and four Postdoctoral Fellows from South Africa and Nigeria contributed towards our research activities.

2021 also saw the first intake of Fine Art PhD candidates, after the newly developed practice-based PhD in Fine Art was approved at all University levels.

POSTGRADUATES / GRADUATIONS

Our Postgraduates contributed to the research culture of the Department in various ways. Master of Fine Art candidates Brunn Kramer and Raphaela Linders presented their MFA Exhibitions for examination in Makhanda in March 2021. A number of our Postgraduate students were also involved in running the Arts Lounge Africa series of art talks, which is created annually by the Arts of Africa and Global Souths research programme in collaboration with the National Arts Festival.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

The Arts of Africa and Global Souths research programme and the DSI/NRF SARCHI Chair in Geopolitics and the Arts of Africa hosted three Writers in residence from South Africa and Nigeria, as well as three RAW artists in residence from South Africa and Namibia. These distinguished visitors contributed in important ways to our research community and resulted in two solo exhibitions at the RAW Spot Gallery: one music performance in collaboration with the National Arts Festival, and a number of published articles.

SIGNIFICANT RESEARCH ALIGNED EVENTS

In July 2021, Associate Professor Maureen de Jager presented a solo exhibition and three performances as part of the National Arts Festival main programme. The exhibition, titled '*History [TBC]: Refocusing the South African War*', comprised works produced for De Jager's PhD in Fine Art (initially exhibited in The National Archives of the UK) and a series of new works produced specifically for the National Arts Festival exhibition.

The Mellon funded Arts of Africa and Global Souths research programme and the DSI/NRF SARCHI Chair in Geopolitics and the Arts of Africa host annual Publishing Workshops, which resulted in a special journal issue published in 2021. Simbao and Kissiedu edited the Summer 2021 issue of *African Arts* (MIT Press), which focussed on the *blaxTARLINES* art collaborative based in Kumasi, Ghana. In November 2021, Simbao, Folaranmi and Baasch ran a Book Publishing Workshop, which was attended by twenty current and former Postgraduate students, Postdoctoral Fellows, RAW Fellows, and visitors.

BOOKS/CHAPTERS/MONOGRAPHS

Folaranmi, S.A.

Folaranmi, S.A. (2021) Lasekan: The Western Region Years. In jegede, dele. and Adesanya, A. (eds.) *Akinola Lasekan: Cartooning, Art and Nationalism at the Dawn of a New Nigeria*. Ibadan, Nigeria: Bookcraft. p.171-181.

Folaranmi, S.A. and Oyeniyi, O. (2021) Reinventing Oral Tradition through Arts and Technology. In: Akinyemi, A. (ed.). *The Palgrave Handbook of African Oral Traditions and Folklore*. Switzerland: Palgrave Macmillan. p.865-887. ISBN: 9783030555160.

Koide, E.

Koide, E. (2021) Cartografia, abstração e histórias: Hadassa Ngamba (R. D. Congo) e Mark Bradford (E.U.A). In: Beck, A.L. and Duarte-Feitoza, P.H. (eds.). *crítica da arte diante das crises atuais*. São Paulo, Brazil: ABCA. p.115-122. ISBN: 9786587783031.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

De Jager, M.S.

De Jager, M.S. Solo Performance. In Parenthesis. *National Arts Festival Main Programme*. 1820 Settlers Monument, Olive Schreiner Theatre, Makhanda. South Africa. 10 July 2021.

De Jager, M.S. Solo Performance. Proof. *National Arts Festival Main Programme*. 1820 Settlers Monument, Olive Schreiner Theatre, Makhanda. South Africa. 9 July 2021.

De Jager, M.S. Solo Performance. Proposal for The Book of Holes. *National Arts Festival Main Programme*. 1820 Settlers Monument, Olive Schreiner Theatre, Makhanda. South Africa. 8 July 2021.

De Jager, M.S. Solo Exhibition. History [TBC]: Refocusing the South African War. *National Arts Festival Main Programme*. 1820 Settlers Monument, Council Chamber, Makhanda. South Africa. 8 - 28 July 2021.

Dixie, C.

Dixie, C. Group Exhibition. The Interior (with Fish). *Celebrating Eastern Cape Art*. Nelson Mandela Metropolitan Art Museum, Gqeberha. South Africa. 27 June - 14 July 2021.

Folaranmi, S.A.

Folaranmi, S.A. Group Exhibition. 60x60x60. *The 60th anniversary of the Obafemi Awolowo University, Ile-Ife*. Oduduwa Hall, Obafemi Awolowo University, Ile-Ife. Nigeria. 20 October - 18 December 2021.

Kalichini, G.M.

Kalichini, G.M. Group Exhibition. For the Phoenix to find its form in us: On Restitution, Rehabilitation and Reparation. *Savvy Contemporary*. Berlin. Germany. 24 June - 22 August 2021.

Kalichini, G.M. Group Exhibition. Of materials and Things. *La Condition Publique*. Roubaix. France. 21 April - 25 July 2021.

Kramer, B.D.

Kramer, B.D. Solo Exhibition. Tronkvoel. *MFA Exhibition*. RAW Spot Gallery, Makhanda. South Africa. 12 March 2021.

Linders, R.C.T.

Linders, R.C.T. Solo Exhibition. camera_cuts_shot_ends. *MFA Exhibition*. 1820 Settlers Monument, Makhanda. South Africa. 19 March 2021.

Muchemwa, F.V.

Muchemwa, F.V. Exhibition Talk. In conversation with Purnaa Deb. *Arts Lounge Africa at the, National Arts Festival*. Arts of Africa and Global Souths and the National Research Foundation SARChI Chair programme in Geopolitics and the Arts of Africa, Makhanda. South Africa. 15 July 2021.

Muchemwa, F.V. Exhibition Talk. In Conversation with Senzo Shabangu. *Arts Lounge Africa at the National Arts Festival*. Arts of Africa and Global Souths and the National Research Foundation SARChI Chair programme in Geopolitics and the Arts of Africa, Makhanda. South Africa. 22 July 2021.



Publishing Workshop for the SARChI Chair programme in Geopolitics and the Arts of Africa, Rhodes University, November 2021.

Back row-L to R: Rory Thomas, Shana Ellappa, Tasmin Randall, Claire Nalukenge, Barnabas Muvhuti, Viwe Madinda, Binjun Hu, Gladys Kalichini, Brunn Kramer, and Usen Obot.

Middle row-L to R: Juanito Featherstone, Natasha Bezuidenhout, Perpetua Chinomona, Wallen Mapondera, Wynona Mutisi, Professor Stephen Folaranmi, Dr Danielle Becker, Dr Quadri Olawale, N'lamwai Chithambo, and Dr Olusegun Titus.

Front row- L to R: Fadzai Muchemwa, Dr Rachel Baasch, Professor Ruth Simbao, and Lifang Zhang

Photo: Department of Fine Art

Muvhuti, T.B.

Muvhuti, T.B. Exhibition Talk. In conversation with Curator Zodwa Skeyi-Tutani and Inertia artists. *Arts Lounge Africa at the National Arts Festival*. Arts of Africa and Global Souths and the National Research Foundation SARChI Chair programme in Geopolitics and the Arts of Africa, Makhanda. South Africa. 17 July 2021.

Obot, U.

Obot, U. Solo Exhibition. Mkpese. *RAW Spot Gallery*. Artist in Residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa. October and November 2021.

Randall, T.T.

Randall, T.T. Solo Exhibition. Mundane Marcadia. *Organic Live*. Amazwi Museum, Makhanda. South Africa. 23 October 2021.

Randall, T.T. and Ncongwane, N.N.

Randall, T.T. and Ncongwane, N.N. Group Exhibition. *Fuck Memory*. Rhodes Drama Department, Makhanda. South Africa. 28 - 1 October 2021.

Shabangu, N.S.

Shabangu, N.S. Solo Exhibition. Their Humble Abode. *RAW Spot Gallery*. Makhanda. South Africa. 31 May 2021.

Simbao, R.

Simbao, R., Madiba, E.M. and McConnachie, B. Exhibition Talk. In conversation with Nashilongweshipwe Mushaandja (RAW Fellow). *Arts Lounge Talks, National Arts Festival*. Arts of Africa & Global Souths, Rhodes University, Makhanda. South Africa. 15 July 2021.

Simbao, R., Folaranmi, S. and Baasch, R. *Writing and Publishing Workshop for the Audacious Arts Practices book*. Arts of Africa and Global Souths and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa.

Thomas, R.L.S.

Thomas, R.L.S. Exhibition Talk. In Conversation with Gavin Krastin and his collaborators on their video installation Swell. *Arts Lounge Talk, National Arts Festival*. Art of Africa and Global Souths and the National Research Foundation SARChI Chair programme in Geopolitics and the Arts of Africa, Makhanda. South Africa. 10 July 2021.

Thorburn, D.

Thorburn, D. Group Exhibition. 1st International Digital Print Art Exhibition. *No Pressure*. Art Museum of Changsha Normal University, Changsha. China. 15 October - 15 November 2021.

Thorburn, D. Group Exhibition. Sustained Ingrain: Contemporary woodcuts from East to West. *Impact 11 Printmaking Conference*. Hong Kong Open Printshop, Kowloon. Hong Kong. 21 - 25 April 2021.

Zhang, Z.L.F.

Zhang, Z.L.F. Exhibition Talk. In conversation with Mook Lion, Ralarno Coutts, Lisolomzi Pikoli and Sanelisiwe Singaphi. *Arts Lounge Talks, National Arts Festival*. Arts of Africa and Global Souths and the National Research Foundation SARChI Chair programme in Geopolitics and the Arts of Africa, Makhanda. South Africa. 29 July 2021.

DISTINGUISHED VISITORS

Dixie, C.

Dixie, C. Stellenbosch University, Stellenbosch, South Africa. *Two Sides of a Story - Making an Artists Book*. May 2021.

Landers, S.L.

Landers, S.L. Centre for Culture, Media and Society based at the University of KwaZulu Natal, Durban, South Africa. Writer in Residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa. September 2021.

Mushaandja, N.

Mushaandja, N. Centre for Theatre, Dance and Performance Studies and the Archives and Public Culture Initiative, Cape Town, South Africa. Artist in Residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa in collaboration with the National Arts Festival. June 2021.

Obot, U.

Obot, U. Galerie Noko. Artist in Residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa. October and November 2021.



A drawing by MFA candidate Brunn Kramer, which formed part of his examination exhibition Tronkvoel.

Photo: Department of Fine Art

Olusegun, O.S.

Olusegun, O.S. Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. Writer in residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa. October 2021.

Shabangu, N.S.

Shabangu, N.S. Artist in Residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa. RAW Spot Gallery, Makhanda. South Africa. 31 May 2021.

Umoru-Oke, N.

Umoru-Oke, N. Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. Writer in Residence with the Arts of Africa and Global Souths Residencies for Artists and Writers (RAW) programme and the National Research Foundation SARChI programme in Geopolitics and the Arts of Africa. May 2021.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Folaranmi, S.A. and Umoru-Oke, N.

Folaranmi, S.A. and Umoru-Oke, N. (2021) Adaptation of Yoruba Images in the Paintings of Ademólá Ogunájó? The Nigerian Field. *The Nigerian Field*. 86 (-). p.1-15.

Kakande, A.

Kakande, A. (2021) On the Fashion parade 2017: Pushing back against the shrinking deliberative space in Uganda. *FIELD: A Journal of Socially Engaged Art Criticism*. 17 (-). p.1.

Khoza, M.

Khoza, M. (2021) Seeing Blackness through Black Expressive Culture: A Reading of Zanele Muholi's Somnyama Ngonyama: Hail the Dark Lioness. *Athens Journal of Humanities & Arts*. 8 (3). p.261-286.

Koide, E.

Koide, E., Filho, H.R., Leme, S., Chagas, T. and Luz, N. (2021) elato de experiências no desenvolvimento de materiais didáticos e atividades educativas no campo da arte africana di grupo de estudos e extensão Áfricas nas Artes (CAHL- UFRB). *Capoeira - Humanidades e Letras*. 7 (2). p.156-180.

Mulenga, A.M.

Mulenga, A.M. (2021) Ascribing an advocatorial role to the work of Zambian artist Agnes Buya Yombwe. *FIELD: A Journal of Socially Engaged Art Criticism*. (17). p.1.



Installation view of camera-cuts-shot-ends, in the examination exhibition of MFA candidate, Raphaela Linders.

Photo: Department of Fine Art

Olusegun, O.S.

Olusegun, O.S. (2021) Music and Poetry Representations of Oil Exploration, Honey Bee (Dis)Placement and Endangerment in the Niger Delta of Nigeria. *Bee World*. 99 (2). p.61-65.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Cheng, Y.

Zheng, W., **Cheng, Y.** and Coetzee, C. (2021) Thinking China from Africa: Encounter with the Other Other. *Journal of African Cultural Studies*. 33 (2). p.119-129.

Cheng, Y. (2021) What Can We Learn from Africa? Teaching African Cultures in China. *Journal of African Cultural Studies*. 33 (2). p.140-151.

Dixie, C.

Dixie, C. (2021) Below the Sediments: Dissecting Water Alienation in the Semi-Desert Region of the Karoo, South Africa. *Leonardo*. 54 (5). p.1-6.

Ijisakin, E.

Ijisakin, E. (2021) Kim Shelley Berman. Finding Voice: A Visual Arts Approach to Engaging Social Change. *African Studies Review*. 64 (1). p.61-63.

Ijisakin, E. (2021) Printmaking and Cultural Imagination in Contemporary Nigerian Art. *Critical Arts*. 35 (1). p.1-16.

Olusegun, O.S.

Olusegun, O.S. (2021) Irègún Music and Sounding Spaces among Yagba-Yoruba People of Nigeria. *Space and Culture*. 2021 (2021). p.1-16.

Simbao, R.

Simbao, R. and Kissiedu, K.B. (2021) Editors of the Special Issue: *blaxTARLINES*. *African Arts*. 54 (2). p.1-5; 12-77.

Kissiedu, K.B. and **Simbao, R.** (2021) A Quiet Revolution in Arts Education: The Rise of *blaxTARLINES* Kumasi. *African Arts*. 54 (2). p.1-5.

Stanley-Niaah, S.N.

Stanley-Niaah, S.N. (2021) 'Sounding' the System: Noise, In/Security and the Politics of Citizenship. *Journal of World Popular Music*. 8 (1). p.51-73.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Folaranmi, S.A.

Folaranmi, S.A. That the House May Stand Again: Carved Posts in Oyo Palace. *19th Triennial Virtual Conference of the Arts Council of the African Studies Association (ACASA)*. Online. June 2021.

Folaranmi, S.A. African Art and Evidence. *A virtual Clark Colloquium (Clark Institute, Williamstown USA) and 12 other Colleagues from USA, France and South Africa*. Online. October 2021.

Folaranmi, S.A. COVID-19 Pandemic In Nigeria: Masking Beyond Safety. *College Art Association 109th Virtual Conference*. Online. February 2021.

Kalichini, G.M.

Kalichini, G.M. Conflicting Archives: Reimagining and Visualising Socio-Political Narratives of Women Freedom Fighters in Zambia and Zimbabwe. *Reclaim: Narratives of African Women Artists (AWARE) Symposium*. Online. April 2021.

Simbao, R.

Simbao, R. Invited speaker. Iron Will: Recasting Zambian-Tanzanian-Chinese Comradeship (Zhanyou). *Socialist Exhibition Cultures: International Art Exhibitions in the Socialist World, 1950 - 1990*. Online, University of California, Santa Barbara. USA. January 2021.

Simbao, R. Invited speaker. Malema Mirrors Mao, Fanon Faces Dao: Afro-Asian Solidarities and Revolutionary Portraiture. *Museum of Modern Art (MoMA) symposium Transversal Orientations*. Online, May 2021.



Professor Maureen de Jager's solo performance-recital, *IN PARENTHESIS*. The event was staged in the Olive Schreiner Theatre (1820 Settlers Monument) on 10 July and live streamed to National Arts Festival audiences both locally and abroad.

Photo: Department of Fine Art

Simbao, R. Organizer of the Africa Multiple Cluster of Excellence panel, Creative Resistances: Africa-China and the Art of Pushing Back with the panellists Bright Ackwerh, Ruth Simbao, Victor Ndula, Myriam Dao, Jana Hönke and Ming-Cheau Lin. *Africa Multiple Cluster of Excellence panel*. Online, Bayreuth, Germany. July 2021.

Simbao, R. Invited speaker. Discussion of A letter to my cousin in China, for the film screening of Henion Han's 1999 film at the symposium Multifaceted Relations: Africa-Asia. *Multifaceted Relations: Africa-Asia*. Online, Bayreuth, Germany. July 2021.

Simbao, R. Creative Resistances and the Art of Pushing Back. Creative Resistances: Africa-China and the Art of Pushing Back. *Africa Multiple Cluster of Excellence*. Online, Bayreuth, Germany. July 2021.

Umoru-Oke, N.

Umoru-Oke, N. Traversing Spaces: Yoruba Potters and Pottery in Modern Nigerian Art. *19th Triennial Conference of the Arts Council of the African Studies Association (ACASA)*. Online. June 2021.



DEPARTMENT OF Geography

Professor Ian Meiklejohn
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Research in the Department reflects the diversity of the discipline of Geography. Despite the restrictions imposed by COVID, the development of field skills and collection of field data, which are integral to the discipline of Geography, continued. Honours and Masters Postgraduate students were able to undertake fieldwork.

Current activities include the wild and augmented honeybush industry; land and agrarian reform; human mobility; the role of tertiary institutions in Grahamstown; the social dynamics of small towns; spatial dynamics related to heritage conservation; the impacts of dams on societies and river systems; soil erosion and sediment transfer; wetlands and their importance to society and the natural environment; applications of Geographical Information Systems (GIS) and Remote Sensing; Antarctic Geomorphology and Biogeomorphology; and climate change. The Tsitsa project, which is a multi-institutional and departmental effort, produces significant numbers of Postgraduates. Not only is our research academically diverse but spatially extensive, with projects extending from the Nordic Arctic to Antarctica. The Department is extremely proud of our training of Postgraduate students and exposing them to the international research community. All those involved in such interactions have shown that Rhodes University, and the Department of Geography, are conducting research that is internationally relevant and of an international standard.

POSTGRADUATES / GRADUATIONS

The effects of the COVID pandemic were evident in the low numbers of Postgraduate students completing their studies. 2021 also represented the end of a cycle of Postgraduates.

Fortunately, many students who were negatively impacted have recommenced their fieldwork and are well on track to completing their research.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

In 2021, like the previous year, COVID regulations prevented adequate engagement with international visitors. Staff also found it very difficult to travel abroad. We do continue to engage with members of the international community. Professor Thembela Kepe, who is Chair of Geography at Toronto University in Canada, and a regular visitor to our Department, spent several weeks at Rhodes University in the middle of the year.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Emeritus Professor Kate Rowntree and Dr Bennie van der Waal continue with their research into sediment dynamics in the Tsitsa catchment with two (2) PhD students. Research into the honeybush industry has expanded and was identified as a need linked to the research by Gillian McGregor. Several Postgraduate research projects relate to the sustainability of the honeybush industry, with a focus on understanding aspects of the sustainability of harvesting of wild *Cyclopia intermedia*. This long-term engaged research project seeks to provide answers to questions surrounding the long-term sustainability of the industry from an economic, social and biological perspective. A broad spectrum of stakeholders from landowners to harvesters, processors and government officials, regularly contribute to the research. A novel approach of augmenting plant population in the wild was trialled in 2020 and 2021 by Mr Pau-Luc Michau (MSc) in collaboration with the NGO, Living Lands. In an exercise in testing the relative accuracy of Differential GPS and handheld GPS's, Honours students surveyed and mapped these newly planted populations to enable long-term monitoring. At the same site, Honours students carried out

year-long surveys of wild populations of harvested and unharvested plants to better understand plant phenology and the impact of harvesting on the cycle of budding, flowering, seed set and germination. These contributions are driven by requests from the Honeybush Community of Practice (HCOP).

Remote Sensing is still being used in collaborative research with the CIB to map the distribution of invasive water hyacinth.

Sinenhlanhla Memela and Philippa Irvine are investigating land tenure practices and the sense of place in the Makhanda area, together with the utilisation of and perceptions of historical buildings, using spatial technologies to augment their findings.

Professor Fred Ellery and three Postgraduate students are working on the rehabilitation of the wetlands in the Krom valley. Professor Ian Meiklejohn is investigating thirty-year rainfall records for the Eastern Cape and the associated changes in vegetation health using remote sensing techniques.

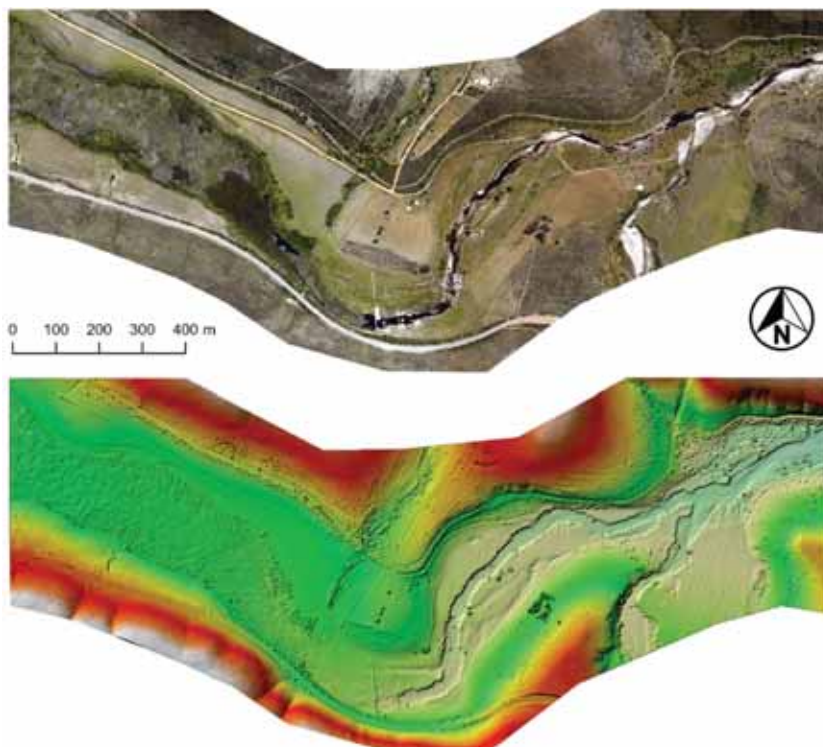
The Department hosted the Biennial Conferences of the South African Geographical Society and the Southern African Association of Geomorphologists, jointly with the University of Pretoria, in September 2021.



Honours student, Tafadzwa Makhuza, records GPS data on the location of newly planted *C. intermedia* plants seedlings from a DGPS operated by classmates in the background. The donkey looks on...
Photo: Department of Geography



Wild honeybush augmentation trails - Masters student, Paul-Luc Michau planting out 3-month-old seedlings in newly burnt veld where honeybush naturally occurs.
Photo: Department of Geography



Professor Ellery's research group utilised LiDAR (Light Intensity and Ranging) to develop digital surface models as part of research aimed at restoring palmiet wetlands in the Krom River Valley in the Eastern Cape.
Photo: Department of Geography

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Foster, I.D.L.

McKenzie, M., England, J., **Foster, I.D.L.** and Wilkes, M.A. (2021) Abiotic predictors of fine sediment accumulation in lowland rivers. *International Journal of Sediment Research*. 37 (2022). p.1-10.

McKenzie, M., England, J., **Foster, I.D.L.** and Wilkes, M. (2021) Evaluating the performance of taxonomic and trait-based biomonitoring approaches for fine sediment in the UK. *Ecological Indicators*. 134 (2022). p.1-11.

Foster, I.D.L., Boardman, J., Evans, J., Copeland-Phillips, R., Vadher, A.N., Wright, S., Collins, A. and Manning, C. (2021) Anthropogenic sediment traps and network dislocation in a lowland UK river. *Earth Surface Processes and Landforms*. 47 (1). p.143-158.

Favis-Mortlock, D., Boardman, J., **Foster, I.D.L.** and Shephard, M. (2021) Comparison of observed and DEM-driven field-to-river routing of flow from eroding fields in an arable lowland catchment. *Catena*. 2022 (105737). p.1-23.

Huchzermeyer, N.H. and Rowntree, K.M.

Huchzermeyer, N.H. and **Rowntree, K.M.** (2021) Developing a taxa-related physical habitat score based on the response of macroinvertebrate community structure to fine bed sediment composition in the Tsitsa River, Eastern Cape, South Africa. *River Research And Applications*. 37 (10). p.1437-1450.

Irvine, P.M.

Irvine, P.M. (2021) From Grahamstown to Makhanda: Urban Frontiers and Challenges in a Post-apartheid City. *GeoJournal Library*. 2021 (2021). p.163-177.

Irvine, P.M., **Memela, S.**, **Dlongolo, Z.N.** and **Kepe, T.** **Irvine, P.M.**, **Memela, S.**, **Dlongolo, Z.N.** and **Kepe, T.** (2021) Navigating Community and Place Through Colloquial Street Names in Fingo Village, Makhanda (Grahamstown). *Urban Forum*. 32 (3). p.333-348.

Kepe, T.

Kepe, T. and Suah, N. (2021) Land and Fragility of Peace in Postwar Liberia: Concessions and Conflicts in the Midst of Poverty. *Journal of Peacebuilding & Development*. 16 (3). p.377-381.

Rudd, L.F., Allred, S., **Kepe, T.** and *et al*, (2021) Overcoming racism in the twin spheres of conservation science and practice. *Proceedings of The Royal Society: B-Biological Sciences*. 288 (1962). p.1-11.

Mcgregor, G.

Lorenzo, M., Kirk-Spriggs, A.H. and **Mcgregor, G.** (2021) The surf flies of the Mascarene Islands (Diptera: Canacidae: Canacinae), with the description of a new species. *Zootaxa*. 4990 (3). p.1-11.

Rowntree, K.

Lodenkemper, L., **Rowntree, K.**, **Hughes, D.A.** and **Slaughter, A.R.** (2021) Integrating Sediment (dis)Connectivity into a Sediment Yield Model for Semi-Arid Catchments. *Land*. 10 (1204). p.1-20.

Rowntree, K. and Van Der Waal, B.W.

Itzkin, A., Scholes, M.C., **Clifford-Holmes, J.K.**, **Rowntree, K.**, **Van Der Waal, B.W.** and Coetzer, K. (2021) A Social-Ecological Systems Understanding of Drivers of Degradation in the Tsitsa River Catchment to Inform Sustainable Land Management. *Sustainability*. 13 (516). p.1-28.

Rowntree, K.M.

Anderson, R., **Rowntree, K.M.** and Le Roux, J.J. (2021) An interrogation of research on the influence of rainfall on gully erosion. *Catena*. 206 (2021). p.1-9.



Honours students Tafadzwa Makhuzwa and Blaize Hofmeyer monitoring budding on *C. intermedia* plants.

Photo: Department of Geography



Biodiversity surveys of Kouga sandstone fynbos where *C. intermedia* is commonly found.

Photo: Department of Geography



Pippa Schlegel (PhD candidate) collecting river flow data along the Minnehaha floodplain wetland, Eastern Cape.

Photo: Department of Geography



DEPARTMENT OF Geology

Professor Tony Booth
Acting: Head of Department

Photo: Dirk Pieters

INTRODUCTION

The year was an interesting one with a partial return to campus by staff and students with teaching and learning taking a hybrid approach and with laboratory-based research slowly resuming. The department is still research active and has maintained a respectable research output under difficult conditions.

The Department produced fourteen (14) journal publications and a book together with ten (10) articles in the popular literature thereby maintaining its steady research profile and included several papers by Professor Büttner on biogeological themes. Dr Eugene Grosch continued his research in the Archaean Barberton Greenstone Belt and published two papers on the petrology and volcanic origin of 3.48 billion-year-old komatiites. Professor Prevec continued with his Bushveld complex research. Mr Mavuso continued with his PhD research that focusses on identifying and explaining past environments that are associated with early human life in Lake Turkana, Kenya. The department's Research Associates had a productive year. Dr Gess published several paleontological papers on early Devonian vertebrates including one in the prestigious journal *Nature*, while Dr Scoon published several papers and a book within his unique geological tourism research area. Two papers were presented at local conferences.

POSTGRADUATES / GRADUATIONS

At the virtual 2021 graduation ceremonies, the Department graduated eight (7) Honours and nineteen (21) BSc students. MSc degrees were awarded to Siyasanga Dyan (supervised by Professor Prevec), Graeme Schmeltdt (supervised by Professors Büttner and Prevec), Uzayr Mahomed (supervised

by Professor Harmer) and Aiden van Huyssteen with distinction (supervised by Professor Büttner and co-supervised by Professor Howarth, UCT).



Dr Eugene Grosch on field work in the c. 3.5 billion-year-old Barberton greenstone belt. Photo: N. McLoughlin



Field photograph of a 3.48 billion-year-old olivine spinifex komatiite rock preserved in the Barberton greenstone belt, South Africa. Geological hammer (30 cm) for scale. Photo: E. Grosch

BOOKS/CHAPTERS/MONOGRAPHS

Scoon, R.

Scoon, R. (2021) *The Geotraveller*. Switzerland: Springer Nature Switzerland. ISBN: 9783030546922.

OTHER PUBLICATIONS

Büttner, S.H.

Büttner, S.H. (2021) Rock Maker 4: The Excel tool for mineral and whole rock chemistry calculations and estimations of ferric and ferrous iron proportions. *MINSAs Newsletter*. 8(2), 2021, 21-24.

Büttner, S.H., Isemonger, EW, Isaaks, M, van Niekerk, D, Sipler, RE, Dorrington, RA (2021) *Cover page, Geobiology issue 19*. (1).

Gess, R.

Gess, R. (2021) Palaeontology: the fossils of the Grahamstown Region. In Lubke, R., de Moor, I. (eds) *Guide to the natural and cultural history of Grahamstown / Makhanda. WESSA, Makhanda Branch*. Pp. 49 – 60.

Prevec, S.A.

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Prevec, S.A. (2021) *Minsa Geode* (vol. 8, #3). In: Prevec, S.A. (ed.). *Editorial Column*. Johannesburg, R.S.A.: Mineralogical Society of South Africa.

Prevec, S.A. (2021) *Minsa Geode* (vol. 8, #4). In: Prevec, S.A. (ed.). *Editorial Column*. Johannesburg, R.S.A.: Mineralogical Society of South Africa.

Scoon, R.

Scoon, R. (2021) *The Geobulletin*. In: Owen-Smith, T. (ed.). *Rwenzori Mountains and Semliki National Parks, Uganda: Mountains of the Moon, Shrinking Icefields and Tropical Forests*. Johannesburg, South Africa: Geological Society of South Africa.

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PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Büttner, S.H., Prevec, S.A. and Schmeltdt, G.A.

Büttner, S.H., Prevec, S.A. and Schmeltdt, G.A. (2021) Petrogenesis of Mesoproterozoic granites of the Swartoup Hills region, Kakamas Domain, Namaqua Belt, South Africa. *Frontiers in Earth Science*. 8 (1). p.1-23.

Büttner, S.H., Isemonger, E.W., Isaaks, M., van Niekerk, D., Sipler, R.E., Dorrington, R.A. (2021) Living phosphatic stromatolites in a low-phosphorus environment: implications for the use of phosphorus as a proxy for phosphate levels in paleo-systems. *Geobiology*. 2021,19 (1), 35-47, <https://doi.org/10.1111/gbi.12415>.

Chukwuma, K. and Tsikos, H.

Chukwuma, K., Tsikos, H. and Wagner, N. (2021) Control of variability of primary grain assemblages on the stratigraphic differences in diagenetic processes and products in organic-rich sediments. *Sedimentary Geology*. 422 (2021). p.1-18.

Gess, R.W.

Gess, R.W. and Prestianni, C. (2021) An early Devonian flora from the Baviaanskloof Formation (Table Mountain Group) of South Africa. *Scientific Reports*. 11(1):11859; pp 1-23 doi: 10.1038/s41598-021-90180-z.

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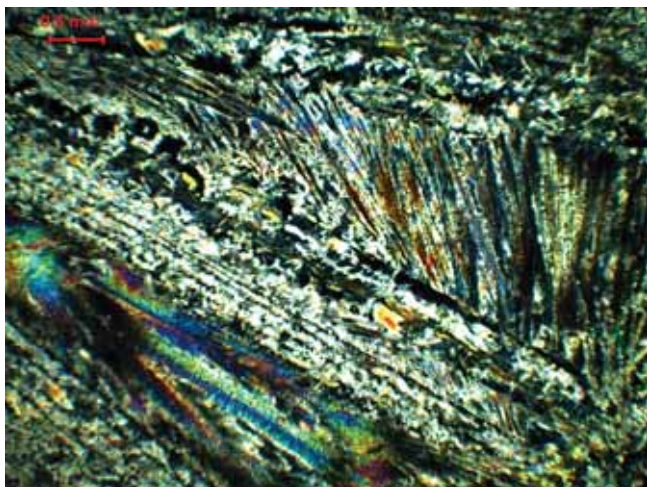
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Miyashita, T., **Gess, R.**, Tietjen, K. and Coates, M.I. (2021) Non-ammocoete larvae of Palaeozoic stem lampreys. *Nature*. 591 (2021). p.1-25.

Grosch, E.G.

Grosch, E.G., Bishop, J.L., Mielke, C., Maturilli, A. and Helbert, J. (2021) Early Archean alteration minerals in mafic-ultramafic rocks of the Barberton greenstone belt as petrological analogs for clay mineralogy on Mars. *American Mineralogist*. 106 (5). p.672-684.



Petrographic image of a partially serpentinized komatiite rock from the Barberton greenstone belt showing the spinifex texture under the microscope.

Photo: E. Grosch

Grosch, E.G. and Slama, J. (2021) On the volcanic architecture, petrology and geodynamic setting of the 3.48 Ga Barberton komatiite suite, South Africa. *South African Journal of Geology*. 124 (2). p.343-352.

Moore, A.E.

Moore, A.E., Costin, G. and Proyer, A. (2021) Cognate versus xenocrystic olivines in kimberlites: A review. *Earth-Science Reviews*. 221 (1). p.1-22.

Harte, B., Helmstaedt, H., Kopylova, M. and **Moore, A.E.** (2021) John Gurney: a career of discovery and promotion of scientific knowledge. *Lithos*. 398-399 (1). p.106293.

Prevec, S.A.

Huber, M.S., Kovaleva, E., Clark, M.D. and **Prevec, S.A.** (2021) Inhomogeneous distribution of lithic clasts within the Daskop granophyre dike, Vredefort impact structure: Implications for emplacement of impact melt in large impact structures. *Special Paper of the Geological Society of America*. 550 (1). p.1-14.

Prevec, S.A. and Largatzis, S.A.

Prevec, S.A., Largatzis, S.A., Brownscombe, W. and Salge, T. (2021) PGE distribution in Merensky wide-reef facies of the Bushveld Complex, South Africa: evidence for localized hydromagmatic control. *Canadian Mineralogist*. 59 (6). p.1305-1338.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Marima, E., Büttner, S.H. and Van Huyssteen, A.

Marima, E., Büttner, S.H., Van Huyssteen, A., Schmidt, C., du Plessis, A., Tshibalanganda, M. and Howarth, G.H. The segregation of carbonate and silicate melts in kimberlitic melt inclusions from Monastery mine, South Africa. *Goldschmidt Conference 2021*. Online, Lyon. France. July 2021.

Mhlanga, X.R., Thokoa, M. and Tsikos, H.

Mhlanga, X.R., Thokoa, M. and Tsikos, H. The re-characterisation of manganese ore deposits in the Postmasburg Manganese Field. *CIMERA annual colloquium 2021*. Online. South Africa. November 2021.



The GLG 302 Geology students in the field with Dr Eugene Grosch.

Photo: Pamela Sogiba.



DEPARTMENT OF History

Professor Alan Kirkaldy
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Department operated in the absence of three permanent faculty members occasioned by the retirement of Professor Gary Baines, the resignation of Professor Nicole Ulrich and the election of Professor Enocent Msindo as the Dean of Humanities. This left only four (4) full-time staff members, Professor Alan Kirkaldy, Professor Helena Pohlandt-McCormick, Dr Janeke Thumbran and Dr Tapiwa Madimu (a new staff member). Fortunately, the university provided us with contract staff to assist in teaching. Coupled with the continuing disruptions caused by the Covid-19 pandemic, the situation had a negative impact on research productivity. Access to archives and the field remained difficult and a great deal of time was taken up by planning innovative online teaching and learning strategies and supervising temporary staff. Permanent staff nevertheless managed to re-activate research plans and complete a number of projects in progress and the situation for 2022 looks extremely promising.

POSTGRADUATES / GRADUATIONS

Professor Julia Wells supervised a PhD student to completion with a thesis on a Participatory Theatre Approach to family property transfer practices and the historical significance of title deeds to African female heads of household in Fingo Village. Professor Kirkaldy supervised an MA thesis to completion on a biography of Inkosi Albert Luthuli as an African Intellectual.

Continuing students were registered for PhD and MA theses in progress in the fields of environmental history, women's history, gender-based violence, medical history, biography, socio-economic history and colonial displacements and coping strategies. A number of these students will be completing early in 2022.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Because of Covid-19 regulations, the Department did not receive in-person visitors during the year. Dr Janeke Thumbran nevertheless revived the History Department's seminar series "History in the Making". Every week, she invited speakers from various departments and different local and international universities, including the University of Basel and New York University, to present their work on a Zoom platform.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Professor Alan Kirkaldy completed an eleven-year research project into the lives and socio-political context of two behind-the-scenes stalwarts of the Communist Party of South Africa/South African Communist Party, Ivan and Lesley Schermbrucker. This will be published in the Palgrave Study in the History of Social Movements series at the beginning of 2022.

The Department has secured South African and Swiss funding for an interdisciplinary (History, Media Studies and Sound Studies and Sound Studies) project entitled "*The (In)Audible Past*" in collaboration with the University of Fort Hare and the University of Basel. This will be launched in 2022 under the direction of Associate Professor Helena Pohlandt-McCormick.

It will critically explore sound archives located in South Africa and Namibia, as well as collections in Basel which connect Switzerland to southern Africa, its political cultures and colonial

past. The project will inquire into sound as a site of political and cultural struggle, social and identity formation.

Dr Janeke Thumbran completed publications in the field of Coloured Identity and apartheid transport infrastructure which will be published early in 2022. She was awarded the NRF Black Academics' Advancement Programme (BAAP) and the Carnegie/ACLS African Humanities Programme (AHP) Fellowship. She was also awarded a writing Fellowship at the University of Johannesburg Institute for Advanced Study (JIAS) and was resident there from February to May 2021. Lastly, she was selected as a 2021 *Sunday World* Heroic Woman.

Dr Tapiwa Madimu, a new appointment as a Senior Lecturer in the Department, has begun research projects in the fields of medical history and unregulated gold mining in South Africa.



Dr Janeke Thumbran at the Johannesburg Institute for Advanced Study (JIAS) where she held a writing fellowship in 2021.

Photo: Department of History

PUBLICATIONS

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Adetiba, A.S.

Adetiba, A.S. (2021) Localising tropical medicine? A history of the medical research institute (mri) in colonial lagos. 1907-1920s. *Modern Africa*. 9 (1). p.99-117.

Adetiba, A.S. (2021) Tensions and Adaptation in Tropical Medicine: Lagos in the Networks of Malaria Science, 1890s-1906. *West Bohemian Historical Review*. 11 (2). p.251-271.

Baines, G.F.

Baines, G.F. (2021) *Historian: An Autobiography*. By Hermann Giliomee. Charlottesville and London: University of Virginia Press, 2017. *South African Historical Journal*. 73 (2). p.552-555.

Baines, G.F. (2021) Fighting and Writing: The Rhodesian Army at War and Post-War. By Luise White. Durham, NC and London: Duke University Press, 2021. *Historia*. 66 (2). p.128-331.

Catsam, D.

Nauright, J. and Catsam, D. (2021) At the forefront of racial tolerance?: African-Americans and high school football in Iowa in the 1930s. *Sport in Society*. 24 (5). p.748-759.

Mkhize, N.

Mkhize, N. and Ntsekhe, M. (2021) When amalungelo are not enough: an autoethnographic search for African feminist idiom in the postcolony. *Journal of Contemporary African Studies : JCAS*. 39 (4). p.534-549.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Kirkaldy, A.

Kirkaldy, A. "The Life of an 'Everyday Communist' during the 1950s and 1960s - Lesley Schermbrucker". "Red Lives" session of the "100 Years of the South African Communist Party" Webinar series. Online, Johannesburg. South Africa. June 2021.

Theledi, N.L.

Theledi, N.L. Slovo's Role in the Congress Alliance and Contribution to the Liberation Struggle of South Africa. *100 Years of the South African Communist Party: Debating Lineages of Socialism in Africa*. Online, Johannesburg. South Africa. August 2021.

Thumbran, J.

Thumbran, J., Mahlo, M. and Roberts, L. The University in a Post-Covid World. *African Studies Association (ASA) conference*. Online, San Diego. United States of America. November 2021.



DEPARTMENT OF Human Kinetics and Ergonomics

Dr Swantje Wells
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Most research in the Human Kinetics and Ergonomics Department is experimental research involving fieldwork and human participants. One of the consequences of the Covid-19 pandemic was that travelling to research sites and interacting with human participants was severely limited. In 2020 most of the department's research activities were thus- restricted to virtual interviews and internet-based questionnaires. As the government lifted restrictions, experimental research and fieldwork became increasingly possible again.

Most noteworthy in this context is the constructed wetland project in Setswetla, north of Alexandria and the study of aerial firefighters. The constructed wetland project in Setswetla is a four-year research cooperation with the University of Witwatersrand that investigates the design and use of constructed wetlands to treat greywater in informal settlements. The aerial firefighter study analysed fatigue and sleep-wake behaviour of aerial firefighters (helicopter pilots and pilots of small aeroplanes) during the summer and winter seasons.

POSTGRADUATES / GRADUATIONS

Sixteen (16) Honours and seven (7) MSc students graduated during the ceremonies in April and September 2021. Dr Ben Ryan graduated with his PhD during the April ceremony. His PhD thesis applied system approaches, commonly used in Human Factors and Ergonomics research, to the principles of talent identification in the local football associations, thus building an important link between Ergonomics and Sport Science.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

While receiving international visitors was still not possible, the department enjoyed a virtual seminar from Greg King in April 2021. Greg graduated from Rhodes with an MSc in HKE in 2002 and is now working as the strength and conditioning coach for Proteas Cricket and the Chennai Super Kings.

The department also joined Webinars organised by the Ergonomics Society of South Africa.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Mr Andrew Todd and Dr Jonathan Davy presented papers at the 21st Triannual Congress of the International Ergonomics Association that took place virtually from Canada. Andrew Todd also presented in the Smart Ergonomics Conference. Professor Candice Christie, who has been a part of the Healthy Active Kids Report Card, South Africa since 2016 has been made co-leader for the South African arm of this project which means that she is now a part of the global leadership. The Active Healthy Kids Global Alliance is committed to powering the global movement to get kids moving through thought leadership, knowledge translation and mobilisation, capacity building and advocacy. This is facilitated by sustainable partnerships and cross-sectional collaborations that enable best-practice exchanges, networking and cross-fertilisation. The Global Alliance, of which Professor Christie is a part of, will be releasing over 50 countries report cards this year as part of the Global Matrix 4.0. This will be launched at the International Society of Physical Activity and Health annual congress in 2022 - a culmination of two years work and will form part of peer-reviewed publications with a large global network.



Studying aerial firefighters.

Photo: Department of Human Kinetics and Ergonomics

BOOKS/CHAPTERS/MONOGRAPHS

Davy, J. and Todd, A.

Alfers, L., Dobson, R., Ndlovu, P., Davy, J., Todd, A. and Quazi, T. (2021) Reflections on Experiences Working alongside informal Traders at Warwick Junction in Durban: A Human Factors and Ergonomics Perspective. In: Bezerra, J., Paterson, C. and Paphitis, S. (eds.). *Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*. Cape Town: African Sun Media. p.267-290. ISBN: 9781991201058.

Dagliana, G., Albolino, S., Mulissa, Z., Davy, J. and Todd, A. (2021) From Theory to Real-World Integration: Implementation Science and Beyond. In: Donaldson, L., Ricciardi, W. and Sheridan, S. (eds.). *Textbook of Patient Safety and Clinical Risk Management*. Online: Springer, Cham. p.143-157. ISBN: 9783030594022.

Ryan B. and Todd A. (2021). Chasing significance in sports science research: A human factors and ergonomics approach to social innovation. In Bezerra, J., Paterson, C. and Paphitis, S. (eds). *Challenging the 'Apartheids' of Knowledge in Higher Education through Social Innovation*. SUNPress pp:179-200. (ISBN: 978-1-991201-04-1).

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Christie, C.J.

Weldon, A., Duncan, M.J., Turner, A., LaPlaca, D., Sampaio, J. and Christie, C.J. (2021) Practices of Strength and Conditioning Coaches: A Snapshot from Different Sports, Countries, and Expertise Levels. *Journal of strength and conditioning research*. 1 (1). p.1-10.

Weldon, A., Duncan, M., Turner, A., Christie, C.J. and Pang, C.M.C. (2021) Contemporary practices of strength and conditioning coaches in Professional cricket. *International Journal of Sports Science and Coaching*. 16 (3). p.585-600.

Davy, J., Christie, C.J. and Zschoernack, S.

Lewis, R., Roden, L.C., Scheuermaier, K., Gomez-Olive, F.X., Rae, D.E., Iacovides, S., Bentley, A., Davy, J., Christie, C.J., Zschoernack, S., Roche, J. and Lipinska, G. (2021) The impact of sleep, physical activity and sedentary behaviour on symptoms of depression and anxiety before and during the COVID19 pandemic in a sample of South African participants. *Scientific Reports*. 11 (1). p.1-11.

Davy, J., Christie, C.J., Todd, A. and Zschoernack, S.

Davy, J., Scheuermaier, K., Roden, L.C., Christie, C.J., Bentley, A., Gomez-Olive, F.X., Iacovides, S., Lewis, R., Lipinska, G., Roche, J., Todd, A., Zschoernack, S. and Rae, D.E. (2021) The COVID-19 Lockdown and Changes in Routine-Oriented Lifestyle Behaviors and Symptoms of Depression, Anxiety, and Insomnia in South Africa. *Journal of Physical Activity & Health*. 18 (9). p.1046-1057.

Pote, L., Robinson, B. and Christie, C.J.

Pote, L., Robinson, B. and Christie, C.J. (2021) Injuries in high school level rugby union: how do coaches manage injuries? *Human Movement*. 22 (1). p.50-56.

Todd, A.

D'Souza, C., Martin, M.B., Fobil, J.N., Todd, A. and Gomes, J.O. (2021) Musculoskeletal Disorders in Unstructured, Unregulated Work: Assessment Methods and Injuries. *Lecture Notes in Networks and Systems*. 222 (2021). p.720-727.



DEPARTMENT OF Ichthyology & Fisheries Science

Associate Professor Clifford Jones
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The Department of Ichthyology and Fisheries Science's (DIFS) is recognised by the African Union as its *Centre of Excellence for Training in Marine Fisheries and Aquaculture*. The DIFS focus is on the study of fish, fisheries, aquaculture and the sustainable utilization of aquatic resources in general, primarily through research and research-related teaching and training of students in these fields. Its staff of seven academics continued the department's international reputation through collaborative teaching and research relationships with about 30 universities and research institutions around the world.

In addition to the South African Institute of Aquatic Biodiversity (SAIAB), our Postgraduate supervision and research network also included collaborations with, and by way of example: the South African Environmental Observation Network (SAEON), Department of Forestry, Fisheries and Environment (DFFE), North West Provincial Government, Water Research Commission (WRC), Oceanographic Research Institute (ORI), Makerere University (Uganda), Bahir Dar University (Ethiopia), University of Namibia, Eldoret University (Kenya), Maynooth University (Ireland), University of Ghent (Belgium), Fort Hare University, University of Johannesburg, Nelson Mandela University and researchers from numerous fish-farm industry partners.

POSTGRADUATES / GRADUATIONS

The DIFS saw the registration of four (4) Postdoctoral Fellows, thirty-four (34) PhD and twenty-one (21) MSc students in 2021; and it graduated seven (7) PhD, nine (9) MSc and eight (8)

Honours students in 2021. A school of fifty-one (51) registered Postgraduates was made possible primarily due to a well-developed network of Research Associates and other collaborative relationships.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Associate Professor Cliff Jones and Postdoctoral Fellow Dr Yu (Ann) Wu participated in numerous international events hosted by the AquaVitae project, ranging from online workshops/meetings with project partners from Europe, North and South America, to a side event that formed part of the 2021 All Atlantic meeting. Professor Jones also travelled to Copenhagen, Denmark to work with researchers on this project and to Madeira, Portugal to present a paper at the European Aquaculture Conference.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Dr Wilbert Kadye continued his research on freshwater ecosystems by focusing on the ecology of headwater streams, conservation of fishes in the Eastern Cape and general fish taxonomy in collaboration with Dr Albert Chakona (SAIAB). Wilbert is also part of two large Foundational Biodiversity Information Program (FBIP) research projects. These are the Waterberg Biodiversity Research project (Limpopo Province) in collaboration with the University of Witwatersrand, University of Pretoria and University of Mpumalanga, and the REFRESH project in collaboration with SAIAB, SANBI, North West University, Stellenbosch University and University of Cape Town.

Professor Warwick Sauer continued with a number of research projects throughout the western Indian Ocean and the West Coast of South Africa, covering South Africa, Namibia and Angola. Fieldwork on a project looking at small tuna stocks



Small scale tilapia farmers in Limpopo Province.
Photo: Q Rouhani.

was mostly completed, and the first manuscripts prepared. He published a desk top study on *Ecological-Fishery Forecasting of Squid Stock Dynamics under Climate Variability and Change*. A long-term research project on sperm competition in squid was completed and published. A student led manuscript on long-term temporal trends of size composition and the length-weight relationships in chokka squid was completed and published. A study *Assessing South Africa's Potential to Address Climate Change Impacts and Adaptation in the Fisheries Sector* was completed and published. With Professor Aswani, Professor Sauer was awarded four years of BELMONT funds, through the National Science Foundation of the United States of America, to undertake an international project examining fisheries conflicts, and the first fieldwork in the Seychelles was undertaken. Professor Sauer is also a Co-Pi of a project also funded through the National Science Foundation in the USA, looking at developing traceability tools (including phone-based applications) for octopus, enabling sustainable utilisation of stocks worldwide. He also assisted with training of researchers and fisheries managers from African countries in an Ecosystem Approach to Fisheries. He completed several manuscripts as part of the SOLSTICE project funded through the British Government, which has now ended. A contract between Rhodes University and the Fisheries and Agricultural Organisation of the United Nations was successfully negotiated and will examine the vulnerability of communities in small Island developing nations.

Professor Peter Britz's continued his abalone ranching research in collaboration with Wildcoast Abalone. This program has seen the restoration of the heavily poached abalone stock off Port Elizabeth and the development of a new approach to abalone production.

Professors Cliff Jones and Peter Britz continued their participation in the European Union's Horizon 2020 All Atlantic 'AquaVita' project with their partners from Europe, South and North America, and with a focus on innovation in low trophic aquaculture. Their work integrates seaweed and sea cucumber into existing abalone aquaculture, and the inclusion of by-products in abalone feeds, with an emphasis on waste recycling and the development of sustainable, circular economies.

Professor Jones also continued his research partnership with South African Breweries and extended this to include new industry partner Taylor Made Water Solutions. In 2021 the project saw the commercialisation of the concept developed previously, where water treatment solutions have been integrated with aquaculture and agriculture. The effluent treatment process results in fresh-vegetable produce that is now sold in shops across the Eastern Cape. This has resulted in job creation and an alternative and sustainable source of water and organic fertilisers in agriculture. This project saw Cliff Jones receive a Water Research Commission *Knowledge Tree Award*, for new products and services for economic development.

Professors Cliff Jones and Horst Kaiser had students participate in a research exchange program (COTRA), that aims to improve tertiary education in aquaculture and fisheries science across Africa, funded by the European Commission/African Union's *Inter-Africa Academic Mobility Scheme*. The program involves the exchange of 10 staff and 36 MSc and PhD students between seven countries in Africa. Cliff and Horst continue to host PhD students from Kenya, Uganda and Ethiopia as part of this project, and there was the addition of an MSc student at Rhodes from the Democratic Republic of Congo.

Professor Horst Kaiser collaborated with several research teams on a number of projects. As a collaborator with the University of Johannesburg, he contributed to a study on the genetics of the critically endangered estuarine pipefish. He collaborated with Dr Brendan Wilhelmi at the Department of Biochemistry and Microbiology to study the microbiome in an aquaponics system. In a collaboration with the University of Ghent (Belgium) he hosted an MSc-student in aquaculture. A new joint programme with DFFE, the University of Mpumalanga and the University of Montpellier (France) was initiated to supervise a PhD student in fish nutrition.

Professor Warren Potts continued with his research on recreational fisheries. This included an international project funded by the One Ocean Hub which is focussing on improving the governance of South Africa's marine recreational fisheries. This research ranged from an assessment of the economic activity associated with South African recreational fisheries, which was published this year, to examining the catch and release behaviour of Marine recreational anglers using Facebook. His international research included work on the emergence of recreational drone fishing, finding and describing bright spots for the adaptation to climate change in inland recreational fisheries and comparisons of the governance of recreational fisheries between the United Kingdom and Southern Africa. He also continued to lead the very successful engaged research project with the Rock and Surf Super Pro League. He was appointed to be the conservation officer for the league and made several presentations to anglers on best catch and release practices. He also served on the international scientific committee for the virtual 7th World Recreational Fisheries Conference and as a guest editor for the special issue for this conference, which will be published in the Journal "Fisheries Research".

Professor Warren Potts also continued with his research on the impacts of climate change on coastal fishes and this resulted in several publications. Together with Dr Amber Childs, he initiated a research project assessing the role and efficiency of marine protected areas in maintaining the climate resilience of fish populations. This multidisciplinary project, funded by the African Coelacanth Ecosystem Program, has collaborators from the University of Southampton, the Institut de Recherche Pour le Développement and the University of Pretoria and includes comparisons of the metabolic physiology, thermal range, behaviour and genetic characteristics of resident fish populations from exploited and unexploited areas. As this was the first year of this project, much time was dedicated to the planning of field and lab research and ethics and other permit applications. However, we completed a thermal physiology study of Red Roman from the exploited Cape St Francis and collected over 100 genetic and 80 otolith samples for the molecular and otolith microchemistry laboratory research.

Besides her climate change research with Professor Warren Potts, Dr Amber Childs continued her collaborative research with Professor Nicola James (SAIAB) on the seascape ecology of the shallow marine ecosystems of Algoa Bay and the surrounding coastal areas. She was asked to join a European Union Cost Action international project called SeaUnicorn which works on marine connectivity and was invited to provide telemetry training at an international workshop in France in 2022. Dr Amber Childs continued serving as a board member of the Centre for Scientific and Industrial Research (CSIR) and a committee member of the South African Network for Coastal and Oceanic Research (SANCOR). She was also awarded an NRF Marine Call grant for a transdisciplinary project to address knowledge gaps for the sustainable management of marine shore-based fisheries, with a focus on recreational fisheries in South Africa.



Research that has been taken through to commercialisation - here spinach is grown in brewery effluent as part of the effluent treatment process that integrates industrial effluent treatment with crop and fish farming. The spinach is sold in supermarkets across the Eastern Cape.

Photo: R. Taylor.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS.

Mwanangombe, C.H., Sauer, W.H.H. and Lipinski, M.R.
Mwanangombe, C.H., Durholtz, D., Yemane, D., Githaiga-Mwicigi, J., Sauer, W.H.H. and Lipinski, M.R. (2021) Growth rates of the chokka squid *Loligo reynaudii d'Orbigny*, 1845 (Cephalopoda: Myopsida: Loliginidae) off South Africa, investigated over two years. *Folia Malacologica*. 29 (3). p.153-162.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Abaho, I. and Jones, C.L.W.
Abaho, I., Masembe, M., Akoll, P. and Jones, C.L.W. (2021) The use of plant extracts to control tilapia production: Current status and future perspectives. *Journal of the World Aquaculture Society*. 2021 (2021). p.1-27.

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A fisher by Lake Fundudzi, the only true lake in South Africa and a place considered sacred by the Venda people.

Photo: Q Rouhani.

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In integrated multitrophic aquaculture (IMTA) research we are developing technology to grow seaweed on mussel rafts in Saldanha Bay.

Photo: C Jones.



DEPARTMENT OF Information Systems

Associate Professor Greg Foster
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Research within the Department of Information Systems is carried out at Honours, Masters and Doctoral levels, where the associated findings are presented at national and international conferences and published in journals. Staff are also engaged in research on projects on their own or in collaboration with Research Associates and colleagues from other institutions in South Africa and internationally.

The Department's research focus areas include AI Technology, Business Analytics, Business Process Management, Consumer Health Informatics, Cyberpsychology, Cybersecurity, eGovernment, eLearning, Health Informatics, ICT for Development, ICT for Education, IT Governance, Project Management, and User Experience. Staff, Research Associates, and Postgraduate students produced a total of twenty-nine (29) research outputs and presented research findings at conferences in South Africa, Norway, India, the USA, and the UK.

POSTGRADUATES / GRADUATIONS

Staff, Research Associates, and a total of fifty-three (53) Postgraduate students (thirty-seven (37) Honours, seven (7) Masters and nine (9) Doctoral) engaged in a variety of research projects during the year. At the graduation ceremony in April 2021, we celebrated the graduation of thirty-seven (37) Honours students, two (2) Masters students, and one (1) Doctoral student.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Dr Khene (De Montfort University, UK) and Dr Thinyane (United Nations University, Computing and the Society, China) continued collaborating with Associate Professor Sieborger on the MobiSAM/MobiSAfAIDS project.

Professor Renaud (University of Strathclyde, UK) continues to work on several projects around cyber responsabilisation, behavioural information security, and social media privacy with Professor Flowerday and Dr van der Schyff.

Dr Orre (Malmo University, Sweden), Dr Lindroth (University of Gothenburg, Sweden) and Mr Boucher (University of Fort Hare, South Africa) remain active collaborators with Associate Professor Foster on a SUSUF project in digital health promotion. Professor Herselman (CSIR, South Africa) has been involved in research supervision with Mr Nxosi in the area of IT Governance.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Professor Flowerday was a co-guest editor for the journal *Methods of Information in Medicine's* special issue on "Security and Privacy in Distributed Healthcare Environments". He was also an invited guest speaker at the 20th Annual Security Conference & ISOW, Las Vegas, the USA, where he presented a talk on "Social Media User Security Violations". In addition, he sat on a panel to discuss a system architecture for ensuring the interoperability of Electronic Health Records in South Africa at the Department of Public Health Medicine, University of Pretoria's academic journal club. He was also invited by a journalist for the Australian Broadcasting Corporation in Sydney, Australia, to discuss phishing as part of a program called "All in the Mind", which discusses aspects of human behaviour, psychology, and neuroscience.

Members of the Department continue to win research awards. This year, Mr Nxosi was awarded the Best Presenter Award at the International Conference on Interdisciplinary Research in Technology and Management held in Kolkata, India.

BOOKS/CHAPTERS/MONOGRAPHS

Flowerday, S. and Bhana, B.
Flowerday, S. and Bhana, B. (2021) *Encyclopedia of Cryptography, Security and Privacy*. ISBN: 1234567891019.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

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Renaud, K., Flowerday, S. and Dupuis, M. (2021) Moving from employee compliance to employee success in the cyber security domain. *Computer Fraud and Security*. 4 (2021). p.16-19.

Renaud, K., Flowerday, S. and Van Der Schyff, K.
Renaud, K., Flowerday, S. and Van Der Schyff, K. (2021) Uncertainty in cyber de-responsibilisation. *Computer Fraud and Security*. 8 (2021). p.13-19.

Sieborger, I.
Sieborger, I. (2021) The Importance of Scaffolding When Building Information Systems Specialists. *Communications in Computer and Information Science*. 1518 (1). p.104-113.

Thinyane, H.
Thinyane, H. (2021) Remaining connected throughout design. *Communications of the ACM*. 64 (10). p.22-24.

Sassetti, F. and Thinyane, H. (2021) Apprise: inclusive innovation for enhancing the agency of vulnerable populations in the context of anti-trafficking responses. *Innovation and Development*. 2021 (2021). p.1-20.

Ju, B., Poveda, S. and Thinyane, H. (2021) From voiceless to voicing: The communication empowerment of sex-trafficking survivors by using participatory video. *Asian Journal of Social Science*. 50 (1). p.62-69.

Van Der Schyff, K. and Flowerday, S.
Van Der Schyff, K. and Flowerday, S. (2021) Mediating effects of information security awareness. *Computers & Security*. 106 (2021). 102313.

Watkins, C.A.
Connan, J., Brown, D.L. and Watkins, C.A. (2021) Using Technology to Teach a New Generation. *Communications in Computer and Information Science*. 1518 (1). p.114-128.

Wright, G.
Caceres, J.L.H., Wright, G., Kumma, B.D., Verbeke, F. and Nechipurenko, Y. (2021) COVID-19 epidemic in The World Health Organization African Region (WHOAR): Situation and forecast. *Journal of Health Care for the Poor and Underserved*. 32 (3). p.1320-1338.

PEER-REVIEWED PROCEEDINGS

Baduza, G.
Baduza, G. and Khene, C. A proposed framework for the comprehensive scalability assessment of ICTD projects. *IFIP Working Group 9.4: Implications of Information and Digital Technologies for Development*. Norway. May 2021.

Nxози, M.
Wells, G., Nxози, M. and Tait, B.L. ICT Education. *49th Annual Conference of the Southern African Computer Lecturers' Association (SACLA 2020)*. Virtual, Makhanda. South Africa. July 2020.

Nxози, M. and Flowerday, S.
Nxози, M. and Flowerday, S. IT governance adoption and use by state-owned entities in South Africa: a public administration perspective. *Interdisciplinary Research in Technology and Management (IRTM) 2021*. Virtual, Kolkata. India. February 2021.

Renaud, K.
Dupuis, M., Jennings, A. and Renaud, K. Scaring People is Not Enough: An Examination of Fear Appeals within the Context of Promoting Good Password Hygiene. *In Proceedings of the 22st Annual Conference on Information Technology Education (pp. 35-40)*. UT. USA. May 2021.

Sieborger, I.
Khene, C., Sieborger, I., Thinyane, M. and Simuja, C. Power Participation in Digital Citizen Engagement in South African Local Government: The Case of MOBISAM. *IFIP 9.4 2021. 1st Virtual Conference*. Conference Theme: Resilient ICT4D. Virtual (online), Oslo. Norway. May 2021.

Theunissen, K.E. and Sieborger, I.
Theunissen, K.E. and Sieborger, I. The use of tablet PCs in previously disadvantaged secondary schools in South Africa during the COVID-19 pandemic. *The 2021 AIS SIGED International Conference on Information Systems Education and Research*. Virtual (online), Austin, Texas. USA. December 2021.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Sieborger, I. and Zhou, C.
Khene, C., Sieborger, I., Ulicane, I., Wakunuma, K. and Zhou, C. Narratives in Responsible Digital Citizen Engagement in Adolescent Sexual Reproductive Health Rights in a Southern African Context. *2021 Symposium on Intercultural Digital Ethics*. Virtual (online), Oxford/Harvard. UK/USA. November 2021.



SCHOOL OF Journalism and Media Studies

Dr Jeanne Du Toit
Head of School

Photos: Dirk Pieters



Dr Priscilla Boschhoff
Deputy Head of School

INTRODUCTION

2021 was a productive year for the School of Journalism and Media Studies. Funding from the National Research Foundation (NRF) has enabled staff and students to pursue valuable projects.

Staff members and students authored and published a total of five (5) book chapters and seven (7) journal articles. In addition to published research, staff members have delivered creative work and presented papers at national and international conferences. Notably, a special report on the South African government's response to the COVID-19 pandemic was produced in a collaborative effort between staff and PhD students. Continuing with the remote teaching model for most of the year granted novel opportunities for research and the organisation of a webinar series, as well as virtual conferences which brought together international and local guests to discuss various insights and issues around the field of journalism.

POSTGRADUATES / GRADUATIONS

The School of Journalism and Media Studies graduated Bachelor of Arts, fifty-four (54) Bachelor of Journalism, five (5) Postgraduate Diploma in Journalism, ten (10) Postgraduate Diploma in Media Management, six (6) Honours, and one (1) Master of Arts students. Postgraduates have been engaged in a variety of journalism and media studies projects. These range from a report on the South African government's COVID response, to economics journalism and researching state capture.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Dr Adjin-Tetty was invited to deliver two lectures at Bingham University, Nigeria. The first was held in June 2021 and explored gender ethics within the newsroom. The second was held in

August 2021 where Dr Adjin-Tetty delivered a lecture on sustainable journalism. She was also invited to speak at the African Women in Media Conference - held virtually, but also in the United Kingdom. The theme of Dr Adjin-Tetty's speech was *Gender sensitivity in the long-term perspective: Sustainable journalism*.

Dr Schoon was invited to be part of a panel of African Digital media scholars for the webinar *Ethnographies and/of digital cultures in Africa* funded by the Wenner-Gren Foundation and organised by Serena Stein, Wageningen University & Research, and Louisa Lombard, Yale University.

The School hosted the virtual launch of the report "Perspectives from Africa: Global Lessons for saving Journalism" with Professor Anya Schiffrin from Columbia University USA, Professor Harry Dugmore from University of the Sunshine Coast Australia, Dr Theodora Adjin-Tetty from Ghana, and Mr Lumko Mtimde, Special Advisor to the Minister in the Presidency, SA. Another significant presentation was given by Mr Reg Rumney who shared his research, commissioned by SANEF, into COVID's impact on the SA media sphere.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Dr Alette Schoon was involved in several research events over the course of 2021. She presented to a group of Yale University Anthropology students on ethnographies and digital cultures in Africa and attended two international conferences: one coordinated by the International Association for Media and Communication Research, and another held in Finland where she discussed the relationship between journalism and algorithms. Dr Schoon was also selected to participate in an international project on developing the research potential of the *Essay Film*. This project was started in 2020 by Horizon and is based at the University of Łódź, Poland. Perhaps most significantly for our context, Dr Schoon produced and directed a sixty-five-minute historical documentary titled: *Intellectual Giants of the Eastern Cape*. This was a co-production of the School of Journalism and Media Studies at Rhodes University and the Hunterston Centre, University of Fort Hare.

Professor Lorenzo Dalvit was awarded funding by the NRF Competitive Programme for Rated researchers for a three-year project on "Rethinking digital inclusion and (dis)ability in South Africa: a southern epistemological perspective".

Dr Adjin-Tetty published four articles and submitted a chapter for publication in addition to presenting papers at five conferences during 2021. She worked with Professor Anja Schiffrin at Columbia University to produce the report *Saving journalism 2: Global strategies and a look at investigative journalism*. She also worked on the Open Society Foundation-funded report *News Provision and Consumption Habits Among Non-Elites Across the Global South*.

PhD student Martina Della Togna participated in seminars and online workshops hosted by civil society organisations such as the Active Citizens Movement, using her experiences,

research activities and activism to share insight into the role of Parliament in state capture. She has also been involved in the attempts to revise both whistleblower legislation as well as the oversight for the management of staff within Parliament.

PhD student Thandi Bombi was chosen in a competitive process to participate in a PhD-level Violence and Trauma course given by the University of Oslo's journalism department. She and two other students from Wits and Sao Paulo University presented at the Safety Matters 2021 Conference at the University of Oslo and will present at the 72nd Annual International Communication Association Conference in 2022 in Paris.

PhD student Robyn Perros, whose thesis is focused on the memorialisation of death online, began collaborating with the Collective for Radical Death Studies, an international, professional organisation formed to decolonize Death Studies and radicalise death practice.

As a project group, Professor Anthea Garman along with PhD students and Postdoctoral Fellows worked on the country report on the SA Government's responsiveness to the Covid pandemic as lead researchers and writers on the chapter on communications. PhD student Martina Della Togna - who has extensive knowledge of government departments and parliament as well as contacts within civil society organisations - acted as lead writer and managed the other researchers. This document has been presented to the Department of Planning, Monitoring and Evaluation and to the National Planning Commission. It involved Della Togna, Professor Anthea Garman, Postdoctoral Fellow Dr Theodora Dame Adjin-Tetty and PhD student Thandeka Bukula. For the second edition in 2021 they were joined by PhD students Thandeka Gqubule-Mbeki and Julian Jacobs.

Dr Adjin Tetty and Professor Anthea Garman were also invited by the Fojo Media Institute based at Linnaeus University in Sweden to join researchers from Jonkoping University and Wits to work on a project on *Sustainable Journalism in Sub Saharan Africa*. Dr Adjin-Tetty set up all the interviews with journalists and was lead writer of the report which was launched at the Swedish Embassy in Pretoria in 2021. A network of journalists and media organisations has now been formed across the world to take the work further.

Sol Plaatje Institute and Highway Africa hosted a virtual panel discussion titled: *Think Globally, Acting Locally: Sustaining South African Journalism in a post-Covid world* on 18 March 2021. The International Highway Africa Conference was held (virtually) from 21 - 23 June 2021. It took a wide and close look at the impacts of media environmental factors, particularly platformisation, that are redefining the media and journalism landscapes in the 'age of uncertainty and speed'.

BOOKS/CHAPTERS/MONOGRAPHS

Dalvit, L.

Dalvit, L. (2021) The voice of the voiceless - decoloniality and online radical discourses in South Africa. In: Karam, B. and Mutsvairo, B. (eds.). *Decolonising Political Communication in Africa*. New York: Routledge: Taylor and Francis. p.207-223. ISBN: 9780367544300.

Isaacs De Vega, T.J.

Zinn, D., Raban, M., Luck, J., Latolla, N., Kubashe, N.C., **Isaacs De Vega, T.J.**, Champion, E. and Biggs, L. (2021) *Uzifozoneke: Healing the Heart of Curriculum in a South Africa University* (in Curriculum Theory, Curriculum Theorising, and the Theoriser). In: Fomunyam, K.G. and Khoza, S.B. (eds.) *Curriculum Theory, Curriculum Theorising, and the Theoriser: The African Theorising Perspective*. Leiden: Brill. p.15-37. ISBN: 9789004447936.

Isaacs De Vega, T.J. (2021) Contextualising Journalism and Media Studies: An approach to Decolonising Education in South Africa. In: Rodny-Gumede, Y., Chasi, C., Jaffer, Z. and Ponono, M. (eds.). *Decolonising Journalism Education in South Africa: Critical Perspectives*. Pretoria: UNISA Press. p.100-120. ISBN: 9781776150953.

Ndlovu, N.

Ndlovu, N. 2021. 'A nation that laughs together, stays together': Deconstructing humour on Twitter during the national lockdown in South Africa.' In Mpofu, S. (ed.) *Digital Humour in the Covid-19 Pandemic: Perspectives from the Global South*. Switzerland: Palgrave Macmillan. p. 191-212. ISBN: 978-3-030-79279-4.

Tshuma, B., Tshuma, L. and **Ndlovu, N.** 2021. 'Humour, Politics and Mnangagwa's Presidency: An analysis of readers' comments in online news websites.' In Mpofu, S. (ed.) *The Politics of Laughter in the Social Media Age: Perspectives from the Global South*. Switzerland: Palgrave Macmillan. p. 93-112. ISBN: 978-3-030-81969-9

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Chatikobo, T.

Chatikobo, T. Conference coordinator. Sol Plaatje Institute/Highway Africa webinar series "Our Futures, Our New Normals". *Thinking Globally Acting Locally*. Online. March 2021.

Chatikobo, T. Conference coordinator. *Highway Africa conference*. Online. June 2021.

Garman, A.

Garman, A. Panel member. The English Association (UK) discussion on Decolonisation and Discomfort. *The English Association (UK) discussion on Decolonisation and Discomfort*. Online. 18 June, 2021.

Garman, A. Panel member. The South African National Editors' Forum webinar. *Building an Ethical Framework for SA Journalism*. Online. 21 April 2021.

Garman, A. Webinar co-host. *Perspectives from Africa: Global Lessons for Saving Journalism*. Columbia University. Online. April, 2021.

Rennie, G

Rennie, G. Presenter. *This Mortal Body colloquium. Lines Land Slant*. University of the Western Cape. April 2021.

Schoon, A.

Schoon, A. Documentary. Presented at the Zanzibar International Film Festival and the Karoo Writer's Festival, Cradock. *Intellectual Giants of the Eastern Cape*. 2021.

Schoon, A. Panel member. *Ethnographies and/of digital cultures in Africa webinar*: Yale University, USA. 2021.

Schoon, A. Panel member. The Essay Film Studio. University of Lodz, Poland. 2021.



Professor Anthea Garman and Rod Anmer at a function with students and community partners talking to Syracuse University research partners.

Photo: School of Journalism and Media Studies

DISTINGUISHED VISITORS

Adjin-Tettey, T.

T Adjin-Tettey. Bingham University, New Karu, Nigeria. *Lecture on Gender as an ethical norm: Integrating gender into newsroom practices to positively shape public discourse.* June 2021.

T Adjin-Tettey. Distinguished Expert Series, Bingham University, Nigeria, 28 August 2021, New Karu, Nigeria. *Lecture on "Meeting the agenda 2030: What is the role of sustainable journalism?"* August 2021.

T Adjin-Tettey. African Women in the Media Conference 2021, Virtual, United Kingdom. *Conference speaker on the theme: Gender sensitivity in the long-term perspective: Sustainable journalism.* December 2021.

OTHER PUBLICATIONS

Garman, A.

Garman, A. (2021) When I get out I will. In: Schonstein, P. (ed.). *Love in the Time of Covid.* Cape Town: African Sun Press.

Garman, A. (2021) This is the perfect time to get creative. In: Schonstein, P. (ed.). *Love in the Time of Covid.* Cape Town: African Sun Press.

Garman, A., Della Togna, M., Adjin-Tettey, T. and Bukula, T.
Garman, A., Della Togna, M., Adjin-Tettey, T. and Bukula, T. (2021) South African Covid 19 Country Report: Communication. In: Burton, S. (ed.). *South African Covid 19 Country Report.* Pretoria: Department of Planning, Monitoring and Evaluation.

Rennie, G.

Rennie, G. (2021) Poem. *Memo to the Eastern Cape.* Awarded 2nd Prize in the English Open Category of the Poetry in the McGregor Competition.

Rennie, G. (2021). Ever After. (Magdala Award winner.) In: Schonstein, P. (ed.). *Love in the Time of Covid.* Cape Town: African Sun Press.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Adjin-Tettey, T.

Adjin-Tettey, T. (2021) Covid-19 compelling governments to listen? Evaluating traces of listening to public opinion in Ghana's Covid-19 presidential lockdown speeches. *African Renaissance.* 18 (4): 261-283.

Adjin-Tettey, T., Selormey, D. and Nkansah, H.A. (2021) Ubiquitous technologies and learning: Exploring perceived academic benefits of social media among undergraduate students. *International Journal of Information and Communication Technology Education.* 18 (1): 1-16.

Adjin-Tettey, T. and Garman, A.

Adjin-Tettey, T. and Garman, A. (2021) Solutions journalism as a tool to erode polarisation in the media and society. *African Journalism Studies.* 42 (2): 1-4.

Boshoff, P.

Boshoff, P. (2021) Breaking the Rules: Zodwa Wabantu and Postfeminism in South Africa. *Media and Communication.* 9 (2): 52-61.

Boshoff, P. (2021) The Women of SunLand: Narratives of NonCompliant Women in the Daily Sun Tabloid Newspaper, South Africa. *Communicatio.* 47 (3): 50-69.

Boshoff, P. and Mlangeni, N.L.

Boshoff, P. and Mlangeni, N.L. (2021) Age is Nothing but a Number: Ben 10s, Sugar Mummies, and the South African Gender Order in the Daily Sun's Facebook Page. *Frontiers in Sociology.* 6 (2021): 1-10.

Dalvit, L.

Dalvit, L. (2021) Back to Whose 'Normal'? Personal reflections of a visually-impaired academic at a small South African University. *Communication Culture & Critique.* 14 (2): 328-331.

Buthelezi, M., Chatikobo, T., and Dalvit, L. (2021). United in diversity? Digital differences and inequalities within a South African rural community. *Information, Communication & Society.* 24(3): 455-469.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Adjin-Tettey, T.

Adjin-Tettey, T. Towards sustainable journalism in Sub-Saharan Africa: A policy brief. *13th Southern Africa-Nordic Centre (SANORD) Annual Scientific Conference.* Bergen, Norway. September 2021.

Adjin-Tettey, T. Combating fake news, disinformation, and misinformation: Experimental evidence for media literacy education. *ILMA Conference on Social Media, Hate speech and Fake News.* North-West University, Mahikeng. South Africa. July 2021.

Adjin-Tettey, T. Privacy and security in the digital sphere: How netizens in two African countries navigate risks. *Trends in Media and Communication Conference 2021.* University of Ghana, Accra. Ghana. October 2021.

Adjin-Tettey, T. Staying clear of disinformation and misinformation: Fact checking practices of students of two universities in West Africa. *Trends in Media and Communication Conference 2021.* University of Ghana, Accra. Ghana. October 2021.

Adjin-Tettey, T. and Garman, A.

Adjin-Tettey, T. and Garman, A. Sustainable Journalism in Sub-Saharan Africa: a north-south, global-local dialogue. *International Association of Media and Communication Researchers (IAMCR) 2021 Conference.* United States International University - Africa (USIU-Africa), Nairobi. Kenya. July 2021.

Adjin-Tettey, T. and Garman, A. Lurking as a mode of giving attention in social media: Motivations-based typologies. *71st Annual ICA Conference, Engaging the Essential Work of Care: Communication, Connectedness, and Social Justice.* Virtual. United States of America. May 2021.

Boshoff, P.

Boshoff, P. Age is nothing but a number: Ben 10s, sugar mummies, and the South African gender order in the Daily Sun's Facebook page. *SACOMM 2021 (South African Communications Association).* Virtual. South Africa. October 2021.

Chatikobo, T. and Dalvit, L.

Chatikobo, T. and Dalvit, L. Reflections on coloniality of power through digital technologies in a Global South context. *International Association for Media and Communication Research (IAMCR).* United States International University-Africa, Nairobi. Kenya. July 2021.

Dalvit, L.

Dalvit, L. Problematising networked spatialities and temporalities: new inclusions and exclusions at South African universities. *The Network Society: Re-evaluation and Applications of a Concept.* Virtual. June 2021.

Dalvit, L. Please do not call it human right: a critical perspective on the digital inclusion of people with disabilities in South Africa. *International Association for Media and Communication Research (IAMCR).* United States International University-Africa, Nairobi. Kenya. July 2021.

Garman, A.

Garman, A. Finding a form. *Creative Nonfiction Colloquium.* Online, Bellville. South Africa. May 2021.

Garman, A. Deeper and deeper and deeper: narrative nonfiction and the interiority of the other. *International Communication Association.* Online, Gold Coast. Australia. May 2021.

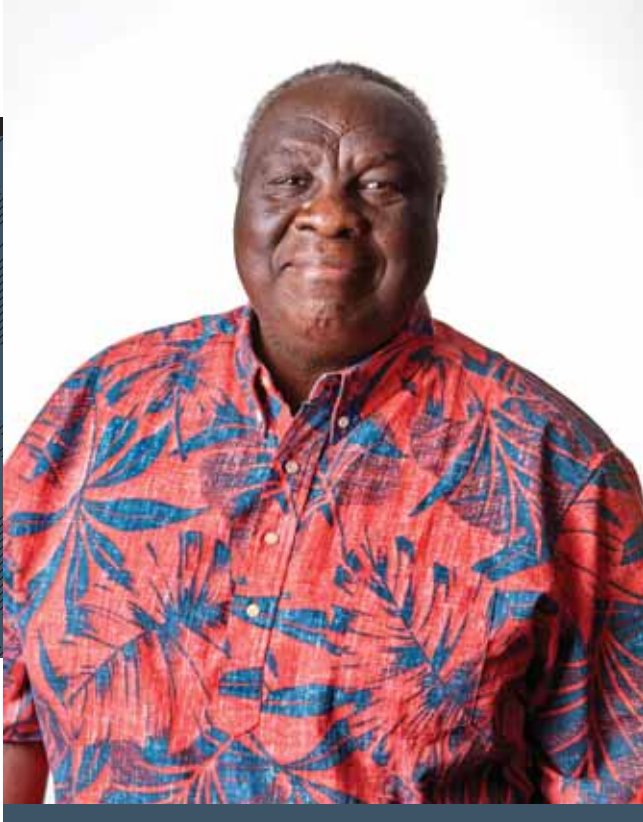
Rennie, G.

Rennie, G. "Will this Work? Investigating Ways of Telling a Story that Resists Being Told". *Creative Non-Fiction Workshop.* UWC / Zoom, Cape Town. South Africa. May 2021.

Schoon, A.

Schoon, A. and Walton, M. (2021). Everyday struggles with South Africa's unequal mobile infrastructure. *IAMCR.* Virtual, Nairobi. Kenya. July 2021.

Schoon, A. (2021). Lighter lips, a Bollywood funeral and the Niger elections: Share-It, the algorithmic video news infrastructure for the Global South's less-connected. *Automation and data-driven journalism beyond the Western world: actors, practices, and socio-political impact.* Virtual, University of Helsinki. Finland. May 2021.



FACULTY OF Law

Professor Laurence Juma
Dean of Faculty

Photo: Dirk Pieters

INTRODUCTION

Despite another year of getting used to the online research environment, amidst the Covid-19 pandemic and online teaching challenges, the Law Faculty staff and students excelled on the research front.

We hosted several very interesting online research seminars on a variety of topics in 2021, including presentations on *Identifying research synergies and writing partners*; *Preventative lawyering, therapeutic jurisprudence and relational lawyering*; *Competition, Equality and Transformation*; *Extradition Laws: The Gendered Impact on Access to Justice* and, *The culture of Death: Euthanasia in a Medical & Cultural Perspective*. We also hosted our first face-to-face Writing Pomodoro for the year on Monday 9 August 2021.

We congratulated several staff members on their research achievements:

- **Associate Professor Charlene Lubaale** was successfully nominated for membership with the South African Young Academy of Science for a five-year membership. Membership commenced in 2021. SAYAS is the voice of young scientists (including humanities and social science) in South Africa.
- Our nGap lecturer, **Ms Yolani Ndamase** received the good news that she has been accepted into the Fulbright Foreign Student Program for 2021-2022 with a placement at the University of Buffalo. She has been accepted as a visiting PhD candidate to conduct research related to her PhD dissertation and audit courses in commercial law from August 23, 2021 - May 15, 2022 for research purposes.

She will be fully funded by Fulbright and the NRF (tuition, room and board, medical insurance, travel).

- **Dr Helen Kruse** was appointed as a member of the South African Law Reform Commission (SALRC) advisory committee on their Review of Matrimonial Property Law project.

POSTGRADUATES / GRADUATIONS

One of our teaching assistants in the Faculty, Tsukudu Moroeng, completed his LLM degree and graduated with distinction. The topic of his dissertation is: *Making sense of Barkhuizen 2: An investigation into the Public Policy Defence of 'Unfair Enforcement' in South African Law*, with reference to the law on covenants in restraint of trade. Supervisor: Professor GB Glover.

Dr Helen Kruse, a senior lecturer in the Faculty, completed her PhD and graduated on 29 October 2021. She was supervised by Professor Graham Glover and the title of her thesis is: *'Legal Ethics and the Lawyer-client Relationship in South Africa: A Proposal for Reform using Local Values'*. Her thesis has been described as 'long-awaited' and 'There is no doubt that this dissertation represents a significant contribution to knowledge in this discipline. It represents a more inclusive, community-based, and historically and culturally rooted conception of legal ethics than any of the major alternative theories currently on offer. I hope to see it published in book form and would expect that it will attract many readers and be frequently cited'.

SIGNIFICANT RESEARCH ALIGNED EVENTS

A significant research event is when the Faculty awards an annual prize for the Faculty of Law Researcher of the Year to give formal recognition to those members of the faculty who



On Wednesday 14 April 2021, we hosted our first face-to-face research seminar and tea. During this event, the recipient of the 2021 Research Award, Professor Graham Glover received his certificate and award.

Photo: Faculty of Law



Professor Juma (Dean) and Professor Glover

Photo: Faculty of Law

have made a significant contribution in a research area of academic excellence. Associate Professor Graham Glover received the Law Faculty's 'Researcher of the Year' award for 2021. During this difficult time amidst the Covid-19 pandemic and limited time for research, Professor Glover still managed to excel on the research front through his research outputs, conference participation, supervision, editorship, and other research contributions.

PUBLICATIONS

BOOKS/CHAPTERS/MONOGRAPHS

Lubaale, E.C.

Abourabi, Y. and Lubaale, E.C. (2021) Criminal Accountability for Gender-Based Violence in North Africa: Beyond Legal Reforms. In: Lubaale, E.C. and Budoo-Scholtz, A. (eds.). *Violence Against Women and Criminal Justice in Africa: Volume I: Legislation, Limitations and Culture*. Switzerland: Springer Nature Switzerland. p.225-268. ISBN: 9783030759483.

Lubaale, E.C. and Budoo-Scholtz, A. (2021) Violence Against Women in Africa: A Human Rights Violation Necessitating Criminal Accountability. In: Lubaale, E.C. and Budoo-Scholtz, A. (eds.). *Violence Against Women and Criminal Justice in Africa: Volume I: Legislation, Limitations and Culture*. Switzerland: Springer Nature Switzerland. p.13-51. ISBN: 9783030759483.

Hakim, J.N., Lansink, A. and Lubaale, E.C. (2021) The right to maternal healthcare of migrant and refugee women in South Africa and Uganda: Criminal accountability as a tool to address violation. In: Budoo-Scholtz, A. and Luballe, E.C. (eds.). *Violence Against Women and Criminal Justice in Africa: Volume II, Sexual Violence and Vulnerability*. London: Springer. p.303-337. ISBN: 9783030759520.

Lubaale, E.C. and Budoo-Scholtz, A. (2021) Introduction. In: Lubaale, E.C. and Budoo-Scholtz, A. (eds.). *Violence Against Women and Criminal Justice in Africa: Volume I: Legislation, Limitations and Culture*. Switzerland: Springer Nature Switzerland. p.3-12. ISBN: 9783030759483.

Lubaale, E.C. and Budoo-Scholtz, A. (ed.) (2021) *Violence Against Women and Criminal Justice in Africa: Volume I: Legislation, Limitations and Culture*. Switzerland: Springer Nature Switzerland. ISBN: 9783030759483.

Budoo-Scholtz, A. and Lubaale, E.C. (ed.) (2021) *Violence Against Women and Criminal Justice in Africa: Volume II, Sexual Violence and Vulnerability*. London: Springer. ISBN: 9783030759520.

Mathiba, G.L.

Mathiba, G.L. (2021) The constitutionality of the COVID-19 moratorium on evictions in South Africa. In: Boggenpoel, Z., van der Sijde, E., Tlale, M.T. and Mahomed, S. (eds.). *Property and Pandemics: Property Law Responses to COVID-19*. Cape Town: Juta & Co. p.208-228. ISBN: 9781485138693.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Kruuse, H.

Kruuse, H. Organiser and Chair. Panel: Ethics and legal Education. *Legal Ethics / Ethics in Law Conference*. Stellenbosch University, Stellenbosch. South Africa. 29 - 30 November 2021.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Akinloye, I.A.

Akinloye, I.A. (2021) Legal Issues Involving Succession Disputes among South African Churches: Some Lessons. *Ecclesiastical Law Journal*. 23 (2). p.160-190.

Glover, G.

Glover, G. (2021) Agency in South Africa: Mapping its defining characteristics. *Acta Juridica*. 2021 (1). p.243-273.

Lubaale, E.C.

Addaney, M. and Lubaale, E.C. (2021) An Unintended Legacy: The External Policy Responses of the USA and European Union to Conflict Minerals in Africa. *Laws*. 10 (2). p.1-17.

Lubaale, E.C. (2021) Covid-19-related criminalisation in South Africa. *South African Journal of Criminal Justice*. 33 (3). p.685-707.

Dinymoi, A.M.I. and Lubaale, E.C. (2021) The Right to Decision Making for Persons with Mental Disabilities in Uganda. *Speculum Juris*. 35 (2). p.1-19.

Mathiba, G.L.

Mathiba, G.L. (2021) Corruption in land administration and governance: A hurdle to transitional justice in the Post-Apartheid South Africa. *Obiter*. 42 (3). p.561-579.

Morudu, N.L.

Morudu, N.L. and Maimela, C. (2021) The indigenisation of customary law: Creating an indigenous legal pluralism within the South African dispensation: possible or not? *De Jure* 54. (1). p.54-69.

Mzolo, N.

Freedman, W. and Mzolo, N. (2021) The principle of legality and the requirements of lawfulness and procedural rationality. *Obiter*. 42 (2). p.421-430.

Van Coller, H. and Akinloye, I.A.

Van Coller, H. and Akinloye, I.A. (2021) Death in Worship Places: Evaluating the Roles of Religious Organisations and State Governments in Reducing the Risks of Religious Disaster. *Jamba: Journal of Disaster Risk Studies*. 13 (1). p.1-10.

Van Coller, H.

Van Coller, H. (2021) Vryheid van Uitdrukking: Godslastering en die Verbod op Godsdienslike Haatspraak. *Tydskrif Vir Geesteswetenskappe*. 61 (1). p.87-106.

PEER-REVIEWED PROCEEDINGS

Mashinini, T.N.

Mashinini, T.N. Criminal Liability for the Violation of Identity using Deepfakes in South Africa. *International Conference on Cyber Warfare and Security*. Tennessee Tech University and Oak Ridge National Laboratory, Cookeville, Tennessee. United States of America. February 2021.

Murahwi, T.D. and Mashinini, T.N.

Murahwi, T.D. and Mashinini, T.N. The Legal Nature of Systems of Artificial Intelligence in South Africa. *3rd European Conference on the Impact of Artificial Intelligence and Robotics ECIAIR 2021*. Iscte - Instituto Universitario de Lisboa, Lisboa. Portugal. November 2021.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Glover, G.

Glover, G. Recent developments in the revocation of mandates. *Private Law and Social Justice Conference*. Virtual - Nelson Mandela University, Port Elizabeth. South Africa. August 2021.

Kruuse, H.

Kruuse, H. and Mwambene, L. Recognising form through function within the context of integrating the bride requirement in customary marriage. *Centre for Legal Integration in Africa's inaugural symposium: The future of legal orders in Africa*. University of the Western Cape, Cape Town. South Africa. October 2021.

Kruuse, H. Using E4J materials to achieve the SDG goals relating to justice in the South African jurisdiction. *Fourteenth United Nations Congress on Crime Prevention and Criminal Justice*. Online, Kyoto. Japan. March 2021.

Kruuse, H. Litigating customary marriage disputes: The need to move away from an adversarial approach. *Acta Juridica Symposium honouring Professor Chuma Himonga's work in customary law*. University of Cape Town, Cape Town. South Africa. September 2021.

Lubaale, E.C.

Lubaale, E.C. The implication of Covid-19-related measures on women's access to justice in South Africa. *Criminology and Criminal Justice Conference*. Online. Kenya. July 2021.

Lubaale, E.C. The implication of Covid-19-related measures on women's access to justice in South Africa. *Criminology and criminal Justice conference*. Virtual, Kenya. July 2021.

Mathiba, G.L.

Mathiba, G.L. Critical Assessment of the Whistle-blower Protection in the AU Convention on Preventing and Combating Corruption: South Africa in Context. *5th Annual Conference of the Law and Development Network: Beyond the Crisis: Challenges and Opportunities for Law and Development*. NMU, Port Elizabeth. South Africa. November 2021.

Mathiba, G.L. and Lefenya, K. Enhancing Accountability for Environmental Damage in South Africa, Zimbabwe, Mozambique and Swaziland: Towards Environmental Justice. *Environmental Law Association (ELA) Annual Conference*. Virtual, Online. South Africa. September 2021.

Mathiba, G.L. The Potential of Asset Recovery in Deterring Corruption & Other Transnational Crimes: South African Perspective with insights from *Bobroff v NDPP* [2021]. *4th International Conference on the Right to Development: Right to Development and Illicit Financial Flows from Africa*. Centre for Human Rights, Free State. South Africa. November 2021.

Morudu, N.L.

Morudu, N.L. Romancing customary law: The disparity between the legislative and judicial interpretation of customary practices in South Africa. *Inaugural Symposium Centre for Legal Integration in Africa Department of Private Law, University of the Western Cape, South Africa*. Virtual, Cape Town. South Africa. October 2021.

Morudu, N.L. The digital divide and COVID-19 pandemic: Exploring the quality of assessments in Higher Education. *7th Flexible Futures Conference: Reimagining Teaching and Learning in Higher Education*. Virtual, Pretoria. South Africa. August 2021.



DEPARTMENT OF Linguistics and Applied Language Studies

Professor Silvester Ron Simango
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The research endeavours for staff were severely curtailed by the effects of the Covid-19 pandemic, which meant that for the second year running a number of local and international conferences and symposia were either cancelled or indefinitely postponed whilst other research activities were held in abeyance. Nevertheless, staff managed to have some of their work published as well as take advantage of the limited avenues for making presentations.

Professor Simango presented his work at the 8th International Conference on Bantu Languages (Bantu 8) which was virtually hosted by the University of Essex, England, in June 2021. He and Dr Xiujie Ma from Beijing Foreign Studies University co-presented their work at the annual conference of the Southern African Linguistics and Applied Languages Society which was (virtually) hosted by the University of Stellenbosch in September 2021.

Professors de Vos, Simango, Dr Sieborger and Ms Bowles continued to be members of the Southern African Linguistics and Applied Linguistics Society (SALALS). Ms Bowles also continued her membership of the Literacy Association of South Africa (LITASA) where she serves as the chairperson of the Eastern Cape branch. Professor Simango continued to serve as a non-executive director for the Molteno Institute for Language and Literacy in addition to serving as an executive member of SALALS. He also continued to serve as a member of the Academy of Science of South Africa.

POSTGRADUATES / GRADUATIONS

One student graduated with a PhD degree, one with an MA degree, whilst nine (9) more completed their Honours degrees. In addition, nine (9) Postgraduates continued with their MA studies and a further fourteen (14) continued with their PhD studies. A number of these Postgraduate students presented their work at a specially arranged virtual linguistics conference which was held in September 2021.



October 2021 graduation of Nomava Tunzelana with Professor Ralph Adendorff. A special occasion, presided over by the VC, because Ms Tunzelana achieved this feat at the age of over 70 and demonstrated, in the VC's words, that age is not a barrier to studying. Ms Tunzelana did her MA thesis on Sign Language teaching.

Photo: Department of Linguistics and Applied Language Studies

BOOKS/CHAPTERS/MONOGRAPHS

Hunt, S.

Hunt, S. (2021) The South African news media and representations of gender and sexuality. In: *Handbook of Language, Gender and Sexuality*. London: Routledge. p.100-167. ISBN: 9781138200265.

Simango, S.R.

Simango, S.R. (2021) Language Contact and Structure in Urban IsiXhosa and Associated Youth Languages. In: *Youth Language Practices and Urban Language Contact in Africa*. Cambridge: Cambridge University Press. p.13-38. ISBN: 9781107171206.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATION

Adendorff, R.D.

Smith, J. and Adendorff, R.D. (2021) Reading parents: Parody and paradox in Go the Fuck to Sleep. *Language & Communication*. 77 (2021). p.1-12.

Hunt, S.

Hunt, S. (2021) COVID and the South African Family: Cyril Ramaphosa, President, or father? *Discourse Context & Media*. 44 (2021). p.1-12.



Nomava Tunzelana with the Head of Department, Professor Simango.

Photo: Department of Linguistics and Applied Language Studies

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Simango, S.R.

Simango, S.R. and Ma, X. The search for verb-stranding VP ellipsis in isiXhosa. *Annual Conference of the Southern Africa Linguistics and Applied Language Studies*. Stellenbosch University, Cape Town. South Africa. September 2021.

Simango, S.R. Towards a characterization of spatial deixis in Bantu. *8th International Conference on Bantu languages*. University of Essex, Essex. England. June 2021.



Nomava Tunzelana with her Supervisor, Dr Ian Sieborger.

Photo: Department of Linguistics and Applied Language Studies



DEPARTMENT OF Literary Studies in English

Associate Professor Lynda
Gichanda Spencer
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Despite the continued challenges brought about by the Covid restrictions of 2021, we were able to engage in local and international collaborations. While most of these activities took place online, there were a few face-to-face events.

Members of staff, Postdoctoral Fellows and Postgraduate students maintained a steady research output, Postgraduate supervision, and undergraduate teaching. The highpoint of the year was the publication of two monographs, by two Postdoctoral Fellows Drs Andrea Thorpe and Sean Bosman.

POSTGRADUATES / GRADUATIONS

Heartfelt congratulations to our Postgraduate students and their supervisors. In total five (5) Masters students and nine (9) Honours students were awarded their degrees at various graduation ceremonies. Nine (9) of these degrees were awarded with distinction.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Professor Ranka Primorac. University of Southampton, Southampton, United Kingdom. Visiting Researcher, June 2021.

Professor Nedine Moonsamy. University of Pretoria, Pretoria, South Africa. Visiting Researcher, July & September 2021.

Dr Maria Zirra. Stockholm University, Stockholm, Sweden. Visiting Researcher, September - December 2021.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The Intersecting Diasporas Group (IDG) led by Professor Sam Naidu is housed in the Department of Literary Studies in English,

Rhodes University. In 2021, two affiliates of the IDG published two cutting-edge academic texts; *South African London: Writing the Metropolis after 1948* by Dr Andrea Thorpe and *Rejection of Victimhood in Literature* by Abdulrazak Gurnah, Viet Thanh Nguyen and Luis Alberto Urrea by Dr Sean James Bosman.

Dr Andrea Thorpe joined the IDG in 2017 after completing a PhD titled "Cosmos in London: South Africans Writing London after 1948", at Queen Mary, University of London. She was an excellent fit for the IDG because her thesis focused specifically on transnational South African literature written in and about London. During her Postdoctoral Fellowship Andrea prepared a manuscript titled *South African London: Writing the Metropolis after 1948*, which was published by Manchester University Press. This book examines postwar South African writing about London and the ways in which apartheid South Africa is figured in the texts and networks of black British writers during the second half of the twentieth century. While contributing to South African literary studies and literary historiography, this monograph reaches beyond its primary national context towards a timely recognition of South African literature's intersections with other diasporic and transnational literatures.

Dr Sean James Bosman was a member of the IDG for several years, both as a PhD candidate and a Postdoctoral Fellow. His book, *Rejection of Victimhood in Literature* by Abdulrazak Gurnah, Viet Thanh Nguyen and Luis Alberto Urrea, was published by BRILL. The monograph examines literature that engages with the precarity of transnationals in times of increased nationalism, but it focuses on the role of just memory in the rejection of victimhood. In particular, Dr Bosman's work is concerned with the complex relationships amongst victimhood, aggression, agency, and just memory. This text offers timely and pertinent criticism of the work of three world-renowned transnational authors, not least of all, that of 2021 Nobel Laureate, Abdulrazak Gurnah.



Intersecting Diasporas Group (IDG) members at the book launch of *South African London: Writing the Metropolis after 1948* by Dr Andrea Thorpe and *Rejection of Victimhood in Literature* by Abdulrazak Gurnah, Viet Thanh Nguyen, Luis Alberto Urrea and by Sean Bosman.

L-R: Dr Andrea Thorpe, Professor Sam Naidu and Dr Sean James Bosman.

Photo: Department of Literary Studies in English

The Urban Connections in African Popular Imaginaries (UCAPI) project led by Associate Professor Lynda Gichanda Spencer and Dr Minesh Dass (University of Johannesburg) participated in two events; the 5th Eastern African Literary and Cultural Studies Conference (EALCSC) which took place at Moi University, in Eldoret and the 4th African Feminisms Conference (Afems) which was a joint-collaboration between the University of Cape Town (UCT) and the University of the Witwatersrand (Wits) hosted at the University of Cape Town in Cape Town. At the 5th EALCSC, Professor Spencer convened a Roundtable discussion on Dina Ligaga's monograph *Women, Visibility and Morality in Kenyan Popular Media*. The panellists included Professor Dina Ligaga (Wits University), Dr Doseline Wanjiru Kiguru (Bristol University), Professor Asante Lucy Mtenje (University of Malawi), Professor Pumla Dineo Gqola (Nelson Mandela University) and Dr Nwabisa Bangeni (Stellenbosch University). In addition, Associate Professor Spencer hosted a writing workshop in collaboration with Professor Tina Steiner (Stellenbosch University), Dr Godwin Siundu (University of

Nairobi) and Professor Dina Ligaga (Wits University) the editors of *The Journal of Eastern African Literary & Cultural Studies*.

Despite the challenges posed by the pandemic, the 4th Afems Conference brought together feminist scholars, practitioners, and artists from all regions of South Africa and beyond. The conference allowed a network of African feminist scholars, activists, and practitioners to reconnect and reflect on the implications of the current political, environmental, and social moment from the perspective of feminist theory and praxis: COVID 19 and the implications for women's physical and mental health, reported increases in gender-based violence, trans-rights and growing environmental crises. Three of our Postgraduate students read papers at this event; Kate Jennings, Pearl Munemo and Kananelo Tsuene.

BOOKS/CHAPTERS/MONOGRAPHS

Bosman, S.J.

Bosman, S.J. (2021) *Rejection of Victimhood in Literature*. Leiden: Brill. ISBN: 9789004468993.

Phiri, A.

Phiri, A. (2021) (In)visible Man: Tracing Ralph Ellison's Legacy to South Africa. In: Roynon, T. and Conner, M.C. (eds.). *Global Ralph Ellison: Aesthetics and Politics Beyond US Borders*. Frankfurt: Peter Lang. p.155-187. ISBN: 9781789974942.

Spencer, L.G.

Spencer, L.G. (2021) "A strange combination of femininity and menace": Re-thinking the figure of the female soldier in Nadifa Mohamed's *The Orchard of Lost Souls*. In: Nkealah, N and Nnaemeka, O. (eds.). *Gendered Violence and Human rights in Literature and Film: Perspectives from Africa and the African Diaspora*. London: Routledge. p.147-162. ISBN: 9780367369491.

Thorpe, A.

Thorpe, A. (2021) *South African London Writing the metropolis after 1948*. UK: Manchester University Press. ISBN: 9781526148551.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Jennings, K.

Jennings, K. Presenter. "Rwandan attitudes towards Gacaca courts": Breaking the silence of violence against women during childbirth". *The 4th African Feminisms (Afems) Conference*. University of Cape Town, Cape Town. South Africa. 1-5 November 2021.

McGregor, J.

McGregor, J. Presenter. Two Rings Revisited: Wagner and J.R.R. Tolkien. *Wagner Society Lecture Season 2021*. Wagner Society of London, United Kingdom. 7 April 2021.

McGregor, J. Presenter. "Öd und leer das Meer": Wagner and T.S. Eliot. *Wagner Society Lecture Season 2021*. Wagner Society of London, United Kingdom. 21 April 2021.

McGregor, J. Presenter. "The sea, music and death": Wagner and Virginia Woolf. *Wagner Society Lecture Season 2021*. Wagner Society of London, United Kingdom. 5 May 2021.

McGregor, J. Presenter. "Nothing up my sleeve": Wagner and James Joyce. *Wagner Society Lecture Season 2021*. Wagner Society of London, United Kingdom. 26 May 2021.

Munemo, P.

Munemo, P. Presenter. "Love and healing in Barbara Boswell's Grace". *The 4th African Feminisms (Afems) Conference*. University of Cape Town, Cape Town. South Africa. 1-5 November 2021.

Njovane, T.

Njovane, T. Respondent. Chandra Mohanty: On Modalities of Radical Feminist Praxis. *Intersectionality and Critical Diversity Annual Lecture*. University of Bayreuth, Bayreuth. South Africa. 28 January 2021.

Njovane, T. Panellist. Democracy and Black Women's Knowledge Production. *Africa Multiple Cluster Centres Gender and Diversity Office Roundtable*. University of Bayreuth, Bayreuth. South Africa. 22 April 2021.

Njovane, T. Panellist. Roundtable Discussion on "What constitutes African Studies in Africa". *Rhodes University African Studies Centre*. Rhodes University, Makhanda. South Africa. 25 May 2021.

Njovane, T. Research Paper. Silent Presences: Fiction, Colonialism and the Shadow of History in Kenya. *Undisciplining and Methodologies of Care: Rethinking the Politics of Knowledge in Postcolonial Landscapes Workshop*. University of Bayreuth, Bayreuth. Germany. 8 - 11 July 2021.

Njovane, T. Research Paper. Gender and Diversity in South African Higher Education. *Interrogating Gender and Diversity in Research Workshop*. Moi University, Nairobi. Kenya. 29 - 30 July 2021.

Njovane, T. Panellist. Reflecting on Historical Trauma and Living with the Haunting Power of the Past: A conversation with Stephen Frosh, Thando Njovane, Stephen David, Kim Wale and Pumla Gobodo-Madikizela. Seminar. University of Stellenbosch, Stellenbosch. South Africa. 14 April 2021.

Phiri, A.

Phiri, A. Invited Discussant. Toni Morrison: The Legacy of a Literary Legend. *The Forum at BBC World Service*. Online, 23 September 2021. <https://www.bbc.co.uk/sounds/play/w3ct1rlq>

Spencer, L.G.

Spencer, L.G. Panellist. Roundtable Discussion on Women, Visibility and Morality in Kenyan Popular Media with Dina Ligaga, Doseline Wanjiru Kiguru, Asante Lucy Mtenje, Pumla Dineo Gqola and Nwabisa Bangeni. *The 5th Eastern African Literary and Cultural Studies Conference*. Moi University, Eldoret. Kenya. 6 - 8 September 2021.



UCAPI affiliates at The 5th Eastern African Literary and Cultural Studies Conference in Eldoret. L-R: Dina Ligaga, Lynda Spencer, Tina Steiner, Wanjiru Kiguru, Kudzai Barure and Patrick Lumasia.
Photo: Department of Literary Studies in English



Members of UCAP at The 4th African Feminisms Conference (Afems) in Cape Town. L-R: Tina Steiner, Noluthando Sibisi, Lynda Spencer and Pearl Munemo
Photo: Department of Literary Studies in English

Spencer, L.G. Co-convenor. Writing workshop with Tina Steiner, Godwin Siundu and Dina Ligaga. *The 5th Eastern African Literary and Cultural Studies Conference*. Moi University, Eldoret. Kenya. 6th-8th September 2021.

Spencer, L.G. Co-organiser with Polo Moji and Sharlene Khan. "In Search of our Shrines: Feminist Healing and the Politics of Love". *The 4th African Feminisms (Afems) Conference*. University of Cape Town, Cape Town. South Africa. 1 - 5 November 2021.

Tsuene, K.

Tsuene, K. Presenter. "The Multi-Placedness of Home in Chimamanda Ngozi Adichie's *Americanah*". *The 4th African Feminisms (Afems) Conference*. University of Cape Town, Cape Town. South Africa. 1-5 November 2021.

OTHER PUBLICATIONS

Naidu, S.

Naidu, S. (2021) 'Hope, Inspiration in a Time of Plague'. Review of *When the Village Sleeps* by Sindiwe Magona, Picador Africa (imprint of Pan Macmillan South Africa) 2021. *Grocott's Mail*. p.1-6.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Bosman, S.J.

Bosman, S.J. (2021) 'Nor was there any role for you; Unsettling canonical frames in Abdulrazak Gurnah's *By the Sea* (2001) and *Gravel Heart* (2017). *English in Africa*. 48 (3). p.29-46.

Bosman, S.J. (2021) A Fiction to Mock the Cuckold?: Reinventing the Cliché Figure of the Cuckold in Abdulrazak Gurnah's *By the Sea* (2001) and *Gravel Heart* (2017). *Eastern African Literary and Cultural Studies*. 7 (3). p.176-188.

Cornwell, D.G.N.

Cornwell, D.G.N. (2021) Willem Anker's Red Dog, Cormac McCarthy, and the Enigma of Coenraad de Buys. *English in Africa*. 48 (2). p.7-22.

Kiguru, D.W.

Kiguru, D.W. (2021) Speculative fiction and African urban futures: Writing food in Billy Kahora's edited collection *Imagine Africa 500*. *Tydskrif vir letterkunde*. 58 (1). p.1-9.

Lumasia, P.C.

Lumasia, P.C. (2021) Churchill Show: Transgressing language codes and upsetting stereotypes. *Tydskrif vir letterkunde*. 58 (1). p.1-11.

Marais, M.

Marais, M. (2021) Hospitality, Reading, and the Aesthetic of Uncertainty: Mohsin Hamid's *The Reluctant Fundamentalist*. *JNT-Journal of Narrative Theory*. 51 (1). p.84-103.

Njovane, T.

Njovane, T. (2021) My Mother Was a Fish?: Racial Trauma, Precarity, and Grief in K. Sello Duiker's *Thirteen Cents*. *Research in African Literatures*. 51 (4). p.173-189.

Tembo, M.N.

Tembo, M.N. (2021) National Identity and Xenophobia in Kopano Matlwa's *Period Pain*. *Imbizo: International Journal of African Literary and Comparative Studies*. 12 (1). p.1-17.

Walters, P.S.

Walters, P.S. and Fogg, J. (2021) When in Doubt, Leave Out?:1 The Country Editor Who Declined to Publish a Long Letter from Olive Schreiner. *English in Africa*. 47 (2). p.1-18.

Wylie, D.

Wylie, D. (2021) The dark surrealism of Phyllis Haring's poetry. *English in Africa*. 48 (3). p.65-86.

Wylie, D. (2021) Self/Isolation. *English Studies in Africa*. 64 (1-2). p.41-46.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Naidu, S.

Naidu, S. Intersecting Crime: Europe through the Eyes of an African Assassin in Deon Meyer's *The Last Hunt*. Detecting Europe in Contemporary Crime Narratives Conference. Online, Link University. Rome. June 2021.

Njovane, T.

Njovane, T. Decolonisation and Black Women's Knowledge Production. *Annual Conference of the Africa Multiple Cluster of Excellence*. University of Bayreuth, Bayreuth. Germany. July 2021.

Phiri, A.

Phiri, A. The Ludic Impulse: Race Narratives 'at play' in Toni Morrison's *Playing in the Dark* and Zoë Wicomb's *Playing in the Light*. *Literature and Epistemic In/Justice virtual international workshop/conference*. Online, Cambridge and Bayreuth Universities. 13-14 May 2021.

DISTINGUISHED VISITORS

Moonsamy, N.L.

Professor NL Moonsamy. University of Pretoria, Pretoria, South Africa. *Research*. November 2021.

Professor NL Moonsamy. University of Pretoria, Pretoria, South Africa. *Research*. June 2021.

Primorac, R.

Dr R Primorac. University of Southampton, Southampton, United Kingdom. *Collaboration*. June 2021.

Zirra, M.

Dr M Zirra. Stockholm University, Stockholm, Sweden. *Research*. September 2021.



DEPARTMENT OF Management

Mr Trevor Amos
Head of Department

Photo: Dirk Pieters

INTRODUCTION

During 2021, the Department of Management continued to promote and develop a research culture and research capability by integrating the development of research thinking and skills into its teaching, particularly at the fourth-year level where students are exposed to a research methodology module and produce a research report. The Department also offers a structured research component in the Masters and PhD programme.

Staff continued their research and authoring during the year with several publications due in 2022. Some of the activity centred around content development of e-books for online course delivery and authoring an IPUB on Entrepreneurship and how to establish your own business. The “Chinese organisations in sub-Saharan Africa: New Dynamics, New Synergies” project was finalised and is reported on below as a significant research aligned event.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Led by Professor Lynette Louw, the project on “Chinese organisations in sub-Saharan Africa: New Dynamics, New Synergies” culminated in the publication of a monograph with Routledge Taylor and Francis. Eight of the eleven chapters in the monograph are authored or co-authored by staff, Research Associates and Postgraduate students in the Department of Management. The rationale of this international collaborative project, with colleagues from the UK and China, stemmed from the increasing importance of the implications of China’s overseas policies and actions of its major organisations and how this is played out at management, organisational and community level

in sub-Saharan African. While the implications of China’s presence in Africa is well researched at the macro-levels of international relations, politics, economics and foreign investment, there is a lack of research at the organisational and community levels. While this macro-level literature informed the research in this project, this project contributed toward theory building and empirical research that critically analysed the role of Chinese organisations and how they operate in Africa. The project also addressed the need to examine management practice, policy and business leadership implications.

The finalised project has resulted in the following research output:

Postdoctoral Fellows: 2

PhDs: 3 graduated

Masters: 5 graduated

Honours: 5 research projects completed

Publications in national and international accredited journals: 8 articles

International Symposium hosted by the Department of Management that marked the beginning of this project: 9 papers

National conference papers and/or proceedings: 26

International conference papers and/or proceedings: 11

Department of Management Honours student, Marina Ngobeni, supervised by Nadine Oosthuizen and Alyssa Williams, was chosen as 1 of 2 candidates to represent Rhodes University at the National Three Minute Thesis (#3MT) Competition where she competed against PhD students.

BOOKS/CHAPTERS/MONOGRAPHS

- Amos, T.**
Amos, T., Pearse, N.J., Ristow, A. and Ristow, L. (2021) *Human Resource Management*. 5th Ed. Cape Town: Juta & Co. ISBN: 9781485131427.
- Amos, T.** (2021) Human Resource Management. In: Nieuwenhuizen, C. (ed.). *Business Management: An African Perspective*. Cape Town: Juta & Co. p.1-606. ISBN: 9781485131489.
- Chigwendere, F.B.**
Chigwendere, F.B. (2021) Towards intercultural effectiveness in Sino-African organisations: exploring synergies and differences in communication culture. In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.103-128. ISBN: 9781138692558.
- Jackson, T.**
Jackson, T. (2021) Current research on Chinese organizations in Africa: what do we know, and what do we need to do? In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.3-22. ISBN: 9781138692558.
- Louw, L.**
Louw, L. (2021) Why is the Chinese presence in Africa important to management scholars? In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.23-52. ISBN: 9781138692558.
- Louw, L.** (ed.) (2021) *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. ISBN: 9781138692558.
- Mabuza, L.T. and Louw, M.**
Mabuza, L.T. and Louw, M. (2021) The influence of organisational culture on a high-commitment work system: the case of a Chinese multinational corporation in South Africa. In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.184-202. ISBN: 9781138692558.
- Mayer, C.H. and Boness, C.M.**
Mayer, C.H. and Boness, C.M. (2021) Experiences of Chinese and Tanzanian cooperation in a Chinese organisation in Tanzania. In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.204-233. ISBN: 9781138692558.
- Mbalyohere, C.**
Mbalyohere, C. (2021) Chinese firms in Uganda: the important role of the mediator. In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.234-252. ISBN: 9781138692558.
- Paterson, S.J. and Louw, L.**
Paterson, S.J. and Louw, L. (2021) South African employees' commitment to a Chinese organisation. In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.166-179. ISBN: 9781138692558.
- Zindiye, S.**
Zindiye, S. (2021) Chinese organisations and management in Zimbabwe: an analysis of press representation. In: Jackson, T., Louw, L. and Boojihawon, E.K. (eds.). *Chinese organisations in sub-Saharan Africa: New dynamics, new synergies*. London: Routledge Taylor and Francis. p.152-165. ISBN: 9781138692558.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

- Antoni, X.L.**
Antoni, X.L. and Saayman, M. (2021) The influence of financial socialisation mechanisms on young financial Professionals' financial literacy levels in the Eastern Cape. *Academy of Accounting and Financial Studies Journal*. 25 (3): p.1-15.
- Asah, F.T. and Louw, L.**
Asah, F.T. and Louw, L. (2021) Formal financial institutions financing of immigrant small and medium enterprises in South Africa. *Acta Commercii*. 21 (1): p.1-10.
- Asah, F.T. and Louw, L.** (2021) Guidelines and criteria used by formal financial institutions to assess credit applications from small and medium enterprises in South Africa. *The Southern African Journal of Entrepreneurship and Small Business Management*. 13 (1): p.1-9.

PEER-REVIEWED PROCEEDINGS

- Antoni, X.L.**
Antoni, X.L. The influence of financial socialisation agents on students' financial attitudes: A South African perspective. *Virtual Social Sciences International Research Conference (SSIRC) 2021*. Potchefstroom Campus, Potchefstroom. South Africa. October 2021.
- Louw, M. and Oosthuizen, N.**
Manyonganise, J.A., Louw, M. and Oosthuizen, N. Perceptions on customer relationship management (CRM) and its possible influence on revenue management (RM) at a selected water board in South Africa. *32nd Southern African Institute for Management Scientists (SAIMS) Conference*. North West University, Potchefstroom. South Africa. September 2021.
- Oosthuizen, N.**
Babirye, H., Oosthuizen, N. and Tait, M. A framework of enabling factors for contract compliance in procuring and disposing entities (PDES) in Uganda. *32nd Southern African Institute for Management Scientists (SAIMS) Conference*. North West University, Potchefstroom. South Africa. September 2021.
- Oosthuizen, N., Babirye, H. and Tait, M.** Challenges in the implementation of contract compliance in state departments. *14th International Business Conference (IBC 2021)*. Virtual, Online. South Africa. September 2021.
- Williams, A.S. and Oosthuizen, N.**
Williams, A.S. and Oosthuizen, N. A framework of electronic customer experience (E-CX) factors necessary for ensuring customer satisfaction of e-commerce retail organisations. *Social Sciences International Research Conference*. Online, Potchefstroom. South Africa. October 2021.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

- Shabane, T.S. and Louw, L.**
Shabane, T.S. and Louw, L. The relationship between talent management and organisational effectiveness as moderated by organisational culture in the South African public sector. *32nd Online Southern African Institute for Management Scientists (SAIMS) Conference*. North-West University, Potchefstroom. South Africa. September 2021.



DEPARTMENT OF Mathematics (Pure and Applied)

Dr Eric Andriantiana
Head of Department

Photo: Dirk Pieters

INTRODUCTION

In addition to maintaining our research output pace, 2021 was marked by efforts to extend our research networking and collaboration locally and internationally. For this some of our staff members were actively involved in organising local and international research events.

POSTGRADUATES / GRADUATIONS

Our Rhodes Artificial Intelligence Research Group continues to boost the number of our Postgraduates, thanks to the good connection of this research area to statistics and computer science. We had a few Postgraduate students co-supervised with statisticians, and we hope to have similar collaborations with the computer science academics.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Associate Professor Claudiu Remsing was among the organising committee of the Differential Geometry special session in the 8th European Congress of Mathematics.

Dr Eric Andriantiana chaired the organising committee of the 2021 Graph Theory Research retreat (GTRR) of the Coe-Mass Graph Theory focus area, for which he is the junior coordinator.

PUBLICATIONS

BOOKS/CHAPTERS/MONOGRAPHS

Bishop, N.T.

Bishop, N.T. (2021) Introduction to Gravitational Wave Astronomy. In: Bambi, C. and Katsanevas, S. (eds.). *Handbook of Gravitational Wave Astronomy*. Singapore: Springer Nature Singapore. p.1-31. ISBN: 9789811547027.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Remsing, C.C.

Barrett, I. and **Remsing, C.C.** (2021) Restricted Jacobi fields. *International Electronic Journal of Geometry*. 14 (2). p.247-265.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Andriantiana, E.O.D.

Andriantiana, E.O.D. and Dossou-Olory, A.A.V. (2021) Nordhaus-Gaddum inequalities for the number of connected induced subgraphs in graphs. *Quaestiones Mathematicae*. 44 (9). p.1-23.

Andriantiana, E.O.D., Razanajatovo Misanantenaina, V. and Wagner, S. (2021) Extremal Trees with Fixed Degree Sequence. *Electronic Journal of Combinatorics*. 28 (1). p.1-34.

Atemkeng Teufack, M.

Brima, Y., **Atemkeng Teufack, M.**, Djiokap, S.T., Ebiele, J. and Tchakounté, F. (2021) Transfer Learning for the Detection and Diagnosis of Types of Pneumonia including Pneumonia Induced by COVID-19 from Chest X-ray Images. *Diagnostics*. 11 (8). p.1-30.

Ebongue Kedieng Fendji, J.I., Taira, D.M., **Atemkeng Teufack, M.** and Musa Ali, A. (2021) WATS-SMS: A T5-Based French Wikipedia Abstractive Text Summarizer for SMS. *Future Internet*. 13 (9). p.1-15.

Tchakounte, F., Nyassi, V.S., Houpa Danga, D.E., Priyanath, K. and **Atemkeng Teufack, M.** (2021) A Game Theoretical Model for Anticipating Email Spear-Phishing Strategies. *EAI Endorsed Transactions on Scalable Information Systems*. 8 (30). p.1-10.



Dr Atemkeng, Sisipho Hamlomo (PhD candidate in Mathematics and Lecturer in the Statistics Department) and Masechaba Sydil Kupa (MSc student in Physics and Electronics) at the Deep learning Indaba conference in Tunis, Tunisia.

Photo: Department of Mathematics (Pure and Applied)

Atemkeng Teufack, M., Okouma, P.M. and Nandutu, I.
Atemkeng Teufack, M., Okouma, P.M. and Nandutu, I. (2021) Integrating AI ethics in wildlife conservation AI systems in South Africa: a review, challenges, and future research agenda. *AI and Society*. 20 (4). p.1-13.

Hakata, J.H.
 Frauendiener, J., **Hakata, J.H.** and Stevens, C. (2021) Can Gravitational Waves Halt the Expansion of the Universe? *Universe* 7. (7). p.1-21.

Naidoo, M., Bishop, N.T. and Van Der Walt, P.J.
Naidoo, M., Bishop, N.T. and Van Der Walt, P.J. (2021) Modifications to the signal from a gravitational wave event due to a surrounding shell of matter. *General Relativity and Gravitation*. 53 (77). p.1-14.

Okouma, P.M.
 Strubbe, L., Okere, B.I., Zhang, J., Chibueze, J.O., Ikape, M., **Okouma, P.M.**, Ibiak, A. and *et al.* 4. (2021) The Pan-African School for Emerging Astronomers. *Nature Astronomy*. 5 (2021). p.217-220.

Olonijju, S.D.
Olonijju, S.D., Otegbeye, O. and Ezugwu, A.E. (2021) Investigating the impact of vaccination and non-pharmaceutical measures in curbing COVID-19 spread: A South Africa perspective. *Mathematical Biosciences and Engineering*. 19 (1). p.1-20.

Remsing, C.C.
 Barrett, D.I. and **Remsing, C.C.** (2021) On the Schouten and Wagner curvature tensors. *Rendiconti del Seminario Matematico dell'Universita di Padova*. p.1-26.

PEER-REVIEWED PROCEEDINGS

Atemkeng Teufack, M.
 Nguenang, G.M., **Atemkeng Teufack, M.**, Ansah-Narh, T., Rockefeller, R., Mulongo, J. and Garuti, M.A. Predicting Fuel Consumption in Power Generation Plants using Machine Learning and Neural Networks. *IEEE Proc. of the International Conference on Electrical, Computer and Energy Technologies (ICECET)*. 9-10 December 2021. Cape Town. South Africa. December 2021.



DEPARTMENT OF Music & Musicology

Professor Jeffrey Brukman
Acting Head of Department

Photos: Dirk Pieters



Dr William Fourie
Acting Head of Department

INTRODUCTION

Music's rich variety is reflected in the varied research offerings produced by the Department of Music and Musicology. These range from creative output to traditional research located in publications and conference presentations.

The Department's rich diversity encompasses western art music performance, practice-based research projects and scientific studies into sight reading, music psychology, African art music, identity, gender and power studies, as well as decolonisation. Our ever-expanding cohort of Postgraduate students presented their research in a set of colloquia with the relevance of their research to South African and African contexts being the cornerstone of the work. This is revealed in the assorted range of research completed by Masters and PhD students.

POSTGRADUATES / GRADUATIONS

Two (2) PhDs and three (3) Masters students graduated during the 2021 graduation ceremonies. One (1) of them was Dr Jacobus (JF) Viljoen being the first student to graduate with a PhD in Music Performance (three public performances and short thesis) from Rhodes University. The other PhD student, Dr Obianju Njoku, explored expressions of identity, gender and power in the musical traditions of the Nupe in Northern Nigeria. Garreth Robertson completed his MMus with distinction (performance and short thesis) and two (2) other students, Athenkosi Nelani and Jason Flanagan, were awarded MMus degrees.



Graduation Photo, Back row (L-R): Dr William Fourie, Dr Obianuju Njoku, Mr Jason Flanagan, Mr Gareth Roberts, Mr Athenkosi Nelani. Front row (L-R): Professor Catherine Foxcroft, Dr Boudina McConnachie, Dr JF Vijojo, Dr Lee Watkins and Professor Enocent Msindo.

Photo: Department of Music & Musicology

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Responding to the increased connectivity brought on by widely adopted modes of online education, Dr William Fourie initiated and convened the Rhodes University Music Colloquium Series. This series hosted a number of the world's leading scholars from various music studies disciplines. Speakers in the series included Professor Philip Ewell (The City University of New York), Dr Juliana M Pistorius (University of Huddersfield), Dr Shzr Ee Tan (Royal Holloway, University of London), Professor Xavier Livermon (University of California, Santa Cruz), Dr Samantha Ege (University of Oxford), Professor Eric Clarke (University of Oxford), Professor Naomi André (University of Michigan), Professor Nicola Dibben (University of Sheffield), and Professor Philip Bohlman (University of Chicago). These colloquia were attended by staff and students from Rhodes University as well as over two hundred people from around the world.

PUBLICATIONS

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Foxcroft, C.

Foxcroft, C. Performance. Chamber performance. *IMISI Piano Quintet at NMU Music and Performing Arts Department. Piano Quintet by R Vaughan Williams: world premiere of Residue by J-H Harley (SA composer). Collaboration with D Bester (NMU), A vd Westhuizen (UFS), JH Harley, M Meyer (RU).* South Campus Auditorium, Gqeberha. South Africa. 26 October 2021.

Foxcroft, C. Performance. Chamber performance. *IMISI Piano Quintet at GM Music Society. Piano Quintet by R Vaughan Williams: world premiere of Residue by J-H Harley (SA composer). Collaboration with D Bester (NMU), A vd Westhuizen (UFS), JH Harley, M Meyer (RU).* Kingswood College Chapel, Makhanda. South Africa. 25 October 2021.

McConnachie, B.

Simbao, R., Madiba, E.M. and McConnachie, B. Exhibition Talk. In conversation with Nashilongweshipwe Mushaandja (RAW Fellow). *Arts Lounge Talks, National Arts Festival.* Arts of Africa & Global Souths, Rhodes University, Makhanda. South Africa. 15 July 2021.

DISTINGUISHED VISITORS

Foxcroft, C.

C. Foxcroft. Kingswood College, Makhanda, South Africa. *ICE programme: Artist in residence.* March 2021.

C. Foxcroft. Classic SAFM 1027 Interview with Richard Cock, Johannesburg, South Africa. *SAFM 1027 People of Note with Richard Cock.* April 2021.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Fourie, W.E.

Fourie, W.E. (2021) Too Late for the Prayers. *Journal of the Musical Arts in Africa*. 18 (1). p. 155-157.

Fourie, W.E. (2020) On the Fragile Joys of Interpretation: A Response to Kevin Volans. *South African Music Studies*. 40. p.23-28.

Madiba, E.M. and McConnachie, B.

Watkins, L.W., **Madiba, E.M.** and **McConnachie, B.** (2021) Rethinking the decolonial moment through collaborative practices at the International Library of African Music (ILAM), South Africa. *Ethnomusicology Forum*. 30 (1). p. 20-39.

McConnachie, B.

McConnachie, B. (2021) Reshaping our musical values: decolonising teaching and curricular frameworks in the Eastern Cape. *Ethnomusicology Forum*. 30 (1). p. 40-51.

RESEARCH PAPERS PRESENTED AT ACADEMIC /SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Fourie, W.E.

Fourie, W.E., Harris, C.L. and Crossley, J. Iterations: On Collaborative Pedagogy, Research and Composition. *2021 Bowed Electrons Symposium*. University of Cape Town, Cape Town. South Africa. December 2021.

Fourie, W.E. On Indigenous Music Technologies and Agency. *2021 Bowed Electrons Symposium*. University of Cape Town, Cape Town. South Africa. December 2021.

Fourie, W.E. White Scars and Cracked Heirlooms: On Musical Modernism in Post-Apartheid South Africa. *15th Annual Meeting of the South African Society for Research in Music*. Nelson Mandela University, Gqeberha. South Africa. September 2021.

McConnachie, B.

McConnachie, B. Conversation: Using language as a resource for teaching in diverse learning contexts: the student-lecturer partnership. *CHERTL Online Event*. Online. South Africa. September 2021.

McConnachie, B., T. Makamure, P. Mathebula, B. Mavuso, H. McCarthy, and Y. Ntshakaza. Podcasting as a teaching and learning intervention. *HELTASA (un)Conference*. Online. South Africa. December 2021.



Dr Andile Khumalo, University of the Witwatersrand. Speaker at the Music Colloquium of 18 August 2021. Photo: Department of Music & Musicology



Dr Samantha Ege, Oxford University. Speaker at the Music Colloquium of 26th May 2021.

Photo: Department of Music & Musicology



International Library of African Music (ILAM)

Dr Lee Watkins
Director

Photo: Dirk Pieters

INTRODUCTION

In 2021, we had to reinvent many of our actions to comply with prevailing circumstances, with fieldwork, our dominant research approach, perhaps falling victim to the extent that it was difficult to produce first class, original research. The core duties of the archive continued as usual while we also tried to continue with our efforts at sustaining the leadership position of ILAM on the continent.

There were numerous developments at ILAM in 2021. These are new collaborations and ongoing efforts to develop the resources at ILAM. While we all welcome the digitization of the holdings at ILAM, digitization has opened up a world of new possibilities which are fairly demanding of our capacities. More and more clients from many parts of the globe seek either partnerships with ILAM or to purchase some of its items for personal use or further exploitation. The case of the Luvale community in Zambia is a case in point. The Luvale community is organising its own archive and has brought ILAM on board for the production and distribution of its music albums. The other component to the intensification of digitization is the development of new knowledge and new research possibilities to do with the holdings.

As we are now well on our way into the twenty-first century, we have to ask about the prospects for the future of the music archive. In the past fifteen years or so there have been dramatic changes at ILAM which are hopefully for the benefit of all of us. But how can these changes be managed in a sustainable manner, with a view to the future in which repositories may transform into any number of platforms? How can the archive continue to be an agent for the transformation of social relations, taking full cognizance of the fact that while many of us share

the privileges of technology, most South Africans are still left on the margins of access to things we take for granted? Existing projects at ILAM bear evidence that there are no ready-made answers to these questions, but that solutions can be found in incremental steps that depend on consultation, innovation, and experimentation. In our case, the sounds of Africa provide a valuable means of initiating and developing sustainable transformation.

POSTGRADUATES / GRADUATIONS

Obianuju Njoku graduated with a PhD. Her research focused on the music of Nupe women in Nigeria. This is the first study on the subject.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Dr Watkins made a presentation entitled, "Beyond the diaspora: Framings in the study of hip hop in South Africa", at the Bayreuth University-RU Multiple Cluster of Excellence on 18 May 2021.

Dr Watkins was invited by the IFAS-Recherche | French Institute of South Africa to make a presentation on 17 November 2021. A dominant observation of this seminar is the huge investment being made in archives at University of Western Cape (UWC), Stellenbosch University and University of Cape Town (UCT). There is a healthy number of graduate students and academics being recruited to conduct research and work in these archives. With its Mayibuye archive, the holdings at the UWC are immense and increasing dramatically. UCT has a Public Archives project which develops more the epistemological aspects to the archive.

On 2-4 November 2021 Dr Watkins also served as a Chair on two panels for PhD students at the NIHSS conference in Johannesburg.

NEW RESEARCH PROJECTS

ILAM has been admitted to two new projects. These are the 'The (In)Audible Past' and 'Beyond the Digital Return: New Heritage/s, Sustainability, and the Decolonisation of Music Archives in South Africa, Kenya, and Ghana.' Main partners in 'The (In)Audible Past' are Helena Pohlandt-McCormick (Rhodes University), Gary Minkley, (UFH), Ute Holl (University of Basel) and Lorena Rizzo (University of Basel). Situated in an interdisciplinary field (History, Media Studies, Sound Studies), this project consists of inquiries into sound as a site of political and cultural struggle, social and identity formation. The project is based on sound archives located in South Africa (Alice, Makhanda) and Namibia (Windhoek) where colonialism left its mark on the social, cultural and physical landscapes of these regions. This project is funded by the National Research Foundation in South Africa and the National Science Foundation in Switzerland.

Another project 'Beyond the Digital Return: New Heritage/s, Sustainability, and the Decolonisation of Music Archives in South Africa, Kenya, and Ghana.' The drivers of this project are Lee Watkins, Tom M. Mboya (Department of Literature, Linguistics, Foreign Languages and Film Studies, Moi University, Kenya), and Markus Coester (Anthropology/Anthropology of Music, University of Bayreuth, Germany). 'Beyond the Digital Return' researches the practice of repatriation/restitution and re/appropriation of submerged but now digitally accessible musical and cultural material. The main objective of the project is to enhance our understanding of how repatriation in the field of music yields new forms of cultural production associated with heritage and, more precisely, intangible cultural heritage.

Ongoing research project: Research on the neo-traditional jazz heritage of the Eastern Cape from a developmental perspective.

As far as capacity building and skills development are concerned, my colleague, Elijah Madiba, and I, have been training students, veteran musicians, and recruited members of local communities when it becomes necessary. Their training includes learning interview skills, audio and video recording, archiving, and conservation techniques. A critical intervention is that musicians are receiving training in how to manage their careers in the music and entertainment industries so that they may develop sustainable careers as performers. The music industry in South Africa is notorious for exploiting musicians and it is alarming the extent to which musicians in the rural Eastern Cape are not equipped to manage their careers. We have already conducted two successful workshops on music rights; one facilitated by SAMRO in 2020 and another one by celebrated musician and entrepreneur, Concorde Nkabinde. One concert was held in King Williams Town on 11 December 2021.



Poster for the Zwelitsha Jazz Heritage Concert

Photo: ILAM

INTERNATIONAL LIBRARY OF AFRICAN MUSIC (ILAM) PUBLICATIONS

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Madiba, E.M.

Simbao, R., Madiba, E.M. and Mcconnachie, B. Exhibition Talk. n conversation with Nashilongweshipwe Mushaandja (RAW Fellow). *Arts Lounge Talks, National Arts Festival. Arts of Africa & Global Souths*, Rhodes University, Makhanda. South Africa. 15 July 2021.

Watkins, L.

Watkins, L. and Madiba, E. *Zwelitsha Jazz Heritage Concert*. King Williamstown, South Africa. 11 December 2021.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Madiba, E.M.


Madiba, E.M. (2021) A collaborative approach to revitalisation and the repatriation of isiXhosa music recordings archived at the International Library of African Music (ILAM) in South Africa. *Ethnomusicology Forum*. 30 (1). p.52-62.

Watkins, L.W.

Watkins, L.W. (2021) Rethinking the decolonial moment through collaborative practices at the International Library of African Music (ILAM), South Africa. *Ethnomusicology Forum*. 30 (1). p.20-39.

EDITOR OF PEER REVIEWED AND ACCREDITED JOURNAL

African Music 11,3. The issue of 2021 consists of 155 pages. Please see the table below which demonstrates the success of the journal as far as the number of downloads is concerned:

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
	295	272	282	193	327	278	323	282	306	250	161	6004
-----	50	20	66	67	85	97	91	99	71	99	12	



FACULTY OF Pharmacy

Associate Professor
Sandile Khamanga
Dean of Faculty

Photo: Dirk Pieters

INTRODUCTION

This report reflects on some of the defining research developments and success stories of the past 12 months, a period in which we have been challenged to return to a more familiar way of doing. We began the year amid a national lockdown which dictated that many of our students would again be at home, not ideal for education, for some time. The COVID-19 pandemic precipitated a shift in the working practice of most staff and students. It was difficult to attend conferences in person. Some students found themselves scrambling for funding to cover the costs of requiring additional time to complete their programmes. The continuing pressure and uncertainty had a significant and often detrimental impact on the mental health of staff and students. It was important for students and staff to take part in cognitive behavioural therapy, to accept that the cause was related to the pandemic which required changes to be made in our life patterns. We have learnt that it is important that Postgraduate researchers and academic staff take mental-health breaks and seek support, when necessary.

The disruption caused by the pandemic required many researchers to rethink their research activities radically. They had hoped that many experiments would lead to several publications, but in consultation with supervisors, some cut back, necessarily, on the scope of the research. There have been significant capital investments in our laboratories. Further enhancement of our internationalisation agenda through new

global partnerships have been evident. The adaptability, resilience, and dedication shown by students and staff in the face of adversity has been fantastic to see with the result that we have emerged stronger from this crisis. I take great pride in the fact that the Faculty of Pharmacy remained focused on retaining its reputation for delivering research of the highest quality and continuing to be a globally connected centre of pharmaceutical sciences research. These include the Biopharmaceutical Research Institute which has continued to maintain its position as a biopharmaceutical research institute of choice for topical formulation equivalence assessment.

In 2022 the University will make significant investment in campus infrastructure including the refurbishment of the Pharmaceutical Sciences building. Our sense of pride will swell further when the research laboratories are refurbished.

POSTGRADUATES / GRADUATIONS

It is almost 20 years since the Faculty of Pharmacy opened a new chapter in the Postgraduate education of pharmacists in South Africa. Graduation 2021 saw the last cohort of PharmD graduate from the Faculty of Pharmacy receiving their degrees. We celebrated this great milestone in the history of the university and the country, and we celebrated their graduation at a luncheon co-organised by the co-ordinator of the PharmD programme and the Dean of the Faculty of Pharmacy. There is no doubt that the journey that the Faculty took truly fulfils our mission of improving the health of patients and populations through continuous and advanced healthcare education and Professional development.

On Saturday, 13 November 2021, six of the seven recent graduates of the Doctor of Pharmacy Programme gathered in Makhanda for a post-graduation celebration. The gathering was the first and last of its kind and was for those who had

PUBLICATIONS

graduated at the virtual graduations held by the University in 2020 and 2021. Notwithstanding the celebration the group was the last group to graduate with this qualification. Dr Witika Bwalya, who obtained his PhD in Pharmaceutics, was appointed as a Senior Lecturer in Pharmaceutics at Sefako Makgatho University.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Professor Sandile Khamanga from the Biopharmaceutical Research Group purchased a state-of-the-art Astree® E-Tongue/ taste sensor to support research across the technology research initiative in taste masking of pharmaceutical products. The instrument is an ion-selective field effect transistor (ISFET) which is dedicated to discriminate samples according to their taste properties. The application range of the taste sensor extends far beyond the analysis of pharmaceutical products and will be applied to the wine, food, and beverage industries.

Professor Dr MD Jasim Uddin of the Department of Pharmacy, Brac University, Bangladesh and Professor Khamanga are working on a collaborative and partnership research process to build research structures that focus on current perspective on microneedles for ocular drug delivery, design, formulation, and optimisation.

BOOKS/CHAPTERS/MONOGRAPHS

Kanfer, I.

Kanfer, I. and Maibach, H.I. (2021) The Vasoconstrictor Assay: Then and Now. In: Berner, B., Gordi, T., Benson, H.A.E. and Roberts, M.S. (eds.). *Drug Delivery Approaches: Perspectives from Pharmacokinetics and Pharmacodynamics*. Delft: Wiley. p.221-236. ISBN: 9781119772736.

Kanfer, I. and Patnala, S.

Kanfer, I. and Patnala, S. (2021) Regulations for the use of herbal remedies. In: Henkel, R. and Agarwal, A. (eds.). *Herbal Medicine in Andrology an Evidence-Based Update*. London: Elsevier Academic Press. p.189-206. ISBN: 9780128155653.

Patnala, S. and Kanfer, I.

Patnala, S. and Kanfer, I. (2021) Quality control, extraction methods and standardization: Interface between traditional use and scientific investigation. In: Henkel, R. and Agarwal, A. (eds.). *Herbal Medicine in Andrology an Evidence-Based Update*. London: Elsevier Academic Press. p.175-187. ISBN: 9780128155653.

Tandlich, R.

Nqowana, T., Tandlich, R., Paphitis, S.A. and Mantel, S.K. (2021) A community-based water monitoring programme in Grahamstown using the improved hydrogen sulphide test kit. In: Bezerra, J., Paterson, C. and Paphitis, S. (eds.). *Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*. Cape Town: African Sun Media. p.87-103. ISBN: 9781991201058.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Gerwel, T.M.

Müller, R.H., **Gerwel, T.M.**, **Kimuda, M.P.**, **Tastan Bishop, O.**, **Veale, C.G.L.** and **Hoppe, H.C.** (2021) Virtual screening and *in vitro* validation identifies the first reported inhibitors of *Salmonella enterica* HPPK. *RSC Medicinal Chemistry*. 12 (0). p.1750-1756.

Glass, B.D.

Taylor, S., Cairns, A. and **Glass, B.D.** (2021) Developing an Ear Health Intervention for Rural Community Pharmacy: Application of the PRECEDE-PROCEED Model. *International Journal of Environmental Research and Public Health*. 18 (12). p.1-14.

Kanakaraju, D., **Glass, B.D.** and Vincent, M. (2021) Disinfectants and coronavirus disease 2019 (Covid-19): A mini review. *Journal of Sustainability Science and Management*. 16 (1). p.97-102.

Patnala, S. and Kanfer, I.

Luo, Y., **Patnala, S.**, Shan, L., Xu, L., Dai, Y., **Kanfer, I.** and Yu, P. (2021) Neuroprotective effect of extract-fractions from *Sceletium tortuosum* and their preliminary constituents Identification by UPLC-qTOF-MS with Collision Energy and Mass Fragment Software. *Journal of Pharmaceutical and Biomedical Sciences*. 11 (2). p.1-16.

Sibiya, N.H.

Xulu, N., Khathi, A., Ngubane, P., Booyesen, I. and **Sibiya, N.H.** (2021) Heamanetic effects of a dioxidovanadium(V) complex in STZ-induced diabetic male Sprague Dawley rats. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*. 2021 (14). p.4321-4333.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Bennett, A.S. and Walker, R.B.

Bennett, A.S. and Walker, R.B. (2021) Response to the manuscript titled "An assessment of the potency related to Cannabis-based products in the South African market". *Forensic Science International*. 322 (110754). p.1-3.

Burton, S.F.

Burton, S.F. and Rattine-Falherty, E. (2021) The role of pharmacy personnel in promoting adherence to antiretroviral therapy in the Eastern Cape: communication barriers and breakthroughs. *African Journal of AIDS Research*. 20 (2). p.165-171.

- Burton, S.F., Oltmann, C., Magadza, C., Chiwanza, F. and Ngodwane, G.Z. (2021) Teaching through a pandemic: Life lessons learnt. *Pharmacy Education*. 21 (4). p.85.
- Glass, B.D.**
Taylor, S., Cairns, A. and Glass, B.D. (2021) Expanded practice in rural community pharmacy: A macro-, meso and micro-level perspective. *Rural and Remote Health*. 21 (3). p.1-12.
- Taylor, S., Cairns, A. and Glass, B.D. (2021) Consumer perspectives of expanded practice in rural community pharmacy. *Research in Social and Administrative Pharmacy*. 17 (2). p.362-367.
- Hays, G.C., Devine, S., Wongtongkam, N. and Glass, B.D. (2021) Studying nursing at Australian satellite university campuses: A review of teaching, learning and support. *Australian Journal of Rural Health*. 29 (2). p.226-235.
- Taylor, S., Cairns, A. and Glass, B.D. (2021) Rural pharmacists and stakeholders' perspectives of expanded pharmacy practice: A descriptive study. *Australian Journal of Rural Health*. 29 (3). p.341-353.
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DEPARTMENT OF Philosophy

Associate Professor
Uchenna Okeja
Head of Department

Photo: Dirk Pieters

INTRODUCTION

Research activities in the department were affected by the Covid-19 pandemic as research aligned events, such as conferences and workshops, were either cancelled or postponed.

Despite the challenges during the year, staff in the department achieved significant results in terms of Postgraduate supervision. Professor Uchenna Okeja received a significant grant (443 000 EUR) for a joint research project with Professor Thoko Kaime from the University of Bayreuth. The project aims to develop new ideas about human rights.

POSTGRADUATES / GRADUATIONS

Six (6) Masters students and one (1) PhD student graduated from the department in 2021. In addition, two (2) PhD dissertations were submitted for external examination during the year. This is a significant improvement in terms of Postgraduate graduation in the department.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Due to the restrictions imposed on international travel, we could not host international visitors in the department. Visits that were planned prior to the Covid-19 pandemic were postponed.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The Allan Gray Centre for Leadership Ethics maintained a healthy record of research aligned activities, despite the lockdowns in 2021.

Professor Pedro Tabensky presented ten (10) workshops to the Makana municipal management throughout 2021 (March-Nov) via online platforms. He was also a presenter at the workshop series convened by Allan and Gill Gray Philanthropies for young entrepreneurs from Rwanda and Kenya. Another highlight of the activities at the Centre was Professor Tabensky's involvement as presenter at a workshop organised by UNODC for academics in Mexico.

Dr Lindsay Kelland hosted two Webinars and an online panel discussion in 2021. The events addressed questions about gender-based violence and forced marriages.

PUBLICATIONS

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

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DEPARTMENT OF Physics and Electronics

Professor Makaiko Chithambo
Head of Department

Photo: Dirk Pieters

INTRODUCTION

'When hunters learnt to shoot without missing, Eneke the bird learnt to fly without perching' so goes the proverb about circumventing adversity.

Research-wise, 2021 was yet another year that was somewhat disjointed and jumbled up by uncertainty, closures, disruptions, delays, and postponements. Although we spent much time away from the office, we found ways to run experiments, mount observations and see to pencil and paperwork. The list of peer-reviewed outputs and conference presentations listed here is evidence of the tenacity of our research groups.

SIGNIFICANT RESEARCH ALIGNED EVENTS

One of the highlights of the Radio Astronomy Research Group was the publication of an overview paper for the MeerKAT Galaxy Cluster Legacy Survey (MGCLS) which was led by Rhodes University Research Fellow, Dr Kenda Knowles. The significance of the report was that it demonstrated the exceptional capability of the South African Radio Astronomy Observatory's MeerKAT telescope, located in the Karoo region of the Northern Cape province. The report featured images of the radio emission from 115 clusters of galaxies in exceptional detail.

Professor Medved, who works in the areas of gravitation and quantum field theory, made progress in understanding how a black hole can be rid of the singularities that plague the classical Schwarzschild solution. The key ingredient is not new physics or mysterious quantum physics but simply negative pressure, which is the same effect that is responsible for our expanding Universe. Professor Medved has a longstanding collaborative link with, in collaboration with Professor Brustein of Ben Gurion University.

Professor M L Chithambo became the President of the South African Institute of Physics (SAIP) in July 2022. His vision for his two-year term is to grow the membership of the SAIP, broaden its reach, and make it better able to fulfil its mission of being the voice of physics in the country, providing science policy advice and running various projects that contribute to national development. Professor Chithambo also presented an invited paper at the First Latin-American Congress on Solid State Dosimetry and Radiation Measurements which was hosted by the Brazilian Society for Solid State Dosimetry in September 2021.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

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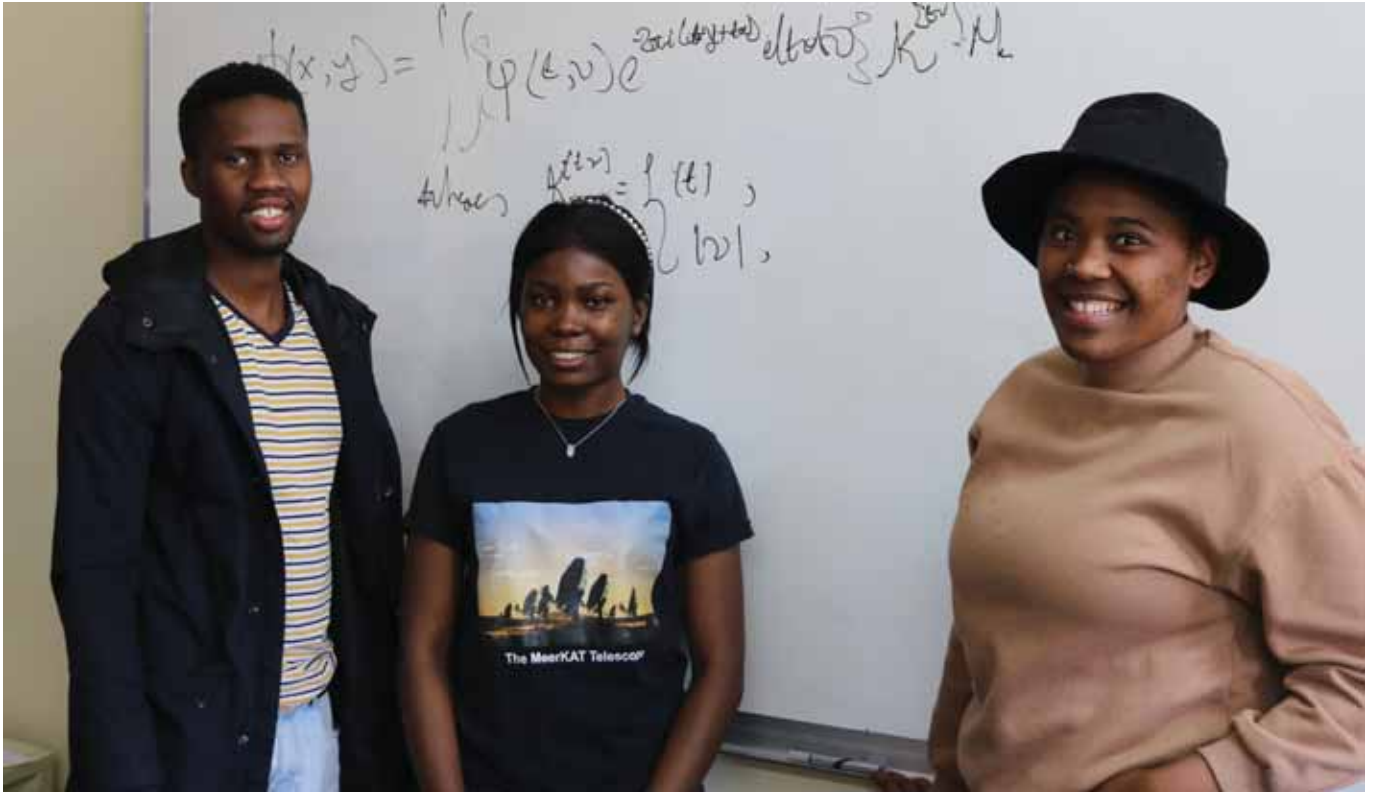
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Research students, Kamvalethu Vanga, Victoria Samboco and Sihle Gcilitshana (left to right), are part of the radio astronomy research group.
Photo: Department of Physics and Electronics

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Delvecchio, I., Daddi, E., Sargent, M.T., Jarvis, M.J., Elbaz, D., Jin, S., Liu, D., Whittam, I.H., Algera, H. and White, S.V. (2021) The infrared-radio correlation of star-forming galaxies is strongly M α -dependent but nearly redshift-invariant since $z \approx 4$. *Astronomy & Astrophysics*. 647 (2021). p.1-11.



DEPARTMENT OF Political and International Studies

Associate Professor
Siphokazi Magadla
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The department of Political and International Studies aims to be a place of thoughtful scholarly enquiry and robust intellectual debate. The COVID-19 pandemic made it rather difficult to maintain all of our usual activities, but we did manage to keep some of our usual research-related activities going.

We continued to run our weekly Friday seminar series, but the seminars were run virtually using Zoom. This seminar series provides an opportunity for visiting scholars as well as colleagues and Postgraduate students from Rhodes University to present papers. We also ran our usual week-long Teach In during which we bring visitors to give lunch-time open lectures on a topical subject, although this year we had to run it virtually. In 2021, the focus of our Teach In was on the Islamic State (ISIS) Insurgency in Mozambique.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

The COVID-19 pandemic made it very difficult for us to travel or to welcome international visitors. While travel was difficult, we were able to include international visitors in our Postgraduate teaching programme because our teaching was done online. Professor Ola Yacob-Haliso of Babcock University in Nigeria taught a course on "African Refugees and International Politics" and Dr Vineet Thakur, from Leiden University in the Netherlands, taught a course entitled "History, Race and Empire in the study of International Relations".

SIGNIFICANT RESEARCH ALIGNED EVENTS

The department hosted two big events in the second semester, both held virtually due to the COVID-19 pandemic. From 9-10 August 2021, we hosted the event "'S'obashaya Ngamatye': Women And 60 Years of the Armed Struggle in South Africa", organised by Associate Professors Siphokazi Magadla in collaboration with colleagues from the Centre for Women Gender Studies (Nelson Mandela University) and the Historical Studies Department (University of Cape Town). The event included several high-Professorile speakers and much enriching reflection on South Africa's past. We also hosted the 15th Biennial Conference of the South African Association of Political Studies (SAAPS) at the end of August 2021. Our Postgraduate students provided valuable support during this conference which brought together academics and Postgraduate students from all over South Africa and the world. Another highlight of the SAAPS conference included the recognition of the quality of research papers and dissertations produced in the department. Three out of four student prizes were awarded to our Postgraduate students: Best Honours Paper - Claire McCann; Best Masters Thesis: Gcotyelwa Jimlongo, and Best PhD thesis: Dr John Onokwai.

We were very pleased when one of our academics, Dr Bongani Nyoka, was honoured by being the recipient of the Vice Chancellor's Book 2021 Award for his book *"The Social and Political Thought of Archie Mafeje: A Pan-African social scientist ahead of his time"*. This is a great achievement for Dr Nyoka, who only joined Rhodes University in 2020.

DEPARTMENT OF POLITICAL AND INTERNATIONAL STUDIES PUBLICATIONS



Claire McCann (John Daniel Award for the Best Postgraduate Honours Student in Political and International Studies) and Vhenekai Kashungura (Terence Beard Prize for the Best Student in Political and International Studies).

Photo: Department of Political and International Studies.

BOOKS/CHAPTERS/MONOGRAPHS

Acharya, A.

Acharya, A. (2021) *ASEAN and Regional Order Revisiting Security Community in Southeast Asia*. London: Routledge. ISBN: 9781003122333.

Acharya, A. (2021) Making sense of international relations: Western and non-western approaches. In: Mishra, R., Hashim, A. and Milner, A. (eds.). *Asia and Europe in the 21st Century New Anxieties, New Opportunities*. London: Routledge. p.15-21. ISBN: 9781003148067.

Bischoff, P.H.

Bischoff, P.H. (2021) *Oxford Encyclopedia of African Politics*. New York: Oxford University Press. ISBN: 1234567891012.

Jordaan, E.

Jordaan, E. (2021) African Rising Powers and Human Rights: Nigeria and South Africa on the UN Human Rights Council. In: Gok, G.O. and Mehmetcik, H. (eds.). *The Crises of Legitimacy in Global Governance*. London: Routledge Taylor and Francis. p.176-192. ISBN: 9780367652470.

Magadla, S.

Magadla, S. (2021) The lives of women ex-combatants in post-apartheid South Africa. In: *Ex-Combatant Voices: Transitioning from War to Peace in Northern Ireland, South Africa and Sri Lanka*. Switzerland: Palgrave Macmillan. p.179-205. ISBN: 9783030615659.

15th Biennial Conference
South African Association of Political Studies

Speakers:
Shireen Hassan
Silu Grovogui
Judith February

Topic: Rethinking Politics in a Time of Crisis
Venue: Virtual (Zoom)

Dates: 26-28 August 2021

Host: Department of Political and International Studies, Rhodes University

For more information:
#saapsconference2021, @saaps.org.za, saaps2021, saaps2021conference

Magadla, S. (2021) Theorizing African Women and Girls in Combat. In: Yacob-Haliso, O. and Falola, T. (eds.). *The Palgrave Handbook of African Women's Studies*. Switzerland: Palgrave Macmillan. p.561-577. ISBN: 97830319770307.

Majavu, M.

Majavu, M. (2021) Colour-blind ideologies: The whiteness of liberalism and socialism. In: Hunter, S. and van der Westhuizen, C. (eds.). *Routledge Handbook of Critical Studies in Whiteness*. London: Routledge Taylor and Francis. p.113-125. ISBN: 9780367403799.

Majavu, M. (2021) 'Kantsaywhere': Black African Women inside the Australian Racial Crucible. In: Luna, Z. (ed.). *Black Feminist Sociology: Perspectives and Praxis*. London: Routledge Taylor and Francis. p.173-181. ISBN: 9781032057530.

Nyoka, B.

Nyoka, B. (2021) Mafeje and Magubane: Two Concepts of the 'South African Revolution'. In Ndlovu-Gatsheni, S.J. and Ngcaweni, B. (eds.). *The Contested Idea of South Africa*. London: Routledge. p.114-133. ISBN: 9780367353599.

Nyoka, B. (2021) On African-American Consciousness of Africa: Reading Bernard Magubane's *The Ties That Bind*. In Zondi, S. (ed.), *African Voices: In Search of a Decolonial Turn*. Pretoria: Africa Institute of South Africa, p.94-114. ISBN: 9780798305310.

Vincent, L.

Vincent, L. (2021) *Puzzling Democracy*. Pretoria: Van Schaik Publishers. ISBN: 9780627038174.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Acharya, A.

Eun, Y.S., Acharya, A. and Thalang, C. (2021) Unpacking the dynamics of weak states? *The Pacific Review*. 2021 (2021). p.1-17.



DEPARTMENT OF Psychology

Associate Professor
Liezelle Jacobs
Head of Department

Photo: Dirk Pieters

SIGNIFICANT RESEARCH ALIGNED EVENTS

Critical Studies in Sexualities and Reproduction (CSSR) hosted the annual RAPP (Research in relation to advocacy, policy and practice) event. The focus this year was on youth sexualities empowerment programmes.

Increasingly, youth sexuality education has been identified as a key area of concern within South Africa (particularly in the context of high levels of HIV and gender-based violence). The programme started off with Deevia Bhana speaking on the prospects, potentialities, and possibilities of youth sexualities education in South Africa. Deevia Bhana is a Professor and the South African Research Chair (SARChI) in Gender and Childhood Sexuality whose research focuses on building an understanding of gender and childhood sexualities across the young life course in South Africa. Sarah Moore then presented on the Masizixhobise Toolkit which is currently being developed by the CSSR, in partnership with Partners in Sexual Health. The aim of the toolkit is to provide organisations and researchers with mechanisms to design, refine or evaluate empowerment-focused sexuality education programmes using a critical sexual and reproductive citizenship (CSRC) lens. We then gave a platform to three of South Africa's most prominent NGOs working in the area of youth sexualities: LoveLife, Soul City Institute, and Partners in Sexual Health. Representatives from these organisations gave an overview of their youth sexualities programmes and spoke to their approaches to youth sexualities empowerment. A podcast of the event can be seen here: <https://youtu.be/ic1LwJsoxzc>

The International Society of Critical Health Psychology (ISCHP) recently launched its inaugural awards at its bi-annual conference hosted across several virtual hubs worldwide. Distinguished Professor Catriona Macleod received the Lifetime Achievement award, which is the highest honour. Colleagues recognise the recipient of the award as an international leader in the field. Professor Macleod, who had the most nominations for any person in the awards process this year, is Chair of the CSSR. The Mid-Career Researcher Award went to Dr Tracy Morison. Dr Morison is a Research Associate of the CSSR and completed her Doctorate through Rhodes University under the supervision of Professor Macleod. Morison now works at Massey University in New Zealand. She also continues to work collaboratively with Professor Macleod on current research projects. Dr Morison received the award for her valued contribution to critical health psychology through her work on reproductive justice and theory and analysis around narrative-discursive methods.

Professor Megan Campbell received an NIHSS Mobility Award to support the initiation of a collaboration with the Hawassa Masters in Counselling Psychology Programme and Mr Adane Wako Jarsso. Mr Wako will complete his PhD in the department with Professor Campbell as part of this mobility grant and has spent the past 6 months with us at the Rhodes Psychology Clinic as a visiting scholar.

BOOKS/CHAPTERS/MONOGRAPHS

Akhurst, J.E.

Akhurst, J.E. (2021) Challenging mainstream 'psychologies' through Community-Based Service Learning at Masters level: critical reflections at the interface of theory and practice. In: Bezerra, J., Paterson, C. and Paphitis, S. (eds.). *Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*. Cape Town: African Sun Media. p.159-178. ISBN: 9781991201058.

Morison, T.

Morison, T. (2021) Reproductive justice: Revitalising critical reproductive health research. In: *Routledge International Handbook of Critical Issues in Health and Illness*. London: Routledge. p.169-182. ISBN: 9781003185215.

Saville Young, L.

Lau, U., Durrheim, K. and **Saville Young, L.** (2021) Place detachment and the psychology of non-belonging: Lessons from Diepsloot township. In: Raymond, C.M., Manzo, L.C., Williams, D.R., Di Masso, A. and von Wurth, T. (eds.). *Changing senses of place*. Cambridge: Cambridge University Press. p.103-115. ISBN: 9781108769471.

OTHER PUBLICATIONS

Macleod, C.I.

Macleod, C.I. and Reynolds, J. (2021). In: *Sexual and reproductive health amongst women who sell sex and women who inject drugs in Eastern and Southern Africa: A scoping review*. Grahamstown: Rhodes University.

Macleod, C.I. and Feltham-King, T.

Macleod, C.I., and **Feltham-King, T.** (2021). South Africa's stance on teenage pregnancy needs a radical review: what it would look like. *The Conversation*. 11 October 2021. <https://theconversation.com/south-africas-stance-on-teenage-pregnancy-needs-a-radical-review-what-it-would-look-like-169032>.

Macleod, C.I.

Reuvers, M. and **Macleod, C.I.** (2021). *Strategic assessment of policies, programmes and research on unintended pregnancies, contraception, unsafe abortion and abortion services in Namibia*. Report prepared for Ministry of Health, Namibia, World Health Organisation and UNFPA. Makhanda: Rhodes University.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Botha, D.

Botha, D. (2021) A "General Theory of Mental Suffering" and the Role of an Innovative Narrative Therapeutic Approach. *Psychological Thought*. 14 (2). p.282-307.

Macleod, C.I.

Macleod, C.I. and Reynolds, J. (2021) Human Papilloma Virus infection and cervical cancer among women who sell sex in Eastern and Southern Africa: A scoping review. *Women's Health*. 17 (2021). p.1-10.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Akhurst, J.E.

Inman, J., Bannigan, K. and **Akhurst, J.E.** (2021) Occupational therapy and psychosis: POINTER feasibility study for a pragmatic clinical trial. *British Journal of Occupational Therapy*. 84 (9). p.541-549.

Bazana, S.

Perez-Nebra, A., Sklaveniti, C., Islam, G., Petrovic, I., **Bazana, S.** and *et al.* (2021) COVID-19 and the future of work and organisational psychology. *SA Journal of Industrial Psychology*. 47 (2021). p.1-9.

Bazana, S. and **Reddy, T.**

Bazana, S. and **Reddy, T.** (2021) A critical appraisal of the recruitment and selection process of the Public Protector in South Africa. *SA Journal of Human Resource Management*. 19 (2021). p.1-12.

Blaine, J.

Blaine, J. (2021) Exploring the Psychosocial Consequences of Mandatory Quarantine During the COVID-19 Pandemic in Hong Kong. *Psychology and Behavioral Sciences*. 10 (2). p.1-8.

Blaine, J. and **Akhurst, J.E.**

Blaine, J. and **Akhurst, J.E.** (2021) A journey into understanding gendered experiences of outdoor adventure education. *Journal of Adventure Education and Outdoor Learning*. 2021 (2021). p.1-15.

Blaine, J. and **Akhurst, J.E.** (2021) Quantifying the psychosocial outcomes of outdoor adventure education for adolescent learners in a South African setting. *South African Journal of Psychology*. 2021 (2021). p.1-14.

Booyesen, D.D.

Booyesen, D.D. and Kagee, A. (2021) The double burden of treating traumatic stress in low-resource communities: experiences and perspectives of non-specialist health workers in South Africa. *South African Journal of Psychology*. 52 (1). p.135-145.

Booyesen, D.D. and Kagee, A. (2021) Preliminary Effectiveness of Brief Prolonged Exposure Therapy for PTSD: Expanding Access to Effective Therapies. *Clinical Case Studies*. 20 (6). p.482-497.

Booyesen, D.D., **Mahe-Poyo, P.** and Grant, R. (2021) The experiences and perceptions of mental health service provision at a primary health centre in the Eastern Cape. *South African Journal of Psychiatry*. 27 (0). p.1-8.

Campbell, M.M.

Matshabane, O.P., **Campbell, M.M.**, Faure, M.C., Appelbaum, P.S., Marshall, P.A., Stein, D.J. and de Vries, J. (2021) The role of causal knowledge in stigma considerations in African genomics research: Views of South African Xhosa people. *Social Science and Medicine*. 277 (1). p.113902-113910.

Campbell, M.M. and **Nagdee, M.**

Campbell, M.M., Matshabane, O.P., de Vries, J., Stein, D.J., **Nagdee, M.**, Mqulwana, S.G. and Mndini, M.M. (2021) Evaluating Community Engagement Strategies to Manage Stigma in Two African Genomics Studies Involving People Living with Schizophrenia or Rheumatic Heart Disease. *Global Health, Epidemiology and Genomics*. 2021 (9926495). p.1-9.

Chiweshe, M.

Chiweshe, M., Fetters, T. and Coast, E. (2021) Whose bodies are they? Conceptualising reproductive violence against adolescents in Ethiopia, Malawi and Zambia. *Agenda*. 35 (3). p.12-23.

Diale, C.D.

Diale, C.D., Kanakana-Katumba, G.M. and Maladzhi, R.W. (2021) Ecosystem of Renewable Energy Enterprises for Sustainable Development: A Systematic Review. *Advances in Science, Technology and Engineering Systems Journal*. 6 (1). p.401-408.

Diale, C.D., Kanakana-Katumba, G.M. and Maladzhi, R.W. (2021) Environmental Entrepreneurship as an Innovation Catalyst for Social Change: A Systematic Review as a Basis for Future Research. *Advances in Science, Technology and Engineering Systems Journal*. 6 (1). p.393-400.

Groenewald, C.

Groenewald, C. (2021) To Vaccinate or Not? Decision-Making in the Time of COVID-19 Vaccines. *Cultural Studies*. 22 (1). p.89-95.

Haine, P.C. and **Knoetze, J.J.**

Haine, P.C. and **Knoetze, J.J.** (2021) Childhood traumatic grief counselling: A South African case study. *Journal of Psychology in Africa*. 31 (5). p.539-545.



Writing retreat in Hogsback: Back row: Dr T Harry (DHoD). Second row (L to R): Professor M. Campbell; Professor T Feltham-King; Dr T Kabungaizde. Front row (L to R): K Tembani, M Motsetse, M Reuvers, Y Kalyanaraman, N Msomi (PhD Candidates), Professor C Macleod (Distinguished Professor).

Photo: Department of Psychology

Harry, T.T.

Harry, T.T. and Chinyamurindi, W.F. (2021) 'Still haven't found what I am looking for?': rural black students' perceived work readiness and assessment of labor market access. *Education and Training*. 64(2)(2021). p.276-289.

Jacobs, L.

Jacobs, L. (2021) Inquiry: "Please Select your Gender" Gender queer Access to SUD Treatment in South Africa. *Gender & Behaviour*. 19 (2). p.17939-17944.

Johnson, S. and Booysen, D.D.

Johnson, S. and **Booyesen, D.D.** (2021) 'I just want to live': A case study exploring separation abuse among women in heterosexual relationships. *Journal of Psychology in Africa*. 31 (2). p.184-189.

Lynch, I.

Lynch, I., Reygan, F. and **Ramphalile, M.** (2021) 'Having to use English others us': South African terminologies of sexual and gender diversity. *Sexualities*. p.1-17.

Macleod, C.I.

Macleod, C.I. and **Reynolds, J.** (2021) Reproductive health systems analyses and the reparative reproductive justice approach: a case study of unsafe abortion in Lesotho. *Global Public Health*. 2021 (2021). p.1-14.

Macleod, C.I., Capdevila, R., Marecek, J., Braun, V. and **Wilkinson, S.** (2021) Celebrating 30 years of *Feminism & Psychology*. *Feminism & Psychology*. 31 (3). p.313-325.

Macleod, C.I., Young, C. and **Molokoe, C.K.**

Macleod, C.I., Young, C. and **Molokoe, C.K.** (2021) Alcohol use during pregnancy: prevalence and pattern in selected Buffalo City areas, South Africa. *African Journal of Reproductive Health*. 25 (1). p.114-121.

Matebese, S., Macleod, C.I. and **Tsetse, A.N.**

Matebese, S., Macleod, C.I. and **Tsetse, A.N.** (2021) The shame of drinking alcohol while pregnant: productive of avoidance, not constructive for health. *Affilia - Journal of Women and Social Work*. 36 (4). p.629-646.

Mavuso, J. and **Macleod, C.I.**

Mavuso, J. and **Macleod, C.I.** (2021) "Bad choices": Unintended pregnancy and abortion in nurses' and counsellors' accounts of providing preabortion counselling. *Health*. 25 (6). p.555-573.

Morison, T.

Morison, T. (2021) Reproductive justice: A radical framework for researching sexual and reproductive issues in psychology. *Social and Personality Psychology Compass*. 15 (6). p.1-10.

Lestari, M.D., Stephens, C. and **Morison, T.** (2021) Constructions of older people's identities in Indonesia regional ageing policies: the impacts on micro and macro experiences of ageing. *Ageing & Society*. 2021 (1). p.1-21.

Morison, T. and **Eagar, D.** (2021) Women's perspectives on long-acting reversible contraception: a critical scoping review of qualitative research. *Women & Health*. 61 (6). p.527-541.

Cullen, S., Taylor, J., Ross, K. and **Morison, T.** (2021) Youth Encounters with Internet Pornography: A Survey of Youth, Caregiver, and Educator Perspectives. *Sexuality and Culture*. (2021). p.1-23.

Cullen, S., Taylor, J.E., Morison, T. and **Ross, K.** (2021) Using Q - Methodology to Explore Stakeholder Views about Porn Literacy Education. *Sexuality Research and Social Policy*. p.1-13.

Morison, T., Macleod, C.I. and **Lynch, I.**

Morison, T., Macleod, C.I. and **Lynch, I.** (2021) 'My friends would laugh at me': embedding the dominant heterosexual script in the talk of primary school students. *Gender and Education*. p.1-17.

Msomi, N.N.

Msomi, N.N. (2021) Lou-Marie Kruger, Of motherhood and melancholia: Notebook of a psycho-ethnographer. *Feminism & Psychology*. 31 (3). p.458-460.

Saville Young, L. and **Flannigan, R.**

Saville Young, L. and **Flannigan, R.** (2021) My sibling's mental illness: An interpretative phenomenological analysis of experiences of having an adult sibling with a mental illness in semi-rural South Africa. *South African Journal of Psychiatry*. 27 (1). p.1-7.

Sweeney, S.S.K. and **Saville Young, L.**

Sweeney, S.S.K. and **Saville Young, L.** (2021) The 'good' mother and the thriving, surviving baby's body: A psychosocial analysis. *Psychoanalytic Practice (Formerly Psycho-analytic Psychotherapy in South Africa)*. 29 (1). p.33-69.

Wannenburg, N.

Mayer, C.H., Van Niekerk, R. and **Wannenburg, N.** (2021) Ferdinand Karl Piëch: A Psychobiography of a Ruthless Manager and Ingenious Engineer. *Frontiers in Psychology*. 12 (671243). p.1-16.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Akhurst, J.E.

Akhurst, J.E., Van Der Riet, M. and **Sofika, D.** Positionality and ethics: Researching HIV and AIDS in a rural community. *EQUIP1 Qualitative research in Psychology in Europe*. Online, Thessaloniki. Greece. June 2021.

Akhurst, J.E. Peer-work: The importance of shared experiences. *European Federation of Psychology Students Association (EFPSA)*. Hotel Vila Gale, Porto. Portugal. November 2021.

Chiweshe, M.

Chiweshe, M. Representation and voice in SRHR research. *Reproductive Expectations: Disruption, Transgression and Re-Configuration*. Online, Washington. United States of America. October 2021.

Chiweshe, M. Interrogating the role of men as researchers in SRHR. Reflections from an African pro-feminist. *London School of Economics Abortion + SRH Seminar Series*. Online, Washington. United States of America. January 2021.

Chiweshe, M., Fetters, T. and **Coast, E.** Whose bodies are they? Conceptualising reproductive violence against adolescents in Ethiopia, Malawi and Zambia. *British Society for Population Studies 2021 Conference*. Online, Washington. United States of America. September 2021.

Du Plessis, U. and **Macleod, C.I.**

Du Plessis, U. and **Macleod, C.I.** Rethinking stigma as a technique of power: Lessons from critical research on abortion. *International Society of Critical Health Psychology conference*. Online, Makhanda. South Africa. August 2021.

Macleod, C.I.

Macleod, C.I. and **Reynolds, J.** Inserting reparative justice into health systems analyses: a case study of unsafe abortion in Lesotho. *International Society of Critical Health Psychology conference*. Online, Makhanda. South Africa. August 2021.

Jearey-Graham, N. and **Macleod, C.I.** Clashing orientations: reflections on disparate goals in a research-NGO partnership aimed at reducing FASD in a region of South Africa. *International Society of Critical Health Psychology 12th biennial conference; London virtual hub*. Online, Makhanda. South Africa. January 2021.

Morison, T.

Tappin, J., Riley, S. and **Morison, T.** Sexual subjectivities and discourses of desire in mainstream online women's media. *Society for Critical Health Psychology 12th Biennial Conference*. Online, Palmerston North. New Zealand. August 2021.

Healy-Cullen, S., **Morison, T.**, Ross, k. and Taylor, J.E. How youth, caregivers and educators draw on sexual scripts to make sense of young people's engagement with Internet pornography. *Society for Critical Health Psychology 12th Biennial Conference*. Online, Palmerston North. New Zealand. August 2021.

Morison, T. "You have to be careful of your own agenda": Discursive dilemmas in healthcare providers' talk about Contraceptive Care. *Society for Critical Health Psychology 12th Biennial Conference*. Online, Palmerston North. New Zealand. August 2021.

Morison, T. 'We are not OK until we are all OK': Advancing Reproductive Health, Justice, and Well-Being in Social Research. *Social Psychology Days conference*. Online, Helsinki. Finland. April 2021.

Sweeney, S.S.K.

Sweeney, S.S.K. The 'good mother' construct and instrumental mothering discourse: Informing parent-infant interventions in South Africa. *World Association of Infant Mental Health 2021 - 17th World Congress*. Virtual Presentation, Brisbane. Australia. June 2021.

Sweeney, S.S.K. Instrumental mothering and 'Mother Trouble'. *32nd International Congress of Psychology*. Virtual Presentation, Prague. Czech Republic. July 2021.

Sweeney, S.S.K. The 'good mother' construct. *32nd International Congress of Psychology*. Virtual Presentation, Prague. Czech Republic. July 2021.



Rhodes Business School

Professor Owen Skae
Director: Rhodes Business School

Photo: Dirk Pieters

INTRODUCTION

We are pleased to report a significant improvement in our research output from 2020, which saw only two publications and two conference proceedings being reported. We hope that this trend will be maintained and hence it is encouraging that the activities we have put in place in our school's strategy to produce more research outputs is now bearing fruit. During the course of 2021, we ran 15 short course programmes, most virtually, with 252 Certificates of Competence and 28 Letters of Attendance being issued.

POSTGRADUATES / GRADUATONS

14 Master of Business Administration (MBA), 34 (of whom 18 were part-time) Postgraduate Diploma in Enterprise Management (PGDipEntMgt) and 15 (of whom 5 were part-time) Postgraduate in Business Analysis (PGDipBusAnalysis) candidates, graduated, giving a total of 63, down from our high of 82 in 2020. The Covid-19 pandemic certainly contributed to a challenging environment for our students.

Lester Issacs, Mfundo Memani, Gareth Ross and Carlene Royle obtained the PG Dip Ent Mgt with distinction and Rivash Bhownath, Hope Mashozhera and Kenja McArthur obtained the PG Dip Bus Analysis with distinction. The recipient of the Archbishop Thabo Makgoba award for the MBA Responsible Leadership essay, was John Rohlandt.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Mboweni, T.T.

Governor Tito Mboweni delivered virtually via Zoom. *Archbishop Thabo Makgoba Development Trust Lecture*. 4th October 2021.

The former Minister of Finance, Labour, and the 8th Governor of the South African Reserve Bank, was the 7th Speaker at our annual Archbishop Thabo Makgoba Development Trust annual lecture on Values Based Leadership. He opened by saying, "We live in an ever-changing, integrated, sometimes fragmented and complex world. The outbreak of the Covid-19 pandemic has taught us about our interconnected world more than ever before. This Corona virus does not discriminate between rich and poor, male, or female, young or old. And yet the virus also taught that greed amongst countries and people is rife. The rich countries sought to accumulate and hoard the vaccines for themselves and starve off poor and developing countries from gaining access to these. Long struggles had to be fought before the vaccines began flowing to poor countries. Within most countries, the greedy and corrupt saw an opportunity to enrich themselves through various schemes of looting. But there are good men and women who are committed to making this a better world. In July 2000, the United Nations launched The Global Compact. Its focus is on corporate sustainability that 'starts with a company's VALUE SYSTEM and a principles-based approach to doing business'. This, the Global Compact states, 'means operating in ways that, at a minimum, meet fundamental responsibilities in the areas of human rights, labour, environment and anti-corruption'.

Governor Mboweni made a call upon all of us to respond to the challenge posed to us by The UN Global Compact, by applying its principles. He was clear in his message that "Leadership matters".

BOOKS/CHAPTERS/MONOGRAPHS

Pearse, N.J.

Amos, T., **Pearse, N.J.**, Ristow, A. and Ristow, L. (2021) *Human Resource Management*. 5th Ed. Cape Town: Juta & Co. ISBN: 9781485131427.

Singh, N.

Mashiteng, M.M.G., Gerwel-Proches, C.N. and **Singh, N.** (2021) *Global Encyclopedia of Public Administration, Public Policy, and Governance*. 2nd Ed. New York: Springer. ISBN: 9783319318165.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Moodly, A.L.

Moodly, A.L. Public lecture. Creating opportunities towards leadership: where does the power lie? *Rhodes University Women's Month Registrar's Public Lecture*. Rhodes University, Makhanda. South Africa. 17 August 2021.

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Cuthbert, C. and Skae, F.O.

Cuthbert, C. and **Skae, F.O.** (2021) Employability tautological trauma. *Education and Training*. 63 (6). p.939-946.

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Singh, N.

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Mthuli, S.A., Ruffin, F. and **Singh, N.** (2021) 'Define, Explain, Justify, Apply' (DEJA): An analytic tool for guiding qualitative research sample size. *International Journal of Social Research Methodology*. 2021 (2021). p.1-14.

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Cuthbert, C. and Pearse, N.J.

Cuthbert, C. and **Pearse, N.J.** Strategic Use of Low Code Platforms. *15th International Multi-Conference on Society, Cybernetics and Informatics: IMSCI 2021*. Winter Garden, Florida. United States. July 2021.

Pearse, N.J.

Pearse, N.J. Theory development in deductive qualitative research. *European Conference on Research Methodology for Business and Management Studies*. University of Aveiro, Aveiro. Portugal. June 2021.

Petzer, L. and Pearse, N.J.

Petzer, L. and **Pearse, N.J.** The relationship between authentic leadership, life satisfaction and employee performance. *14th International Business Conference*. Virtual Conference, on-line. South Africa. September 2021.

Skae, F.O. and Pearse, N.J.

Skae, F.O. and **Pearse, N.J.** An evaluation of inclusive governance arrangements in South African public sector organisations. *17th European Conference on Management Leadership and Governance*. University of Malta, Valletta. Malta. November 2021.



School of Languages and Literatures

Professor Undine Weber
Head of School

Photo: Dirk Pieters

INTRODUCTION

Despite 2021 being the second year of the pandemic in which many of the research and supervision activities were often remote, it was a successful year for the seven sections of the School of Languages and Literatures.

The School is a large academic department made up of seven sections: African Language Studies, Afrikaans and Netherlandic Studies, Chinese Studies, Creative Writing, French Studies and German Studies, and is home to almost 1000 undergraduate students (946), close to 70 Postgraduates (69) and over 20 academic staff, including the Model Confucius Institute affiliated with the School. We were very pleased that the SARChI Chair for the intellectualisation of African Languages, Multilingualism, and Education under Professor Dion Nkomo was re-affirmed in 2021 as a Tier 1 SARChI chair, i.e., a chair for “established researchers that are recognised internationally as a leader in their field and/or have received international recognition for their research contributions” (nrf.ac.za). A number of staff members have been serving as n-GAP mentors, thus ensuring that the next generation of South African researchers will benefit from the School’s vast experience in academia.

The African Languages Studies Section in collaboration with colleagues at Rhodes University, North-West University, UWC and UKZN (from South Africa) and a university each from Spain (Salamanca University), Ireland (Trinity College Dublin) and the Netherlands (University of Groningen) started a project together called Baqonde Project. The Baqonde Project is meant to facilitate and promote the use of indigenous African Languages as medium of instruction in tertiary education.

Rhodes University African Language Studies in partnership with colleagues from University of the Western Cape, University of Fort Hare and Walter Sisulu University from 2021 - 23 are involved in a project called Centre for African Language Teaching. The project aims to create a Centre for African Languages teaching and supervise students and there are four (4) MA and PhD candidates from Rhodes that are funded by the project. The project is meant to maximally prepare teachers to create curricula that nurtures language skills to allow students to succeed in a hybrid working environment.

POSTGRADUATES / GRADUATIONS

We were very proud that so many Postgraduates and their supervisors persevered in Covid-19 times. Twenty-five (25) MA students graduated in the School of Languages and Literatures. Creative Writing graduated 20 MAs in 2021.

BOOKS/CHAPTERS/MONOGRAPHS

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Mukenge, A.N. Workshop. Teaching French as a foreign language to a multicultural audience. *Workshop*. CAVILAM, Vichy, France. 11 - 22 January 2021.

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Lepheana, J. (2021) Perceptions of learners, teachers, and parents on integrating isiXhosa within curricula and pedagogies in junior secondary schools in the Maluti District, Eastern Cape Province, South Africa. *Indilinga: African Journal of Indigenous Knowledge Systems*. 20 (1). p.111-123.

Maseko, B.

Maseko, B. (2021) Teachers' language ideologies, conflicting language policy and practices in Zimbabwean education system. *Southern African Linguistics and Applied Language Studies*. 39 (1). p.30-42.

Maseko, B. (2021) Family language policy: The case for a bottom-up approach in conserving Zimbabwe's minoritised languages. *South African Journal of African Languages*. 41 (2). p.187-195.

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Mukenge, A.N. (2021) Downstream to Kinshasa. *Journal of Contemporary African Studies: JCAS*. 2021 (2021). p.1-3.

Nkomo, D.

Nkomo, D. (2021) Another isiXhosa Monolingual Dictionary: A Critical Analysis of the Shutters IsiChazi-magama SesiXhosa. *Lexikos*. 31 (1). p.440-467.

Nkomo, D. (2021). The language question and the role of the university in South Africa revisited. *Alternation* 38 (c). pp. 1-16.

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Ortner, G.J. (2021) Exploring the Complex Adaptive Blended Language Learning System of German Studies. *Acta Germanica, German Studies in Africa*. 49 (1). p.50-70.

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Persohn, B. (2021) Non-culmination in two Bantu languages. *Studies in Language*. 46 (1). p.1-12.

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Mukenge, A.N. Les exilés du Covid 19 et les enfants de midi: une littérature engagée ou l'exil des exilés? *Journées Internationales de Réflexion de Lomé*. Université de Lomé, Lomé. Togo. June 2021.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Botha, M.E.

Botha, M.E. Herkoms, verkenning en verlies in Lady Anne en biantang [Origin, exploration, and loss in Lady Anne and biantang]. *Afrikaanse Letterkundevereniging (Afrikaans Literature Association): Affekte, begeertes, emosies (Affects, desires, emotions)*. Online, Online. South Africa. September 2021.

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Dana, Z., Magadla, S. and Nkomo, D. Political and International Studies in isiXhosa: The policy and practice interface regarding multilingual assessment at a South African university. *Multilingual Assessment - A Global Conversation*. Virtual Conference, South Africa - Germany. November 2021.

Dana, Z., Gambushe, W., Nkomo, D. and Nosilela, B.B.

Dana, Z., Gambushe, W., Nkomo, D. and Nosilela, B.B. How great is thy dictionary: cultural articles in The Greater Dictionary of (isi)Xhosa. *African Association for Lexicography 25th International Conference*. Virtual Conference, South Africa. June 2021.

Mambambo, J.

Mambambo, J. A translator's experience: From Decolonising the mind to Kutapanura Pfungwa Dzakatapwa. *18th International Conference of the Association of Languages Association of Southern Africa*. Regent Beach Hotel, East London. South Africa. September 2021.

Mambambo, J. and Nkomo, D.

Mambambo, J. and Nkomo, D. Conceptualising Ngugi's Homecoming Project: Translating Decolonising the Mind into African Languages. *18th International Conference of the Association of Languages Association of Southern Africa*. Regent Beach Hotel, East London. South Africa. September 2021.

Maseko, B.

Maseko, B. Family language policy: The case for microlanguage management in conserving Zimbabwe's minority languages. *18th International Conference of the Association of Languages Association of Southern Africa*. Regent Beach Hotel, East London. South Africa. September 2021.



From left to right Prof Dion Nkomo (SARCHI Chair for the intellectualisation of African Languages, Multilingualism and Education), Dr Bulelwa Nosilela (Head of African Language Studies Section) and Dr Pedro Alvarez Mosquera (Director of Baqonde from Salamanca University - Spain).

Photo: School of Languages and Literatures

Mudenda, T.

Mudenda, T. Lexicography and terminology development critical in the intellectualization of Tonga language in Zimbabwe. *18th International Conference of the Association of Languages Association of Southern Africa*. Regent Beach Hotel, East London. South Africa. September 2021.

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Mwepu, P.K. Un chant à la dulcinée ou une politique pour sortir du déséquilibre existentiel. *AFSSA Congress "Langues, Littérature et Politiques"*. University of the Witwatersrand, Johannesburg. South Africa. December 2021.

Mwepu, P.K. Comprendre le développement national sous un angle linguistique. *Développer les langues nationales de l'espace Grand Kasai*. Institut Supérieur de Management et Développement (ISMAD), Mbuji-Mayi. Democratic Republic of Congo. May 2021.

Mwepu, P.K. Pourquoi lire Exploration d'une expérience. *La Journée du Livre de Ngandajika*. University of Ngandajika, Ngandajika. Democratic Republic of Congo. April 2021.

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Nkomo, D. A Tale of Two Pioneer Monolingual isiXhosa Dictionaries. *18th International Conference of the Association of Languages Association of Southern Africa*. Regent Beach Hotel, East London. South Africa. September 2021.

Nkomo, D. Lawmakers, lexicographers, and educators' definitional dilemmas regarding sexual violence: Insights from (South) Africa. *18th International Conference of the Australasian Association for Lexicography (AUSTRALEX): Dictionaries, Law and Lore*. Te Ipukarea Research Institute, AUT University, Aotearoa. New Zealand. September 2021.

Nkomo, D. and Ndlovu, E. Isichazamazwi SesiNdebele at Twenty: Reflections on its Role and the Future of Zimbabwean Lexicography. *18th International Conference of the African Association for Lexicography*. Virtual Conference, South Africa. June 2021.

Mahlangu, M. and Nkomo, D. Towards Lexicographic Resources on African Traditional Food Science with Specific Reference to Ndebele Culinary Traditions. *25th International Conference of the African Association for Lexicography*. Virtual Conference, South Africa. June 2021.

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Nkomo, D. and Maseko, B. The linguistic dimensions of Gukurahundi. *'Gukurahundi and the Culture of Violence in Zimbabwe' Virtual Conference*. Virtual Conference, Zimbabwe. October 2021.

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Van Schoor, D.J.

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Van Schoor, D.J. Symposium Cumanum 2021. *Symposium Cumanum 2021- Identity in Vergil: Ancient Representations, Global Receptions*. Villa Vergiliana, Cuma. Italy. June 2021.

Van Schoor, D.J. From Logos to Person Conference. *The Polis Institute: From Logos to Person Conference*. The Polis Institute, Jerusalem. Israel. October 2021.



DEPARTMENT OF Sociology and Industrial Sociology

Professor Kirk Helliker

Photo: Dirk Pieters

INTRODUCTION

2021 was a challenging year, the second in which the bulk of teaching and learning had to be done online due to COVID-19 restrictions and the partial closure of campus. However, the Department continued to run its large teaching programmes, and to supervise a significant number of Postgraduate students, with 31 graduating in 2021. Postgraduate students also made a significant showing in the Department's research outputs, accounting for slightly over half of all listed items - indicative of the mentoring and encouragement provided by staff, as well as the quality of student research.

Academic staff, Associates and research units, remained research active. Special mention must be made of Professor Kirk Helliker, who co-edited one book and one journal special edition, and co-authored a major monograph, with groundbreaking work on Zimbabwe. Professor Lucien van der Walt gave nine papers, and published, *inter alia*, the *Makhan Singh Memorial Lectures*. The Department also engaged the larger community, primarily through the Neil Aggett Labour Studies Unit (NALSU), which ran three programmes for trade unions and workers' organisations, co-ordinated by Professor van der Walt.

POSTGRADUATES / GRADUATIONS

The 2021 breakdown of Postgraduates graduating was as follows: twelve (12) Honours, twelve (12) Masters, of which ten (10) were by coursework, and seven (7) PhDs. Graduates were from the three streams offered by the Department: General

Sociology, Industrial and Economic Sociology, and Development Studies. For example, the respective figures at Honours level were seven (7), three (3) and two (2) for these programmes. The range of topics addressed in the different dissertations and theses from Honours to PhD level testifies to the multiple areas in which the discipline is engaged and in which the Department has capacity. The PhD topics of those who graduated in 2021, for instance, included the relationship between ESKOM and the automobile industry in South Africa, former farm workers of foreign descent in communal areas in post-fast-track-land-redistribution Zimbabwe, masculine embodiment, and physical disability among Xhosa men in the Eastern Cape, and minimum wages and agrarian labour systems in commercial farming in the Eastern Cape.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Despite the effects of COVID-19 on international travel and visits, the Department was able to host Ms Mattie Webb in the Neil Aggett Labour Studies Unit (NALSU). Ms Webb, a Fullbright Fellow, is working on labour relations in 1970s and 1980s South Africa.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The Governance and Development Unit (GDU) in the Department continued its work on local government in South Africa, through the Municipal Governance Programme that it initiated in 2018. This focused on diagnostic reviews of key municipal services (such as water, sanitation, housing, roads and solid waste management), providing Postgraduate interns to municipalities to undertake research and provide support to key municipal structures, and its university-accredited, three module short certificate course on "The Essentials of Municipal Public Accounts Committee (EMPAC) Oversight."

The Neil Aggett Labour Studies Unit (NALSU) in the Department continued to be extensively involved in research, policy engagement and workers' education. NALSU members, from within the Department and beyond, have published widely, including on agrarian issues, the impact on workers of COVID-19 restrictions, the informal economy, labour history, social policy. NALSU has also become the hub for project management for the SA Cultural Observatory, headed at Rhodes by Professor Jen Snowball, HOD of Economics & Economic History. NALSU also relaunched its popular Labour Studies Seminar programme, a new NALSU podcast series and held its Annual Neil Aggett Labour Studies Lecture in October, addressed by Professor Noor Nieftagodien, SARCHI Chair in Local Histories, Present Realities at Wits.

NALSU's worker education projects built on the unit's inclusive, non-aligned and non-sectarian collaborations with a wide range of unions. NALSU completed the first cycle of a merSETA-funded certificate programme in "Policy, Theory and Research for Labour Movements," running two modules, as well as its annual Vuyisile Mini Workers School. It started a new partnership with UN Women supporting organisations of workers in the informal economy, advocating improved access to social protection. This is led at Rhodes by Sociology Associate and NALSU member, Dr Laura Alfes. NALSU member and Sociology Associate Dr Lali Naidoo continued to work closely with the *Phakamani Siyephambili* movement of farm-workers and -dwellers, and was awarded her PhD on the agrarian economy.

These worker education projects also have important synergies with research. For example, Dr Alfes contributed to WIEGO studies of "Coping in Crisis: South African Workers Lives during COVID-19," the Vuyisile Mini Workers School hosted the launch of the second collection in NALSU's Labour Studies: Working-Class Education Series, *Building African Working-Class Unity: The Makhan Singh Memorial Lectures*, co-edited by Professor van der Walt, and NALSU member and Economics Associate Ms Siviwe Mhlana joined the Southern Centre for Inequality Studies at Wits. Professor van der Walt, who served as advisor to the South African Municipal Workers Union (SAMWU) official history project, presented on the Industrial and Commercial Workers Union (ICU) in 1920s Namibia and on syndicalist-turned-communist Solomon Buirski in the 1910s-1940s.

The Unit of Zimbabwean Studies (UZS) in the Department was very productive in 2021, including with regard to both publications and PhD and MA supervision. The head of the Unit, Professor Kirk Helliker, published two books. He was lead editor for *Everyday Crisis-Living in Contemporary Zimbabwe* (London: Routledge) and lead author for *Fast Track Land Occupations in Zimbabwe: In the Context of the Zvimurenga* (New York: Springer). Importantly, the first book consisted of chapters written by his current and former PhD and MA students. Professor Helliker was also lead editor for a special edition of the *Journal of Asian and African Studies* titled "Mnangagwa's Zimbabwe".

The Research Associates attached to the UZS were also very productive. In addition to their own separate publications, Dr Sandra Bhatasara and Dr Manase Kudzai Chiweshe were the other co-authors and co-editors for the two books mentioned above. Indian scholar Professor Praveen Jha, who works with Professor Helliker around land studies, also authored a number of publications on the political economy of land in the Global South.

Also significant were the publications of the Postdoctoral Fellow, Dr Freedom Mazwi, in the Unit, who was attached to the Sam Moyo African Institute of Agrarian Studies (Harare). His publications included: "Revisiting the trimodal agrarian structure as a social differentiation analysis framework in Zimbabwe: a study" (in *Agrarian South*); and "The impact of migratory practices on food security and asset accumulation in Zimbabwe: a study" (in *African Geographical Review*). During 2021, he also had a book proposal (based on his PhD) accepted by a South African publisher. Two of Professor Helliker's PhD students graduated in 2021: Patience Chadambuka's thesis was examined "Former Farm Workers of Foreign Descent in Communal Areas in Post-Fast Track Zimbabwe: The Case of Shamva District", while Lali Naidoo's thesis was titled "A Double-edged Sword: The Minimum Wage and Agrarian Labour in the Eastern Cape, South Africa, 2003-2014."



Dr Lindiwe Tsobe, the first Oprah Winfrey Leadership Academic alumna to graduate with a PhD. Professor Michael Drewett of the Department of Sociology supervised her Honours, Masters and PhD theses.

Photo: Department of Sociology and Industrial Sociology

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Alfers, L.

Alfers, L., Dobson, R., Ndlovu, P., Davy, J., Todd, A. and Quazi, T. (2021) Reflections on Experiences Working alongside informal Traders at Warwick Junction in Durban: A Human Factors and Ergonomics Perspective. In: Bezerra, J., Paterson, C. and Paphitis, S. (eds.). *Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*. Cape Town: African Sun Media. p.267-290. ISBN: 9781991201058.

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Bhatarasa, S. (2021) Women, land and urban governance in colonial and post-colonial Zimbabwe. In: Homes, R. (ed.). *Land Issues for Urban Governance in sub-Saharan Africa*. New York: Springer. p.207-224. ISBN: 9783030525033.

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Sivalo, D.M. (2021) Accountability of Bulawayo's urban council: service delivery and civic activism challenges. In: Helliker, K.D., Chiweshe, M.K. and Bhatarasa, S. (eds.). *Everyday crisis-living in contemporary Zimbabwe*. London: Routledge. p.23-35. ISBN: 9780367863104.

Tombindo, F.

Tombindo, F. and Gukurume, S. (2021) Trust and the Zimbabwean diaspora: a case study of the West Midlands County, England. In: Helliker, K.D., Chiweshe, M.K. and Bhatarasa, S. (eds.). *Everyday crisis-living in contemporary Zimbabwe*. London: Routledge. p.155-167. ISBN: 9780367863104.

Van Der Walt, L.

Van Der Walt, L. (2021) 'Tous les Travailleurs, Sans Distinction de Métier, de Race ou de Couleur de Peau': La Première Vague d'Action et d'Influence IWW en Afrique du Sud. In: Cole, P., Struthers, D. and Zimmer, K. (eds.). *Wobblies du Monde Entier: Histoire Globale du Syndicat Industrial Workers of the World*. Montréal: Éditions de la Rue Dorion. p.357-378. ISBN: 9782924834220.

Van Der Walt, L. (2021) 'Tous les Travailleurs, Sans Distinction de Métier, de Race ou de Couleur de Peau': La Première Vague d'Action et d'Influence IWW en Afrique du Sud. In: Cole, P., Struthers, D. and Zimmer, K. (eds.). *Olidarité Forever: Histoire Globale du Syndicat Industrial Workers of the World*. Marseille: Hors d'atteinte. p.387-410. ISBN: 9782490579822.

Wapinduka, T.

Wapinduka, T. (2021) HIV therapy in Chivanhu, Masvingo district. In: Helliker, K.D., Chiweshe, M.K. and Bhatarasa, S. (eds.). *Everyday crisis-living in contemporary Zimbabwe*. London: Routledge. p.115-127. ISBN: 9780367863104.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Klerck, G., Reynolds, J. and Van Der Walt, L.

Klerck, G., Reynolds, J., Van Der Walt, L. and Hagemeyer, L. Design, facilitation, presentation. Module 3 - "The State and Law". *Policy, Theory and Research for Labour Movements programme*. Graham Hotel, Makhanda. South Africa. 19 - 25 June 2021.

Naidoo, L.

Naidoo, L. Presentation. Farmworker Organising after Apartheid. *Vuyisile Mini Workers School*. Graham Hotel, Makhanda. South Africa. 8 - 12 November 2021.

Ntikinca, K.L.

Ntikinca, K.L. Presentation. Labour in Global Value Chains: Apples in South African Agriculture. *Labour Studies Seminar Series*. Online / Rhodes University, Makhanda. South Africa. 21 October - 21 January 2021.

Van Der Walt, L.

Van Der Walt, L. Presentation. Resources to Revive Unionism: Recovering the History of Africa's Unions. *Vuyisile Mini Workers School*. Graham Hotel, Makhanda. South Africa. 8 - 12 November 2021.

Van Der Walt, L. Presentation. Unions, Co-operatives and the "Solidarity Movement". *Vuyisile Mini Workers School*. Graham Hotel, Makhanda. South Africa. 8 - 12 November 2021.

Van Der Walt, L. Presentation. The Defence and Strengthening of Collective Bargaining in the Context of Municipal and Working-Class Crisis. *South African Municipal Workers Union (SAMWU) Collective Bargaining Conference*. Sunnyside Hotel, Johannesburg. South Africa. 15 - 16 March 2021.

Van Der Walt, L. Presentation. Building an Ethical Politics: After the Unrest and the Political Parties. *Unemployed Peoples Movement (UPM) workshop*. Graham Hotel, Makhanda. South Africa. 15 July 2021.

Van Der Walt, L. Presentation. Understanding Capitalism: Explaining Class Conflict. *Train the Trainer school, South African Federation of Trade Unions (SAFTU)*. University of the Witwatersrand, Johannesburg. South Africa. 10 - 14 November 2021.

Van Der Walt, L. Presentation. Opening Address: South African Unrest - How do we Understand what Happened? *18th ILRIG (International Labour Research and Information Group) Political School Don Bosco*. Johannesburg. South Africa. 26 - 30 September 2021.

Van Der Walt, L. Presentation. In the South: The ICU in Southern Africa. *Vuyisile Mini Workers School*. Graham Hotel, Makhanda. South Africa. 8 - 12 November 2021.

Van Der Walt, L., Alfery, L., Naidoo, L. and Ntikinca, K.L.

Van Der Walt, L., Alfery, L., Naidoo, L., Ntikinca, K.L., Mcgregor, W. and Hagemeyer, L. Design, facilitation, presentation. Module 4 - "Building Organisation". *Policy, Theory and Research for Labour Movements programme*. Graham Hotel, Makhanda. South Africa. 4 - 10 September 2021.

Van Der Walt, L., Naidoo, L. and Maisiri, L.J.

Van Der Walt, L., Patel, Z., Anisha, E., Mwachonda, C., Hattingh, S., Sebei, M., Nieftagodien, N., Naidoo, L. and Maisiri, L.J. Design, facilitation, presentation. Back to the Future: Lessons from African Labour History. *Vuyisile Mini Workers School 2021. Neil Aggett Labour Studies Unit (NALSU) / Sociology*. Graham Hotel, Makhanda. South Africa. 8 - 12 November 2021.



Professor van der Walt and NUMSA leader, Lorna Swayena, at the graduation ceremony for the merSETA-funded Neil Aggett Labour Studies Unit/Rhodes University short course programme for trade unions.

Photo: Department of Sociology and Industrial Sociology

OTHER PUBLICATIONS

Alfers, L.

Alfers, L., Galvani, F., Grapsa, G., Juergens, F. and Sevilla, A. (2021) Older Informal Workers in the COVID-19 Crisis. In: (ed.). *Policy Insights 5, WIEGO*. Manchester, UK: Women in Informal Employment: Globalizing and Organizing (WIEGO).

Ngoma, A.L.

Ngoma, A.L. (2021) Coalition Negotiations and Agreements in South Africa's Local Elections 2021. In: Booyesen, S. (ed.). *When Wedding Bells Ring: Coalitions with(out) Concord, an Analysis of South Africa's 2021 Local Elections and Coalitions*. Johannesburg: Mapungubwe Institute for Strategic Reflection (MISTRA).

Ngoma, A.L. (2021) From Showcase Coalition to the Extraction of 'Collateral Damage': Coalitions in Ekurhuleni, 2016-2021. In: Booyesen, S. (ed.). *When Wedding Bells Ring: Coalitions with(out) Concord, an Analysis of South Africa's 2021 Local Elections and Coalitions*. Johannesburg: Mapungubwe Institute for Strategic Reflection (MISTRA).

Reynolds, J.

MacLeod, C.I. and Reynolds, J. (2021). In: *Sexual and reproductive health amongst women who sell sex and women who inject drugs in Eastern and Southern Africa: A scoping review*. Grahamstown: Rhodes University.

Xhegwana, S.I.

Xhegwana, S.I. (2021) Land of Thorns. In: *Land of Thorns*. South Africa: Eastern Cape Department of Sport, Recreation, Arts & Culture.

PEER REVIEWED NON-SUBSIDY EARNING JOURNAL RESEARCH PUBLICATIONS

Mazwi, F.

Mazwi, F., Muchetu, R.G. and Mudimu, G. (2021) Revisiting the Trimodal Agrarian Structure as a Social Differentiation Analysis Framework in Zimbabwe: A Study. *Agrarian South: Journal of Political Economy*. 10 (2). p.1-26.

Reynolds, J.

MacLeod, C.I. and Reynolds, J. (2021) Human Papilloma Virus infection and cervical cancer among women who sell sex in Eastern and Southern Africa: A scoping review. *Women's Health*. 17 (2021). p.1-10.

PEER REVIEWED SUBSIDY EARNING JOURNAL RESEARCH PUBLICATIONS

Agbedahin, K.

Agbedahin, K. (2021) "Covid-Preneurship" and the Imperative Return to Ubuntu. *Peace Review*. 33 (1). p.80-87.

Alfers, L.

Rogan, M., Chen, M., Grapsa, G., Ismail, G., Valdivia, M., Alfery, L., Harvey, J., Ogando, A.C., Reed, S. and Roeber, S. (2021) COVID-19 and informal work: Evidence from 11 cities. *International Labour Review*. 10 (1111). p.1-42.

Bhatasara, S. and Chiweshe, M.K.

Bhatasara, S. and Chiweshe, M.K. (2021) Women in Zimbabwean Politics Post-November 2017. *Journal of Asian and African Studies*. 56 (2). p.218-233.

Chiweshe, M.K.

Mufandaedza, A. and Chiweshe, M.K. (2021) An analysis of obstetric violence among low-income urban women: A case study of Mabvuku Hospital in Harare, Zimbabwe. *Agenda: A Journal About Women and Gender*. 35 (2). p.24-35.

Chiweshe, M.K. and Mahiya, I. (2021) Corruption and the Morality of Everyday Life in Urban Harare, Zimbabwe. *Africa Today*. 68 (1). p.1-22.

Chiweshe, M.K. and Dandah, G. (2021) Netball in Zimbabwe: Towards a Social History. *The International Journal of the History of Sport*. (2021). p.1-17.

Dandah, G. and Chiweshe, M.K. (2021) Zimbabwe Premier Soccer League in the Context of COVID-19. *Journal of Global Sport Management*. (2021). p.1-10.

Diaz, F.A.

Diaz, F.A. and Luden, M.G.P. (2021) Inequality and the Socioeconomic



Discussion group in the merSETA-funded Neil Aggett Labour Studies Unit/Rhodes University short course programme, with trade unionists from LIMUSA, NUMSA and Solidarity. Photo: Department of Sociology and Industrial Sociology.

Dimensions of Mobility in Protests: The Cases of Quito and Santiago. *Global Policy*. 12 (2). p.78-90.

Drewett, M.

Drewett, M. (2021) Rodriguez, apartheid, and censorship: Cold Facts, and fiction. *Safundi*. 22 (1). p.130-146.

Helliker, K.

Gimenez Amoros, L. and **Helliker, K.** (2021) The Orchestration of Postcolonial Zimbabwe: The Soundtrack of the Three Zvimurenga and the Present. *Muziki*. (2021). p.1-23.

Helliker, K. and Mazarire, G.C. (2021) Mnangagwas Zimbabwe: Crisis? What Crisis? *Journal of Asian and African Studies*. 56 (2). p.171-175.

Mathekga, J.M.

Mathekga, J.M. (2021) Retail Workers in the Context of the Coronavirus (Covid-19) and Lockdown Regulations: An Analysis of Shoprite Workers in South Africa. *African Journal of Employee Relations (Formerly South African Journal of Labour Relations)*. 45 (2021). p.1-16.

Mazwi, F.

Mazwi, F. (2021) The impact of migratory practices on food security and asset accumulation in Zimbabwe: a study. *African Geographical Review*. 2021 (2021). p.1-13.

Mwonzora, G.

Mwonzora, G. and Hodzi, O. (2021) Movement for Democratic Change and the Rise of Nelson Chamisa. *Journal of Asian and African Studies*. 56 (2). p.251-266.

Nare, H.

Nare, H. (2021) Political restructuring, bureaucratization, and minority groups in Myanmar: The case of Rohingya from 2011 to 2018. *Asian Journal of Social Science*. 49 (1). p.16-20.

Ndakaripa, M.

Ndakaripa, M. (2021) Zimbabwe's Economic Meltdown: Are Sanctions Really to Blame? *The Washington Quarterly*. 44 (2). p.95-120.

Reynolds, J.

Macleod, C.I. and **Reynolds, J.** (2021) Reproductive health systems analyses and the reparative reproductive justice approach: a case study of unsafe abortion in Lesotho. *Global Public Health*. 2021 (2021). p.1-14.

Toerien, M.

Toerien, M. (2021) When do patients exercise their right to refuse treatment? A conversation analytic study of decision-making trajectories in UK neurology outpatient consultations. *Social Science & Medicine*. 290 (2021). p.1-22.

RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Hadebe, S.

Nkomo, D., Hadebe, S. and Fuzwayo, M. Dismembering memory of a genocide: Contestations over Bhalagwe mass graves memorial site. 'Gukuruhundi and the Culture of Violence in Zimbabwe' Virtual Conference. Virtual Conference, Bulawayo. Zimbabwe. October 2021.

Ngoma, A.L.

Ngoma, A.L. Political Conditions that Facilitate Coalition Workability. 15th Biennial Conference: South African Association of Political Studies. Rhodes University, Makhanda. South Africa. August 2021.

Reynolds, J.

Macleod, C.I. and **Reynolds, J.** Inserting reparative justice into health systems analyses: a case study of unsafe abortion in Lesotho. International Society of Critical Health Psychology conference. Online, Makhanda. South Africa. August 2021.

Sibuyi, L.N.

Sibuyi, L.N. From Import-Substitution Industrialisation (ISI) to Neo-Liberalism. *The State We're In: Democracy's Fractures, Fixes and Futures*. Nelson Mandela University, Port Elizabeth. South Africa. September 2021.

Van Der Walt, L.

Van Der Walt, L., Johns, S. and Mendelsohn, R. The Political Odyssey of Solomon Buirski, South Africa: Traversing the Worlds of the IWW, the CPSA, Afrikaner Nationalism and the Jewish Diaspora. *100 Years of the South African Communist Party: Debating Lineages of Socialism in Africa*. Online, Johannesburg. South Africa. July 2021.

Van Der Walt, L. The Industrial and Commercial Workers Union in South West Africa: Syndicalism, Garveyism and Resistance in South African-ruled Namibia, 1920-1925. *Namibian and Southern African Studies Research Colloquium, Autumn 2021*. Centre for African Studies, University of Basel, Basel. Switzerland. November 2021.



DEPARTMENT OF Statistics

Mr Jeremy Baxter
Head of Department

Photo: Dirk Pieters

INTRODUCTION

The staff and students wish Professor Irek Szyszkowski all the best in his retirement. Professor Irek Szyszkowski joined the staff of the department in 1991. His dry sense of humour and enthusiasm for “advanced” mathematics kept the students engaged and interested during his classes. Professor Szyszkowski made an immense contribution within the department and he will be missed.

Despite the COVID-19 restrictions, the Department of Statistics continued pursuing a broad range of teaching and research interests and activities during 2021.

POSTGRADUATES/ GRADUATIONS

Mr Sisipho Hamlomo completed his Master of Science. His thesis was titled “Statistical and Mathematical Learning: An Application to Fraud Detection and Prevention”. In his thesis Mr Hamlomo reviewed and subsequently applied various supervised statistical and mathematical learning techniques, namely logistic regression, decision trees, k-nearest neighbour, support vector machine and multilayer perceptrons, to a data set comprised of European banking transactions. This data set is highly unbalanced. Random under-sampling, one-sided sampling, Synthetic Minority Oversampling Technique (SMOTE) combined with Tomek links and parameter tuning were utilized to offset the effects of the imbalanced data. Interestingly the logistic regression classifier performed better than other classifiers except when the dataset was oversampled.

Four students graduated with a Bachelor of Science Honours in Mathematical Statistics, three with joint Bachelor of Science Honours in Mathematics and Mathematical Statistics, and one

with joint Bachelor of Science Honours in Human Kinetics and Ergonomics and Mathematical Statistics. Apehelele Matshaya, Georgina Fiorentinos, Sihle Gcilitshana and Tamlyn Lahoud all attained distinctions.

Mr Tagen de Wet was the winner of the South African Statistical Association (SASA) Honours year bursary competition sponsored by Institute of Certificated and Chartered Statisticians of South Africa (ICSSA) (2021). Ms Solethu Sibanda was the winner of the South African Statistical Association (SASA) third year bursary competition (2021).

DISTINGUISHED VISITORS AND SIGNIFICANT RESEARCH ALIGNED EVENTS

Mr Jurie Schoeman and the BSG team discussed the BSG internship and graduate placement programs. The Business Systems Group (BSG) took the students through a complete statistical analysis of a current BSG consulting project. This very interesting and highly informative seminar clearly demonstrated the practical application of the statistical concepts and theory that the students are learning in their courses. The BSG team strongly recommended that the students consider a career as a data scientist and provided many practical and useful tips and suggestions for the students with regards further study and career opportunities.

Dr Fabio Correa was granted significant funds from the Technology Innovation Agency Fund (TIA) Seeds to continue his research on tomato genotype selection and yield prediction using climatic and genetic information. This project aims to build tomato classification models through visual patterns and combine genetic information with climatic information to predict tomato yield. He is part of a group of young researchers whose objective is developing the capacity for supervision and curriculum construction in statistics in South Africa.

PEER REVIEWED SUBSIDY-EARNING JOURNAL
RESEARCH PUBLICATIONS

Langston, A.F.

Finkelstein, M., Cha, J.H. and **Langston, A.F.** (2021) Optimal preventive switching of components in degrading systems. *Reliability Engineering and System Safety*. 219 (2022). p.1-11.

Raubenheimer, L.

Verster, A. and **Raubenheimer, L.** (2021). A different approach for choosing a threshold in peaks over threshold. *Statistics, Optimization & Information Computing (ISSN 2310-5070)*. DOI: 10.19139/soic-2310-5070-976, 9(4), 838 - 848.

Smit, N. and **Raubenheimer, L.** (2021). Bayesian accelerated life testing: A generalised Eyring-Birnbaum-Saunders model. *Quality and Reliability Engineering International (ISSN 1099-1638)*. DOI:10.1002/qre.2970.

RESEARCH PAPERS PRESENTED AT
ACADEMIC / SCIENTIFIC CONFERENCES
(NON-PEER-REVIEWED PROCEEDINGS)

Chinomona, A.

Chinomona, A. and Mwambi, H. Estimating HIV Prevalence using Population-based Surveys in the Presence of Missing Data. *Sub-Saharan African Network (SUSAN) 2021*. Online (hosted by IBS Kenyan Region), Nairobi. Kenya. September 2021.

Correa, F.M.

Fabris-rotelli, I., Das, S., Smit, A., Maribe, G., von Maltitz, M., Roberts, D., Maposa, D., **Correa, F.M.** Entry-level statistics supervisor development in South Africa. *62nd Annual Conference of the South African Statistical Association*. Stellenbosch University, Stellenbosch. South Africa. November 2021.

Raubenheimer, L.

Smit, N. and **Raubenheimer, L.** Bayes factors for accelerated life testing models. *The Bayesian Young Statisticians Meeting*. Virtual Conference, September 2021.

Smit, N. and **Raubenheimer, L.** Model comparison for Bayesian ALT models. *The South African Statistical Association (SASA) 62nd Annual Conference of the South African Statistical Association*. Stellenbosch University, Stellenbosch. South Africa. November 2021.



The Hamlomo family at graduation.
Photo: Ms Solethu Sibanda and Ms Amy Langston.



Ms Amy Langston presenting Ms Solethu Sibanda with the SASA Bursary.
Photo: Department of Statistics.



Mr Sisipho Hamlomo and Mr Jeremy Baxter.
Photo: Department of Statistics.



DEPARTMENT OF Zoology and Entomology

Professor Nichole Richoux
Head of Department

Photo: Dirk Pieters

INTRODUCTION

In 2021 we returned to our offices and laboratories, and we built on our existing research strengths despite the long-term effects of the devastating COVID-19 pandemic.

The staff, students and associates contributed to more than 180 peer-reviewed subsidy-earning journal publications, a book chapter, an edited book, and a variety of conference presentations and popular articles. Members of our department continue to lead the way in various national and international research initiatives through manuscript, project, and programme reviews, while simultaneously returning to a face-to-face teaching and supervision lifestyle. Life has certainly not been boring.

POSTGRADUATES / GRADUATIONS

The department supervised to completion significant numbers of Postgraduate students in 2021. We applauded eleven (11) Honours, twelve (12) MSc, and seven (7) PhD students as successful graduates of their programmes. We wish all of them the very best as they continue their journeys as young scientists.

SIGNIFICANT RESEARCH ALIGNED EVENTS

Professor William Froneman was appointed Director of the SARChI in Marine Ecology following the retirement of Distinguished Professor Christopher McQuaid. Professor Martin Villet conducted forensic entomological analysis for the

International Criminal Court, The Hague. Professor Ryan Wasserman was appointed Honorary Treasurer for the Southern African Society of Aquatic Scientists. Professor Julie Coetzee was appointed president of the Entomological Society of Southern Africa. Professor Martin Hill was awarded the 2021 Individual Internationalisation Award for Rhodes University. At the 22nd Congress of the Entomological Society of Southern Africa, Rosali Smith was awarded Best Student Presentation (PhD), and Clarke van Steenderen was runner-up. Dr Francesca Porri was invited to present at the 6th International Marine Connectivity Conference in Paris, France.

BOOKS/CHAPTERS/MONOGRAPHS

Brigham, R.M.

Clerc, J., **Brigham, R.M.**, Boyles, J.G. and McGuire, L.P. 2021. A NASBR history of radiotelemetry: how technology has contributed to advances in bat biology. Pp. 241-253. Fifty Years of Bat Research: Foundations and New Frontiers. Lim, B.K. *et al.* (eds.). *Fascinating Life Sciences Series*. Springer. ISBN 978-3-030-54726-4.

Lim, B.K., Fenton, M.B., **Brigham, R.M.**, Mistry, S., Kurta, A., Gillam, E.H., Russell, A. and Ortega J.(eds.). 2021. Fifty Years of Bat Research: Foundations and New Frontiers. *Fascinating Life Sciences Series*. 376 pp. Springer. ISBN 978-3-030-54726-4.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

James, H.

James, H. Virtual. The role of natural history museums in biodiversity knowledge, using riverflies (mayflies, stoneflies and caddisflies) as examples. *Biodiversity and collection Management in East Africa*. Grand Auditorium. Rwanda. 3 - 5 September 2021.

James, H. Event/Graduate Summer school. Mind the Darwinian shortfalls. *A graduate summer school on Biodiversity and Collection Management in East Africa*. Grand Auditorium. Rwanda. 20 August - 5 September 2021.

PEER REVIEWED NON-SUBSIDY EARNING JOURNAL RESEARCH PUBLICATIONS

Hodgson, A.N.

Hodgson, A.N., Dussart, G. and Raheem, D.C. (2021). From print to on-line, a historical review of the Journal of the Malacological Society of London. *The Malacologist*. 76 p.30-36.

PEER REVIEWED SUBSIDY EARNING JOURNAL RESEARCH PUBLICATIONS

Aigbedion-Atalor, P.O.

Aigbedion-Atalor, P.O., Idemudia, I., Adom, M., Forchibe, E.E., Tossou, H., Wilson, D.D. and Day, M.D. (2021) Marching across and beyond West Africa: First record of the stem-galling fly *Cecidochares connexa* (Diptera: Tephritidae) in Central Africa and the implications for biological control of *Chromolaena odorata* (Asteraceae). *PLoS ONE*. 16 (6). p. e0252770.

van Lenteren, J.C., Lanzoni, A., Hemerik, L. and **Aigbedion-Atalor, P.O.** (2021) The pest kill rate of thirteen natural criterion of their biological control potential of *Tuta absoluta*. *Scientific Reports*. 11 (1). p.10756.

Idemudia, I., Wilson, D.D. and **Aigbedion-Atalor, P.O.** (2021) Spread and establishment of *Cecidochares connexa* (Macquart) (Diptera: Tephritidae) in Nigeria, a biological control agent of *Chromolaena odorata* (L.) R.M. King and H. Robinson. *Biocontrol Science and Technology*. 32. p.391-396.

Aigbedion-Atalor, P.O. and Hill, M.P.

Aigbedion-Atalor, P.O., **Hill, M.P.**, Ayelo, P.M., Ndlela, S., Zalucki, M.P. and Mohammed, S.A. (2021) Can the combined use of the mirid predator *Nesidiocoris tenuis* and a braconid larval endoparasitoid *Dolichogenideia gelechiidivoris* improve the biological control of *Tuta absoluta*? *Insects*. 12 (11). p.1-12.

Allanson, B.R.

Human, L.R.D., Weitz, R., **Allanson, B.R.** and Adams, J.B. (2021) Nutrient fluxes from sediments pose management challenges for the Knysna Estuary, South Africa. *African Journal of Aquatic Science*. 45 (1). p.1-9.

Allison, C. and Froneman, P.W.

Allison, C., Muller, C., Childs, A.R., **Froneman, P.W.**, Bailey, L. and

Potts, W.M. (2021) When cooling is worse than warming: investigations into the thermal tolerance of an endemic reef fish, *Boopsoidea inornata*. *African Journal of Marine Science*. 43 (2). p.239-249.

Albertyn, S., **Moore, S.D.**, Marsberg, T., **Coombes, C.A.** and **Hill, M.P.** 2021. The influence of citrus orchard age on the ecology of entomopathogenic fungi and nematodes. *Biocontrol Science & Technology*. 31(1): 80-96.

Barker, C., Monaco, C.J. and McQuaid, C.D.

Barker, C., **Monaco, C.J.** and **McQuaid, C.D.** (2021) Exposure to fluctuating temperature increases thermal sensitivity in two lineages of the intertidal mussel *Perna perna*. *Marine Ecology Progress Series*. 668. p.85-95.

Barnes, R.S.K.

Fagg, C., Phair, N., **Claassens, L.**, **Barnes, R.S.K.** and von der Heyden, S. (2021) Strengthening the DNA barcode reference library for South African estuarine macrofauna. *African Journal of Marine Science*. 43. p. 1-5.

Michie, L.A., **Barnes, R.S.K.**, Clark, P.F., Bennett, W.A. and Cragg, S.M. (2021) Distinguishing ten sympatric species of fiddler crab (Decapoda: Ocypodidae) using a suite of phenotypic characteristics. *Zootaxa*. 5026 (4). p.480-506.

Barnes, R.S.K. (2021) What does measuring species diversity in estuarine seagrass systems actually assess? *Marine Environmental Research*. 172 (2021). p.105500.

Barnes, R.S.K. (2021) Patterns of seagrass macrobenthic biodiversity in the warm-temperate Knysna estuarine bay, Western Cape: a review. *Aquatic Ecology*. 55. p.327-345.

Barnes, R.S.K. (2021) Within-species relationship of patchiness to both abundance and occupancy, as exemplified by seagrass macrobenthos. *Oecologia*. 196. p.1107-1117.

Barnes, R.S.K. (2021) Intraspecific abundance-occupancy-Patchiness relations in the intertidal benthic macrofauna of a cool temperate North Sea mudflat. *Estuaries and Coasts*. 45. p.827-838.

Bernard, A.T.F.

Bernard, A.T.F. and *et al.* (2021) Establishing the Foundation for the Global Observing System for Marine Life. *Frontiers in Marine Science*. 8. p.1-12.

Juby, R., **Bernard, A.T.F.** and **Götz, A.** (2021) Day/night patterns of habitat use by dogfish sharks (Squalidae) at photic and subphotic warm-temperate reefs: evidence for diel movements and size- and sex-segregation. *African Journal of Marine Science*. 43 (3). p.325-336.

Albano, P.S., Fallows, C., Fallows, M., Schuitema, O., **Bernard, A.T.F.**, Sedgwick, O. and Hammerschlag, N. (2021) Successful parks for sharks: No-take marine reserve provides conservation benefits to endemic and threatened sharks off South Africa. *Biological Conservation*. 261. p.1-10.

Bernard, A.T.F. and Midgley, J.M.

Heyns-Veale, E.R., **Bernard, A.T.F.**, **Midgley, J.M.** and Herbert, D.G. (2021) The distribution of offshore benthic molluscs provides new insight into South Africa's marine biogeography. *Ocean and Coastal Management*. 217. p.1-12.

Booth, J.M.

Fusi, M., Daffonchio, D., **Booth, J.M.** and Giomi, F. (2021) Dissolved Oxygen in Heterogeneous Environments Dictates the Metabolic Rate and Thermal Sensitivity of a Tropical Aquatic Crab. *Frontiers in Marine Science*. 8. p.1-9.

Booth, J.M. and McQuaid, C.D.

Booth, J.M., Fusi, M., Giomi, F., Chapman, E., Diele, K. and **McQuaid, C.D.** (2021) Diel oxygen fluctuation drives the thermal response and metabolic performance of coastal marine ectotherms. *Proceedings of the Royal Society B-Biological Sciences*. 288 (21). p.1-9.

Brigham, R.M.

Rose, P.K., **Brigham, R.M.** and Davis, S.K. (2021) Conservation of Sage- grouse Critical Habitat and Implications for Prairie Songbirds. *Wildlife Society Bulletin*. 45 (2). p.1-9.



Community mass-rearing tunnel for rearing *Megamelus scutellaris* on *Pontederia crassipes*. Photo: David Taylor

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Dr Shelley Edwards and a whip scorpion.

Photo: Department of Zoology and Entomology

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Dr Keates and Mr Kemp in Witsands. Photo: Department of Zoology and Entomology

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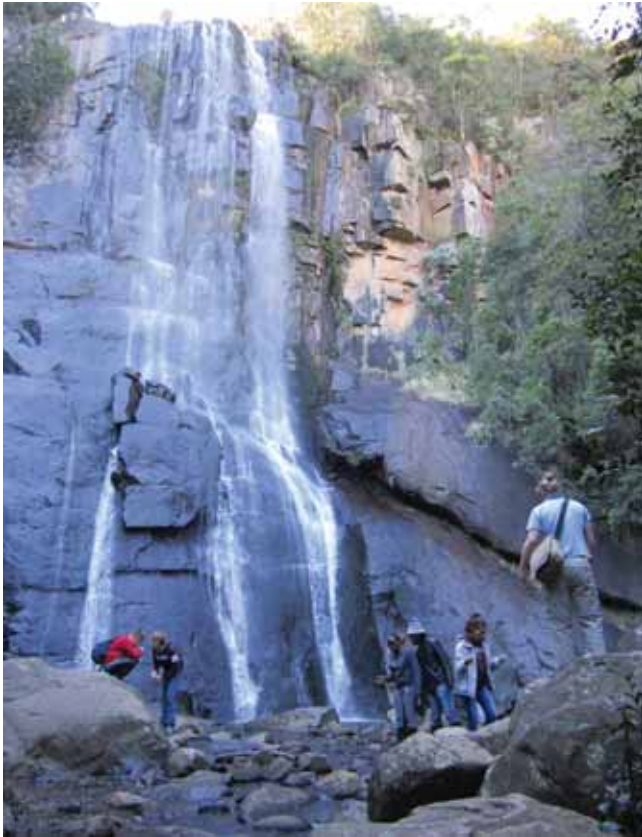
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Dr Keates, Mr Evlambiou and Mr Kemp in Witsands. Photo: Department of Zoology and Entomology



Entomology 2 class in Hogback.

Photo: Department of Zoology and Entomology

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RESEARCH PAPERS PRESENTED AT ACADEMIC / SCIENTIFIC CONFERENCES (NON-PEER-REVIEWED PROCEEDINGS)

Villet, M.H. and Midgley, J.M. (2021) Villet, M.H., Williams, K. and Midgley, J.M. The first record of *Omosita nearctica* in South Africa. *Biennial ESSA Congress*. Forever Resort, Tshipise. South Africa. June 2021.



2021 Rhodes University
RESEARCH REPORT

Affiliates & Institutes



Albany Museum

Manzi Vabaza
Director

Photo: Dirk Pieters

INTRODUCTION

Research activities at the Albany Museum were varied and highly productive during 2021, with the publication of seventeen (17) peer-reviewed journal articles produced by seven (7) Museum researchers and research associates, and ten (10) conference and workshop presentations.

Six (6) Rhodes Postgraduate student projects were supervised, and we hosted two (2) Postdoctoral Fellows. Intense field programmes were undertaken by most researchers at the Museum, seeing a substantial growth in our palaeontological, entomological and freshwater invertebrate collections, concomitant with our sustained efforts to standardise and digitise the Museum catalogues.

DEPARTMENT OF EARTH SCIENCES

The Devonian Research Programme, run by **Dr Robert Gess** produced a bumper crop of outputs, including publications in *Scientific Reports* and *Nature*. The latter detailed 360-million-year-old lamprey juveniles from Waterloo Farm in Makhanda, preserved in beautiful detail including soft-tissues. The paper presents a unique growth series of the world's oldest known lampreys (*Priscoomyzon*), from hatchling to adult - revealing that ancient lampreys represent a specialised side-branch in vertebrate evolution and can no longer be regarded as homologues of the most basal ancestors of the vertebrate clade. These discoveries have overturned mainstream thinking about vertebrate evolution and will no doubt be seen in textbooks in the near future. The second big announcement was the discovery and description of a 420-million-year-old terrestrial flora from South Africa. Previously only one species of plant of this age was known from South Africa, having been described

in the 1930s. By contrast 15 species were identified in this paper. Many of the plants are far more completely preserved than those normally found from this age, with a number of very small plants being exquisitely preserved.

Dr Rose Prevec ran several fieldtrips to the Sutherland plant and insect fossil localities, making up for time lost in 2020. The Onder Karoo locality is emerging as an internationally significant fossil site that is causing much excitement among the large, interdisciplinary group of local and international collaborators working on describing the many new species being discovered.

Dr Zolile Maseko joined us for a Postdoctoral Fellowship and had first-hand experience of the frustrations and challenges associated with the statistical analysis of fossil plants. Partial preservation, distortion, disassociated plant parts and dodgy taxonomy were just some of the joys we shared with him.

Ms Aviwe Matiwane, Rhodes PhD student, and Research Associate of the Albany Museum, was part of a multinational team of young researchers who published an important paper in *Nature, Ecology and Evolution* on the impacts of colonial history and global economic inequalities on our understanding of deep-time biodiversity. Utilizing open access datasets, they established that 97% of palaeontological data is generated by researchers based in countries in Northern America and Western Europe. Many of these affluent countries also conduct a large amount of research abroad, often without any collaboration with local researchers in the countries they are working in. What emerged is a pattern of 'parachute science', where lower-income countries are exploited for their fossils and palaeontological data without receiving benefits and acknowledgement.

DEPARTMENT OF ENTOMOLOGY AND ARACHNOLOGY

The Department of Entomology and Arachnology at the Albany Museum houses approximately 270 000 insect, spider and scorpion specimens. It is the largest collection of its kind in the Eastern Cape and serves to represent the diversity of these groups from South Africa. One of the highlights of the year was the discovery of an undescribed species of social paper wasp in Makhanda, no less, hidden in plain sight on Oatlands street! The species has been described as *Ropalidia ambala* (Hymenoptera: Vespidae) in the Journal of Hymenoptera Research. Their nest is constructed from lichens, a behaviour that until this discovery was known only from Madagascar, for this genus. Previously, the species was known to science from museum records, and images on *iNaturalist*, but was unnamed.

Dr Terence Bellingan conducted a two-week research visit to Iziko Museum, Cape Town, during May of 2021. He was accompanied by Dr John Midgley, a fellow Rhodes University Research Associate of the Department of Zoology and Entomology. Approximately 1 100 aerial malaise trap samples were sorted through. These form part of bycatch from long term monitoring studies conducted in the Department of Entomology, Iziko Museum. The samples were collected from all across Africa and are an extremely valuable resource for collections-based science. Groups of research interest (primarily true flies) were removed from the samples and taken on loan for further study. So far, a new species of hanging fly (Mecoptera: Bittacidae) from Gorongosa National Park, Mozambique, has been formally described from this work.

DEPARTMENT OF FRESHWATER INVERTEBRATES

Dr Helen Barber-James (HoD of the Department of Freshwater Invertebrates, FWI) resigned at the end of 2021, after more than 30 years of service to the Museum, Rhodes University and the public of Makhanda. She ran a productive and dynamic research programme on freshwater ecosystems, with an emphasis on African mayflies (Ephemeroptera). She is a leading international expert in this field and has collaborated with and trained researchers from across Africa, and internationally. Dr Barber-James was a Research Associate in the Department of Zoology and Entomology at Rhodes University, where she

ran undergraduate courses for many years, and she supervised a large number of Postgraduates during her tenure. She was a tireless advocate for South African biodiversity research and conservation, ran a comprehensive outreach programme, and was a key player in the establishment and continuation of SANBI's Natural Sciences Collections Facility. Helen has taken up a post as Senior Curator of Natural Sciences at National Museums NI, in Belfast, Northern Ireland. She will be dearly missed. Her position as HOD has been taken over by **Musa Mlambo**. The department continues to be actively involved in several Postgraduate research projects on various invertebrate groups including systematics of mayflies, amphipods, large branchiopods, and stoneflies. Mr Mlambo ran a hectically productive field and research programme throughout 2021 and has grown a flourishing team of Postgraduate students and interns.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Retired Professor Connal Eardley, Aculeate Hymenoptera specialist, taxonomist, visited the Department of Entomology and Arachnology. During his visit he examined collections of the bee genera *Xylocopa* and *Amegilla* and loaned 52 specimens from his research.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Prevec, R.

McLoughlin, S., Prevec, R., Slater, B. 2021. Arthropod interactions with the Permian *Glossopteris* flora. *Journal of Palaeosciences*. 70: 43-133.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Barber-James, H.M.

Malzacher, P. and Barber-James, H.M. (2021) New *Caenis* species (Insecta: Ephemeroptera: Caenidae) from Angola, Okavango and Zambezi River basins. *African Entomology*. 29 (2). p.563-589. <https://doi.org/10.4001/003.029.0563>.

Pereira da Conceicao, L., Elbrecht, V., Hall, A., Briscoe, A., Barber-James, H.M. and Price, B. (2021) Metabarcoding unsorted kick-samples facilitates macroinvertebrate-based biomonitoring with increased taxonomic resolution, while outperforming environmental DNA. *Environmental DNA*. 3 (2), 353-371.

Bellingan, T.A.

Bellingan, T.A., Midgley, J.M., Goergen, G. and Jordaens, K. (2021) Notes on the Afrotropical hover fly genus *Meromacroides* Curran (Syrphidae, Eristalinae). *African Invertebrates*. 62 (2). p.383-397.

de Moor, F.C.

Rivers-Moore, N.A. and de Moor, F.C. (2021) Climate-linked freshwater habitat change will have cost implications: Pest blackfly outbreaks in two linked South African rivers. *River Research and Applications*. 37 (3). p.387-398.

Rivers-Moore, N.A. and de Moor, F.C. (2021) Longitudinal species turnover rates are predictable and should guide location of sampling sites for South African river surveys to assess aquatic biodiversity. *African Journal of Aquatic Science*. 46 (1). p. 45-53.

Gess, R.W.

Scholze, F and Gess, R.W. (2021) Late Devonian non-marine *Naiadites devonicus* nov. sp. (Bivalvia: Pteriomorphia) from the Waterloo Farm Lagerstätte in South Africa. *Geobios*. 69: 55-67. <https://doi.org/10.1016/j.geobios.2021.07.002>

Harris, C., Gess, R.W., Prestianni, C. and Bamford, M.K. (2021) A Late Devonian refugium for *Colpodexylon* (Lycopsida) at high latitude. *Review of Palaeobotany and Palynology*. 293: <https://doi.org/10.1016/j.revpalbo.2021.104481>

Gess, R.W. and Prestianni, C. (2021) An early Devonian flora from the Baviaanskloof Formation (Table Mountain Group) of South Africa. *Scientific Reports*. 11(1):11859: pp 1-23 doi: 10.1038/s41598-021-90180-z.

Harris, C., Gess, R.W., Rubidge, B.S. and Penn-Clarke, C. (2021) Coombs Hill: A Late Devonian fossil locality in the Witpoort Formation (Witteberg Group, South Africa). *South African Journal of Science*. 117(3/4) pp 1-6. DOI: 10.17159/sajs.2021/9190.

Miyashita, T., Gess, R.W., Tietjen, K., and Coates, M.I., (2021) Non-ammocoete larvae of Palaeozoic stem lampreys. *Nature*. 591(7850): 982-984. <https://doi.org/10.1038/s41586-021-03305-9>.

Matiwane, A.

Raja, N.B., Dunne, E.M., Matiwane, A., Khan, T.M., Nätscher, P.S., Ghilardi, A.M., and Chattopadhyay, D. (2021). Colonial history and global economics distort our understanding of deep-time biodiversity. *Nature, Ecology, & Evolution*. <https://doi.org/10.1038/s41559-021-01608-8>

Mlambo, M.C.

Alexander, G.J., Tolley, K.A., Maritz, B., McKechnie, A., Manger, P., Thomson, R.L., Schradin, C., Fuller, A., Meyer, L., Hetem, R., Cherry, M., Conradie, W., Bauer, A.M., Maphisa, D., O'Riain, J., Parker, D.M., Mlambo, M.C., Bronner, G., Madikiza, K., Engelbrecht, A., Lee, A.T.K.,

Jansen van Vuuren, B., Mandiwana-Neudani, T., Pietersen, D., Venter, J.A., Somers, M.J., Slotow, R., Strauss, W.M., Humphries, M.S., Kerley, G.I.H. (2021) Excessive red tape is strangling biodiversity research in South Africa. *South African Journal of Science*. 117 <https://sajs.co.za/article/view/10787>.

Mdidimba, N.D., Mlambo, M.C., Motitsoe, S.N. (2021) Trophic interactions and food web structure of aquatic macroinvertebrate communities in Afrotropical wetlands: influence of hydroperiod. *Aquatic Sciences*. 83 (2): 1-15.

Sigvardt, Z.M.S., Olesen, J., Rogers, D.C., Timms, B., Mlambo, M.C., Rabet, N. and Palero, F. (2021) Multilocus phylogenetics of smooth clam shrimps (Branchiopoda, Laevicaudata). *Zoologica Scripta*. 50: 795-811.

Sousa, R., Halabowski, D., Labecka, A.M., Douda, K., Aksenova, O., Bepalaya, Y., Bolotov, I., Geist, J., Jones, H.A., Konopleva, E., Klunzinger, M.W., Lasso, C., Lewin, I., Liu, X., Lopes-Lima, M., Mageroy, J., Mlambo, M.C., Nakamura, K., Nakano, M., Osterling, M., Pfeiffer, J., Prié, V., Paschoal, L.R.P., Riccardi, N., Santos, R., Shumka, S., Smith, A.K., Son, M., Teixeira, A., Thielen, F., Torres, S., Varandas, S., Vikhrev, I.V., Wu, X., Zieritz, A., Nogueira, J. (2021) The role of anthropogenic habitats for freshwater mussel conservation. *Global Change Biology*. 27: 2298-2314.

Prevec, R.

Pretorius, A.I., Labandeira, C.C., Nel, A., Prevec, R. 2021. Latest Permian insects from Wapadsberg Pass, southern Karoo Basin, South Africa. *Austral Entomology*. 60: 560-570. <https://doi.org/10.1111/aen.12540>.

McLoughlin, S., Prevec, R. 2021. The reproductive biology of glossopterid gymnosperms- a review. *Review of Palaeobotany and Palynology*. 295 (5): 104527. <https://doi.org/10.1016/j.revpalbo.2021.104527>.

CONFERENCE / SYMPOSIUM / WORKSHOP PRESENTATIONS

Barber-James, H.M. 2021. Introduction to *Ephemeroptera* (mayflies), life history and identification. *Mind the Darwinian shortfalls - A graduate summer school on Biodiversity and Collection Management in East Africa in Rwanda*. (20th August - 5th September 2021). Presented at Kitabe.

Barber-James, H.M. 2021. The role of natural history museums in biodiversity knowledge, using riverflies (mayflies, stoneflies and caddisflies) as examples. *Workshop symposium: Biodiversity and Collection Management in East Africa*. Grand Auditorium, University of Rwanda, Huye campus. 3 - 5 September 2021. (In person event was cancelled due to a Covid scare and given virtually).

Barber-James, H.M. 2021. Collecting, identifying and preserving freshwater insects. *Mind the Darwinian shortfalls - A graduate summer school on Biodiversity and Collection Management in East Africa in Rwanda*. (20th August - 5th September 2021). Presented at Kitabe.

Barber-James, H.M., Holland, A.J. and Ngirishuti, L. 2021. Trichoptera (caddisflies), with discussion about a new species from Rwanda. *Mind the Darwinian shortfalls - A graduate summer school on Biodiversity and Collection Management in East Africa in Rwanda as senior lecturer*. (20th August - 5th September 2021). Presented at Kitabe.

Bellingan, T.

Bellingan, T., Cimi, P., Mlambo, M., Barber-James, H.M., Prevec, R. 2021. Albany Museum report back for Collection Management & Conservation WG Meeting. *NSCF*. 29 November 2021.

Bellingan, T.A., Midgley, J.M., Georgens, G.G. and Jordaens, K. 2021. A revision of the hoverfly genera *Chrysogaster*, *Orthonevra* (Diptera: Syrphidae: Eristalinae) from the Afrotropical region. **Oral presentation.** At: the 22nd Conference of the Entomological Society of Southern Africa (ESSA) - Virtual Conference. 29 June - 01 July 2021.

Gess R.W.

Gess R.W. 2021. Waterloo Farm, Grahamstown, South Africa: the only known high-latitude Devonian tetrapod locality. *Symposium to*

launch the international stem tetrapod research group. Hosted online from Uppsala, Sweden. 11 June.

Gess R.W. 2021. Soft tissue, hard science - how 360 million year old lamprey infants from Makhanda overturned a 150 year old scientific dogma. *Scifest Africa program*. Online. May 2021.

Kirkaldy, B.P.

Kirkaldy, B.P. and Barber-James, H.M. 2021. *Plecoptera* (stoneflies). *Mind the Darwinian shortfalls - A graduate summer school on Biodiversity and Collection Management in East Africa in Rwanda*. 20th August - 5th September 2021. Presented at Kitabe.

Midgley, J.M., Bellingan, T.A., Georgens, G.G. and Jordaens, K. 2021. Rediscovery of *Meromacroides meromacriiformis* (Diptera: Syrphidae) in South Africa, with a description of the female and notes on the biology. **Oral presentation**. At: *the ESSA Virtual Conference*. 29 June - 01 July 2021.

RESEARCH REPORTS

Zengeya, T.A., Wilson, J.R., Faulkner, K., Henderson, L., Mdidimba, N., Miza, S., Mlambo, M.C., Ndeleni, X., Paap, T., Robinson, T., Winter, P. (2020) Chapter 3: Species. In: *The status of biological invasions and their management in South Africa in 2019*. (eds) Zengeya, T.A. and Wilson, J.R., pp.71. South African National Biodiversity Institute, Kirstenbosch and DSI-NRF Centre of Excellence for Invasion Biology, Stellenbosch. <http://dx.doi.org/10.5281/zenodo.3947613>

PUBLIC INTEREST BOOKS AND ARTICLES

Gess, R.

Gess, R. 2021. Palaeontology: the fossils of the Grahamstown Region. In Lubke, R., de Moor, I. (eds) *Guide to the natural and cultural history of Grahamstown / Makhanda*. WESSA, Makhanda Branch. Pp. 49 - 60.

Prevec, R.

Hiller, N., Prevec, R., de Klerk, W.J. 2021. Landform and Geology. In Lubke, R., de Moor, I. (eds) *Guide to the natural and cultural history of Grahamstown / Makhanda*. WESSA, Makhanda Branch. Pp. 21 - 35.



Institute for Environmental Biotechnology Rhodes University (EBRU)

Professor A Keith Cowan
Director

Photo: Dirk Pieters

INTRODUCTION

EBRU targets research and development in environmental biotechnology at the interface between the fundamental and applied sciences. Environmental biotechnology is the branch of biotechnology that addresses environmental problems, such as pollutant removal, renewable bio-energy generation, and biomass and production of commodity and high value products, by exploiting biological processes. As such, environmental biotechnology may be regarded as a cornerstone of circular economic processes aimed at minimising impact on the environment, lowering waste and making the most of resources. Rather than the more traditional 'take, make, waste' model of production, environmental biotechnology has a regenerative approach to resources. Focus areas include wastewater treatment and beneficiation, renewable energy derivation and implementation (e.g. biomass-to-biogas), biological systems; land rehabilitation and decontamination technology (e.g. post-mining, hydrocarbon spillages), natural products, agricultural and microalgae biotechnology.

Basic activities are supported by a strong emphasis on technology transfer from laboratory to full-scale commercial /industrial process application and implementation. In brief, use of natural products/microbes to perform industrially important tasks in an environmentally sustainable way is the focus of attention.

Collapse of sanitation infrastructure in Makhanda, dereliction of the municipal Belmont Valley Wastewater Treatment Works, a two-year hiatus due to the Sars-CoV-2 global pandemonium, coupled with sustained financial distress has rendered a leaner institute and much smaller research group. We had to wind up the 'experimental station' project in 2019, close the algae-based wastewater treatment process, disassemble the apparatus and relocate much of the research activity to campus-based laboratories. The institute is now housed within the Biotechnology Innovation Centre and has five Postgraduate students researching various aspects related to bioremediation. One PhD is exploring the use of bacteria harvested from Belmont Valley for plant growth-promoting properties in an effort to develop a novel bio-fertiliser. We hope to generate a formulation that upon application to the soil will enhance plant growth and reduce reliance on fossil fuel-derived fertilisers.

Another project is exploring the conversion of small molecules (e.g., acetate and carbon dioxide) to methane for use as either substrate or fuel. The intention is to target flue gas and organic acid waste streams which can be used as substrates for bespoke reactors containing bacteria that have been enriched to produce methane. Additional PhD research projects seek to determine the origin and spread of antimicrobial resistance by examining proliferation of antibiotic resistance genes in the environment.

We continue to focus on commercialisation of technologies incubated at EBRU such as the re-engineering the algae-based wastewater treatment process to a modular system of appropriate capacity for both temporary and permanent deployment, production and formulation of viable ready-to-use biofertilizers with both pollutant degrading and plant growth promoting activity for invigoration and regenerative restoration of organic matter in degraded soils particularly those post

opencast mining and for cover crops on waste or discard dumps to provide much needed long-term ecological service.

POSTGRADUATES / GRADUATIONS

Despite the collapse of a flagship project in 2019, the global pandemic and associated lockdowns in 2020 and early 2021, two Postgraduate studies were successfully concluded, and the respective degrees awarded. Taobat Jimoh received her PhD degree for the thesis titled, 'Microalgal-bacterial flocs and extracellular polymeric substances for optimum function of integrated algal pond systems'. Olajide Keshinro was awarded the degree of PhD for his thesis titled, 'Plant-fungal mutualism as a strategy for the bioremediation of hydrocarbon polluted soils'. These two studies and the resultant theses bring to conclusion the current phase of research into biotechnological aspects of IAPS as a water and sanitation technology and, the Fungcoal 3 programme for rehabilitation of land post coal mining, two major EBRU projects of the recent past.



Taobat Jimoh and Olajide Keshinro at their Graduation.
Photo: EBRU

PUBLICATIONS

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Jimoh, T.A., Laubscher, R. and Cowan, A.K.

Jimoh, T.A., Laubscher, R., Askew, M. and Cowan, A.K. (2021) Advanced oxidation as tertiary treatment for recovery of effluent from an integrated algal pond system. *Water and Environment Journal*. 35 (3). p.1094-1102.

Laubscher, R.

Taylor, R.P., Jones, C.L.W. and Laubscher, R. (2021) Agricultural fertiliser from brewery effluent - the recovery of nutrients from the biomass of activated sludge and high rate algal pond treatment systems. *Water Science and Technology-Water Supply*. 21 (5). p.1-14.

Titilawo, O.Y., Jimoh, T.A. and Cowan, A.K.

Titilawo, O.Y., Jimoh, T.A. and Cowan, A.K. (2021) Multiple Drug-Resistant *Escherichia coli* Phylogroups from the Belmont Valley Integrated Algal Pond System. *Water, Air and Soil Pollution*. 232 (12). p.1-23.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Tebitendwa, S.M. and Cowan, A.K.

Tebitendwa, S.M. and Cowan, A.K. (2021) Vertical-horizontal subsurface flow hybrid constructed wetlands for municipal wastewater treatment in developing countries: A review. *African Journal of Biotechnology*. 20 (9). p. 358-368.



Institute for the Study of Englishes of Africa (ISEA)

Professor Deyi Mbelani
Director

Photo: Chris Marais

INTRODUCTION

The Institute for the Study of the Englishes of Africa (ISEA) is a small unit that operates under the faculty of Education. The year 2021 was a difficult year for the members of the ISEA staff. Below is a brief report of the research activities for the year.

CONFERENCE AND PUBLIC LECTURE

The lecturers were able to participate and present papers in several academic conferences. This was because the conferences were run virtually. Ms Ntombekhaya Fulani presented papers at the following conferences:

- The National Association of English Teachers' of South Africa conference, 26-27 March 2021
- The Eastern Cape English Educators' Association conference, 6-8 August 2021
- Africa English Language Teachers' Association, 13-14 August 2021

Mr Sikhumbuzo Sibanda presented a paper at the Literacy Association of South Africa conference, March.

Dr Rethabile Mawela presented papers at the following conferences:

- TESOL CHINA conference, 21-23 July 2021
- Africa English Language Teachers' Association, 13-14 August 2021
- She presented a public lecture at the Academy of Science of South Africa (ASSAF), 4 November 2021

POSTGRADUATES / GRADUATIONS

One student supervised in the ISEA graduated with a Master of Education (English Language Teaching) in October 2021.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The lecturers were engaged in different research projects. Ms Ntombekhaya Fulani worked on conceptualizing her doctoral proposal. Associate Professor Monica Hendrics revised a book chapter co-written with Professor Dion Nkomo on the *Institutionalisation and Integration of English in South Africa*. Dr Carol Leff turned her doctoral thesis into a book. In the book she analysed the literary figure of the *flâneur* in an Afropolitan context, as evidenced in a variety of African and transnational texts.

Dr Rethabile Mawela conducted research on the experiences and attitudes of English First Additional Language (FAL) teachers, Isizulu Home Language (HL) teachers and Sesotho Home Language (HL) on the causes for the poor reading proficiencies of learners in Grade 8 to 10 classes. She further trained the nine (9) participants to teach reading through the use of the Reading to Learn pedagogy. At the end of the year, she was busy writing a paper on the project. This project was in line with the Capacity Development Grant received with Associate Professor Hendricks from Rhodes University Research office.



*Dr Rethabile Mawela with English FAL, Sesotho HL and IsiZulu HL teachers for research.
Photo: ISEA*



*Mr Sikhumbuzo Sibanda presenting at LITASA conference.
Photo: ISEA*



*Ms Ntombekhaya Fulani presenting at the Africa ELTA conference.
Photo: ISEA*



*Dr Rethabile Mawela presenting at the China TESOL conference.
Photo: ISEA*



Institute of Social and Economic Research (ISER)

Professor Nhlanhla C. Mbatha
Director

Photo: Dirk Pieters

INTRODUCTION

In 2021 the Institute of Social and Economic Research (ISER) hosted exciting events and experienced a number of activities and developments. In September 2021, we welcomed Dr Reesha Kara to the Researcher position at the ISER. She landed on the job with her feet running and facilitated the Data Analyses Training workshop in November/December 2021.

The ISER's *Journal of Contemporary Africa Studies* (reported on below) experienced a change of leadership, with the departure of Professor Emeritus Fred Hendricks in November 2021 as Editor in Chief (EiC), after serving in the position for almost 10 years since 2012. The Open process to fill in the position of EiC began in December 2021, with infrastructural and procedural support from Taylor and Francis Publishers and the ISER's Advisory Board. The Director of the ISER visited Rwanda towards the end of 2021. The visit aimed at exploring and initiating discussions on the participation of the ISER in two projects with Vanguard-Economics, one on a MasterCard Foundation funded initiative for meaningful participation of youth in Rwanda's labour market, and the second on economic policy writing training.

POSTGRADUATES / GRADUATIONS

Three Postgraduate students were supervised in the Institute in 2021:

- Mr Vusi Kubhayi (co-supervised with the Department of Economics, Professor T Mutambara)
- Mr Mike Hala (ISER registered student, supervised by Dr S. Magadla (Politics Department) and Professor Jeff Peires (History Department))

- Ms Namirembe Hudah Bawonga (co-supervised with ISER visiting Professor, Professor PD Rwelamila)

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

The ISER appointed two visiting Research Fellows. Due to the Covid-19 pandemic the Fellows started their collaboration with the ISER online:

- Visiting Professor - Professor PD Rwelamila. Professor Rwelamila is a Professional project manager and a project procurement expert specialising in procurement policy, infrastructure procurement and management of risks and contracts management; international development projects; and strategic alliances.
- Visiting Fellow - Dr Steffen Otterbach is currently a Post Doctoral Researcher and Lecturer at the Institute for Health Care and Public Management, University of Hohenheim, Stuttgart, Germany.
- Visiting Fellow - Professor Martin Gustafsson is an education economist and Associate Professor attached to the Research on Socio-Economic Policy (ReSEP) unit, which in turn is linked to the Department of Economics at Stellenbosch University.
- Research Associate - Dr Dumisani Hompashe has over eight years of experience working in the higher education sector. He started working as a Lecturer at the University of Fort Hare in 2013. He also serves as Research Associate at the Research for Socio-Economic Policy (ReSEP) unit at Stellenbosch University.
- Research Associate - Mr Wandile Sihlobo is a Chief Economist of the Agricultural Business Chamber of South Africa (Agbiz) and the author of "Finding Common Ground: Land, Equity, and Agriculture".

SIGNIFICANT RESEARCH ALIGNED EVENTS

The ISER held a number of events aimed at promoting research findings with the broader public as well as a training workshop on Quantitative Data Analysis using public datasets.

- **ISER WEBINAR:**
Title: An adaptative, systemic approach to community-led and engaged research.
Presenters: The seminar was presented by Professor Tally Palmer of the Institute of Water Research (IWR) at Rhodes University. Dr P Ntuthu was a discussant/respondent.
Date: 25 February 2021
- **ISER WEBINAR:**
Title: What does home mean in the context of the urban housing crisis?
Presenters: Dr Matthew Wilhem-Solomon, Lecturer in Anthropology, University of the Witwatersrand. Migration and Health Project Southern Africa. Respondents: Ms Mpho Raboene, Attorney, Ndifun Ukwazi and Ms Meloney van Eck, Executive Leading Strategic Support. Housing Development Agency
Date: 20 April 2021
- **ISER WEBINAR:**
Title: Great trade expectations - will AfCFTA deliver
Presenters: Professor Tsitsi Mutambara (Economics) Rhodes University. Respondent Mr Simon Hess (Head - Monitoring and Evaluation, Enhanced Integrated Framework (EIF) Initiative. World Trade Organisation)
Date: 9 June 2021
- **ISER WEBINAR:**
Title: Will Carbon Tax Policies Reduce Emissions?
Presenters: Professor Martin Gustafsson Associate Professor, Research on Socio-Economic Policy (ReSEP) group, Department of Economics, Stellenbosch, and Visiting

Research Fellow, ISER, Rhodes University, South Africa. Respondent: Mr Gray Maguire Carbon Project Manager at Climate Neutral Group, South Africa; Columnist for Business Day Live

Date: 2 September 2021

- **ISER DATA ANALYSIS TRAINING WORKSHOP:**
Presented by: Dr Reesha Kara Rhodes University, Ms Lynn Woolfrey from DATA First and Professor Martin Gustafsson from the Department of Basic Education
Date: 1-3 December 2021

FUNDED RESEARCH PROJECT AGREEMENTS SIGNED IN 2021

1. **THE WATER RESEARCH COMMISSION (WRC) PROJECT**
Title: Participatory course to activate Ecological Infrastructure for Water Security Learning Networks (Project Number: C2020/2021-00639)
Collaborators: Environmental Learning Research Centre (Rhodes University), Living Lands, Duzi-uMngeni Conservation Trust (DUCT), Environmental & Rural Solutions, Association for Water and Rural Development and the Institute of Social and Economic Research (Rhodes University)
Date signed: 30 March 2021
2. **THE WILD WORLD FUND (WWF) PROJECT**
Title: Future Proofing the grass-fed beef value chain: A case study in Matatiele
Collaborators: Institute of Social and Economic Research Rhodes University, Environmental and Rural Solutions Matatiele and the Nelson Mandela University
Date signed: 18 November 2021



Professor Nhlanhla Mbatha in Kigali with the Vanguard-Economics team.

Photo: ISER

BOOKS/CHAPTERS/MONOGRAPHS

Roberts, B.

Møller V. and Roberts, B. 2021. Quality of Life and Human Well-Being in sub-Saharan Africa: Prospects for Future Happiness. *Series: Human Well-Being Research and Policy Making*. Springer, Switzerland.

Møller V.

Møller V. 2021. *Hamba Kahle, 'Go Well', from Africa*. In: A.C. Michalos A.C.. (Ed.), *The Pope of Happiness. Social Indicators Research Series*. Vol 82. (pp. 191-194). Springer, Cham, Switzerland.

PREFACE FOR INTERNATIONAL HANDBOOK

Møller, V.

Møller, V. 2021. Preface: A place and a time for a Handbook on Active Ageing and Quality of Life. In: F. Rojo-Pérez. & G. Fernández-Mayoralas G. (Eds.), *Handbook of Active Ageing and Quality of Life - From Concepts to Applications*. (pp. vii-xii). *International Handbooks of Quality-of-Life*. Cham, Switzerland: Springer Nature. <https://link.springer.com/content/pdf/bfm%3A978-3-030-58031-5%2F1.pdf>

OTHER PUBLICATIONS

Grapsa, E.

Du Plessis, U., Macleod, C.I., Mavuso, J., Grapsa, E. and Sanyangore, A. (2020) An assessment of abortion seeking behaviours and preferences in rural communities of the Eastern Cape. In: Du Plessis, U., Macleod, C.I., Grapsa, E., Sanyangore, A. and Mavuso, (eds.). *An assessment of abortion seeking behaviours and preferences in rural communities of the Eastern Cape*. Grahamstown: Critical Studies in Sexualities and Reproduction.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Grapsa, E.

Posel, D., Casale, D. and **Grapsa, E.** (2020) Household variation and inequality: The implications of equivalence scales in South Africa. *African Review of Economics & Finance (The Journal of the African Centre for Economics & Finance)*. 12 (1). p.1-21.

Mbatha, C.N.

Mbatha, C.N. 2021. Livestock production and marketing for small emerging farmers in South Africa and Kenya: comparative lessons. *SA Journal of Agric. Ext.* Vol. 49 No. 1, 2021: 141-161.

Møller, V.

Møller, V. (2020) Lawrence Schlemmer - South African Pioneer of Social Indicators and Applied Quality of Life Research. *Applied Research in Quality of Life*. 2020 (2020). p.1-6.

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Webster, E., 2020. The Uberisation of work: the challenge of regulating platform capitalism. *A commentary, International Review of Applied Economics*.

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Møller, V., Roberts B.J. 2021. South Africa, Quality of Life. In: Maggino F. (Ed.) *Encyclopedia of Quality of Life and Well-Being Research*. Springer, Cham. https://doi.org/10.1007/978-3-319-69909-7_2812-2.

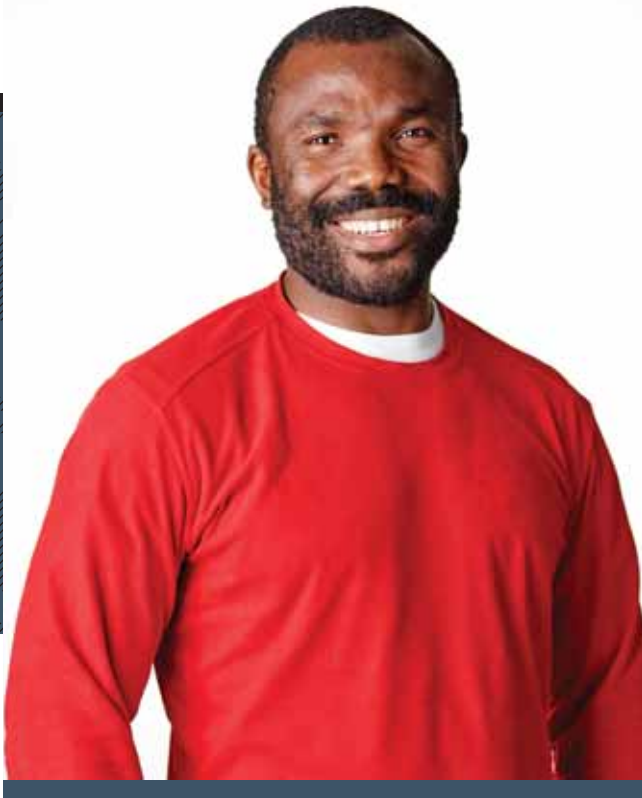
TECHNICAL AND WORKING PAPERS

Gustafson, M.

Gustafson, M. 2021. A critical stocktaking of recent analyses and policies: *ISER Working Paper Series 2021*. Available [[https://www.ru.ac.za/media/rhodesuniversity/content/iser/documents/Carbon_tax_in_South_Africa_-_ISER_WP_-_August_2021-Gustafsson_\(3\).pdf](https://www.ru.ac.za/media/rhodesuniversity/content/iser/documents/Carbon_tax_in_South_Africa_-_ISER_WP_-_August_2021-Gustafsson_(3).pdf)]



Rwandan economic policy analysts at Vanguard Economics, Kigali. Photo: ISER



Institute for Water Research (IWR)

Professor Nelson Odume
Acting Director

Photo: Dirk Pieters

INTRODUCTION

In 2021 Covid-19 became a way of life, and the IWR has adapted with resilient commitment. We have become adept at on-line and hybrid engagements, continuing to practice in terms of our values, and our commitment to excellence.

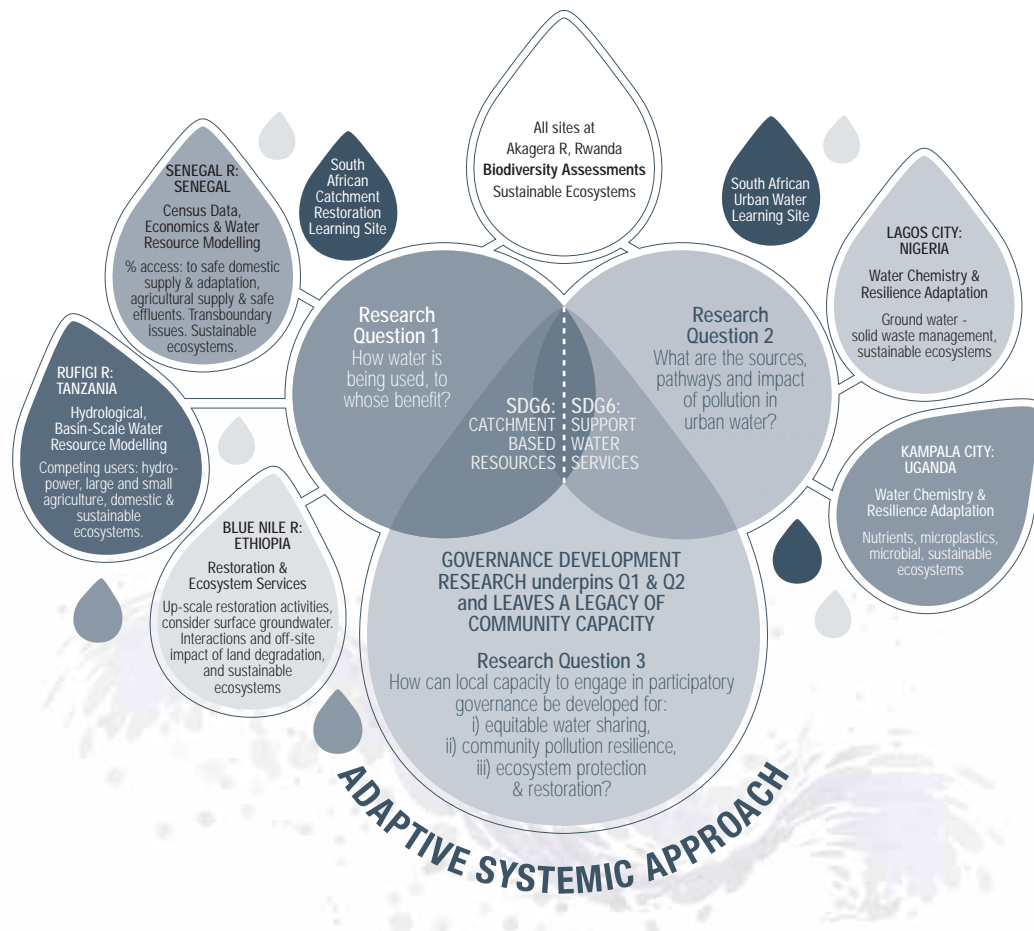
The most significant event this year is the successful launch of the African Water Resources Mobility Network (AWaRMN), a multi-partner project funded with a grant of 1.39M Euro by the Intra-Africa Academic Mobility Scheme of the European Union. The launch, which took place virtually on 20 October 2021, attracted over 100 participants from the African continent. The Ugandan Minister of State for Higher Education, Dr John Chrysestom Muyingo; the South African Minister of Higher Education, Science and Innovation Dr Blade Nzimande, represented by Ms Mmampei Chaba, Chief Director: Multilateral Cooperation and Africa; the International Aid/Cooperation Officer, Regional and Multi-Country Programmes for Africa, Directorate General for International Partnership, Ms Eleonora Martinello, were members of the panel that addresses the relevance of Intra-Africa Academic Mobility as a vehicle for achieving the AU Agenda 2063 and UN SDGs. The Vice Chancellors and Rectors of the partner universities took part in a panel that addressed the importance of internationalisation to water research in Africa. Dr Sizwe Mabizela, Vice-Chancellor, Rhodes University; Professor Abdullahi Bala, Vice-Chancellor, Federal University of Technology, Minna; Dr Hebbouche Abdelhamid Rector Higher School of Hydraulics, Blida; Professor Barnabas Nawangwe, Vice-Chancellor, Makerere University; and Professor Aukje Hassoldt, Dean Faculty of Technology, Policy and Management TU, Delft, were members of this panel. To date, the project has awarded 23 scholarship mobilities, covering 13 African countries.

The African Research Universities Alliance (ARUA) Water CoE is one of four multidisciplinary and multinational projects addressing the UN's Sustainable Development Goals (SDGs) that are supported by the UKRI-GCRF Research Excellence Grant. The ARUA Water CoE Research Excellence project (also referred to as RESBEN) is titled *Unlocking Resilient Benefits from African Water Resources*. The aim of the project is to apply trans-formative, transdisciplinary, community-engaged research, to shift water development outcomes towards achieving the SDGs, with focus on the continental water development priorities of water supply and pollution.

Main research questions being targeted under the RESBEN Project using the Adaptive Systemic Approach for transformative developmental research

The scientific decade 2013-2022 of the International Association of Hydrological Sciences (IAHS), entitled "Panta Rhei - Everything Flows", is dedicated to research activities on change in hydrology and society. Emerging from this scientific decade is research contributing to the field of Socio-Hydrology. The IWR research around Socio-Hydrology has evolved through both the ARUA Water CoE engagement work throughout Africa, as well as a WRC project led by Dr David Gwapedza which aims to integrate the human dynamic into the hydrological dynamic in a more coupled way than traditional hydrological models have achieved.

The IWR through its LIRA projects (Leading Integrated Research for Agenda 2030 in Africa) successfully launched a multi-party programme for the Swartkops catchment, comprising of the Department of Water and Sanitation, the Nelson Mandela Bay Metro, and communities within the catchment. The objectives of this programme are in three fold: i) to mobilise capacity for sustainable governance and management of the Swartkops catchment, ii) clean up and removal of solid waste and iii) education, awareness raising, entrepreneurship and community outreach through youth engagement.



The IWR has led a process leading to the successful launch of the African Chapter of the Society for Freshwater Science (SFS). Professor Odume was also appointed as the pioneering chairperson of the Chapter. Members of SFS are leaders in the field of freshwater science, policy, and management, and we are so delighted to be able to play a lead role in establishing the African Chapter and seeing Professor Odume being elected the pioneer chairperson of the African Chapter.

In 2021 the IWR witnessed the commencement of several externally funded projects. Two of these projects are led by Postdoctoral Fellows Dr David Gwapeza and Dr Bukho Gusha. Dr Gwapeza's project focuses on developing a plan for equitable water sharing in a contested agricultural catchment in the Western Cape, whereas that by Dr Gusha focuses on sustainable livestock practices for improved livelihoods. Dr Chika Nnadozie's project on *Campylobacteriosis* is another important project that took off in 2021. This project is funded by the European & Developing Countries Clinical Trials Partnership (EDCTP).

IWR Research Associate Dr Jai Clifford-Holmes brokered a significant IWR partnership with the International Institute for Applied Systems Analysis (Austria), which resulted in a successful grant award from the Belmont Forum-NRF Collaborative Research Action Pathways to Sustainability call, with Professor Nelson Odume as the NRF-funded Principal Investigator. Another IWR Senior Research Associate Dr Paul Mensah is the IWR lead on the revision of the 1996 South African Guideline project for the aquatic ecosystems. The IWR is grateful to all the contributions by its Research Associates.

Visiting Professor Jill Slinger produced an interactive e-book published by TU Delft Open Publishing: *Building with Nature & Beyond: Principles for designing nature-based engineering solutions*, TU Delft OPEN Textbooks, with Professor Tally Palmer and Dr Athina Copteros as collaborating contributors.

As with previous years, our community engagement initiatives led by Ms Khaya Mgaba continue to flourish. Ms Mgaba together with our students: Ms Chibwe, Ms Ramatsabana, Ms Ngoni and Mr Tumwesigye, taught learners from St Mary's School the importance of river health, and demonstrated the mini-SASS tool as part of the Scouts for SDGs water project. We believe that through these initiatives the Centre can influence and inspire the next generation of water leaders.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

In 2021 the IWR welcomed Dr Bezaye Gofu Tessema from the Water and Land Resource Centre, University of Addis Ababa, Ethiopia, who was awarded the ARUA-Carnegie Early Career Research Fellowship for one year starting in October 2021.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The launch of the African Water Resources Mobility Network (AWaRMN) project and the Africa Chapter of the Society of Freshwater Science were significant in 2021. IWR is the lead of both projects/initiatives. The IWR facilitated workshop training on Adaptive Planning Process (APP) for the various Water

PUBLICATIONS

BOOKS/CHAPTERS/MONOGRAPHS

Mantel, S.K.

Nqowana, T., Tandlich, R., Paphitis, S.A. and Mantel, S.K. (2021) A community-based water monitoring programme in Grahamstown using the improved Hydrogen Sulphide test kit. In: Bezerra, J., Paterson, C. and Paphitis, S. (eds.). *Challenging the Apartheids of Knowledge in Higher Education through Social Innovation*. Cape Town: African Sun Media. p.87-103. ISBN: 9781991201058.

Odume, N.O.

Feio, M.J., Ranta, E. and **Odume, N.O.** (2021). Switzerland: Springer. *Nature*. Switzerland AG 2021.

Palmer, C.G.

Dini, J., **Palmer, C.G.** and Naidoo, D. (2021) Chapter 7. Water law and the Water Research Commission. In: Day, J., Day, B. and Reizenberg, J.L. (eds.). *WRC@50 - Celebrating a half-century of excellence*. South Africa: WRC. p.1-10. ISBN: 9780639202662.

Palmer, C.G. and Reizenberg, J.L. (2021) Chapter 13: Concluding Perspectives. In: Day, J., Day, B. and Reizenberg, J.L. (eds.). *WRC@50 - Celebrating a half-century of excellence*. South Africa: WRC. p.1-10. ISBN: 9780639202662.

Slinger, J.H.

Slinger, J.H. (2021) *Building with Nature & Beyond*. Delft, The Netherlands: TU Delft Open. ISBN: 9789463664585.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Akamagwuna, F.C., Ntloko, P., Edegbene, O.A. and Odume, N.O.
Akamagwuna, F.C., Ntloko, P., Edegbene, O.A. and Odume, N.O. (2021) Are Ephemeroptera, Plecoptera and Trichoptera traits reliable indicators of semi-urban pollution in the Tsitsa River, Eastern Cape Province of South Africa? *Environmental Monitoring and Assessment*. 193 (309). p.1-15.

Clifford-Holmes, J.K.

Selebalo, I.M., Scholes, M.C. and **Clifford-Holmes, J.K.** (2021) A Systemic Analysis of the Environmental Impacts of Gold Mining within the Blyde River Catchment, a Strategic Water Area of South Africa. *Water*. 13 (3). p.1-22.

Itzkin, A., Scholes, M.C., **Clifford-Holmes, J.K., Rowntree, K., Van Der Waal, B.W.** and Coetzer, K. (2021) A Social-Ecological Systems Understanding of Drivers of Degradation in the Tsitsa River Catchment to Inform Sustainable Land Management. *Sustainability*. 13 (516). p.1-28.

Edegbene, O.A.

Edegbene, O.A. (2021) Assessing the health of forested riverine systems in the Niger Delta area of Nigeria: a macroinvertebrate-based multimetric index approach. *Environmental Science and Pollution Research*. 29 (2021). p.15068-15080.

Edegbene, O.A. and Akamagwuna, F.C.

Edegbene, O.A., Adam, M.B., Gambo, J., Osimen, E.C., Ikomi, R.B., Ogidia, E., Omovoh, G.O. and Akamagwuna, F.C. (2021) Searching for indicator macroinvertebrate traits in an Afrotropical riverine system: implication for ecosystem biomonitoring and sustainability. *Environmental Monitoring and Assessment*. 193 (711). p.1-15.

Edegbene, O.A. and Odume, N.O.

Edegbene, O.A., Odume, N.O., Arimoro, F.O. and Keke, U. (2021) Identifying and classifying macroinvertebrate indicator signature traits and ecological preferences along urban pollution gradient in the Niger Delta. *Environmental Pollution*. 281 (2021). p.1-10.

Edegbene, O.A., Arimoro, F.O., Odume, N.O., Ogidia, E. and Keke, U. (2021) Can Macroinvertebrate Traits be Explored and Applied in Biomonitoring Riverine Systems Draining Forested Catchments. *Frontiers in Water*. 3 (2021). p.1-9.

Gwapedza, D.R., Hughes, D.A., Slaughter, A.R. and Mantel, S.K.
Gwapedza, D.R., Hughes, D.A., Slaughter, A.R. and Mantel, S.K. (2021) Temporal Influences of Vegetation Cover (C) Dynamism on MUSLE Sediment Yield Estimates: NDVI Evaluation. *Water*. 13 (2707). p.1-17.

CoE nodes. The first Train the Trainers workshop held at Rhodes University had 27 delegates in attendance from the various ARUA Water CoE nodes. The trainers are already leading APP training workshops at their respective nodes.

Dr Chika Nnadozie attended a three-day training workshop organised by the EDCTP programme. Professor Odume was invited to give a talk at the knowledge lab of the Africa Multiple Cluster of Excellence. He also participated in an international panel discussion on what it means to re-configure African studies in Africa. Professor Odume also gave a talk at the International Transdisciplinary conference. Dr Jane Tanner and PhD student Pippa Schlegel both presented papers at the Wetlands Indaba which was held online from 20 to 21 October 2021. Dr Tanner presented a paper during the opening plenary session on her work on the hydrological functioning of Palmiet wetlands in the Eastern and Western Cape, while Ms Schlegel presented on her PhD work on sediment dynamics in floodplain wetlands in the Tsitsa catchment.



Participants in the RESBEN Project which uses the Adaptive Systemic Approach for transformative developmental research.

Photo: IWR



A cross section of the participants during the official launch of the African Water Resources Mobility Network (AWaRMN).

Photo: IWR

- Gwapedza, D.R., Tanner, J.L. and Mantel, S.K.** Nolte, A., Eley, M., Schoniger, M., **Gwapedza, D.R., Tanner, J.L., Mantel, S.K.** and Scheihing, K.W. (2021) Hydrological modelling for assessing spatio-temporal groundwater recharge variations in the water-stressed Amathole Water Supply System, Eastern Cape, South Africa. *Hydrological Processes*. 35 (e14264). p.1-17.
- Gwate, O., Mantel, S.K., Gusha, B. and Palmer, A.R.** **Gwate, O., Mantel, S.K.,** Gibson, L.A., Munch, Z., **Gusha, B. and Palmer, A.R.** (2021) The effects of *Acacia mearnsii* (black wattle) on soil chemistry and grass biomass production in a South African semi-arid rangeland: implications for rangeland rehabilitation. *African Journal of Range and Forage Science*. 38 (4). p.1-12.
- Hughes, D.A.** **Hughes, D.A.** and Farinosi, F. (2021) Unpacking some of the linkages between uncertainties in observational data and the simulation of different hydrological processes using the Pitman model in the data scarce Zambezi River basin. *Hydrological Processes*. 2021 (35). p.1-18.
- Yves, T., Rouche, N., Paturel, J.-E., Mahé, G., Boyer, J.-F., Amoussou, E., Bodian, A., Dacosta, H., Dakhlaoui, H., Dezetter, A., **Hughes, D.A.,** Hanich, L., Peugeot, C., Tshimanga, R.M. and Lachassagne, P. (2021) ADHI: the African Database of Hydrometric Indices (1950-2018). *Earth System Science Data*. 13 (0). p.1547-1560.
- Yves, T., Villarini, G., Khalki, E.M.E., Grundemann, G. and **Hughes, D.A.** (2021) Evaluation of the Drivers Responsible for Flooding in Africa. *Water Resources Research*. 57 (2021). p.1-14.
- Hughes, D.A. and Slaughter, A.R.** Lodenkemper, L., Rowntree, K., **Hughes, D.A. and Slaughter, A.R.** (2021) Integrating Sediment (dis)Connectivity into a Sediment Yield Model for Semi-Arid Catchments. *Land*. 10 (1204). p.1-20.
- Igbinigie, E.E.** Nsa, I.Y., Oyebanji, O.O., **Igbinigie, E.E.** and Odunsi, A. (2021) Floral Distribution of a Sub-Bituminous Coal Dumpsite in Enugu, Nigeria. *Frontiers in Ecology and Evolution*. 9 (9). p.1-10.
- Kabuya, P.M. and Hughes, D.A.** **Kabuya, P.M., Hughes, D.A.,** Tshimanga, R.M., Trigg, M.A. and Bates, P. (2021) Assessing the potential value of the regionalised input constraint indices for constraining hydrological model simulations in the Congo River Basin. *Advances in Water Resources*. 159 (104093). p.1-18.
- Libala, N., Palmer, C.G. and Odume, N.O.** **Libala, N., Palmer, C.G. and Odume, N.O.** (2021) The evaluation of biological indices to assess the condition of hillslope seep wetlands in the Tsitsa River Catchment, South Africa. *PLoS ONE*. 16 (5). p.1-19.
- Makungu, E.J. and Hughes, D.A.** **Makungu, E.J. and Hughes, D.A.** (2021) Understanding and modelling the effects of wetland on the hydrology and water resources of large African river basins. *Journal of Hydrology*. 603 (2021). p.1-13.
- Ntloko, P., Palmer, C.G., Akamagwuna, F.C. and Odume, N.O.** **Ntloko, P., Palmer, C.G., Akamagwuna, F.C. and Odume, N.O.** (2021) Exploring Macroinvertebrates Ecological Preferences and Trait-Based Indicators of Suspended Fine Sediment Effects in the Tsitsa River and Its Tributaries, Eastern Cape, South Africa. *Water*. 13 (798). p.1-18.
- Odume, N.O.** **Choruma, D.J.C.,** Balkovic, J., Pietsch, A. and **Odume, N.O.** (2021) Using EPIC to simulate the effects of different irrigation and fertilizer levels on maize yield in the Eastern Cape, South Africa. *Agricultural Water Management*. 254 (2021). p.1-15.
- Thiam, S., Aziz, F., Kushitor, S.B., Amaka-Otchere, A.B., Onyima, B.N. and **Odume, N.O.** (2021) Analyzing the contributions of transdisciplinary research to the global sustainability agenda in African cities. *Sustainability Science*. 16 (2021). p.1923-1944.
- Odume, N.O.,** Baigun, C.R.M., Cooke, S.J., Datry, T., Gessner, M.O., Maasri, A., Jahnig, S.C., Adrian, R., Domisch, S. and Grossart, H.P. (2021) A global agenda for advancing freshwater biodiversity research. *Ecology Letters*. 0 (0). p.1-9.
- Odume, N.O.,** Amaka-Otchere, A.B., Onyima, B.N., Aziz, F., Kushitor, S.B. and Thiam, S. (2021) Pathways, contextual and cross-scale dynamics of science-policy-society interactions in transdisciplinary research in African cities. *Environmental Science and Policy*. 125 (2021). p.116-125.
- Feio, M.J., Hughes, R.M., Callisto, M., **Odume, N.O.,** Quintella, B.R., Aguiar, F.C., Almeida, S.F.P., Arimoro, F.O., Harding, J.S., Kaufmann, P.R. and Ndiritu, G.G. (2021) The Biological Assessment and Rehabilitation of the World's Rivers: An Overview. *Water*. 13 (371). p.1-45.
- Odume, N.O. and Edegbene, O.A.** Keke, U., Arimoro, F.O., Ayanwale, A., **Odume, N.O. and Edegbene, O.A.** (2021) Weak relationships among macroinvertebrates beta diversity (β), river status, and environmental correlates in a tropical biodiversity hotspot. *Ecological Indicators*. 129 (2021). p.1-10.
- Palmer, A.R.** Vermeulen, L., Munch, Z. and **Palmer, A.R.** (2021) Fractional vegetation cover estimation in southern African rangelands using spectral mixture analysis and Google Earth Engine. *Computers and Electronics in Agriculture*. 182 (2021). p.1-11.
- Vos, H.C., Fister, W., Von Holdt, J.R., Eckard, F.D., **Palmer, A.R.** and Kuhn, N.J. (2021) Assessing the PM10 emission potential of sandy, dryland soils in South Africa using the PI-SWRL. *Aeolian Research*. 53 (2021). p.1-12.
- Yunusa, I.A.M., **Palmer, A.R.,** Kamululdeen, J. and Punthakey, J. (2021) Contrasting responses to soil and water salinity in stomata and canopy traits produced convergence of water-use in tomatoes (*Solanum esculentum*) and okra (*Abelmoschus esculentus*): application to water management. *Journal of the Science of Food and Agriculture*. (2021). p.1-10.
- Slinger, J.H.** Owusu, A., Mul, M., Strauch, M., van der Zaag, P., Volk, M. and **Slinger, J.H.** (2021) The clam and the dam: A Bayesian belief network approach to environmental flow assessment in a data scarce region. *Science of the Total Environment*. 820 (2022). p.1-14.
- Klaassen, R., Kothuis, B. and **Slinger, J.H.** (2021) Engineering roles in Building with Nature interdisciplinary design Educational experiences. *Research in Urbanism Series*. 7 (2021). p.73-98.
- Slinger, J.H.,** Stive, M. and Luijendijk, A. (2021) Nature-Based Solutions for Coastal Engineering and Management. *Water*. 13 (7). p.1-5.
- Vreugdenhil, H., Janssen, S., Hermans, L. and **Slinger, J.H.** (2021) Cooperating for added value: Using participatory game theory in implementing nature-based flood defences. *Ecological Engineering*. 176 (2022). p.1-12.
- Smart, K.G.** Chapman, R.A., Midgley, G.F. and **Smart, K.G.** (2021) Diverse trends in observed pan evaporation in South Africa suggest multiple interacting drivers. *South African Journal of Science*. 117 (7/8). p.1-7.
- Wasswa, P.** Nsabagwa, M., Mwije, A., Nimusiima, A., Odongo, R.I., Ogwang, B.A., **Wasswa, P.** and *et al.* (2021) Examining the Ability of Communities to Cope with Food Insecurity due to Climate Change. *Sustainability*. 13 (9). p.1-18.

PEER-REVIEWED PROCEEDINGS

- Palmer, A.R.** **Palmer, A.R.,** Munch, Z. and Vermeulen, L. Modelling Catchment-Scale Evapotranspiration and Net Primary Production in Sub-Humid African Grasslands: Towards Understanding Carbon and Water Trade-Offs in Communal Rangelands. *The XXIV International Grassland Congress / XI International Rangeland Congress*. Online. October 2021.



Rhodes University Mathematics Education Project (RUMEP)

Ms Fezeka Mkhwane
Director

Photo: Dirk Pieters

INTRODUCTION

The year 2021 was a difficult year for the Rhodes University Mathematics Education Project (RUMEP), because of the previous year of COVID-19, where almost everything came to a halt. RUMEP only meets with students during the block sessions when it is school holidays, so during the COVID-19 pandemic students could not come to the University due to COVID-19 protocols. Classroom support visits could also not be conducted, so contact with the students was completely curtailed.

RUMEP had to make up for the lost ground and cover as much work as possible. It was also the last year of the old curriculum as well as the introduction of the new curriculum, which only started in the second term. RUMEP Director, Mr Tom Penlington, retired and two more staff members resigned, leaving RUMEP with only 5 staff members to carry all the load. There were two cohorts of first year students, the Northern Cape cohort, and the Eastern Cape cohort.

The students graduating in 2022 missed two years of contact sessions, which made life a bit difficult for them. The face-to-face contact sessions were complemented by online sessions, which were held weekly for two days in the evenings. Although this worked, there were still challenges with both connectivity and data costs, which lead to irregular attendance by students and this impacted negatively on RUMEP's progress. Despite all these challenges, RUMEP still managed to forge ahead and produced good results. All this was made possible by the lecturers' commitment and dedication as well as teamwork and of course the financial support RUMEP gets from the funders and the University.

In as far research activities are concerned, Ms Mkhwane and Mr Mhlongo did research on the impact that the Collegial Cluster programme had on teachers' practice. Ms Mkhwane also attended the AMESA conference that was held virtually. The research webinars that other institutions of Higher Learning organized, which some staff members attended, were informative and were also a learning curve.

POSTGRADUATES/ GRADUATIONS

28 students graduated during the April 2022 convocation.

DISTINGUISHED VISITORS / INTERNATIONAL VISITS

Mr Malusi and Jalama of HCI Foundation, Cape Town, South Africa. Classroom support visit to Fikizolo Primary School. 5 August 2021.



Students reflecting on the academic year during a strategic planning meeting RUMEP had at the end of the year.

Photo: RUMEP.

RHODES UNIVERSITY MATHEMATICS EDUCATION PROJECT (RUMEP) PUBLICATIONS

BOOKS/CHAPTERS/MONOGRAPHS

Nobongoza-Mkhwane F.F. and Mhlongo P.
Nobongoza-Mkhwane F.F. and Mhlongo P. (2021) Reflections on the Impact of Collegial Clusters. January 2021.

CONCERTS, EXHIBITIONS, PERFORMANCES, WORKSHOPS, EVENTS

Haywood T. and Balele S.
Haywood T. and Balele S. (2021) TVET workshop. Topics: Euclidean Geometry, Probability, Statistics and Geogebra. 7 - 11 June, 30 August - 3 September 2021

DISTINGUISHED VISITORS

Mr Malusi and Mr Jalama
Mr Malusi and Jalama of HCI Foundation, Cape Town, South Africa. Classroom support visit to Fikizolo Primary School. 5 August 2021.



Cooperative learning amongst the participants at the training that RUMEP conducted for TVET lecturers.

Photo: RUMEP.



BEd 3 Students presented their research papers during 'How I Teach' conference.

Photo: RUMEP.



Teachers worked in groups, practising their social media skills during the ICT lecture. The Facilitator conducted sessions on Trigonometry during the April Block (top right). Teachers participated during the workshops held during the year.

Photo: RUMEP





South African Institute for Aquatic Biodiversity (SAIAB)

Professor Francesca Porri
Senior Scientist:
SAIAB Science Leadership Team

Photo: Dirk Pieters

INTRODUCTION

The South African Institute for Aquatic Biodiversity (SAIAB) serves as a hub for national and international scientific research into the country's most precious resource - water - and the diversity of life supported by our marine, coastal and inland freshwater ecosystems. SAIAB's mandate is to undertake research for the sustainability of Africa's marine and freshwater environments. To this end, SAIAB provides research platforms and infrastructure that enable a wide range of multi-disciplinary and multi-institutional research into inland fisheries and freshwater ecology, constantly changing coastal systems and the movement ecology of marine animals. All the research undertaken at SAIAB contributes knowledge about how water-based ecosystems function, including the impact of societal demands on the country's coastal, estuarine and freshwater resources. This information is crucial for understanding and managing these essential natural resources for the long-term benefit of South Africa's people.

In line with its status as a National Facility, SAIAB's unique research platforms are available to the broader research community in the National System of Innovation (NSI). These platforms include the aquatic biodiversity collections, associated specialist laboratories and services which integrate modern molecular and bio-banking systems, a community-driven marine flagship programme (the African Coelacanth Ecosystem Programme - ACEP); and marine platform provision, including

coastal crafts, in situ instrumentation, a Remotely Operated Vehicle (ROV), Remote Underwater Video Systems, the Acoustic Tracking Array Platform (ATAP) and the Geophysics and Mapping Platform (GeMap). SAIAB also hosts the DSI/NRF Research Chair in Inland Fisheries and Freshwater Ecology and provides a regional platform for freshwater African aquatic biodiversity research through collaborations and project management with a number of sub-Saharan countries.

SAIAB interacts with a broad range of universities and local and national government departments regarding current environmental issues, which require the integration of evidence-based science with management and providing scientific advice that policy makers can apply in the formulation of national environmental policy. Areas of national concern in which SAIAB is involved are socio-economic development, water security issues, ecosystem degradation and the influence of climate change on food security.

Rhodes University is an important partner institution for SAIAB with researchers interacting across disciplines, but mostly with the Departments of Ichthyology and Fisheries Science, Zoology and Entomology, Microbiology and Environmental Science. All SAIAB scientists are members of the Faculty of Science at Rhodes and, as a result, the majority of supervised students are hosted at Rhodes University.

POSTGRADUATES / GRADUATIONS

Of the 62 Postgraduate students supervised by SAIAB researchers, 40 were registered at Rhodes University in 2021, comprising two BSc Hons, 17 MSc and 21 PhD students. Transformation of demographics is a critical performance area for SAIAB and 80% of Rhodes students supervised by SAIAB researchers were South African, of which 43% were black and 50% were women. Four MSc and two PhD Rhodes University/SAIAB students graduated in 2021.

Rhodes University/SAIAB student, Takudzwa Comfort Madzivanzira, graduated with a PhD in freshwater ecology in 2021, entitled "Evaluating and predicting impacts of Australian Redclaw crayfish *Cherax quadricarinatus* and Louisiana Red Swamp crayfish *Plocambrus Clarkii* invasions". This work has raised concerns about the potential of introduced crayfish to spread to important ecosystems and cause socio-economic harm. Dr Madzivanzira's work has been widely commended and he is the recipient of a number of prestigious awards including notably the National Research Foundation Research Excellence Award for Next Generation Researchers 2021 and South African Society for Aquatic Scientists Bronze Medal.

SIGNIFICANT RESEARCH ALIGNED EVENTS

The productivity of SAIAB research staff, students, Postdoctoral Fellows and Honorary Research Associates continued at a high level during 2021, with 124 ISI rated scientific papers published. Some research highlights follow.

The Acoustic Tracking Array Platform (ATAP), a nationwide network of acoustic receivers that monitor the coastal movements and migrations of tagged aquatic animals, continues to go from strength to strength. This past year (2021) saw no less than seven students using data collected by the platform for their various degrees. Studies ranged from assessing the feasibility of using boat-based acoustic receivers, to improving data collection of tagged sharks within the ATAP (which was also presented at the 6th Southern African Shark and Ray Symposium in November 2021), to gaining a better understanding of the coastal movements of sub-adult and adult leervis *Lichia amia*, to assessing the movement behaviour of juvenile river snapper, *Lutjanus argentimaculatus*, in the Kosi Bay Lake System, KwaZulu-Natal.

MSc student, Tayla Dominy (registered with the Rhodes University Geography Department, supervised by Geography's Professor Ian Meiklejohn and co-supervised by SAIAB's Dr Taryn Murray) received a distinction for her MSc thesis entitled "Geospatial analysis on the effect of environmental variables on the space use patterns of four marine predators occurring in Algoa Bay, Eastern Cape, South Africa." Both examiners commended her on her high level of work, stating that the maps created in ArcGIS Pro were of a particularly high quality.

During 2021, the Marine Remote Imagery Platform (MARIP) carried out remotely operated vehicle (ROV) and baited remote underwater stereo-video (stereo-BRUV) surveys to support three NRF African Coelacanth Ecosystem Programme (ACEP) projects and four independently funded projects. This included baseline surveys of established (Robberg, Hluleka and Dwesa-Cwebe) and new (Protea Banks) marine protected areas. The South African Polar Research Infrastructure (SAPRI) platform was approved, and MARIP will manage the Seafloor Node of the infrastructure platform. This will see a greater emphasis on supporting deep-sea and polar research by MARIP and associated research groups. Dr Anthony Bernard, MARIP Platform Manager and Dr Rick Stuart-Smith (University of

Tasmania) were awarded funding from the Scientific Committee for Oceanic Research for a working group that aims to advance standardisation and utility of coastal and nearshore demersal fish visual census techniques.

The ACEP SMART Zones MPA project, led by Dr Errol Wiles, saw the collection of 77 km² of multibeam bathymetry data within, and adjacent to, the uThukela MPA (marine protected area) using the ACEP Geophysics and Mapping Platform's (GeMaP) Reson 7101 multibeam echosounder. This is the first systematic high resolution, multibeam bathymetry survey of reefs within different management zones of a South African MPA including reefs outside of the MPA control zone. Beyond high-resolution bathymetry surfaces, data derivatives (slope, aspect, rugosity) will: 1) describe and classify the seafloor in terms of geomorphological habitat, 2) provide an unprecedented view of the seafloor for biological sampling campaigns and 3) provide geospatial context to marine research in the region. Reefs of the South African east coast are biological hotspots, contributing to the blue economy through ecosystem services, tourism and fisheries sectors. Once the data collection phase is complete, analysis of data from the various project teams will link geomorphological habitat to a variety of biological indicators enabling quantification and classification of seafloor ecosystems by area. Marine Geologist and Nelson Mandela University PhD candidate, Mr Thamsanqa Wanda, has presented at several local and international conferences and submitted his first manuscript based on the bathymetry data from the uThukela MPA. Ultimately, the outputs from this research will feed directly into marine spatial planning enabling better informed management of marine resources.

2021 was an exceptionally productive year for the Coastal and Ocean Sciences Team (COST), under Dr Francesca Porri's leadership. Eleven peer-reviewed papers were published, two of which were in very good impact factor journals: one on the state of global mangroves (Proceedings of the National Academy of Science) and the other on the physiological vulnerability of early ontogeny of marine invertebrates respectively (Limnology and Oceanography Letters). A great achievement for the COST in 2021 was also the award of the NRF three-year innovative project, Indigenous Marine Innovations for Sustainable Environments and Economies (IMISEE Project). Later in the year, Dr Porri was conferred Honorary Professorship within the Department of Zoology and Entomology at Rhodes University. Despite a year of COVID-related confinement, Dr Porri was invited to present in person at the International Marine Connectivity conference in Paris, France in December 2021.

Postdoctoral fellow, Dr Kerry-Ann van der Walt published two peer-reviewed articles in international journals (Marine Environmental Research and Frontiers in Marine Science) based on her PhD research. Dr van der Walt completed two online courses: 1) on the Blue Economy with VUSSC and the University of Seychelles, 2) on Intellectual Property (IP), Traditional Knowledge (TK) and Traditional Knowledge Expressions (TCEs) with the World Intellectual Property Organization (WIPO). Dr van der Walt produced three digital storytelling videos in



MSc student, Tlhoafalang Kgomokhumo, collecting water samples in the Swartkops Estuary in order to characterize the microbial community and the anthropogenic impacts on the health of the estuary.

Photo: Gwynneth Matcher.

association with the AERP, SAFER research team and COST research team for National Marine Week 2021 highlighting research being carried out by researchers and students.

During 2021, Dr Nikki James and her research team focussed on the relative value of different coastal nursery habitats for marine and estuarine fish species, as well as the impact of climate change on fish species. A team of six PhD students, Ms Phakama Nodo, Ms Phumza Ndeleni, Ms Melissa Pollard, Ms Lauren Murray, Dr Carla Edworthy and Mr Cuen Muller as well as three MSc students Mr Thembani Mkhize, Mr Mihle Gayiza and Mr Aiden Jacobs were involved in this research in 2021. Highlights for the year were: the graduation of Dr Carla Edworthy, the awarding of an NRF marine and coastal research grant to continue this research, and the appointment of Dr James as a visiting Professor in the Department of Ichthyology and Fisheries Science at Rhodes University, as well as in the Institute for Coastal and Marine Research (CMR) at Nelson Mandela University.

Dr Carla Edworthy graduated from the Department of Ichthyology and Fisheries Science at Rhodes University in April 2021. Her PhD research while at Rhodes University focussed on assessing the eco-physiological impacts of ocean acidification on early stage fishes, Dr Edworthy began an NRF-PDP Postdoctoral Fellowship at SAIAB in May 2021 and joined the Seascape Ecology Research group. Her current focus is on continuing her research on ocean acidification and its impact on coastal species, by developing a strategy to monitor coastal pH conditions, specifically in potentially important macroalgal ocean acidification refugia in Algoa Bay.

During 2021, Dr Albert Chakona and the freshwater research team added five species of freshwater fish to the list of freshwater fishes of South Africa through description of new species and

revalidation of synonyms. One of the newly described species is *Enteromius mandelai*, which was named in honour of the first democratic president of South Africa. This species is endemic to the Eastern Cape Province of South Africa. Also, part of the freshwater research team, Postdoctoral Fellow, Dr Pedro de Bragança focussed mainly on specimens in the SAIAB Collection during 2021. This led to redescriptions and new descriptions of southern African freshwater species as well as the description of two new miniature species from north eastern Gabon, and a range extension of a small livebearer fish in the Brazilian Amazon.

Dr Mandla Magoro, Postdoctoral Fellow at SAIAB, gave a keynote presentation at the 2021 World Fisheries Congress in September, which was hosted via a hybrid format in Adelaide, Australia. Dr Magoro also presented at the 2021 Fisheries Society of the British Isles conference, which was hosted by KU Leuven in Belgium. In March 2022, the freshwater research team, consisting of Dr Albert Chakona, Dr Magoro and other SAIAB Postdoctoral Fellows: Dr Lubabalo Mofu and Dr Dumisani Khosa completed the final field surveys as part of the Nile Tilapia Distribution Project in the Limpopo and Mpumalanga Provinces. The freshwater research team also participated in the first phase of the Waterberg biodiversity project, which is funded by the Foundational Biodiversity Information Programme (FBIP).

Dr Lizaan de Necker, Postdoctoral Fellow based at North West University, attended and presented at the British Society for Parasitology Online Conference in June 2021. She also published a paper on the effects of drought on aquatic invertebrate communities in a naturally saline lake of South Africa.

In 2021 the Draft National Freshwater (Inland) Wild Capture Fisheries Policy for South Africa was published by the DFFE. The aim of this policy is to develop the inland fisheries sector for the benefit of society by ensuring food security, job creation and economic development. Much of the late Professor Olaf Weyls' work as the South African Research Chair in Inland Fisheries and Freshwater Ecology was to undertake research to underpin and inform this development. Of note in this respect is the key research published posthumously at the start of 2021: Weyl, O.L.F., *et al.* 'Ten research questions to support South Africa's inland fisheries policy.' *African Journal of Aquatic Science*. 46.1 (2021): 1-10. This publication arose from an 'Inland Fisheries' workshop convened by the South African Society for Aquatic Scientists in June 2018 to develop a list of priority knowledge requirements for inland fisheries in the country. The 15 authors of this paper, from Southern Africa, North America and Europe combined their broad range of expertise to develop a top-ten list of research questions for inland fisheries. The purpose of this paper is to guide future research to accomplish the goals of the new policy. After the passing of Professor Weyl in 2020, Dr Josephine Pegg, a Postdoctoral Fellow within the South African Research Chair: Inland Fisheries and Freshwater Ecology, stepped in as Interim SARChI Chair during 2021, overseeing the research group and Postgraduate students linked to the Chair.

BOOKS/CHAPTERS/MONOGRAPHS

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Lotz-Sisitka, H., Mandikonza, C., Misser, S. and Thomas, K.E. (2021) Making Sense of Climate Change in a National Curriculum. In: Schudel, I., Songqwaru, Z., Tshiningayamwe, S. and Lotz-Sisitka, H.B. (eds.). *Teaching and learning for change: Education and sustainability in South Africa*. Cape Town: African Minds. p.92-111. ISBN: 9781928502241.

PEER REVIEWED NON-SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

Braganca, P.H.N., Skelton, P.H., Bills, R. and Tweddle, D.

Braganca, P.H.N., Skelton, P.H., Bills, R., Tweddle, D. and Chakona, A. (2021) Revalidation and Redescription of "*Lacustricola*" *chobensis* (Fowler, 1935) and Description of a New Miniature Species of "*Lacustricola*" from Southern Africa (Cyprinodontiformes: Procatopodidae). *Copeia*. 109 (1). p.123-137.

Ebert, D.A.

Nehmens, M.C., Varney, r.M., Janosik, A.M. and Ebert, D.A. (2021) An Exploratory Study of Telomere Length in the Deep-Sea Shark, *Etmopterus granulosus*. *Frontiers in Marine Science*. 8 (2021). p.1-11.

PEER REVIEWED SUBSIDY-EARNING JOURNAL RESEARCH PUBLICATIONS

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Allison, C., Muller, C., Childs, A.R., Froneman, P.W., Bailey, L. and Potts, W.M. (2021) When cooling is worse than warming: investigations into the thermal tolerance of an endemic reef fish, *Boopsoidea inornata*. *African Journal of Marine Science*. 43 (2). p.239-249.

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Braganca, P.H.N. and Ottoni, F.P. (2021) On the availability of the name *Poecilia kempkesi* Poeser 2013 (Cyprinodontiformes: Poeciliidae). *Zootaxa*. 4927 (2). p.294-296.

Braganca, P.H.N., Van Der Zee, J.R., Chakona, A., Schmidt, R.C. and Stiassny, M.L.J. (2021) Following the Mangroves: diversification in the banded lampeye *Aplocheilichthys spilauchen* (Dume'ril, 1861) (Cyprinodontiformes: Procatopodidae) along the Atlantic coast of Africa. *Hydrobiologia*. 848 (2021). p.1433-1453.

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Masters students Mihle Gayiza and Them bani Mkhize setting up stereo remote underwater video systems (sRUVs) to record fishes at Flat Rocks, Gqeberha.

Photo: Nikki James.



Dinah Mukhari using acoustic telemetry to track invasive alien fish in Groenvlei, Goukamma Reserve, Western Cape for her MSc research. Photo: Josephine Pegg.

Dalu, T., Cuthbert, R.N., Methi, M.J., Dondofema, F., Chari, L.D. and Wasserman, R.J. (2021) Drivers of aquatic macroinvertebrate communities in a Ramsar declared wetland system. *Science of the Total Environment*. 818 (2022). p.1-9.

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Experimental holding tanks at the NMU Ocean Science Campus, used by NRF-SAIAB researchers and students to test the impacts of ocean acidification treatment levels on larval and juvenile coastal fishes. Photo: Carla Edworthy.

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Roger Bills processing samples of tilapia (*Oreochromis*), near Hazyview, Mpumalanga, as part of the national *Oreochromis niloticus* survey. Photo: Albert Chakona

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