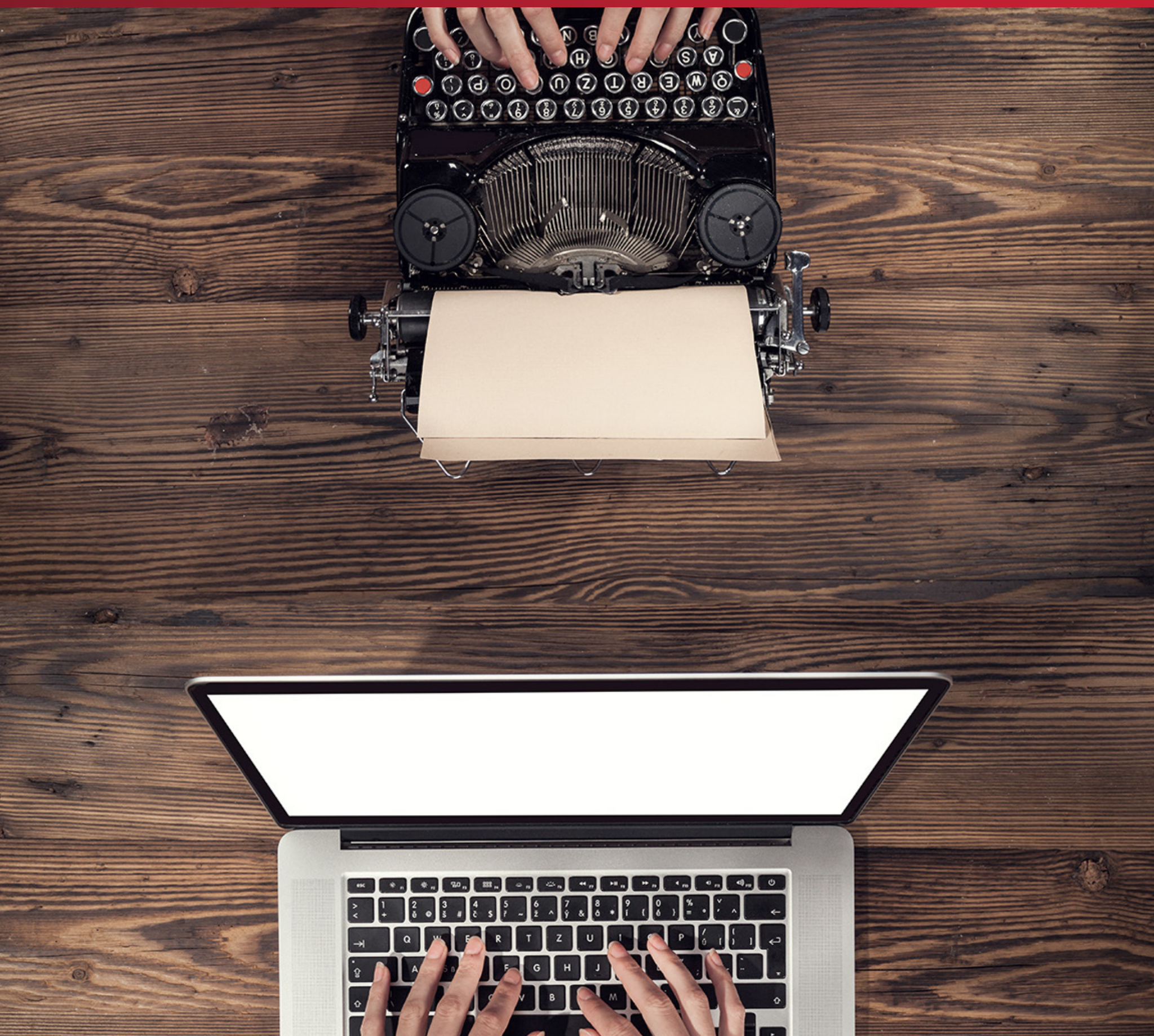
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Peter Withey
President, 2018-19

Presidential PERSPECTIVE

Message from the ASSA PRESIDENT

ACTUARIAL SOCIETY OF SOUTH AFRICA

Message from the ASSA PRESIDENT

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As we roll into the second half of the year and after the short midyear break we are into the swing of the next reporting season with quarterly, half year and in some cases year end cycles well in process. I have been struck by just how much of life is characterised by cycles — weeks, months, seasons, years and more. So, too, for the profession with the latest exam results being released and for those of us on Council and other ASSA structures there have been IAA meetings, Council and board meetings and more.

As I read through this edition of the SA Actuary with its elements of looking back and looking forward I was so aware of how much of what we do today is built on that which other colleagues have done before. In some cases that has been in the development of new areas of actuarial work and in others how we run the profession here in South Africa. Even in the wider global profession the developments of today are invariably built on the foundations of the past, which in many cases were creative innovations of their time. Advances in financial markets and in technology have fuelled this and will continue to do so at a rapid rate. Similarly, the profession needs to continue to change to embrace what is happening around us – in the same way as the profession and the daily work of the actuary today is quite different from what it was in the past so, too, we can expect it to be different again in the future for us to remain relevant to society and what we add to society.

However, I believe that there is a key feature that should stay steady over time and be carefully treasured by each generation of actuaries and passed intact on to the next. This is the high reputation and professionalism of the actuary. We have a brand that we need to handle with care. In preparation for my introductory speech at the new Fellows Dinner I was looking for some fun quotes to include and came across this one from Elastogirl in the Incredibles – "Your identity is your most valuable possession. Protect it!" I take the liberty to paraphrase it for my purposes here – "Our Professional reputation is our most valuable possession. Protect it!"

In our world today greed and self-interest seem to be increasingly prevalent, morality and ethics seem to be becoming more situational than absolute and the individual interest (what's in it for me) seems to more frequently overrule the collective interest. In this environment the need for us all to protect our own reputations and that of "Brand Actuary" becomes even more critical than in the past. We need to continue to emphasise our professionalism and build a culture of accountability that is enabling for us to have the courage to call out where our reputation is potentially being impacted by improper practices and behaviours. I believe that this extends to our profession as a whole but also to our ASSA designations. Colleagues in this edition of the SA Actuary practising away from SA have chosen to retain their ASSA designations because of the reputation it carries – long may this continue. As president I believe that it is my role to be a custodian of the development and reputation of ASSA but this is not for me alone, or for a limited group in leadership – it is the role of each one of the members of ASSA. I challenge you all to join me to ensure we pass a strong and vibrant profession on to the next generation.

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RECTIFICATION: In the April 2019 edition, Vol 3 No 1, proofreading errors led to certain authors not being duly recognised. The article "Making Insurance Work for Emerging Economies" was written by Dirk Reinhard, Vice Chair of the Munich Re Foundation, and "You Matter More than You Think: The Role of Actuaries in the Digital Age" was co-authored by Pieter Janse van Vuuren and David Saunders, both of CENFRI. We apologise for the errors.

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ACTUARIAL SOCIETY OF SOUTH AFRICA

Editorial

IAA MEETINGS

Twice a year between 300 and 400 actuaries and actuarial association staff from around the world come together for the meetings of the International Actuarial Association (IAA). These meetings are always in a different city thus sharing the cost and jet lag load and giving delegates an opportunity to experience different countries. Although the official languages of the IAA are English and French, 99.99% of the proceedings are in English – with one of the French delegates usually making a statement in French to remind the rest of us that French is also an IAA language.



Mike McDougall (Chief Executive)

The IAA is an association of associations with 74 full member associations (FMAs) and 26 associate members. ASSA is the 13th largest association with 1 571 members with an actuarial credential (Fellows and Associates who pay subscriptions) and the biggest and most active of the seven African FMAs[1]. Membership of the FMAs ranges between 9 members (jointly held by Iceland, Nigeria and Cote de Ivoire) and 29 145 members (Society of Actuaries). Between 35 and 50 FMAs are represented at the meetings with more attending when they are held in Europe than in other locations.

When attending the IAA meetings there are two parallel sets of meetings running. Firstly, the official IAA meetings where over 50 meetings of committees, task forces and working groups are arranged with the focus of the meetings being the Council meetings. Secondly, the privately arranged bilateral meetings between different associations are held in empty meeting rooms, restaurants and, when desperate, hotel suites.

Every FMA has a seat on the Council and is entitled to appoint a member to most of the IAA committees. A few are limited membership committees who are appointed by Council on the advice of the nominations committee.

ASSA normally has between 8 and 12 people attending the IAA meetings. This includes the President, President-elect and 2 or 3 staff members as well as members who are active in or leading the various committees and sections of the IAA.

The President, President-elect and staff will not only be active in the IAA committees but also actively participate in the bilateral meetings. These bilateral meetings are used to negotiate mutual recognition agreements, to find opportunities for collaboration, to learn from each other and to share views and experiences on the direction of the IAA and the growth of the profession. Our regular meetings with the IFoA, Casualty Actuarial Society, Canadian Institute of Actuaries, and Australians (with the New Zealanders joining the meeting) are highlights of the meetings.

The first impression of many people of the IAA is that it is inefficient and ineffective with many meetings being mind-numbingly boring. They are not wrong but, amazingly, this structure has managed to deliver a core education syllabus, some core standards for conduct and discipline, model standards for actuarial work as well as broad collaboration for the geographic growth and reach of the profession and direct links between the actuarial profession and key supranational bodies like the OECD, World Bank, International Labour Organisation, Accounting Standards Board and the World Health Organisation.

As with all organisations of this nature, the objectives and intentions of the different associations are not always aligned. They range from organisations who, by their own admission, are primarily focused on ensuring the IAA doesn't do anything stupid to those who see it as a core vehicle for growing the profession and enhancing the standing of the profession globally. ASSA is very active in the second group with disproportionate representation in the leadership of emerging areas working parties (banking, microinsurance and big data) and actively involved in the Africa sub-committee that strives to grow the profession in Africa.

The IAA is currently in a state of change as a task force is engaged in reviewing the governance and structures of the organisation. We hope that this process will lead to a structure that is more effective and efficient while fostering the growth of the profession into new lands and new fields of practice and ensuring that we continue to punch above our weight as a profession in supranational bodies.

Membership of the IAA costs around R200 per year for every Fellow and Associate who pays subscriptions to ASSA. Some say that this is expensive. However, I would argue that, for less than the price of a meal for two in a mid-level restaurant, this is very good value if it can ensure that ASSA actuaries continue to be respected around the world, the profession will continue to grow and provide local and global opportunities for this and future generations of actuaries.

In this we need to pay tribute to members of ASSA who have over the years contributed to the IAA at such a level that it is often said that if you want something done, give it to a South African. At the risk of omitting someone, credit is due to Desmond Smith (the only South African to have been president of the IAA), the late Garth Griffin, Peter Doyle, Emile Stipp, Rob Thomson and Paul Lewis who have served the IAA with distinction in the past. Also to Marius du Toit, Andrew Gladwin and Peter Withey who continue to serve, having served with distinction for many years. Also, the new generation who are starting to make their mark – Roseanne Harris, Lusani Mulaudzi, Michael Tichareva, Ashleigh Theophanides, Nigel Bowman, Christiaan Ahlers and Leza Wells – have big shoes to fill and are already making their distinct mark on the IAA.

IAA meetings have provided attendees with the opportunity to travel around the world. Over the last few years meetings have been held in The Hague, Singapore, Washington (twice), London, Zurich, Vancouver, St Petersburg, Cape Town, Budapest, Chicago, Berlin and Mexico City. At some meetings the combination of the meeting time table, timing and the location of the venue will give delegates the opportunity to experience the wonders of the city. At other times you leave the meetings having not seen the city and other than the long flights, the experience is no different to a week spent in Johannesburg conference rooms. In my experience, the most memorable have been Vancouver in Autumn, as well as Washington and Budapest where the meetings have been held in the heart of the city. Others are held in less accessible ends of town making it harder to enjoy the life of the city between meetings.

While some enjoy the official dinner hosted by the local association, the highlight of the entertainment programme is usually the dinner held for all the South African delegates.

In summary, the IAA provides opportunities to share experiences with actuaries from around the world in cities around the world. An opportunity for us to have a professional voice in organisations that guide policy makers on a global scale and an opportunity to open doors for ASSA actuaries around the world. In this edition, ASSA members who live and work around the world share some of their experiences as part of the global actuarial community.

1 Other African FMAs are Cote de Ivoire (Ivory Coast), Egypt, Ghana, Kenya, Morocco and Nigeria.



SNAP SHOT

Kholeka Mdluli:
Student Representative on Council, 2019

Kholeka Mdluli was elected as student representative on the Actuarial Society Council for 2019. This position is filled annually from among Student and Associate members. Although she was a Student at the time of the elections, Kholeka has since qualified as a Fellow. And she also kindly agreed to respond to a few questions from *South African Actuary.*

SA Actuary: Please tell us more about your current role and responsibilities.

Kholeka Mdluli: I am the deputy chair of the ASSA Student Liaison Committee, aka Student representative on Council. I see my role as giving Student members a voice within the ASSA Council. I facilitate links between ASSA and the student body from academic to social 🙂.

SAA: What attracted you to the actuarial profession?

KM: The classic answer is maths but I generally enjoy problem solving.

SAA: What did you find particularly hard in qualifying as a Fellow?

KM: Working and studying at the same time, challenging time management. Identifying areas of improvement with every unsuccessful exam attempt.

SAA: Now that you have been working for some time, is there anything that excites you about being an actuary?

KM: The variety of work that actuaries can do and how dynamic the skills set is. I have done banking and life insurance work seamlessly.

SAA: Thus far, which actuarial skills have served you best?

KM: Problem solving and the analytical skills.

SAA: What are your goals in your role as Student Representative?

KM: To facilitate the right conversations between Council and the students whilst meeting the needs of our Student members.

SAA: Do you foresee any obstacles in achieving these goals?

KM: Not really, but maybe limited time. I think that if I can do the work to make the link between ASSA and students work even better, then the goals I don't achieve can still be met long after my term.

SAA: Do you think the current structures serve the interests of students adequately, or is there room for improvement?

KM: There'll always be room for improvement because the student body itself is evolving and so our structures need to keep up with the student needs.

SAA: If you had to give three pieces of advice to students, what would they be?

KM: Ask questions, be open to criticism and allow yourself to improve your way of doing things because learning something new doesn't invalidate what you already know (that you are smart!).

SAA: What are your short-term plans, careerwise?

KM: Become a hotshot business actuary (LOL!). I recently joined a start-up consultancy where I intend to do work with actuarial students to support their qualification journey whilst providing some career guidance based on my own experience. Hopefully through this journey I can also challenge what I know, and see how that manifests in the work I do and in my relationships with the clients.



REARVIEW:

Gustav Jenkins: First Student Representative, 2002

The Actuarial Society amended its Constitution in 2001 to create the position of Student Representative on Council. Gustav Jenkins was the first Student Representative. He seems to have found the kitchen a bit too hot, because he qualified as Fellow during his term on Council, forcing him to step down. We strolled down memory lane.

SA Actuary: Theoretically, and without necessarily referring to your own experience, do you think it makes sense to have a Student member on Council?

Gustav Jenkins: I do think it makes sense to have a student member on Council. To me, it complements the armoury with which Council can deliver on its mandate. At a first level, it brings the (young) student perspective into every discussion, which is critical from a relevance point of view. Secondly, it contributes to the pipeline development of interested young volunteers to our wonderful profession.

SAA: How did you experience the first Council meeting, where you were the first and only Student at the meeting, among a number of Fellows?

GJ: I remember the phone call from Wim Els in which he first explained the concept to me. This was back in the previous century, and he explained how Council had made the decision to create a position for a Student representative. My sceptical side kicked in at first. I had two thoughts: why had nobody else said yes to Wim, and who uses the term "Council"?

After Wim masterfully sold the position, I was quite looking forward to performing the role. My only previous experience in serving the Society was on the Johannesburg programme committee, which was vaguely relevant at best.

The first meeting was quite intimidating, given that the average age of the Council at that time was at least double my age then, and consisted of various company valuators, heads of consultancies and the like. Nevertheless, they made a clear effort to make me feel welcome, and were very open to my contributions on any of the matters discussed. I found the challenge stimulating both from an intellectual and an interpersonal perspective.

SAA: Being the first person in the Student representative position, did you have any specific goals or objectives for the role, or did you adopt a wait and see approach?

GJ: To be honest, my first objective was just not to mess it up! Imaging being known as the first student member who served on Council and then the position ceased to exist.

My first goals included to learn as much as possible from the Council members, and to marry that with my and other student perspectives and in turn play that back to the Council. As an example, I remember many conversations around how we could demonstrate relevance as a profession, both from a student recruitment as well as understanding our critical part in the South African business and social ecosystem perspectives.

SAA: Any lessons or other learnings from your term that you would like to share?

GJ: Listen, listen, listen. There is usually so much that is not said at first, and by listening carefully and asking questions some of this will be revealed. I experienced this first hand in those early years, and how it made me feel to be "listened to". Thinking back now it is no surprise that the other Council members were so successful in their own careers. I will carry this lesson with me always.

SAA: Any specific highlights from your term as Student representative?

GJ: As I mentioned earlier, I was relieved when the decision was taken to continue the role after my term expired! There were many highlights, but I will just mention two. The first was the importance of understanding our professional duties right from the start of our careers, and growing awareness around that. Secondly was qualifying as an actuary during my term!

SAA: And any disappointments?

GJ: I cannot recall any disappointments, which probably means that the highlights well-outweighed whatever disappointments there may have been.

SA Actuary: If you had the chance, would you do it again? And if so, would you do anything differently?

GJ: I would definitely do it again. I would make it a priority to pick up the relationship skills from the other members. These skills are increasingly important in our professional lives, as we strive to influence all the spheres within which we operate.

SAA: Tell us a bit more about your current job – responsibilities, challenges and so on.

GJ: I have been at Liberty for around 13 years. I have had many wonderful opportunities here. My current job is to head up our long term insurance businesses outside of South Africa. The role is very varied, and never predictable, as I am sure anyone who has worked in Africa outside of SA will attest to. It is a very diverse mix of technical, commercial and people challenges, but the opportunity to make a meaningful difference on the continent makes it all worthwhile.

SAA: And when you're not at the office?

GJ: I am blessed with a wonderful family, so I try to spend as much time with them as possible. Our interests are quite varied and includes golf, running, karate, camping and photography, as the weather and time allow!



WORKING IN **PUBLIC HEALTH**

- Roseanne Harris



The Presidents' Forum meets during the biannual meetings of the International Actuarial Association (IAA). As indicated by the name, this body comprises the Presidents and Chief Executives of the various member associations of the IAA. Roseanne Harris made this presentation at the recent Presidents' Forum meeting in Washington, D.C.

I would like to acknowledge Shivani Ranchod, who is a Fellow member of ASSA, many of whose ideas informed this presentation and works actively in public health financing. She came up with the analogy of Alice in Wonderland going down the rabbit hole. It is a good comparison because in working in public health we often have to think about whether the conventional actuarial approaches to things like data analysis, benefit structuring and risk assessment are appropriate and we are really challenged to keep the public interest objectives at the top of our minds, rather than commercial interests.

Like in many countries around the world, in South Africa we are currently having lots of discussions and debates about the health policy framework and there is quite a tussle about whether a single fund or multi-fund approach is appropriate for attaining Universal Health Coverage. The big challenge is to get the actuarial voice heard. In our highly unequal society, the goal of having the same benefits for everyone is a laudable ideal but may not be practical to achieve. Our challenge is to demonstrate that having multiple tiers of benefits with some segments of the population making contributions (where they can afford it) can actually lead to everyone being better off, rather than trying to spread limited public resources across everyone. We are finding that it is very difficult to separate the concepts of equality and equity.

So, working in healthcare generally, and more specifically in the public health space, means a need to embrace issues of ethics and social ideology as well as technical rigour of assessing and quantifying risk.

An aspect of working in healthcare that I have always particularly enjoyed is working with multidisciplinary teams – the clinical experts and health economists bring different and helpful perspectives to the complex challenges of essentially meeting unlimited demand, with limited resources. In the public health space this need to rely on diverse expertise is amplified. It also requires a range of perspectives on social policy priorities and a sensitivity to how this affects different segments of the population.

Rapidly evolving technology and especially pharmaceutical developments necessitate economic assessment of whether additional costs are supported by clinical benefits. These can often be emotive and politically-charged arguments about access to life-prolonging treatment and so a disciplined approach is important.

One of the challenges in public health is political interference. There can be short-term gains from making promises that end up being very expensive in the long term and we have the tools to unpack these.

In South Africa, one of the big contributions the actuarial profession has made in public health is the AIDS model which provides forecasts allowing for various treatment interventions. The rapid escalation of the HIV epidemic in South Africa during the 1990s created huge uncertainties and tensions with treatment activists taking the Government to court to demand treatment in terms of a Constitutional right of access. The AIDS model allowed for the cost of interventions to be understood and scenario tested. This facilitated the development of what is now the largest publicly funded ARV programme in the world, but on a fiscally responsible basis. We haven't beaten AIDS yet but we are making huge gains.

The 1978 Alma-Ata declaration is cited by the World Health Organisation as a milestone of the twentieth century in the field of public health as it identified primary healthcare as the key to the attainment of the goal of Health for All. Subsequently, the WHO has developed this block approach to assessing progress towards achieving UHC by considering the dimensions of:

- Extent of coverage in terms of who is covered
- What services are covered – breadth
- And how much of the services are covered – depth

More recently there is the added dimension of the quality of services covered as well.

So, for actuaries in this space there is a real juggle of determining how to balance these needs with available resources.

In South Africa, we often find different stakeholders being at cross purposes because of different views on what health services are essential and how quality should be measured. Even the concept of primary healthcare is something that is very difficult to define precisely. For example, what are essential medicines, what are priority health conditions to cover? In the public health space we are often dealing with a package of services rather than a list of defined benefits that we are used to seeing in policy documents.

Working in the public sector has its own challenges compared to the commercial environment.

Data is often not collected as comprehensively and consistently as we would like for rigorous analysis. In South Africa we have been really struggling to get data from pilot sites as, on the ground, delivering care is more important than collecting data. This is understandable from a short-term perspective but makes planning more dependent on assumptions. We have found that identifying pockets of good data is better than having large volumes of questionable data. We then need to use statistical techniques to extrapolate. This is a challenging process as we have such a diverse population in terms of geographical access, disease burden and income levels, so representivity is a complex process.

There can also be huge sensitivities around measurement. Reporting does not usually have the goal of supporting actuarial analysis but more demonstrating treatment progress or even just activity. We need to be mindful of this as well as the challenges of measuring things like exposure in a public health context where there are sensitivities around factors like migration.

The decision-making process also tends to be somewhat different to the commercial environment. Clearly, where there is regulatory change there is a required process but even decision-making on programmes can have extensive consultation processes across different sectors of government and we need to patiently ensure all stakeholders understand the implications to move forward. From a professional perspective this is definitely a case where we need to ensure we are equipping the decision-makers to make informed decisions.

My suggestion is firstly to have a good understanding of policy frameworks, how these evolved and how these are applied. This means going outside of traditional actuarial resources and looking into health economics and social security frameworks. The recent survey of health actuaries by the IAA health section identified understanding principles of health economics as the second most important skill (after data manipulation) for health actuaries. Supra-nationals such as the WHO, ILO and OECD have excellent resources to provide a range of perspectives.

This enables the development of frameworks for addressing key problems consistently and appropriately for the country's context. One of my little peeves is the focus on healthcare spending as a percentage of GDP to compare health systems between countries. This is a singularly unhelpful metric for determining affordability since GDP per capita varies dramatically between developed and developing economies – we need to look at actual per capita monetary spending on a PPP basis and use this as a framework for determining what is affordable.

Finally, we need to acknowledge that we don't have the answers, just the tools to contribute

to finding them and we need to be team players to do this. We are often working with community representatives who have practical on-the-ground knowledge of what people need and it takes humility to really hear their inputs and ideas and blend them with our technical approaches.

So, what is the **role of the global profession here?**

It is a vital one as there is an opportunity for us to be sharing learnings and building up some valuable research. We are working hard to demonstrate in country and at the WHO level that the actuarial profession can add value to the development of health policy and we don't necessarily just come to the table to look for opportunities to implement for-profit insurance.

Risk management is vital in getting value from public health spending and this is where we have expertise in terms of interventions as well as tools for measurement and monitoring.

For me, working in the public health policy space is really rewarding, although it can be frustrating at times, but there is an opportunity for us to use our skills and learning to make the world a better, healthier place.

THE MAIN EVENT

Council tried to encourage the production of papers by members of the Actuarial Society by establishing Publications Committees in Johannesburg and Cape Town in 1967. The committees also had the responsibility of quality control and to arrange sessions for the discussion of papers submitted to them. While the initiative for earlier meetings came largely from Cape Town, it was the Johannesburg Committee that approached Council in 1971 with the idea of holding an annual seminar.

The first Convention of the Society was held at the President Hotel in Cape Town on 20 October 1972 and attended by 77 members. It was preceded by a dinner at the same hotel on 19 October, The dinner cost of R5 per person excluded liqueurs and cigars.

The programme comprised four plenary sessions:

- Presentation and discussion of the report of the Continuous Mortality Investigation;
- Panel discussion: The Responsibility of the Actuary to Policyholders and the Public;
- Panel discussion: The Investment Scene;
- Paper by Jan Pijper: The Role of Government in the Control of Life Assurance.

Successful conventions were held in 1973, '74 and '75. A lack of suitable papers, as well as the International Congress of Actuaries in Tokyo and the annual conference of the Association of Consulting Actuaries, led to Council deciding against hosting a convention in 1976. It became an annual event from 1977 onwards.

And it has grown since then. In 2018, 1 533 delegates from 13 countries registered for the event. The programme comprised four plenary sessions and 41 concurrent sessions, 11 of which were workshops. There were 770 attendees at the dinner and cocktail … exactly ten times the number of attendees at the first Convention!



"Who puts the doh-re-me in our pockets; keeps the party going on?"
Marcé Marx, Chair of the Convention Organising Committee, took time out of her schedule to talk to us.

SNAP SHOT

Marcé Marx:

Chair: Convention Organising Committee

SA Actuary: **The Convention has become a massive event. Now that you, as Chair of the Organising Committee, have had an opportunity to catch your breath, and before you hit full speed again for this year's event, we'd like to get to know both you and the Convention a little better. So, to kick off, please tell us a bit about your current job; your role and responsibilities.**

Marcé Marx: After six years in an actuarial role, I joined Elliott Bauer at the start of 2018 where I am currently heading up the South African Office. We focus on (mostly) actuarial recruitment and executive search. My role is to manage relationships with our existing clients and assist them with their requirements, as well as identify new opportunities and advise candidates where possible in finding their next challenge.

SAA: **How did your actuarial training prepare or equip you for the Organising Committee?**

MM: My actuarial background provides a good foundation – I can relate to most of the topics on the programme and identify what the challenges are from a regulatory but also professional/ethical perspective that are facing the industry. I have also learnt to ask questions and try to understand the bigger picture. In my role as Chair, it is important to understand what the implications of a decision will be before making it and to ask the experts when you don't know the answer. Also, the Actuarial Control Cycle – monitor results!

SAA: **When did you become involved in the Committee?**

MM: In 2017.

SAA: **How does one go about developing a programme for an event of this nature? When does the planning start?**

MM: The planning starts months in advance, usually the year before already. This is when we engage with sponsors and consider the survey results from delegates about their experience. Keynote speakers also need to be confirmed early and this is one of our biggest challenges.

Thankfully we have great people helping along the way – from experienced professional conference organisers to the sub-committees of the Organising Committee that are responsible for various aspects of the Convention. As for the programme: feedback from previous years is very useful in making changes to the structure and content of the programme, but we also welcome suggestions from the Profession in terms of what people would like to see. As some of you may have experienced, we have a rigorous process in selecting presenters and speakers in an attempt to maintain a high standard throughout.

It is important to try to get as many things confirmed as early as possible to avoid last-minute panic. Having said that, we also need to remain flexible and open to new ideas throughout the process.

Finally, trusting your peers to pull their weight is key. You cannot do everything yourself and trusting others to help you achieve a common goal is something I have had to learn to do.

SAA: Does the Organising Committee face any specific challenges in putting together a programme?

MM: Yes! From selecting appropriate keynote speakers and working around their availability to balancing the number of technical, theoretical presentations with other "softer" and more practical sessions, it takes a number of iterations to finalise the programme. Trying to make sure that popular sessions do not clash with other "big" ones is another challenge and we also need to allow for the fact that some speakers cancel quite close to the event and we need to fill those slots.

We obviously also want to make the programme exciting and this is probably the most challenging aspect – we think carefully about including relevant and useful sessions that appeal to a diverse range of actuaries and always welcome suggestions and input from the Profession.

SAA: How does the Committee decide on keynote speakers?

MM: As a start, we look at the suggestions we have received through feedback from previous Conventions, but also consider whether these speakers are appropriate, given the topical issues in the industry or any other themes we may want to cover on the programme. More practical considerations are our budget and the speakers' availability. We debate potential speakers as a committee and together make a decision about the ones we should approach.

SAA: Until 2008, the Annual General Meeting formed part of the Convention. At the time, this was not a very popular session. However, the AGM, as a separate event, is attended by very few members in person. Do you think it should be brought back into the Convention programme?

MM: Interesting question! In short, no. I believe that people look forward to the Convention because of what they believe they can learn and to be exposed to the thought-leaders in the industry. For some, it is also about networking and walking away with some practical knowledge of how to implement a new technique or concept. I think that some people perceive the AGM as an administrative item that takes away from the excitement of the Convention and perhaps most of us have not really thought about why we should be attending the AGM, i.e. the WIIFM aspect. I don't believe that bringing it into the Convention will necessarily improve attendance if we have not addressed this issue.

SAA: During the term of your predecessor as Chair, Guy Chennells, the nature of the Convention programme changed quite dramatically. Sessions were made longer and more interactive, and more non-technical topics were added to the programme. This has been the case for some five years now. Do you think this has worked?

MM: Definitely. Guy understood that the structure of the Convention needs to change to stay relevant to the diverse group of people attending each year. The feedback that we received from previous years was also very important in improving the content of the programme and Guy was able to try new things and challenge traditional thinking. Last year's Convention was one of the best from what I've heard, and this is proof of Guy's dedication to keep innovating.

From the discussions that I have had with peers, more and more delegates are looking for interactive sessions where they can take part in debate or try something themselves. The increasing number of professional and ethical considerations that we are faced with means that our programme needs to allow for these critical conversations to be included.

SAA: The past two Conventions also had a dedicated transformation track on the programme. Have members supported this? Is this something we can expect to see again in the near future?

MM: The introduction of these discussions and sessions has certainly been well supported by members. A good example is Nene Molefi's workshops that were very popular. It is important that we take the feedback we receive from our members about the issue of transformation into account and we have tried to do that this year in putting together the programme with a dedicated sub-committee looking at this. We will definitely be continuing with this theme and we have a number of exciting ideas that we are working on for this year's Convention.

SAA: And a sneak preview – can you give us an indication of what attendees can expect at this year's event?

MM: Fantastic keynote speakers, a good balance between traditional presentations and more interactive sessions and some really thought-provoking topics including some of the softer issues facing the profession. Also, great entertainment on the first night at the cocktail function!



REARVIEW:

Guy Chennells:

Immediate Past Chair: Organising Committee

Guy Chennells succeeded Marquerithe Schreuder as Chair of the Convention Organising Committee after the 2012 Convention. Having handed over to Marcé, he will have the opportunity to enjoy this year's Convention. But while looking forward to it, he had a quick look into the rearview mirror.

SA Actuary: Let us just catch up on the technical side first. You qualified as a Fellow in 2009. What have you done careerwise since then, and what is your current position?

Guy Chennells: I've worked in employee benefits doing product development and strategy roles, and now head up product for Discovery Employee Benefits (umbrella and group risk). The umbrella side is a startup, so I'm having a real blast building it from scratch with an incredible team.

SAA: How did you become involved in the Organising Committee?

GC: I volunteered after returning to the country from a few years overseas – it seemed like a good way to get connected into the Society. It was quite intimidating at first, but Marquerithe Schreuder was a fantastic Chair, who drew me in and encouraged me to grow in responsibility and ultimately take over the chair from her when she moved overseas.

SAA: Would you mind mentioning a few highlights of your term; developments of which you are particularly proud or that have given great satisfaction?

GC: I really loved the experience. It was wonderful to be part of a team that grew in confidence and excellence together – leading that team to personal growth and collective success was probably the highlight for me. We set our sights on improving the quality of the content and the quality of connecting. For the latter, a shift to a cocktail event was a real success. My last Convention, with the event at the Shimmy Beach Club, was a real high point in that journey – it set the bar for an actuarial function at a new height. And for content, the feedback has improved significantly through implementing a number of steps and a fair amount of trial and error.

SAA: Something always goes wrong behind the scenes. Is there anything in this category you would like to share with readers?

GC: More than once we've had a mad dash to find a good keynote speaker because the one/s we planned fell through … stressful stuff. Not as stressful, though, as the time we almost had then deputy president Cyril Ramaphosa addressing the evening function … he came onto the programme at the last minute, required quite a bit in terms of security and special arrangements, and then ended up not attending but sending a stand-in to read his speech – predicting the movements of dignitaries needs its own distribution curve.

… it was an experience that matured me in a way that has really been to my benefit, especially at work. I gained experience and skills that have served me well, and wouldn't give up the connections and camaraderie for anything.

SAA: Looking back, was it worth the time and the effort?

GC: Absolutely. There were some challenging times when the demands of the Convention compounded an already tough period at work or home, but looking back it was an experience that matured me in a way that has really been to my benefit, especially at work. I gained experience and skills that have served me well, and wouldn't give up the connections and camaraderie for anything.

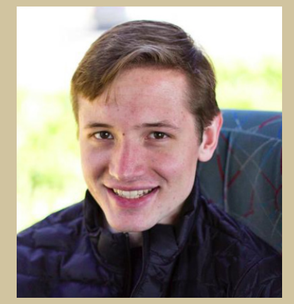
SAA: Now that you have all that extra time, what are your short-term plans?

GC: For now, keep some breathing room open to be a present parent to a toddler and a soon-to-be new arrival. And I happen to be in a particularly demanding phase at work, so there's no shortage of things to fill the void.

Calibrating the Merton Jump Diffusion Stochastic Process using Artificial Neural Networks

(DISCOVERY PRIZE WINNER, 2017)

– Rayno Mostert



At the 2018 Convention, the Discovery Prize for the Best Honours Project at an Accredited South African University Programme in 2017 was awarded to Rayno Mostert from Stellenbosch University for his paper entitled Calibrating the Merton Jump Diffusion Stochastic Process using Artificial Neural Networks.

In making the award, the Actuarial Society Research Committee expressed the view that the ANN architectures proposed in the paper will help practitioners deal with the calibration of more complicated stochastic processes to real-world time series-related data sets.

From Classifying Cat Images to Predicting Market Movements-

RAYNO MOSTERT – JUNE 16, 2019

"Neural networks" have become an overused buzz term – and with good reason. These models are highly flexible and have excelled at applications that were previously believed to be impossible. For example, convolutional neural networks have enabled computers to recognise objects in images, from classifying cat breeds, to identifying skin cancer, all from an image taken on a smartphone (Esteva et al., 2017).

However, in actuarial applications, neural networks remain rare. The main reason most likely being that they are widely considered to be *black boxes*, which provide little explanatory insight (Olden & Jackson, 2002). This article considers one way in which we could repurpose these models, enabling us to better model reality. We use a convolutional neural network only to calibrate a more expressive, widely understood model: a stochastic process.

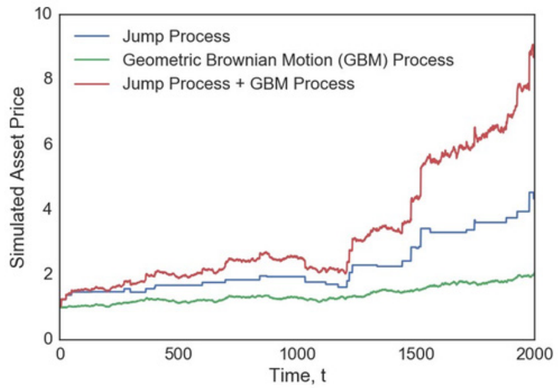


Figure 1: Simulated asset prices resulting from a jumps process, a Geometric Brownian Motion process, and their sum: a jump-diffusion process.

A stochastic process is a sequence of random variables, indexed by time. The most widely used process is Brownian Motion, which could yield a process known as Geometric Brownian Motion (GBM). This is a continuous path that drifts by μ, with some volatility, σ (see Figure 1). Despite being widely used in finance; intuitively and empirically, a continuous path with some drift is simply not an accurate description of most financial markets. Markets boom and crash, often following paths that would hardly be considered "continuous". For this reason, Robert Merton extended the GBM process to allow for jumps (Merton, 1976). The result (referred to as a jump-diffusion process) is a path that drifts at some rate, μ, with some volatility, σ; and jumps with probability λ. The jump sizes are (usually) drawn from a log-normal distribution with parameters μ_{jumps} and σ_{jumps}s . It has the stochastic differential equation:

$$dS_t = \mu S_t \, d_t + \sigma S_t \, dW_t + S_t \, dJ_t \qquad (1)$$

where

$$J_{-t} = \sum_{(j=1)}^{(N_t)} (V_j - 1) \qquad (2)$$

is a compound Poisson process. V_j are independent, identically distributed random variables representing the jump sizes. N_t, $t \geq 0$ is a Poisson process with intensity λ, which is independent of J_t and W_t .

Great, you've made it this far without turning the page! Now, simulating some process is one thing, but it's only useful if you know what the underlying parameters of the model should be to accurately describe the process you're interested in. A model is only useful if it describes some real-world process, right?

For complex Stochastic Processes, fitting the parameters is actually rather difficult. The most common approach to find appropriate parameters for some statistical model is by Maximum Likelihood Estimation (MLE), but in order to perform Maximum Likelihood Estimation, you need a likelihood function to maximise. And, as it turns out, these are non-trivial to find for complex stochastic processes. In fact, in the case of the Merton jump-diffusion process, it can be shown that the likelihood function does not exist in closed form (Honore, 1998); and finding approximations to the likelihood functions for complex stochastic processes are the subject of many theses.

So, we have these models that are really useful and highly flexible, but are difficult to calibrate. Doesn't it feel more difficult than it should be though? We have a model. We have some real-world process. We simply need the set of parameters that best fit the model to our process (5 numbers in the case of the Merton jump-diffusion process). In fact, all we need is a function: one that maps from an observed sample path to a set of suitable parameters.

Considering that we can simulate a sample path using an arbitrary set of parameters for our process, we effectively have an infinite set of input-output pairs. Can we not then approximate a calibration function?

Neural networks, famously, are universal function approximators. They can approximate "any measurable function to any desired degree of accuracy" (Hornik, Stinchcombe & White,1989).

Training a neural network to estimate the parameters of the jump-diffusion process would involve:

- generating sets of random parameters (μ, σ, λ, μ_{jumps}, σ_{jumps}),
- simulating returns for each set of parameters, using equation 1,
- feeding the simulated returns to a neural network, and training it to predict the original parameters.

Then, for some real-world process of interest (a market index, for instance), we can feed its returns to the trained neural network. Hopefully, the network will output parameter estimates for a jump-diffusion process that resembles the process we're trying to model.

"It's basically solved", I smugly thought, as I handed in the research proposal to my supervisor at the start of 2017. Oh, how wrong I was. At first, I tried regular feedforward neural networks – which didn't work. I then tried recurrent architectures – which are commonly applied to time series problems in machine learning. I tried feature engineering, by calculating the moments of the process and feeding those to the network. None of these approaches, however, produced even marginally useful estimates of λ, μ_{jumps}, or σ_{jumps}.

One morning, after yet another sleep-deprived night of spending hours watching models train, I shared my frustration with a friend. He suggested trying convolutional neural networks (CNNs) – which seemed to be a silly idea. After all, CNNs were designed for image classification. These models typically process a two-dimensional input and apply filters that search for patterns and edges in a photo (Figure 2).

To feed a sample path to the model, we stack the path's returns in rows – like pixels in a photo

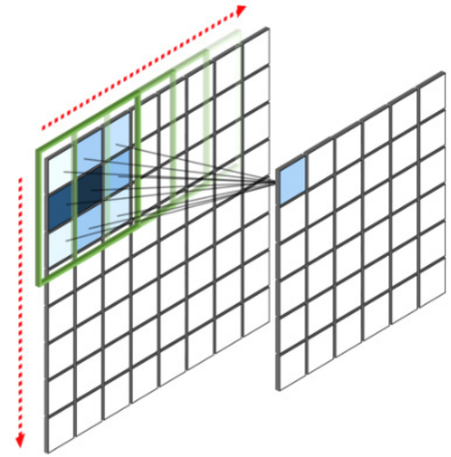
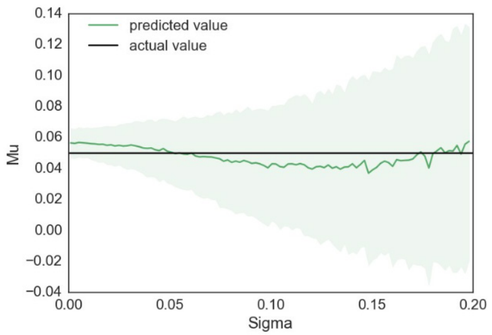


Figure 2: A Two-Dimensional Convolution Layer

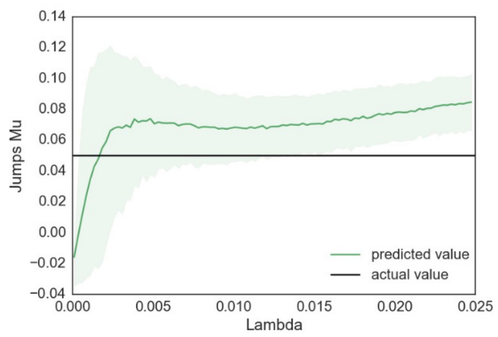
– in chronological order from the top left, to the bottom right. We then use a convolutional neural network just as one would for image classification. The model is then trained to output estimates of the parameters of the process that originally generated the sample path. Applying a CNN architecture to the problem produced surprisingly accurate results. Although not quite as accurate as approximated MLE solutions, the results are comparable. All without a single line of stochastic calculus!

As always the case with black-box models, such as ANNs, it's difficult to diagnose why a particular architecture works, or might not work. We suspect that stacking the returns in an image-like structure allows the model to compare values over a longer period. Having some information of what happens, say, 40 steps ahead, might help the model make a better informed decision on how often jumps occur (λ), and what those jumps look like (μ_{jumps}, σ_{jumps})

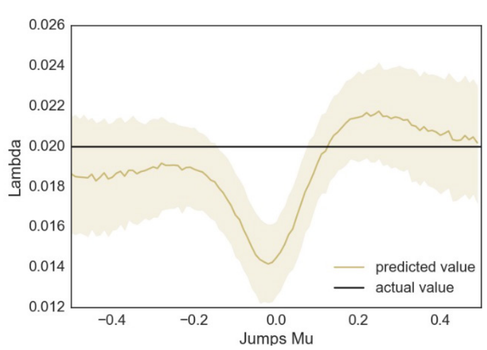
The accuracy of individual parameter estimates can vary widely, depending on the values of the other parameters of the process. For example, ramp up the volatility (σ) of the GBM component, and your estimates for μ become less certain (Figure 3a).



a) The mean μ̂ parameter estimate (and 68% confidence interval) plotted against the actual parameter value, μ=0.05, for different values of σ.



b) The mean μ̂_jumps parameter estimate (and 68% confidence interval) plotted against the actual parameter value, μ_jumps=0.05, for different values of λ.



c) The mean λ̂ parameter estimate (and 68% confidence interval) plotted against the actual parameter value, λ=0.02, for different values of μ̂_jumps.

Decrease λ (the probability that a jump occurs) and your estimates of μ_{jumps} (the mean jump size) become less certain (Figure 3b). Intuitively, this makes sense: if jumps rarely occur, your CNN has very few jumps from which to base its estimate of their size. By the same logic, if you decrease the absolute jump size, the estimates of lambda go out of whack (Figure 3c).

In conclusion, stochastic processes are powerful tools which can be applied to almost any time series-related problem. They offer clear, truthful representations of real-world processes in ways in which deterministic formulae cannot. Yet the underlying mathematics complicate their application. What we've managed to do, is derive appropriate parameters for a stochastic process without the burden of deriving a likelihood function. What we hope to achieve is a "democratisation" of stochastic processes. Neural networks might just offer us the ability to implement and benefit from these statistical tools, without a masters-level course in stochastic calculus.

Thanks to Stephen Burgess, my supervisor, Stuart Reid, for introducing me to the topic, and Juan Lategan, for suggesting the use of Convolutional Neural Networks.

The full paper was submitted as part of a BCommHons with the Department of Statistics and Actuarial Science at Stellenbosch University.

For the sake of brevity, I have left out many details – including detailed sections on the architecture used and the results. If you've managed to read this far, please download the full paper. Get in touch with me (rmostert@me.com) if you're interested in the topic, have any feedback, or if you've applied Stochastic Processes to interesting problems (the chapter on applications needs some content).

Get the full paper at **urlzs.com/Ji5dy.**

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PaperVideo

ACTUARIAL SOCIETY OF SOUTH AFRICA

REARVIEW:

Leigh Johnson:

First winner of the Discovery Prize, 2001

The Discovery Prize was awarded for the first time in 2001, and Leigh Johnson got the nod with *AIDS: Modelling the Impact of the Epidemic in Sub-populations*. We enquired about the impact of having won the prize.



SA Actuary: What did winning the prize mean to you?

Leigh Johnson: It encouraged me along the path of research career. I remember one of my fellow actuarial students making fun of me for wanting to do research, and perhaps without that prize I might have been more inclined to doubt myself. A career in research is a lot harder than most people realise, and it's difficult to commit to it if you don't believe in yourself and the questions you're trying to answer. At the time I started doing HIV research, South Africa was on the brink of an AIDS apocalypse, and I struggled to believe that I could make a difference. But the prize did help to boost my self-confidence.

SAA: How did you use the money that formed part of the award?

LJ: Honestly, I can't remember that far back! I like to think I used it toward my Master's registration costs. But quite possibly I used it to pay for my rent or one of the other exigencies that poor students are prey to.

SAA: What is your view on research prizes? Do they actually encourage research, or are they a nice-to-have?

LJ: I'd be surprised if anyone does research with the objective of winning a research prize. But it's great to get the recognition, and the money that comes with it does help towards covering research expenses, like going to conferences and paying research assistants – which, in turn, is important in planting the seeds for further research. The big challenge one faces, as a full-time researcher, is bringing in research grants to cover the much more substantial overhead and salary costs for full-time staff. Local funding agencies provide very little support for these expenses, so we are usually having to compete against US and European universities to get funding from international research funders.

SAA: Can you share any current research activities with us?

LJ: We've been asked by the Department of Health to develop a model of non-communicable diseases in South Africa, and we've also been asked by UNAIDS to extend our models to include tuberculosis. So we're starting to think about how we can model other diseases within our existing HIV modelling framework. But we're also starting to think about social determinants of health, and how certain risk factors impact multiple diseases. For example, what is the impact of increasing urbanisation on levels of physical activity, and how is that affecting South Africa's burden of disease? And how does income inequality drive socio-economic differences in health outcomes – through differences in risk behaviours or through differences in access to healthcare? Putting this all into a single mathematical model is challenging, but also exciting.

THE Discovery PRIZE

Discovery introduced the Discovery Prize in 2000, with the aim of stimulating research and advancing actuarial excellence in South Africa. The 17 prizes awarded since then are testament to the breadth and depth of actuarial talent in South Africa, and the research recognised through the award have pushed the boundaries in investments, healthcare, retirement funding, capital modelling and several other areas. We are proud to support groundbreaking research and the Actuarial Society through the Discovery Prize, and look forward to celebrating many future years of intellectual achievement in the profession! -

Emile Stipp, Chief Health Actuary.



YASHODA RAM

A BRAVE NEW ACTUARY FOR THE BRAVE NEW (DIGITAL) WORLD

The reason developing economies need an Enterprise Development Actuary

The age of digital disruption and the rise of the start-up is upon us.

The fourth industrial revolution is as much about the technology that is going to disrupt businesses, as it is about the entities that are going to deliver this tech.

In the South African context, that of a developing economy, the prospect of new enterprises rising to the challenges of the Brave New Digital World is an exciting one.

The opportunity to grow the economy, create jobs and start to realise the vision of transformation in achieving a more balanced standard of living for South Africans, are all encompassed in the dreams of the start-ups, the entrepreneurs developing feasible business ideas based on experience, based on their first-hand exposure to the remnants of inequality.



But what is a business idea without a business model?

And what is a model without the rigor of a forecast based on variable inputs, stress and scenario tests, and financial forecasting that makes sense to potential investors?

An inadequate model is the start of a business idea that will remain an idea.

The role of an actuary must keep up with the evolution of the landscape in which we operate. While traditional fields will always require statutory sign off and guidance, there is a yearning requirement for the mind of an actuary to be applied beyond the sphere of the familiar.

The tagline of our profession is “quantifying risk, enabling opportunity”. This is the fundamental requirement for anyone looking to start a business, who may not be financially inclined, but has that golden idea.

Starting any business entails a great amount of risk. Quantifying risk in a way that a potential investor understands is not something an entrepreneur may be able to do. And may not be able to afford getting a specialist to do either.

An Enterprise Development Actuary (ED Actuary) may well be the solution to this dilemma of getting the ideas into models, and the models into legitimate business plans.

By analogy, the techniques an actuary is skilled at, i.e. profitability and solvency, can be extended to the Enterprise Development sphere with ease.

The ED Actuary will fulfil the very same role a HAF does, but in the context of entrepreneurship. Basically put, the ED Actuary will be ensuring the risks inherent in the business plan are adequately provided for to prevent ultimate ruin.

In a country where unemployment is on the rise, yet we have some of the brightest minds creating innovative solutions to real African problems, it would be callous as an industry to look the other way or, dare I say, immigrate.

While this article is intended to highlight the obvious need and relevance of an ED Actuary, it is also a call for members who would like to volunteer to support this as a Practice Area.

Please drop an email to
yashoda@blissfulsolutions.org
CLICK HERE if this idea resonates with you.



Shaun Bennet

Shaun Bennet is an actuarial manager, heading up the analytics team at QED Actuaries and Consultants, and Bradley Smith is Head of Product: Customerger.



Bradley Smith

Using Data Science to deliver a Single View of Customer

- Shaun Bennet and Bradley Smith

Realising a single view of a customer is a central pillar in creating customer-centric organisations. It is also a strong foundation off of which to grow an organisation through a deep understanding of its customer base, facilitating better strategic discussions and enabling mass personalisation in sales and customer service. Achieving this goal has been an incredibly challenging task for most organisations; in some instances, the task has been abandoned completely, while in others it has been localised to business units that are small enough for this task to be manageable but not necessarily effective.

Having fragmented data in an organisation that cannot be merged is the biggest hurdle that any organisation must overcome before it is able to efficiently leverage its data to improve customer experience and increase competitive advantage.

Across all industries, there has been increased interest in using data science techniques and machine learning algorithms in the business processes of organisations. This can potentially create a strong platform on which to develop a process that can deliver a merged data record across an entire organisation.

In this article, we describe some of the challenges that organisations face when trying to manage and view data in a holistic manner, the target state that most organisations are trying to achieve and how the data science toolkit can allow organisations to overcome these challenges and unlock the full potential value of their data.

THE PERFECT DATA WAREHOUSE AND THE DATA MERGING CHALLENGE

A CIO of a large insurer once explained that across the group he had hundreds of applications that were being managed or developed across various entities, at various stages in the value chain. All these applications had differences in the underlying data, IT structures and dependencies. The problem that needed to be solved was how to generate value and an understanding of the data from all of the applications while the list of projects was constantly changing or expanding through additional applications or enhancements to current applications. The desires to replace legacy systems, migrate and merge data and update or upgrade the IT infrastructure needed to be balanced. This experience highlights the significant challenge faced by organisations in creating a unified view of its data or the ever elusive perfect data warehouse. It would be akin to trying to rebuild a ship while still at sea when what most organisations would want to do is stop and rebuild a new ship from the ground up that will meet the current requirements. In the fast-paced modern world, stopping is not possible and maintaining momentum is important.

Established organisations face a number of challenges when trying to build this solution. Many organisations have legacy systems or data sets that have not been fully migrated or are attained through an external source such as intermediaries. These legacy and external systems or spreadsheets typically have no or poor data validation that lead to incomplete and inaccurate data. Company mergers and acquisitions result in additional datasets that do not conform to the current data structures of the organisation and new products or markets result in new datasets that need to be managed. This poses a significant IT hurdle and risk that needs to be overcome. Many organisations try to manage this through custom data extracts or data dumps that are separately manipulated to create a snapshot view but the time required to generate these views often result in a record that is stale before decisions can be made and actioned. An embedded solution that is live or near-live and highly automated is required to overcome this hurdle.

Every executive knows the pain of a failed IT project, often these projects require large financial investments, significant personnel resources and take a number of years to develop and implement. The additional challenge of IT jargon and the significant complexity around these tasks often result in a lack of transparency and separation between the technical and business functions within an organisation.

DESIRED TARGET STATE

Competitive advantage is hard to sustain as the practices that give current market leaders their advantages are quickly adopted by competitors. A deep understanding of an organisation's customer base can tilt this equation slightly. If an organisation can generate value for its customers that is specific to their base and structure this becomes much harder to replicate. This is a key consideration in generating value from a unified dataset.

A view of the merged data across an organisation must be managed on an ongoing basis where changes to the underlying data structures and sources do not impair the ability of decision makers to understand the current environment and context in order to make business decisions that are immediately relevant.

This view must be robust enough to adopt new technologies and change as new data best practice evolves and regulatory changes are affected. This ongoing maintenance of data should not hinder the merging of data or the ability to generate business insights at a higher level.

The data science toolkit allows us to create this state through abstracting the process of merging data to a higher level where the changing data environment can be easily adapted to on an ongoing basis.

Good customer experience can have a significant knock-on impact for the rest of the business. This could be through increased revenue, improved customer retention or an empowered brand through positive social media exposure.

Amazon has demonstrated that there is significant value contained in the data that people generate and are willing to share with organisations. Amazon briefly reached a market capitalisation of $1 trillion during 2018. With 100 million Amazon Prime users globally, each user receives a tailored shopping experience that assists them in finding what they are looking for across more than 12 million products. This ability to tailor the user experience through effectively managing a holistic view of each customer is a significant contributor to the success of the company.

THE DATA SCIENCE TOOLKIT USED ON CUSTOMER DATA

If all the records in a set of data sources have perfectly unique datasets, then the problem of forming a single view of a customer is a trivial one as one can use efficient indexing algorithms in databases to match a record using its unique identifier to corresponding records in other databases that have the same identifier. For example, South African citizens have a unique national ID number that has a checksum built into it which can be used to validate the ID number at the point of capture. If all records are captured with their ID number and these are validated at the point of capture to prevent errors the problem is easily solved. However, this rarely represents the reality of most organisations where data may often be captured at worst on paper then digitally converted or at best captured digitally directly but without validations. At this point, the computational complexity becomes, in computer science parlance, exponentially complex. If one has N records on average per data source across K data sources, every record in a data source must be compared to every other record in every other data source giving rise to approximately Nkoperations. For example, if we have 1,000,000 customers spread across 10 different databases (e.g. different product databases, CRMs, billing systems, quoting systems, etc) then we need to perform 1050 operations. Given that there are approximately 1080 atoms in the known universe, you can understand how intractable this problem is. How do we use data science to address this problem?

Firstly, we typically have customers' names, even if they are misspelt and have additional or missing names. Using machine learning algorithms we can "embed" a representation of the customers' names into a high dimensional numeric space and use distance metrics to find names that are in close proximity to those names. Using sophisticated algorithms, this can be done in a time and memory efficient manner. This gives us a candidate set of names to consider when matching against each other.

We can then take the candidate matches and compare facets of each record, such as the similarity of details that we have about them such as addresses and phone numbers, even where there may be errors in these, to create features for a machine learning classification model that determines whether candidate matching records, in fact, represent the same customer. Machine learning algorithms such as random forests and XGBoost work well on mid-sized datasets, while neural networks of various types can work well on larger data. AutoML can also be used to good effect.



Using graph algorithms, which are used extensively within social network sites to analyse dynamics within networks of people, can then be used to connect all the candidate matches and isolate customer segments as separate customers. This can be automated for the vast majority of customers and for the remaining customer groupings in which we have low confidence people can help validate the groupings, rounding off the machine intelligence with some good ol' fashioned human intelligence. This is then fed back into the system to enhance the machine learning going forward. Linking of new customer records that come into the system can then be done on an incremental basis.

This results in a process that can run on a continuous automated basis with very few records requiring manual intervention. The dataset can then be constantly updated through an embedded process that gives decision makers access to a merged data record at all times in order to make decisions.

Once we have connected customer records across all the systems, we can then fit further machine learning models to learn which data fields are likely to be the most correct, thereby enriching our view of customers.

BRINGING IT ALL TOGETHER

Generating value from an organisation's data requires a robust solution that can operate across the entire landscape of an organisation. Historically the focus has been on building a data warehouse that can store all this information but the ever-changing IT and data environment has resulted in data warehouse projects that are never complete.

In order to achieve this goal, we can abstract the data merging process to a higher level that can overcome these hurdles. Using data science tools we can automatically generate the business insights that are required to meet customer needs incorporating all available data across the organisation.

These tools can be automated and embedded within an organisation to provide regular and continuous value even as the underlying environment changes. It creates a business function that bridges the gap between business decisions and IT management and development, providing a process that can operate with infrequent updates and revisions.

By embedding solutions like these to obtain a single view on all customers, an organisation can increase its competitive advantage, improve efficiencies and ultimately deliver significant value — to both customers and shareholders.

SNAP SHOT

Michael Tichareva:
Banking Actuary



In 2009, Council appointed task teams to look into the establishment of committees to support members of the Society in a number of then-emerging practice areas. Michael Tichareva chaired the working group on a banking practice area committee. He became the first Chair of the Banking Committee, and led the task team that developed the Banking Fellowship course. He found the time to serve on Council and chair the Education Board as well. He was appointed as first Chair of the IAA Banking Working Group, and currently still serves in this position. And when the IAA Council and committees met in Cape Town in 2016, the IAA staff asked him to teach them some of his dance floor moves …

SA Actuary: Where did it all start? What attracted you to the actuarial profession?

Michael Tichareva: When I finished high school in 1994 in Harare (25 years ago!), I had no idea about actuarial science and the actuarial profession. I consider myself lucky, as actuarial science was introduced at my University when I was going into second year. I had never heard of it. I was a Finance student in the first year as I had always wanted to be a banker. I was the best student in that first year Finance class and I applied and was accepted into the Actuarial Science programme in the second year. I just liked the challenge of the course from what I had heard about it when it was being introduced, but I did not necessarily like the math behind it. The main lecturer was a brother from my neighbourhood, Dr. Chessman Wekwete, who lived 500 meters from my home, so it was somewhat easy to settle into the course. Most significant is that I did my one year industrial attachment at Old Mutual Harare during my third year, but against my wishes, as I thought I was inadequate to mingle with those top brains at Old Mutual. I was just placed there and sooner I realised that I was wrong about my

perceptions as this was actually the best thing to have happened to me. This placement gave me significant exposure to practical actuarial work and I liked it. I knew straight away that I was going to be an actuary. I learnt a great deal from a number of senior actuarial colleagues at the time whom I still work with and consult even today. That's how it all started and the rest is history.

SAA: Did you encounter any specific obstacles en route to qualification?

MT: Actuarial science is not straightforward. Everyone encounters problems in one way or another. It is a difficult course and I found myself at the deep end initially, and at some point in my second year I was the worst student in class. But I am one person who has always said that once you like it, actuarial exams become a way of life and obstacles are naturally removed. Obstacles are usually about your state of mind. It's psychological. So, I cannot really say I struggled as I ended up being the best student in that second year actuarial class too, from being the worst. After University, I must say I played hard and worked hard until I qualified, and it worked for me. It was a lifestyle.

SAA: Give us a summary of your career path thus far, please.

MT: I graduated with a BCom (Hons) in Actuarial Science Degree at the National University of Science and Technology in Bulawayo, Zimbabwe, in 1999. I then worked for Old Mutual Zimbabwe where actuaries like Paul la Cock and Andrew Gladwin, who had taught me at university, were an inspiration. There were also senior actuarial students, most of whom are now actuaries and/or senior executives, like Clement Chinaka, Douglas Hoto, Taurai Chinowona, Livingstone Magorimbo, Loveday Madzika and Reuben Java who guided me during my early learnings at Old Mutual Zimbabwe. I practised both pensions and life before moving to a purely pensions role at Metropolitan in Cape Town. I later qualified as a pensions actuary in the UK at the then Hewitt Bacon & Woodrow (now Aon, following a series of mergers) in 2004 before coming to Alexander Forbes in Johannesburg at the beginning of 2005 after being recruited by another actuary, Tinashe Mashoko. I then moved to Old Mutual Corporate in the same year (2005) where my role was expanded from being purely employee benefits actuary to being a key accounts manager looking after the Old Mutual Group's key clients across all product ranges.

It is in that role that I encountered banking-related work as I worked closely with teams at Old Mutual Specialised Finance and Nedbank to service the Old Mutual Group's key clients in the mining, energy and utilities industries. I realised how the actuarial skills set was highly useful in analysing and understanding deep client needs and then proposing structured solutions and solving problems in their businesses. I realised that most of the issues that financial directors grappled with were related to capital management, funding and liquidity risk management. These were balance sheet issues. I started an MBA with Wits Business School in 2007 that I believe helped bridge the gap in understanding some of the business issues that clients were trying to solve. It is at that time that I also started looking for roles in banking, but I struggled. I went to all big five banks, but they would not employ me as I was expensive and I did not have banking experience. They did not recognise my actuarial qualifications for the roles I was applying for. I eventually had a breakthrough with Nedbank in 2008 through a cross-functional team that I was working with on a transaction for a major client. We clicked with that team and I motivated for lateral transfer within the group. It was approved and I moved to Nedbank Corporate Property Finance as a Senior Relationship Manager originating transactions for the bank and managing risk as the bank's first line of defence.

That is how my banking career started as an actuary. I never looked back since then. I learnt a great deal during this career path as I also worked to find myself as a person. I would ask the question who exactly is Michael Tichareva and what are his real interests. It is a difficult question to answer so one has to continue exploring and taking many cognitive courses, participating in teams and solving problems within teams and watching how you behave. In addition, I learnt that apart from my purely technical skills, soft skills such as proactiveness, communication and developing strong networks and turning those into beneficial use are key in achieving any success sustainably.

SAA: What is your current position, and what are your main responsibilities?

MT: I am currently Managing Director and Principal for National Standard Finance Africa, a small entrepreneurial outfit under the National Standard Group that we started in 2014, with strong roots in the United States. We specialise in funding and credit enhancement advisory work, mainly within the infrastructure and real estate finance space, as well as spearheading developmental finance through insurance-backed funding solutions. This company is in the building stage to fully realise its potential in Africa. In addition, I am also an independent actuary undertaking mainly banking and finance-related assignments on an ad hoc basis. So, I consider myself a practising banking actuary as more than 80% of my work is banking-related, with strong networks in the banking industry.

SAA: How does your actuarial training help you in your current job?

MT: Being an actuary has always helped me in many ways. I work with many professionals from different backgrounds and I find that being an actuary comes with respect from those other professionals where they recognise the qualification. I work with teams across borders in the USA, Europe, Middle East, parts of Asia, Australia and most of Africa. Being an actuary gives you an entry point into many environments. Most importantly, I believe that the risk management training and problem-solving skills instilled through the actuarial training are superior and cannot easily be matched by many professionals. Of course, one has to have other innate skills and also constantly upgrade their skills and knowledge as part of CPD to remain relevant, but being an actuary already places you ahead of the pack. As an example, one of the solutions we develop is credit enhancement in the commercial funding space that combines insurance and banking solutions. Having ventured into banking, but with a strong commercial insurance risk management background through actuarial training, I found it quite intuitive when developing structured solutions that most of my colleagues could not easily visualise from first principles. The main challenge was always that bankers could not fully understand the insurance side and insurance people could not fully understand the banking side. There is a lot of work to do to bridge this gap and open up completely new solutions to solving some of the funding challenges that the world faces especially in developmental finance. The actuarial skills set is better placed to spearhead development of such innovative solutions.

SAA: How did you become involved in all this banking activity? What drew you towards it?

MT: Banking work is intuitive for many actuaries. We are a natural fit into banking. When I walked into banking practice in 2008, it was not because of my actuarial skills, but the first thing I then did was to match what bankers were doing with the actuarial skills set. The close matching was so obvious that I could not ignore it. I had started engaging ASSA way back in 2008 with a view to developing banking and finance practice for actuaries. I had no clue what it would look like. This was way before I had even moved from an insurance company to a bank, so I can say I was clueless, but I just had a good feeling about it from the little I knew. When in 2009 a decision was taken to establish a number of task forces to look into the wider fields, given ASSA's strategic direction at the time, a Banking and Finance task force was one of them. I was appointed the Chair of that task force due to my earlier engagement with ASSA, as I was somehow a pain to the then CEO on the issue, and I had even prepared a template terms of reference for a typical banking and finance committee. I was surprised to find that there were a lot of other actuaries in banking practice who had great interest and who joined

the task force. They were mainly young actuaries who felt they were not well catered for by the profession. We researched and came up with a recommendation to establish a Banking Committee. In 2010, a Banking Committee was born and I was appointed its first Chair. A number of senior actuaries who were already in banking practice at the time, like Pravin Burra and the late Garth Griffin, greatly supported this new committee. The rest is history!

SAA: As Chair of the IAA's Banking Working Group, you interact with actuaries from various countries. Do you have an indication of what others think of the South African actuary? Are FASSAs part of the herd, slightly in front, lagging behind, or what?

MT: South African actuaries are viewed in highest regard. ASSA is certainly punching above its weight at the IAA. We have a number of actuaries in key positions such as Chairs and Deputy Chairs of a number of influential IAA committees. In banking, we are leading the world and this has even improved ASSA's image and visibility. We are on the map of innovators within the world actuarial profession. We are a reference point when it comes to how actuaries have succeeded in developing banking practice. We are role models and our work over the past 10 years is being used as reference work around the world.

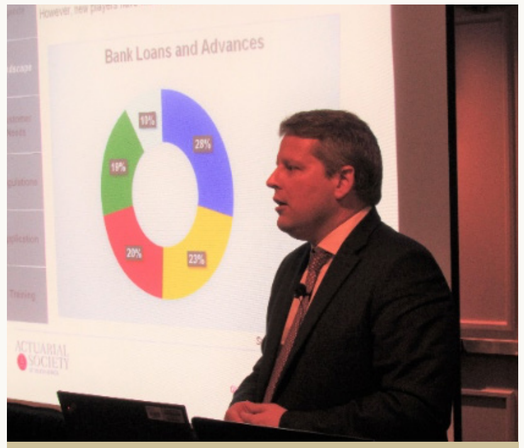
SAA: What do you think the future holds for the profession in South Africa?

MT: The actuarial profession in South Africa is in great hands with consistent strategy and smooth leadership changes over the past 10 or more years. The future is bright and as we forge ahead with transformation conversations to promote diversity, I believe the profession will truly represent the demographics of the country in years to come. We also need to continue promoting development of new areas of actuarial practice for actuaries so that we create opportunities for our young actuaries. We need a deliberate strategy to showcase our skills to different industries beyond areas of traditional practice. The future of the profession is always in the hands of current members as our activities today define the future.

There is great need for targeted developmental finance to address the structural socio-economic issues South Africa and the rest of the Africa continent faces. I believe that actuaries, especially those in commercial insurance and banking, have a great role to play.

SAA: And for Michael Tichareva personally, in the short term? Any plans you can share with us?

MT: I cannot be short term, because I am an actuary. My plans are to remain relevant within both the industry and the profession in the short, medium and long term. For that, I need to constantly innovate and remain proactive. It is difficult to do this and stay motivated in the face of adversity, but one has to deal with the psychology involved. I will continue contributing to the profession in various capacities, which may include going for ASSA Presidency in some future period. My long-term dream though is that, before I turn 75, I hope to run an Investment Bank for Entrepreneurial Development as an actuary and I hope I will be the founder and it must be staffed mainly with actuaries. There is great need for targeted developmental finance to address the structural socio-economic issues South Africa and the rest of the Africa continent faces. I believe that actuaries, especially those in commercial insurance and banking, have a great role to play. I am giving myself a long time horizon because I am an actuary! It's just a dream, but I strongly believe that the world is shaped by entrepreneurs, i.e. those who think outside the box and are prepared to take risks and manage them for success by turning them into opportunities! Where there is risk, there is opportunity! We manage risk to create opportunities!



Rolf van den Heever was one of the organisers of the first ever short term insurance seminar hosted by the Actuarial Society (1998). He was the first winner of the Swiss Re Prize (for Risk-adjusted Capital in a General Insurance Environment). He obtained the highest rating from attendees at the first ever international banking seminar for actuaries, hosted by the Actuarial Society in Chicago in 2017 (picture above). And he was the first principal examiner for the Banking Fellowship, a position from which he is stepping down.

SIDEVIEW:

ROLF VAN DEN HEEVER,

Principal Examiner: Banking Fellowship

SA Actuary: Please bring us into the picture quickly; what is your current position, and what are your main responsibilities?

Rolf van den Heever: I am currently in the Absa Group's Treasury team. My responsibilities include raising long-term funding and capital and executing balance sheet optimisation trades for the Group. As a result, my team and I have a frequent engagement with investors, banks and development finance institutions.

SAA: How did you become involved in the banking industry?

Rolf van den Heever: I moved to London in 2002 to join the actuarial consulting arm of Deloitte. While working on liability valuations for Lloyd's of London syndicates, the consulting arm of Deloitte asked for help on quantifying and modelling credit and operational risk. I realised that, even though these risks were very different from the insurance risks I had been exposed to, the techniques we used in the reinsurance industry were directly applicable to the questions our clients were asking. For example, I was able to apply model calibration techniques and collective risk models familiar to actuaries to these questions. This coincided with the introduction of Basel II and as a result there were more opportunities than people to meet the demand. I have been in the banking industry ever since.

SAA: Can you single out one skill or technique you have learnt as an actuary that has been serving you very well in your job?

Rolf van den Heever: Not really. Early in my career I found this an easy question as I could point to the actuarial control cycle or modelling techniques or business application and other actuarial skills. However, even though all actuaries have exposure to these skills, other professionals also have similar skills.

As a consequence, I believe the actuarial skills set provides an excellent foundation, but continuing professional development is ultimately required to serve me in my career.

SAA: How did you become involved in the work of the Actuarial Society's Banking Committee and Fellowship development team?

Rolf van den Heever: I was initially serving on the Enterprise Risk Committee and was then asked to join the Banking Committee. Given the development of actuarial skills in the banking industry by individuals with a similar career path to my own, it became apparent that an actuarial Fellowship could fill a key need for the industry. Garth Griffin was chairman of Absa at the time, Michael Tichareva was at Nedbank and Pravin Burra was a consultant at Deloitte. We all had a vested interest in the success of the profession in the industry. Regrettably, Garth passed a few years later; his absence has left a large gap.

SAA: The first Banking Fellowship was sat in October 2016, but none of the candidates passed. How did you feel at the time?

Rolf van den Heever: I felt very similar to when I sat the exams. I vividly recalled my own exam failures. To make matters worse, with no successful candidates, the case for actuarial Fellowship in banking looked bleak. The examiners and I were devastated when we could not find a deserving candidate. We had invested an enormous amount of time and energy in the Fellowship material and the exam paper. To rectify the situation, we held additional training sessions on the paper to explain the standard we were looking for. Since then we have seen an improvement to the extent that pass rates are broadly in line with the other subjects. However, the Banking Fellowship should never be perceived as an easier alternative to qualification, irrespective of market demand.

SAA: Do you see banking as a permanent growth area for actuarial involvement or is this perhaps a phase the industry is going through, maybe in response to one or two incidents?

Rolf van den Heever: Yes, the banking industry is a permanent growth area for the skills that actuaries can provide, including pricing, provisioning, risk management and capital management. I can only see this increasing. For example, events such as the introduction of Basel III and IFRS9 have fundamentally changed the need for actuarial skills. However, the profession often develops to a level of role reservation where only a qualified actuary is deemed fit and proper to discharge the task in question. I cannot see this in the banking industry for the foreseeable future as there are still too few actuaries.

SAA: Any advice you would like to give to any student or actuary who is considering going into banking?

Rolf van den Heever: The industries that actuaries serve are very diverse. Banking is no different, with different stakeholders, roles in the economy, size of balance sheets, key risks, etc. Actuaries are very familiar with trading risk and banks also trade money and capital so there are many opportunities to combine these. So, from an advice perspective, I would suggest speaking to as many bankers as possible and seek to understand rather than to be understood.

SAA: Finally, are there any developments or plans regarding your own career you would like to share with us?

Rolf van den Heever: Yes, I would like to congratulate Dawie Spangenberg for taking over the role of principal examiner. I look forward to the team of examiners taking the Fellowship exam from strength to strength and shall support as and when required. I would also like to thank Alastair Bye and Antonie Jagga for all their hard work as examiners since 2015. They, together with the scrutineers and guinea pigs, are the heroes who ensure that F206 is and remains a success.



The ASSA Alternative Investments Forum presents... AN ALTERNATIVE

- Peru Govindasamy

Following a period of subdued local and international returns from traditional equity and property asset classes, particularly on a risk-adjusted basis, investors have been searching for alternatives.

Depending on the end client/investor, these have largely come in the form of:

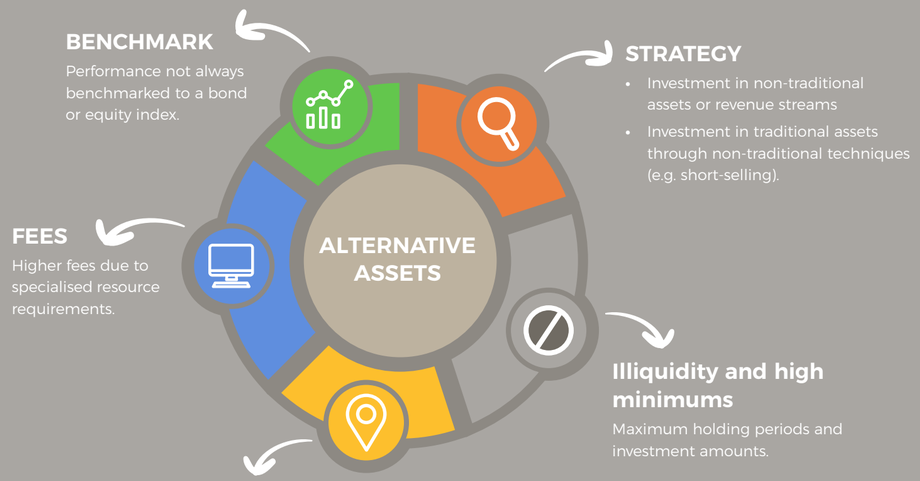
- S12J investments in venture capital and start-up companies with the benefit of a once-off tax deduction;
- Hedge fund investments that target low correlations to traditional asset classes;
- Investment into traditional private equity funds or investment vehicles; and
- Infrastructure investment into, inter alia, IPP projects.

The Alternative Investments Forum of ASSA is mandated to expand the reach of the actuarial profession into the realm of the alternative investments practice area. We have a specific focus on three core asset classes (which constitute much of the local alternative investment space):

- Hedge funds, with a look across the various fund strategies (including traditional equity long-short, broader relative value and multi-strategy fund types);
- Private equity, including venture capital, S12J vehicles and broader SMME investment; and
- Infrastructure investments.



The graphic below summarises some of the standout characteristics that alternative investments boast.



The illiquidity premium offered by some of the unlisted alternative investments is an attractive feature which is well suited for retirement funds with longer dated liabilities, for example.

ALTERNATIVE INVESTMENTS FOR YOUR PENSION SAVINGS

Retirement liabilities are typically characterised by their need to protect capital and be inflation-proof or inflation-beating. In 2011, the Pension Funds Act increased the overall threshold for investment into alternative assets from 2.5% to 15%.

Globally, research suggests that alternative investments, suitably selected, are a source of alpha/outperformance in portfolios backing long-term flows [*Looking for Alternatives: Pension Investments around the World, 2008 to 2017*. Local experience has however pointed out some of the bugbears facing fund trustees and investment officers:

- **A lack of understanding**

Given that the asset classes are relatively new, or at least non-traditional, and thus carry with them characteristics that are not well-known in the market, general investment market players and decision makers simply don't understand them, and as a result are likely to label them as risky and avoid them.

- **Difficulties in selecting the right jockey to back**

In the private equity or infrastructure space, for example, superior returns are driven by savvy managers picking the right underlying companies and investments, ultimately creating shareholder value. It is often difficult to distinguish between value created by selecting the optimal target firm, and the organic value created from within the firm, for example. Investors risk choosing inferior managers, and due diligence is that much more important. It can easily be said that this is a general problem in asset management (i.e. selecting the best fund managers), however the issue can be more acute in the alternative assets space.

- **Potential asymmetric returns**

Particularly in infrastructure, depending on whether investment is done through a debt or equity structure, risk-return relationships can be asymmetrical. Some alternative investments such as IPP infrastructure projects may have a capped upside (e.g. finite projected revenue from a power plant), however equity structures expose investors to unlimited downside (e.g. through cost-overrun spirals, or simply project default).

- **Absence of a market player to absorb first tranche losses**

While most private sector retirement funding in South Africa is on a defined contribution basis, investors nonetheless have return and risk expectations. Significant deviations from expectations can cause liquidity runs as investors switch portfolios. Having a centralised fund (driven by government, for example) to absorb first tranche losses in institutional venture capital or SMME investing can create better risk-adjusted return profiles for retirement funds, thereby limiting company default or failure risk.

- **Inadequate business management skills**

"Entrepreneurship is not a band-aid for poverty, unemployment and poor education".

Following from above, returns in the venture capital and SMME space are inevitably driven by the innovators and managers at the helm of the business. In South Africa, with low levels of skill in entrepreneurship and business/financial literacy, investors need to do due diligence not only on the business model but on the ability of the key individuals in the business to put the model into practice to create sustainable and scalable bottom-line profit.

- **Size matters**

Project modelling, legalities and other due diligence processes are onerous in the alternative investments space. This means that investment has been dominated by the larger pension funds. An increased focus on pooling separate retirement funds, through asset consultants and fund managers who take on most of the due diligence work, and Public-Private Partnerships (PPPs) could serve as an entry point or alleviate some of the stumbling blocks.

Infrastructure investments have been responsible for a significant portion of the push for retirement funds' alternative investments allocations, and are expanded on below.

INFRASTRUCTURE AS AN ALTERNATIVE INVESTMENT

Infrastructure investments are usually long-term inflation-linked investments, but may present capped upside returns with potentially unlimited downside risk. They can be pre-revenue for many years (e.g. solar power plants). Given this, investment officers aim to keep three core considerations in mind:



An investment is not a donation

Investors expect to see a return on their invested capital and, in some cases, expect protection of capital over meaningful periods.

Governance & Transformation

Given the multi-year nature of the investments, investors need a trust relationship with the protected owners and managers. Reputational risk is not only limited to the latter – the investor's investments are usually also public knowledge. Alignment with investors strategy is also crucial. This includes meeting minimum BEE thresholds and consistent CSI cultures.

The J-curve

While the internal rate of return on investments is low during the initial years, it is likely to increase with stability, profability and revenue-generating capability over time. Capped upside means that incorrect valuations during early years cannot be recouped later.

Notwithstanding issues like potentially capped upside, and a moral obligation for the greater good, local investors have been attracted by good risk-adjusted returns due to sovereign guarantees on SOE projects in this space (e.g. power stations). Force majeure clauses are applicable under a wider range of scenarios than in a typical traditional equity deal. In the absence of sovereign guarantees, investors would seek higher margins.

These margins are under pressure, though, due to increased demand – while banks typically only funded at a debt-level, they have now started offering funding on a non-recourse basis in equity rounds. This has created a favourable environment for projects outside of the traditional SOE space.

The local market has not boasted a material opportunity set beyond renewable energy investments however there has been increasing attention towards:

- Telecommunication projects which have a real asset profile, long-dated cashflows (similar to renewal energy projects) and a history of cashflows from past projects to use in modelling;
- Low-cost housing projects, especially when backed by industrial and resource players (e.g. mining companies);
- Commercial real estate and toll road projects in Africa as cities become more developed; and
- Public-Private Partnerships, including water reticulation projects locally – these have commonly been explicitly underwritten by the sovereign.

With an increased exposure to Africa ex-SA now permitted under Regulation 28, funds can also participate in projects like those listed above in developing regions on the continent, potentially at higher margins.

Following our panel discussions on alternative investments and retirement funds in our 2017, 2018 and 2019 sessionals, the Forum is engaging further with industry players and the broader







society around the alternative investments space. This includes training of pension fund trustees and research undertaken on behalf of the broader industry and society. We will also be hosting our inaugural alternative investments seminar towards the end of August / beginning of September — look out for the invite!

For more information on the forum or to find out how you can get involved, please get in touch with Peru Govindasamy, the forum secretary, at **govindasamyperu@gmail.com**.

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FEATURE ON MEMBERS ABROAD

The Actuarial Society, due to the history of South Africa, has its roots in the United Kingdom. When the Society was established in 1948, there were 42 people with actuarial qualifications in the country. All but one, who held a German qualification, were members of either the Institute or Faculty of Actuaries. There was some discussion on the appropriateness of calling the organisation "the Actuarial Society of Southern Africa", but it was eventually agreed to use "South Africa", while membership would be open to citizens and residents of other countries.

At present, some 300 members of the Society live and work abroad. Some of them share their experience in this mini-feature.

1 Loudina Erasmus *(The Netherlands)*
2 Shivash Bagaloo *(Dubai)*
3 Andrea Barry *(England)*
4 Trevor Brinkman *(New York)*
5 Atang Matebesi *(Boston)*
6 Nadine Brooks *(Sydney via London)*

1. LOUDINA ERASMUS

What made me go?

I was attracted by the old-world charm of Europe since a young age. I wanted to experience living here and I really enjoy travelling and seeing new places – Europe has not disappointed. I chose the Netherlands for 3 main reasons: Sustainable lifestyle, the language is relatively easy to learn from Afrikaans and connectivity to the rest of Europe and South Africa (daily direct flights to Cape Town). Switzerland was also a serious consideration.



How I prepared?

As actuaries we're really lucky that our qualification is transferrable – so after securing interviews, preparation was mainly focused on finding a place to rent, moving a household and changing plugs on appliances.

How I adjusted, the challenges, the surprises, advantages/disadvantages?

Culture shock is real. And it has many, many layers. It took several months to settle and make real connection with people. The examples are endless and quite funny. Corporate culture was also hard to get used to. In the Netherlands they have a "polder" model for decision-making. Decision-making is different — problems get discussed in great detail and eventually a middle ground which is not entirely satisfying for anyone is reached. This is quite time-consuming, but in the end the decision has buy in from everyone and generally gets implemented well. Overall, the European mindset seems open – but once you get into discussions, you realise there are some particular rules of open-mindedness to abide by.

I hope to gain experience – in life and professionally **which I can take back to South Africa at some point in the future**

In terms of lifestyle it's quite different from South Africa. I cycle to work (in heels) and work from home standard one day a week. I also cycle to the shop, the dentist, the doctor, the beach … cycling is popular in the Netherlands.

The things that make it hard only sink in after a year or two – bumping into people you know and have a history with, and a baking hot dry summer's day.

Why I decided to retain my ASSA membership?

I hope to gain experience – in life and professionally which I can take back to South Africa at some point in the future.

2. SHIVASH BAGALOO



As with all change, these are not easy at first, particularly on the mind. Expanding the comfort zone to accommodate the uncommon is a journey in itself, though one I would recommend taking. Foreign languages, strange customs, confusion at airports and an eventual recognition of what makes us all similar are sites along this journey that after a while one becomes part of for others. I could have guessed most of the advantages and disadvantages of this road before I took it, except for one: Time really flies and when you return home, you are surprised by how much of it has passed.

I remember leaving SA to work abroad almost 10 years ago. It seems strange saying that.

I remember the apprehension at first. An uncertainty of going to a country I had not been to and working in an industry that was foreign. The hope of adventure, new experiences and a steep learning curve was, however, more than strong enough to convince me to take the chance. I haven't looked back.

Working abroad as a South African within the actuarial profession, specifically consultancy, brings a world of change. My previous experiences in consultancies within South Africa were by no means dull though I am convinced these provided a platform for me to grow outside of my country of birth. The Middle East, where I am based, sees a steady growth in demand for suitably qualified actuaries and South Africans, I am proud to say, can boast a good reputation. Regulation continues to develop at different speeds across the Gulf nations and opportunities to get involved across the field of actuarial influence are present. I am indeed proud to have been part of the group that founded the Gulf Actuarial Society and will always be committed to furthering the profession wherever I am based.

… over and above your rational research of the specific market and companies you may be considering, be aware **of how much potential there is for the actuarial path to branch off into unchartered areas that use our skill sets in unconventional ways.**

I am eternally grateful to those who supported my growth in South Africa and helped me make the decision to move abroad. They have indeed given me the guidance to move in a direction that, whilst uncommon, was responsible for me learning more than I expected.

There are perhaps many budding and qualified actuaries contemplating working outside South Africa who may be faced with the same apprehension. I would advise that, over and above your rational research of the specific market and companies you may be considering, be aware of how much potential there is for the actuarial path to branch off into unchartered areas that use our skill sets in unconventional ways. This, combined with the passion to explore, makes for a journey you are unlikely to regret.

3. ANDREA BARRY

Ever since I first met my husband, Simon, I knew that he wanted to gain medical research experience in the UK, so moving to London was a step we were set to make. When reflecting on how I could benefit most from a few years spent overseas, I felt the timing opportune to gain an MBA. I had already made the shift from a conventional actuarial career onto a management oriented path, and felt that an MBA would be invaluable in broadening my scope of knowledge and developing my leadership skills.

London Business School was the obvious fit, although the feeling to take on the improbable challenge of applying to Harvard Business School (HBS), in addition, could not be quashed. The most inspiring actuarial leader I had encountered in my early career had done the Harvard AMP programme so, in my mind, in great leadership and Harvard became synonymous. To my and Simon's shock, I was admitted to HBS which threw our London plans on their head! Thankfully, Simon is an extremely supportive partner who was willing to flex his plans around circumstance – he felt that I would ultimately harbour great regrets if I did not take up the chance to go to Harvard.

The difficult decision was then taken that I would move to Boston for my first year of classes, and Simon would move to London to begin his integration into the medical system there. In my second year, Simon was accepted to do a Master's in Public Health at Harvard, with a focus on quantitative methods – critical knowledge for a research career. We ultimately moved to London two years later than we had intended, but each with a Master's degree that we were thrilled to have gained and both on a far stronger footing than we could have planned for when arriving in the Big Smog together. We are both very aware of the serendipitous nature of life and the opportunities that materialise when one is flexible and open to embracing uncertainty.



Settling into London has been delightful, but not without its challenges. Exploring London as a professional couple is a wonderful experience, but setting up for maximum enjoyment takes effort and intent. London is a sprawling city and identifying the right area to live in relative to your professional and social epicentres is critical. We chose to have a smaller flat in a more central area and decided against living in one of the areas typical for South African expats as we wanted more of a cosmopolitan experience. Socially, we are very lucky to have a lot of Harvard alumni not just in London but also close to where we live, so getting onto our feet in this regard was not as much of a hurdle as London can be known for.

However, things become more challenging once you transition to becoming a family. The difference in living standards is far more palpable in the context of finding a family home without having to move far out of London, adapting to a public healthcare system which, although the best in the world, does not offer the customised care during pregnancy that we are used to in South Africa, as well as the cost of childcare. On the upside, having UK citizenship will afford our children flexibility in a future that will be increasingly tough on immigration as the global population grows and resources diminish … although Brexit will limit the options here!

Ultimately, our plan is to return to Southern Africa where Simon and I feel that we can perform our most impactful work. In terms of pursuing careers infused with purpose, the opportunity to do so in both the business and medical spheres in Africa is clear. Whilst London finds itself overwhelmed by qualified professionals, the growth story of the future is taking root on the beautiful continent we know best. We cannot imagine anything more exciting than deepening our experience internationally and bringing these skills home to build the part of the world that nurtured us to start.

4. TREVOR BRINKMAN



I initially came to the United States (US) to complete a degree at the MIT business school in order to broaden my horizons and build upon my soft and technical skills. It was an amazing experience that allowed me to interact with remarkable academics, insightful industry professionals and fellow students from around the globe. Whilst finishing up my studies I came across an interesting opportunity at the Federal Reserve Bank of New York and was lucky to join one of their many exciting teams, where I still currently work.

Throughout this experience I have always missed my home, South Africa, along with my family, friends and former work colleagues there. Even though American culture permeates around the world through its media, entertainment and economic power, it still required some adjustment to live here. The general mindset of people I have encountered here is slightly more individualistic compared to back home, and the general tone of communication much more direct and less peppered with politeness compared to what I was used to back home. Furthermore, having to start building a network in a new country where you know very few people can be tiring and frustrating at times but usually is exciting and allows you to learn about yourself.

… maintaining the professional membership with ASSA allows me to stay up to date with general actuarial developments.

But without a doubt it has been a truly rewarding experience both professionally and personally and something I would recommend if you are looking to try something new and get out of your comfort zone.

During my studies in the US, and each day at work, I realise how the knowledge and skills learned through my actuarial training are world class and easily adaptable to many situations outside the traditional actuarial arena. Moreover, maintaining the professional membership with ASSA allows me to stay up to date with general actuarial developments, showcases I am professionally and ethically accountable and provides me the option to return to a traditional actuarial career back in South Africa or many other places globally.

5. ATANG MATEBESI



I chose to retain my ASSA membership as I was planning to return to South Africa post my studies. **Despite working in a non-traditional field, I still see value in the qualification, credibility and the network that ASSA provides me.**

I chose to pursue an MBA at Harvard Business School and I'm in the process of going back for my 2nd year. I chose the USA as it's a geography I don't usually get exposure to through work and spending time there would broaden my global network. Moreover, the MBA programme I was offered a place in is one of the best in the world and I couldn't pass up the opportunity!

Living in Boston was a huge adjustment from living in Johannesburg. Surprisingly, it wasn't the cold that got to me – I actually enjoyed that, to the extent that I'm now an avid snowboarder. As funny as it may sound, it was the lacklustre food, the academic nature of Boston and lack of daylight during winter that were tougher to adjust to. This was possibly compounded by my family and South African friends being 6-7hrs ahead of me on any given day.

However, what I truly enjoyed was exploring a different part of the world, meeting new and interesting people from all over the world in the melting pot that is Cambridge, making friends with people I probably would have never met and the opportunity to travel around the USA exploring the vast differences between cities and states. The African community in Boston is also very close, which made me, and other fellow students, feel very welcome and eased the transition.

It's hard to prepare for the adjustment but to have a positive outlook, look forward to the experience, stay connected with people from home and create a new social network in the new city. I'm a creature of habit and something that helped me adjust quickly was getting into a daily and weekly routine.

6. NADINE BROOKS

Eight years ago, I was presented with the opportunity to work and live in London. Being an energetic, adventurous and ambitious young actuary whose dream it was to explore the world and its people and to see as many musicals as possible, I decided to leave the comfort of home and my outstanding job for the unknown, yet very exciting hub of Europe.

London was all I dreamed it would be and more! I worked hard and progressed my career while still finding time to travel Europe and delight in London's theatre scene. However, one can't stay young, single and free forever. I was fortunate enough to meet my soul-mate a year into being in London and we decided to move to Sydney, Australia, a year later to join his family before starting a family of our own.

So how did I prepare for the move from London to Sydney?

My starting point was obtaining a visa that would enable me to work and live in Australia. We are very fortunate as actuaries because our skills set is in high demand and there were a number of ways that I could obtain a visa. We needed to come to Australia fairly quickly because my husband's visa was expiring, so I decided to go with the quickest route and find an employer who would sponsor me on a temporary working visa. I set out to make a number of Australian connections and was very fortunate to have a number of opportunities open to me. I accepted one of the offers that was aligned to my experience in life product development and included a relocation package. I commenced to work two weeks after we arrived in Sydney and during those initial two weeks, we found an apartment and set ourselves up in our new home.

What did I need to adjust to?

There were a number of adjustments, not least,





I believe that my actuarial education in South Africa and approach to problem-solving **has set me up incredibly well to work...**

the very strict road rules! And having to learn a new lingo — no more mielies, naartjies, robots or jerseys. From a career and work perspective, the major adjustments have been a generally different work culture. While people are very friendly, the South African warmth and hospitality is somewhat missing. I'd say that people are generally more conservative here, so it can be a little more challenging to innovate, but that is changing over time.

I've found it very valuable to remain an ASSA member as it allows me to keep abreast of what is happening in the South African market, especially given than some of my clients are based in South Africa

I believe that my actuarial education in South Africa and approach to problem-solving has set me up incredibly well to work here. There are also similarities — the Australian market is actually quite small, relatively speaking, and there are only a few big players in the life insurance space, just like in South Africa. The regulatory environments are also fairly similar.

What do I enjoy about living and working in Sydney?

People are generally lovely and very respectful in Sydney and it's a wonderful, multicultural society. I love the beauty, the beaches and the parks. It's a very privileged lifestyle. It's also a very family-oriented society, which is something that is important to me. I've enjoyed meeting actuaries from many different ethnic backgrounds as many come from Asian countries to study and work here.

What aspects of South Africa do I miss?

I miss South Africa a lot and it will always remain my home. Nowhere in the world are people as warm and welcoming. South Africans have the widest smiles, and the kindest hearts and we don't hold back for the sake of being professional. I've struggled a bit with the Aussie conservatism, but one gets used to it!

What are the advantages and disadvantages?

To be honest, I never intended to leave South Africa, but life took me in another direction and I feel very fortunate to be where I am today. As actuaries, we've worked hard to earn the privilege of having a highly regarded qualification that



enables us to work and use our unique skills set to make a difference anywhere in the world without having to do any conversion exams, other than the professionalism course. (Unless one is a chief actuary of an insurer.)

I've found it very beneficial and fulfilling to work in different cities and to gain exposure to different ways of working within various companies, economies and regulatory environments.

Today, I run my own business in consulting with flexible working hours so that I can be available for my family as a wife and a mother. I have clients all around the world and I enjoy using my actuarial and problem-solving skills to help meet my clients' diverse needs.

I've found it very valuable to remain an ASSA member as it allows me to keep abreast of what is happening in the South African market, especially given that some of my clients are based in South Africa. I believe that South African actuaries are very well respected for their hard-working and innovative culture, so maintaining my connection to ASSA has always benefited my career and business prospects. I'm also very proudly South African and it is one of the ways that I can maintain my connection with my home.

Anyone who is contemplating moving overseas is welcome to contact me via LinkedIn with any questions. I'd be happy to help out if I can.

INTERNATIONAL NEWS

ALL YOUR SOCIETY NEWS TODAY AND MORE

Washington Meetings

The Council and committees of the IAA met in Washington, D.C., from 15 to 19 May. Here are views from some of the South Africans who attended the meetings.

PRAVIN BURRA: The Banking Seminar, a joint venture between the Society of Actuaries, Casualty Actuarial Society, Canadian Institute of Actuaries and Actuarial Society of South Africa, was excellent. There were great speakers and excellent audience participation. CAS has established a working group under the chairmanship of Scott Hallworth. This will over time increase CAS participation and escalate the eminence of banking as a practice area.

PETER WITHEY: The Banking seminar was very successful, with better attendance than in Mexico City, but there still seem to be a lot of sceptics around whether actuaries can play a role. There is some progress on the restructure exercise; the compromise position seems to be getting some traction and there seems to be a desire to move on and get on with the work of the IAA.

MICHAEL TICHAREVA: I can report only from a Banking practice perspective. The meetings in Washington were a great success. We continue to make great progress in spreading the word on the practice of actuaries in banking globally. We are seeing a lot of progress from other member associations. ASSA continues to maintain the lead in this practice area and we continue to share our knowledge across the world.

Canadian Institute of Actuaries / Institut canadien des actuaires

CANADA'S ACTUARIES DISCUSS RETIREMENT AGE, CLIMATE CHANGE, BOARD ELECTIONS, AND MORE.

Supporting the needs of our members remains at the heart of what we do. However, the Canadian Institute of Actuaries (CIA) keeps busy in other areas as well, working to further the Institute, its mandate, and the profession.

KEEP READING FOR AN UPDATE ON SOME OF OUR RECENT ACTIVITIES.

Retire later for greater benefits: A CALL FOR DISCUSSION

In April 2019, the CIA released Retire Later for Greater Benefits: Updating today's retirement programs for tomorrow's retirement realities, an appeal to Canadians and government stakeholders to reflect on the need to update Canada's current retirement programmes.

Guided by expert research, the CIA's proposal asked Canadians to consider how retirement programmes can better reflect the reality of how long people are choosing to work and how we can become better prepared for retirement.

The response has been significant: "Countless comments from Canadians were generated on media websites and in newspapers," says John Dark, President of the CIA. "We exposed our ideas to a potential audience of 13 million, and have scheduled meetings with governments that want to keep the conversation going."

Actuaries Climate Index fall 2018 data released using improved methodology

Organisations representing the actuarial profession in Canada and the United States have applied an improved methodology to the Actuaries Climate Index (ACI), starting with newly released ACI data for fall 2018. The latest data continue to show an upward trend in the key five-year moving average ACI metric. The new methodology was applied with this release to ensure a high standard of scientific rigour going forward in measuring how climate extremes and sea levels are changing.

2019 CIA ELECTIONS

We are pleased to announce the appointment of five new members to our Board:

- Michel St-Germain, President-Elect
- Claude Ferguson, Director
- Jenny Ge, Director
- Sati MacLean, Director
- Claire Bilodeau, Director

In July 2019, these new members will join returning members on the Board. We are excited for the expertise each member brings with them and we look forward to the collaborative opportunity to develop the profession even further.

CIA's Annual Conference, act19 **June 20–21, 2019**

Our annual conference, act19, takes place on June 20–21, 2019, in Montréal, Canada. Formerly the CIA annual meeting, this year it has undergone a rebranding not only in name but programme, format, and feel – promising greater opportunities for networking and professional development, and sessions that challenge perception and inspire debate.

A major area of focus will be sessions dedicated to IFRS 17, the impact of digital disruption on industry, and practice-wide solutions to improve business.

Follow us on Twitter and LinkedIn for highlights from the event.

International Association of Consulting Actuaries: MAX LANDER AWARD

The International Association of Consulting Actuaries (IACA) makes the Max Lander Award every two years to recognise a member of the actuarial profession who has made a major contribution to enhancing awareness of the actuarial profession and the work of consulting actuaries. The award is named after a founding member of IACA.

The 2018 Max Lander Award was won by the Hon Daisy-May McFarlane Coke, O.J., C.D., B.A., M.A., Cert. Stat., FIA, ASA, who is also the founding President of the Caribbean Actuarial Association (CAA). The CAA currently has more than 250 members. Her other awards include the President's Award of the Society of Actuaries (1997) for her contribution to the profession and the Order of Jamaica (O.J.).

Her pioneering work as Jamaican actuary, and Jamaica's first Government Actuary, paved the way for others to follow.

Applying her leadership and actuarial skills in a wide variety of areas, including the Jamaican public service, retirement and healthcare systems and the insurance, banking, agriculture and housing industries, she became an invaluable member of every team that has embraced her. Even now, at 81 years of age and retired, she serves the Jamaican Government when called upon and gladly shares her wealth of knowledge and experience with every young actuary who seeks it.

Talk of Shoes and Ships and Sealing Wax ...



The actuarial profession in South Africa has its roots in the United Kingdom, and relationships between the Actuarial Society and the UK-based actuarial organisations have been very good throughout the years. The Society's first mutual recognition agreements were entered into with the Institute and the Faculty of Actuaries, then separate organisations, in 2009.

As indicated in the editorial, the biannual IAA meetings are used for bilateral meetings between the Society and the IFoA.

Members of the IFoA Council recently visited Nigeria, Kenya, Zimbabwe and South Africa to engage with members, employers and other stakeholders, and 21 delegates from the group attended the Society's Investments Seminar in Cape Town on 13 June.

History was made on Friday, 14 June, when the Councils of both the Society and the IFoA held their meetings in Cape Town, after a joint breakfast. This was the last IFoA Council meeting Marjorie Ngwenya, Immediate Past President, attended. She referred to it as ending her term on "a high — with a final Council meeting on African soil".

SLC

STUDENT LIAISON COMMITTEE

page 52

WHO WE ARE

The SLC is part of the Actuarial Society of South Africa (ASSA). The SLC has the main role of representing students' views when key decisions and directions are made within ASSA. The committee works hard to be the voice of every student member of ASSA. Students are a key part of ASSA as they are the future of the profession. The SLC aims to have several channels for students to voice their experiences, thoughts and views, as well as ensure they feel supported and well informed along their journey to qualifying as an actuary.

THE COMMITTEE MEMBERS:

- Asil Motala
- Bhaavic Chhana
- Kholeka Mdluli
- Learoy Alcock
- Maseeha Rawat
- Mohamed Moolla
- Nasiphi Hlalele
- Radhesen Naidoo
- Stephanie da Silva
- Tatenda Chikuku
- Thandi Mcizana

DID YOU KNOW? ASSA is the only actuarial society that allows student representation on Council.

IT'S ASSA WORKSHOPS TIME!

HERE IS A REMINDER ON HOW THE NAMES HAVE CHANGED....

WORKSHOP CODE:	WORKSHOP NAME:
N111.01	Professional Actuary in SA
N111.02	Professional communications for actuaries
N111.03	Fundamentals of modelling
N211	Communications
N311.01	Work based learning for associates
N311.02	Actuarial business and legal awareness
N311.03	Model documentation analysis & reporting
N311.04	Presentation skills and communication
N311.05	General practice module
N311.06	Strategic thinking and interpersonal skills
N311.07	Professionalism for associates
N411.01	Work based learning for Fellows
N411.02	Professionalism for Fellows

WHAT TO LOOK OUT FOR:

Access the latest exam timetable via the link below:

https://www.actuarialsociety.org.za/event-pages/student-zone/

Registration dates for semester 2 so that you don't forget to register (via your member profile) in time for both exams and your normative skills workshops!

- 8 July – 26 July for A111, A214 and F106;
- 22 July – 16 August for A211, A213 and A311, 5 August – 2 September for N211, F101 – F106 and F201 – F206, and
- 9 September – 27 September for N311 Core APP Components.

CONTACT US

Email: slc@actuarialsociety.org.za

Facebook: "Actuarial Society of South Africa – Student Liaison Committee

SOMETHING FOR FUN

Answers on page 55

1. What begins with T, ends with T, and has T in it?
2. You can hold it without using your hands or your arms. What is it?
3. What building has the most stories?
4. What gets broken if it's not kept?

Send us your thoughts and comments.

CLICK HERE

Where to find Job Adverts

ASSA's Job Board:
http://www.actuarialsociety.org.za/assa-jobs/

WANTING TO JOIN THE SLC TEAM??

The SLC is looking for volunteers – if you are a student member and would like to join the SLC then please click here to email us your CV

www.actuarialsociety.org.za

SAactuary@actuarialsociety.org.za

@ASSASLC

BOOK REVIEW



Death Is Always With Us

– Review by Shivani Ranchod

Every business should have a reading list, a pile of books to remind you why it is that you do what you do, to draw you back to a sense of meaning and narrative and to place your work in a larger context. For our new business, the reading list centres on the notion of dying well. **Alignd** provide a way for healthcare funders to purchase palliative care. Palliative care isn't just about end-of-life care, but it does have an important role to play in helping patients to have good lives until the very end – where their wishes are listened to, where they are treated with dignity, where close attention is paid to their context and where the family is supported.

Being Mortal: Medicine and What Matters Most by **Atul Gawande** is the book that most strongly influenced my own thinking. I read it soon after working with other researchers at UCT to estimate the cost of care in the South African medical scheme environment in the last year of life. The **results** were astounding. And when I connected this to my personal experiences of prolonged private sector deaths it felt like something was terribly amiss. As Gawande says "people with serious illness have priorities besides simply prolonging their lives. If your problem is fixable, we know just what to do. But if it's not? The fact that we have had no adequate answers to this question is troubling and has caused callousness, inhumanity and extraordinary suffering."

The book is magnificent because it moves between the personal and the systemic, weaving together narrative and science. Gawande doesn't just articulate the problems with dying in a modern healthcare system, he also points to a wide array of potential solutions. The one that stuck in my mind was the simultaneous improvement in patient experience and dramatic reduction in claims costs flowing from insurers offering additional palliative benefits (i.e. not forcing patients to choose between palliative and disease-directed care). Even the simplest intervention of enabling access to a palliative consultant early in the disease trajectory has the effect of empowering the patient to make decisions in line with their preferences. It turns out most people prefer to die at home with minimal intervention – a choice that is much cheaper for the healthcare system. This simple but powerful idea was the seed that germinated into the Alignd offering.

Atul Gawande shares numerous stories of patients figuring out what matters to them most, a process that then guides their end-of-life decision-making. My favourite story was of a patient who most valued being able to eat ice cream and watch sport. I recently engaged in a conversation with a palliatively-trained doctor to articulate my own end-of-life wishes – a process that I found illuminating and empowering[1]. I love the way Paul Kalanithi's wife Lucy describes completing an advanced directive as an act of love: "like a wedding vow, a pact to take care of someone, codifying the promise that till death do us part: I will be there. If needed, I will speak for you. I will honour your last wishes." **Lucy** was married to doctor-turned-patient Paul Kalanithi. His memoir **When Breath Becomes Air** was written in the last months of his life as he courageously faced his stage 4 lung cancer diagnosis. It is heart-breakingly moving – and inspiring.

Our work as actuaries is abstracted from the human reality underpinning mortality tables and life insurance policies. The roots of actuarial science lie in death and dying. But we spend almost no time in our training as actuaries engaging with the humanity of what that means. If not in the work space, then perhaps in our personal lives, what occurs when we turn our gaze towards to our own demise?

Kathryn Mannix, an experienced palliative doctor, argues that our societal fear of death is directly linked to tucking death away inside hospitals. She tells the stories of her patients as a way of normalising death. As Frank Ostaseski, founder of Zen Hospice and author of The Five Invitations says "Death is not waiting for us at the end of a long road. Death is always with us, in the marrow of every passing moment. She is the secret teacher hiding in plain sight. She helps us to discover what matters most."

1 See https://hpca.co.za/living-matters/ and https://theconversationproject.org/starter-kits/ for resources to support your own conversations

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Answers: 1. A teapot, 2. Your breath, 3. A library, 4. A promise