



ROCKtalk

A QUARTERLY NEWSLETTER WITH THE LATEST BUZZ AMONGST ROCK ENGINEERS

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President's Corner



Present vs. Persuade

Firstly, I would like to congratulate the organizing committee from both SANIRE and SAIMM on the recently presented AfriRock 2017 Conference in Cape Town. As in the metaphor of the calm duck on the pond, with feet kicking frantically under the surface, this event was no different. You will be able to read more on the event inside this edition of Rocktalk.

Following a series of events and responsibilities, I was again reminded of a piece I read a while back pertaining to the way people communicate, which I try to follow in my life as well. We are good in telling people what needs to be done; however, the moment we turn our back, nothing changes. We all live and die by the 5 rules concerning safety, but No. 5 – “Will they continue working safe when I leave?” – is seldom positively answered. After the time spent on presenting your case, it is business as usual. The answer as to why might be in the following question: Are you good as a presenter, or can you persuade people to change?

Here are some bases I try to cover in presentations to persuade people in changing course – “BIO”.

The first key is Brevity: You might be able to talk someone into buying, but if you keep on talking, you might talk the same person OUT of buying. In the movie, Jerry McGuire, at the end where he proposes to the girl who stood by him in his endeavours, explaining how lucky he is to have known her and that he is so grateful to have her in his life, let alone mentioning how he would be less of a person when she leaves, she replied: “You had me at HALLO!” You need to know when to stop.

One should give enough information to get the conversation going, yet limit the facts to what is needed for the occasion.

Second to brevity is Identification to experience: Share your experience. It is best if you can share yours (first person), but sometimes you can reach into the “archives” and share other people’s experience (third person). With the stories comes emotion, which in most cases sells the product better. If people can relate to what you feel, they will more readily change the way they act.

If you ever were part of the production staff and you try real hard (although our brains are good at blocking out trauma), you might just remember how tough it was to juggle all the balls of responsibility. Remember what you did and the short cuts you took to achieve the daily blast. Try to recall what happened when you did not install that breakerline of support units, when you did not bar down the small piece on that brow. It does not even have to be as far back as that; it might even be as recent as the previous panel you visited. Relate that feeling to the crew with the necessary words and feeling, and you will win them over.

The third key I try to concentrate on is Ownership: Both you and I might be in the same life (time), yet we both live different lives. We need to realise that we are responsible for our own actions and the course which our lives take. The sooner one gets to realise that only you can do what is needed to change your conditions, the sooner the change will start. Michael Jackson sings in his song, Man in the Mirror: “I’m looking at the man in the mirror, asking him to change his ways”. In our profession, we should communicate the fact that although the Geotechnical Engineering Department might be responsible for all rock-related hazards and risks, the following and implementation of recommendations rest solely on the production staff. The strata control observer can highlight the possible hazards; however, fixing the problem is the responsibility of the miner. By applying these three principles in communication – brevity, experience and ownership – I would wish when I left that each member would experience effective presentation and persuasion for doing the right thing, with the right tools, at the right time.

As we are into the last month of 2017, I would also personally like to convey my greetings toward you and the family in this festive time of the year. May we all enjoy the fullness and appreciation of the Christmas season, and may 2018 bring along happiness, prosperity and health.

Jannie Maritz



AfriRock 2017



AfriRock 2017 plenary session

AfriRock 2017, the International Society for Rock Mechanics (ISRM) International Symposium for 2017, was held at the Cape Town International Convention Centre in the beautiful city of Cape Town, South Africa, from the 3rd to the 5th October 2017. This is the first conference of that name and the first African ISRM International Symposium since the Tunisian and Zimbabwean National Groups joined the African Region of the ISRM. The Symposium was jointly organised by the Southern African Institute of Mining and Metallurgy (SAIMM) and the South African National Institute of Rock Engineering (SANIRE). It was well attended by 264 delegates from 42 countries. Each of the ISRM regions was represented: Africa (135 delegates), Asia (56, with 33 from China), Australasia (10), Europe (36), North America (13) and South America (14). Africa's proud participation was evident through the number of delegates from Botswana, DRC, Egypt, Ghana, Lesotho, Swaziland, Tunisia, Zambia, and Zimbabwe, together with a substantial number of delegates from South Africa.

Prior to the Symposium, the ISRM Board Meeting was held, over two days on the 30th September and 1st October, and the ISRM Commission and Council Meetings took place thereafter, on the 2nd of October. The ISRM Advisory Forum met on the evening of the 3rd October.

Dr Nick Barton and Prof. John Cosgrove presented their informative short course on the 2nd October, spanning a wide array of technical aspects such as empirical methods, rock mechanics, and structural geological methods useful for excavation in jointed and fractured media.

The Symposium opened on the 3rd October, commencing with addresses by the Symposium Chairman, Mr William Joughin; the President of the SANIRE, Mr Jannie Maritz; the President of the ISRM, Dr Eda F de Quadros; the President of the SAIMM, Prof Selo Ndlovu; and the Secretary General of the ISRM, Dr Luís Lamas. These were followed by the Rocha Medal presentation by Dr Bryan Tatone and the Franklin Lecture by Prof. Francois Malan. Four excellent keynote lectures were presented by Prof. Dick Stacey, Dr Nick Barton, Dr Luís Lamas and Prof. Sergio Fontoura, respectively. Technical papers were presented during plenary sessions, as well as during two parallel sessions. The Symposium proceedings contain 94 papers, 50 of which are from Africa (South Africa, Tunisia, Zimbabwe, Zambia, Ghana, and Egypt). Given that mining is a key driver of the economies in several African countries, many of the papers dealt with rock engineering research and case studies for mines. The civil engineering industry was well represented and some papers from the petroleum industry were also included in the Symposium proceedings. Topics included geotechnical investigations, laboratory testing, new investigation technologies, monitoring, seismic analysis, numerical modelling, support design, slope stability, underground mine design, pillar design, stability of tunnels and caverns, dam foundations, hydraulic fracturing, reservoir engineering, and borehole stability. The Symposium proceedings were provided electronically to delegates and will be made available to the industry at large in the near future on the following websites: www.sanire.co.za, www.saimm.co.za, www.onemine.org and www.onepetro.org.



Nick Barton and John Cosgrove course

The first Early Career Forum (ECF) was held on 4th October, where rock mechanics practitioners in the earlier phases of their career were given the opportunity to present case studies and research. It was a very successful undertaking and demonstrated promising talent and enthusiasm from Africa. The ECF delegates were funded by the ISRM Secretariat and the ISRM Education Fund Committee.

Recognition of technical excellence expertise was given in the form of recognition of 'best papers'. The best papers were awarded to Dr Dave Roberts and Dr Ehsan Ghazvinian (young author) and the best ECF presenter was awarded to Edeshni (Candice) Munsamy. The Symposium closing address was given by Mr William Joughin.

A technical exhibition was on display adjacent to the main hall throughout the duration of the Symposium, creating ideal opportunities for sponsors to showcase their products and engage in lively technical discussions during tea breaks and lunch. The Symposium was generously sponsored by IDS GeoRadar, New Concept Mining, Reutech Mining, TRE Altamira, Optron, Aciel Geomatics, Geobruigg, Groundwork, Maccaferri Africa, Minova, Rocbolt Technologies, QualiRock, SRK Consulting, FST Mining Engineering, M&J Mining and Sandvik.



Early Career Forum, ISRM Board and SANIRE **President**

In addition to the technical presentations and discussions, professional networking opportunities were aplenty. A cocktail function was held on the evening of the 2nd October to welcome delegates. The banquet was hosted on the 4th of October at the Castle of Good Hope, a bastion fort built by the Dutch East India Company in the 17th century, which made for an unforgettable experience.



Banquet venue – Castle of Good Hope



Induction of ISRM Fellows

The post-symposium technical tours took place on the 6th of October. The Chapmans Peak Tour provided an excellent opportunity to see the rockfall protection strategy installed to protect the incredibly scenic Chapman's Peak drive in Cape Town. The tour also visited various local attractions and the fantastic geology of Cape Town and surrounding areas. Delegates were also given the opportunity to tour one of the deepest gold mines in the world, Kloof 4 shaft at Kloof Gold Mine, and see the challenges associated with deep, high stress, seismically active mining. The mine is situated near the border of Gauteng and Northwest Provinces, approximately 75 km from Johannesburg.



Technical tour Chapman's Peak
rockfall protection

Technical tour to Kloof 4 Shaft



South Africa dominates at AfriRock

Prof. Francois Malan receives Franklyn Award



Prof. Francois Malan was honoured by the ISRM board with the Franklin award at AfriRock 2017 where he presented on “Numerical Modelling of Tabular Excavations: Old Problems and New Solutions”. The Franklyn award is presented annually to recognise the achievements of a mid-career ISRM member who has made a significant contribution to a specific area of Rock Mechanics and/or Rock Engineering in the country where the ISRM annual conference will be hosted.

Dr. Michael du Plessis nominated as the Rocha Award winner for 2017



Dr. Michael du Plessis's PhD thesis titled “The design and behaviour of crush pillars on the Merensky Reef” was announced by the ISRM board as the best PhD thesis for 2017. The Rocha medal is awarded annually by the international committee to the best PhD study in the field of Rock Mechanics or Rock Engineering. Michael will be receiving the Rocha medal for his study at the next ISRM International conference which will be held in Singapore in 2018.



Dave Roberts received the award for the best paper at AfriRock.

ABSTRACT

Bore-and-fill mining was implemented at a pilot site in Tau Tona mine's shaft pillar on 97 level. Observations, scan data and measurements from this site were used to calibrate an inelastic numerical model of bore-and-fill mining within the carbon leader reef (CLR).

Borehole breakout was found to occur around holes at the site as they were bored. A strike-parallel exposure showed that fracturing within the carbon leader stratum extended far beyond the breakout (up to 1.2 m from the hole sidewall). This observation was confirmed by borehole camera observations in a hole drilled on reef through a bored-and-filled hole.

A Mohr-Coulomb strain-softening model was calibrated against the observed fracturing. It was found that was necessary to include interfaces corresponding with CLR contacts to replicate the extent of fracturing that was observed. The effect of hole position on breakout was quantified by analyzing hole scan data. Models with holes at various positions, together with this data, were used to calibrate the upper and lower CLR contact properties. A novel, displacement-based method for simulating breakout was developed for use on Carbon Leader models. Though the breakout distributions were not precisely matched, the modelled values lay within the extremes that were observed. Trends and other features observed underground were also replicated.

Modelled stresses and measured stress histories showed similar responses to the boring of nearby holes, but the magnitudes differed by varying degrees in each stress component. The modelled sub-vertical stress changes were generally lower than those measured, though both were greater than those obtained from a virgin stress measurement done in the fill. It was noted that either measured value could be obtained by simply shifting the measurement position in the model. The strike stresses correlated reasonably well. Dip stresses were very different: measured tensile stresses greater than the fill strength suggest that these measurements were erroneous.

The result of this work is a calibrated plane strain model which can be used to study the effects of geology, mining sequence and fill properties on the rockmass response to bore-and-fill mining.

ISRM News

Event title	Start date	End date	Country	City
1st International Conference on Advances in Rock Mechanics	2018-03-29	2018-03-31	Tunisia	Hammamet
EUROCK 2018 - the ISRM European Rock Mechanics Symposium	2018-05-22	2018-05-26	Russia	Saint Petersburg
RockDyn-3 - 3rd International Conference on Rock Dynamics and Applications - an ISRM Specialised Conference	2018-06-26	2018-06-27	Norway	Trondheim
ARMS10 - the ISRM 10th Asian Rock Mechanics Symposium	2018-10-29	2018-11-03	Singapore	Singapore
ISRM 14th International Congress on Rock Mechanics	2019-09-20	2019-09-27	Brazil	Foz do Iguaçu

Personality of the Quarter



Full Name: Rudrajit Mitra

Position: Associate Professor & Chair of Rock Engineering at the School of Mining Engineering, University of Witwatersrand

Date and Place of Birth: 9 August 1978, Kolkata, India

Education: PhD (Mining Engineering), MS (Mining Engineering), BE (Mining Engineering)

First Job: School of Mining Engineering, University of New South Wales

Personal Best Achievement/s: Voted best lecturer by students

Philosophy of Life: Work hard while enjoying life with your near and dear ones

Favourite Food/Drink: Love to eat; Drink white wine

Favourite Sport: Cricket

How did your career in the mining industry begin and where are you now?

Based on the results of my engineering score in India, I selected to study Mining Engineering, as this sector looked the most exciting to me. Since then, I have completed my Masters, PhD and am currently working as an academic at the School of Mining Engineering at the University of Witwatersrand. Before moving to South Africa, I was an academic at the School of Mining Engineering at the University of New South Wales (UNSW) in Sydney, Australia.

Why did you choose Rock Engineering?

Since my undergraduate degree, where my first project was in the area of Rock Engineering, I have always enjoyed the challenge of working with rocks. This discipline, armed with the growing power of technology, has the potential to transform the sector by supporting the global drive towards zero harm in mining; our work can help remove people from dangerous, high-energy areas in mines, and make the workplace safer.

Please tell us a bit more about your career journey?

After finishing my undergraduate degree in India, I moved to the US to complete my Masters and PhD in Mining Engineering. While doing my research in Rock Engineering, I was involved in other research projects too, including Mine Ventilation and Virtual Reality. After graduating with my PhD, I was offered a job at the School of Mining Engineering at UNSW in Australia.

The focus of my research and publications – I have published over 90 papers and reports – has been in the field of rock mechanics and rock engineering, particularly in underground coal mining. My particular interest is in virtualisation technology and simulation, and I co-founded the 'Future Mining' conference, that promotes innovation in mining and considers lessons and opportunities from other industries. The initiative is a forum for scientists, mine management, engineers, government, academics and other stakeholders to visualise and work towards positive future scenarios for mining.

This interest also led me to co-develop ViMINE, a scenario-based mine planning tool that helps mining engineering students to experience various aspects of a mining operation working together, integrating several types of simulation into one environment.

This is a practical way for students – in a classroom environment – to learn the complexity of mining systems, including financial management and the impact of commodity price fluctuations. It is also a useful decision-making tool that takes into account the range of elements in mine feasibility.

What are some areas that you believe will become of increasing importance in the near future of the rock engineering discipline?

We are all aware that mines will become deeper in the future and we will face more challenges as a result. Innovation and technology will play a huge role in the future mining industry and will assist us, as researchers, to find innovative solutions that will increase the productivity and safety in mines. We also need to collaborate with other industries in our search for these innovative solutions.

What advice would you offer people aspiring to be in your position?

Work hard and think outside the box. This is important because universities are not only vital centres of learning; they also have a vital role to play in advancing our rock engineering practice – to develop safer ways to mine, and to harness the power of technology.

Who is your role model/ mentor?

My most important mentor was my Dad. He was always very supportive of me and told me to work hard and not just worry about the outcomes. The other person who has been a role model for me is Professor Bruce Hebblewhite. He has been instrumental in my taking lead roles in various projects, and I always look to him for suggestions.

What is the best advice you have ever been given?

Work hard, but also enjoy quality time with your family.

SANIRE Birthdays

November to January

G Hofmann D B Harding J C Smit G Kayesa A D Wilson L L van Rooyen (Prinsloo) M Henderson J Brits G K Morapedi / Karabo C F van Rooyen I G Moseru R Page J A van der Westhuizen O Rakumakoe I P Nadisheba W J F Coote A P van der Berg D van Heerden J C Holtzhausen S M Molebatsi C Mutsvanga K. Smith P G Boshoff ML Sekwele F M T Nemaname J Oosthuizen X L Lottering P R Shiri N J Janse van Rens- burg T P Pule N E Ndlovu L C Moepeng D J Jonker N Sirriram Henik Kruger F J Little Q. Potgieter	Kurt Rensburg N Langa A Bentile C Madzore VL Nokwe SM Liebenberg HJ Schoeman J van der Merwe I E Mabelebele D.L Venter TF Ngobeni P A Manamela WF Grobler P S Piper B J Madden Les Gardner J.J. VAN WIJK O D Goldbach K K Kabeya G. Louw G B Dukes D S Minney D F Malan G L Smith R A Johnson W J Liebenberg N D Fernandes S L Mulder L U Bronkhorst P Miovisky E M (Sibanda) Mkhize N Singh F C Naude K Nesbitt L Prinsloo P Lehong RJ Gerber C Miller B N Viljoen J J Thompson X Ndlovu	S Singh X Mkwanzani J C Esterhuyse B Schoevaerts D P Roberts R Armstrong C L Hunter Passion Pabwe G. Kotze N Khathi G E Brink ZE Thebethe W J De Maar H J Greeff E O Makinen JAL Napier D A Arnold N J van der Merwe O K H Steffen
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Advertising

The SANIRE Committee has decided to increase the advertising opportunities for suppliers who would like to market there business and products in the Rock Talk.

The table below indicates the prices for different size advertisements as well as bookings for the future.

Please contact Alida Hartzenberg for more details

Alida.hartzenberg@lonmin.com

Type of advert	Rates (Excl. VAT) Solus, Casual	Availability per newsletter	Select Publication Issue (Mark with x)	
			October 2017	January 2018
Square (Not front page)	R 1 000	4		
Skyscraper (Front page)	R 4 000	1	Booked	Booked
Full page (Middle)	R 8 000	2	Booked	Booked

New Members July 2017— November 2017

No.	TITLE	NAME	SURNAME	GRADED AS	ISSUED NO.
ASSOCIATE MEMBERS					
1	Mr	Ian	Breedt	Associate Member	A641
2	Ms	Engelie	van Dijk	Associate Member	A642
3	Mr	C	Pieterse	Associate Member	A643
4	Mr	IJP	Zaayman	Associate Member	A644
5	Mr	Hansie	Coetzer	Associate Member	A645
6	Mr	Dumisani	Thomas	Associate Member	A646
7	Mr	Lesenyego	Matlhare	Associate Member	A647
8	Mr	Gerhardus	Janse van Rensburg	Associate Member	A648
9	Ms	Rosy	Phiri	Associate Member	A649
10	Mr	Dewald	Swanepoel	Associate Member	A650
11	Ms	Queen	Kebatsetse	Associate Member	A651
12	Mrs	Kopano	Khorombi	Associate Member	A652
REGRAIDINGS TO MEMBER					
1	Mr	Clarence	Mutsvanga	Member	M285
2	Mr	Petri	Wessels	Member	M286

Herewith the contact details of the newly elected Free State SANIRE branch:

Chairman : Mr. Jacques Lucas	jacques.lucas@harmony.co.za
Vice Chairman: Dr. Jaco Le Roux	jaco.leroux@harmony.co.za
Treasurer: Mr. Russell Page	russell.page@harmony.co.za
Secretary : Mr. Enos Makhubu	enos.Makhubu@harmony.co.za
Additional member: Mr. Tumi Moyake	tumi.Moyake@harmony.co.za
Company Representative: Mr. Paul van Der Berg	p.vdberg@timrite.co.za

Rock Star of the Quarter



Full Name: Paul Michael Couto

Position: Rock Engineering Manager at Brentley, Lucas and Associates, Harmony Gold

Date and Place of Birth: 18 May 1987, Johannesburg South

Education: B.Sc. (Honours) Applied Science – Mining Engineering, B.Sc. Geology Degree, and COMREC, COMSCC

First Job: Strata Control Observer at Open House Management Solutions in Klerksdorp

Personal Best Achievement/s:

Philosophy in Life: “Never give up because hard work always pays off, perhaps not immediately, but in the long run” and “There is a fine line between arrogance and confidence, don’t confuse the two”

Favourite Food/Drink: Steak, egg and chips

Favourite Sport: Target/ Pistol Shooting, Rugby and Golf

How did your career in the mining industry begin and where are you now?

I graduated in 2009 from the University of Johannesburg (UJ) with a B.Sc. Geology degree. Unfortunately, the industry took a huge knock after the worldwide recession in 2008 and therefore jobs were scarce. I obtained my first position at Open House Management Solutions (OHMS) in 2010. OHMS appointed me as a Strata Control Observer on Vaal Reefs 10 Shaft, Tau Lekoa. I obtained my COMSCC in October 2010, and was then promoted to Strata Control Officer at Two Rivers Platinum. After working at Two Rivers Platinum for 6 months, I was then transferred to Northam Platinum's Booysendal. This was all still with OHMS. My OHMS contract ended in 2012 at Northam Platinum Booysendal. Northam Platinum retained me as a Strata Control Officer. In 2013, I obtained my COMREC and was promoted to Senior Rock Engineer. In 2014, I was then promoted to Chief Rock Engineer and managed a department of 14 people. In 2015, I took up a post in the Free State with Brentley, Lucas and Associates as a Rock Engineering Manager, looking after Bambanani (shaft pillar extraction project) and Unisel (multi-reef, intermediate gold mine).

Why did you choose Rock Engineering?

I believe Rock Engineering chose me. I initially started studying a B.Eng. Civil Engineering Degree at UJ, before changing to Geology. I enjoyed the natural environment, but I have always been inclined to build projects, and explore engineering principles. I think this combination best was the basis for my interest in Rock Engineering, and here I am today.

Please tell us a bit more about your career journey?

Starting my career at 23, and being only 30 now, means that it has been a very short 7-year career journey. I have met many great people in the industry, seen a couple of interesting things, but don't know it all at this stage. My journey has just started and hopefully will continue on as long as possible.

What are some areas that you believe will become of increasing importance in the near future of the rock engineering discipline?

I personally feel that the discipline will grow, similar to that in the medical doctors' field. All, or should I say, the majority, of the Rock Engineers are seen as "General Practitioners", similar to your "Medical GP" that you go to when you have a cold. As the mines venture deeper, further out, and look at different methods and commodities, I feel that the "General Practitioner" on the shafts will not have enough time to identify the new problems ("illnesses"). This will require specialists. We have specialist medical doctors, so why not specialist Rock Engineers? I believe that we will have specialist Numerical Modellers, Seismologists, pillar experts, and mining rate experts, and so the list goes on, who will assist the "GP" in his daily tasks. Specialist Service Providers could become the next big thing.

What advice would you offer people aspiring to be in your position?

Wow, in my opinion, I would say the qualities which have assisted me to get to where I now am are:

Hard work

Energy

Pride, and

the Never Give Up Attitude.

One of my "mentors" always said to me, believe and act like a Rock Engineer and you will become the best Rock Engineer.

Bottom line is, believe in yourself and your abilities.

Who is your role model / mentor?

Role model / mentor! During my 7 years, I have been lucky enough to work with, and obtain assistance from, numerous people in the industry. I have taken a good quality trait from each person and tried to build my own character. Every person has a good quality, whether it be a technical quality or personality trait that you would like to grow within yourself. A few of stand-out people that have had a significant impact on my career are: Kevin Brentley, Jannie Maritz, Joggie van Oort, Marius Stander, Dr. Michael du Plessis, Prof. Francois Malan, Louis Bronkhorst, and last but not least, my family, Michael Couto and Marisa Couto (Dad and Mom), for giving me the opportunity to study and create a career platform for myself, and my wife, Stacey Couto, for backing me all the way for the last 10 years in everything.

What is the best advice you have ever been given?

I have received so much good advice from all the above mentioned "role models / mentors", but what always stands out, and maybe it stands out because it was the first advice my father gave me:

"Never give up because hard work always pays off, perhaps not immediately but in the long run" and "there is a fine line between arrogance and confidence, don't confuse the two".



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SANIRE AGM—Awards



Award	Recipient	Award	Recipient
Candidate Award – October 2016 Highest mark > 81% for SCO Theory (Metalliferous)	G. Kgaladi	Lifetime Achievement Award Honorary Fellowship Technical	Mr. P. van der Heever
Candidate Award – May 2017 Highest mark > 85% for SCO Theory (Coal)	S. Masoka	Lifetime Achievement Award Honorary Membership Non Technical	Mr. E. Wevell
Candidate Award – October 2016 Highest mark > 82% for Paper I	W. Chinogureyi	Salamon Award	Dr. M. du Plessis Prof. F. Malan
Candidate Award – October 2016 Highest mark > 81% for Paper 3.3	L. Vernoooy	Ortlepp Award	A. Hartzenberg
Candidate Award – May 2017 Highest mark > 85% for SCO Theory (Metalliferous)	K. Mutamba	Best Student Award 2016 – Strata Control University of Pretoria	H. Hinrich
Candidate Award – May 2017 Highest mark > 76% for Paper I	T. Mametja	Best Student Award Rock Engineering Wits	A. Nchabeleng
Candidate Award – October 2016 Highest mark > 81% for Paper 3.4	E. Hattingh		

