Operations Research Society of South Africa

At the Forefront of Analytics in Africa

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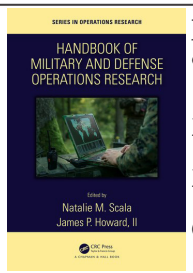
Margarete Bester's journey with OR



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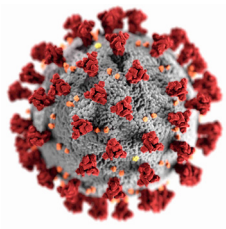
"a view into modern military and defense OR"



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How Covid-19 has changed our daily lives

www.orssa.org.za @ORSocietySA @_ORSSA The Operations Research Society of South Africa ORSSA

ORSSA Newsletter

September 2020

THE PRESIDENT'S DESK

Gemma Dawson
gemmadawson@gmail.com

While there is a lot that I will miss about the "old normal", there are many aspects in this new world that I have come to enjoy. For me, the ability to participate in conferences and events across the globe with a few simple clicks of my mouse is most definitely high on that list.

In terms of connecting with people outside of your usual network, I would recommend Meetup (www.meetup.com) and, in particular, the three groups belonging to our Johannesburg (https://www.meetup.com/Lean-Analytics-ORSSA-JHB), Pretoria (https://www.meetup.com/Lean-Analytics-ORSSA-PTA), and Western Cape (https://www.meetup.com/Lean-Analytics-ORSSA-WC/) chapters. They hold meetups every few weeks and it is always great to have discussions with familiar faces, as well as meet some new ones. All you need to do is sign up and bring along a cup of coffee or tea. If you have any OR or related topic questions, then that is a bonus!

Earlier this month, we had the opportunity to attend OR62 (https://www.theorsociety.com/events/annual-conference/), The Operational Research Society's annual conference. I hope you saw the posts on the ORSSA social media reminding you to register! I would like to congratulate and thank the society's president, Professor Burke, along with the society's Events Committee for what was a phenomenal conference!

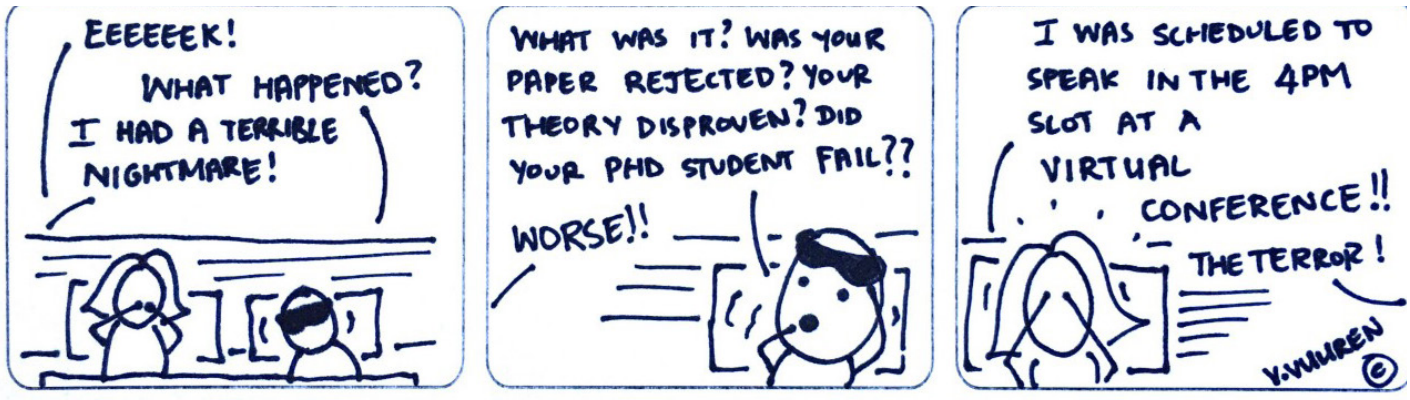
In addition to OR62, the second webinar in the IFORS Global Webinar series (https://www.ifors.org/ifors-global-webinar-series/) will be held on Wednesday, 30 September. The webinar will be co-hosted by IFORS and the Asia-Pacific Operational Research Society (APORS) (http://www.apors.asia/), with invited speakers from Nepal, India, and China. Registration details will be shared with ORSSA members as soon as they are available.

By now you should have received an invitation to register for the ORSSA 2020 virtual conference (https://www.orssa2020.com/). In part, due to our incredible sponsors, we are in the fortunate position to offer free registration to all attendees. The event will be held in the early evening and we intend to record sessions, so even if you aren't able to find the time in your schedule to join us during the live event, you will be able to enjoy the conference later. I know that many of us will miss the in-person event, but I am delighted to be able to share this event with those members that have not been able to attend an ORSSA conference in the past.

Another first for ORSSA is that our AGM will be held virtually this year. This is a superb opportunity to re-invent the manner in which this meeting is conducted, and a greater number of members will be able to participate and have their voices heard.

I thoroughly look forward to "seeing" you at the conference!

FEATURES



ORSSA 2020

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FROM THE EDITOR

Annelie Wessels
annelie99@hotmail.com

The September edition of the Newsletter is usually dedicated to the ORSSA annual conference. This year the conference will be online from 19-21 October. Take a look at the poster in the Newsletter and you can read more about it here.

In this Newsletter we feature the Western Cape Chapter event where Dr. Silal spoke about what is happening behind the scenes of Covid-19 modelling.

We also profile an article on ORSSA member Margarete Bester and a few members share how their lives changed due to the pandemic.

Follow the many links in our Newsletter to read more on various topics and news.

I am back in South Africa, - read more about my journey on page 15.

Groete uit die Boland
Annelie

Volume 15 | Number 3 | September 2020 | ISSN 2223-4373

IFORS NEWS

International Federation of Operational Research Societies

From the President

The IFORS Global Webinar Series

Grazia Speranza <grazia.speranza@unibs.it>

This year is in many ways special, different from any other. On the personal side, we have been worried, about ourselves, our families, our friends. On the professional side, we have been working mostly from home. For some of us working from home has been easy, for some others it has been challenging because of poor connection or because of the need of taking care of children. We have been using the technology for synchronous or asynchronous lectures. We have had meetings with colleagues through one of the several platforms of which we have all become experts. Several webinars have been organized this year to somehow compensate the lack of conferences.

As many others, I have cancelled in the last months several flights. I attended no conference. Meeting colleagues, listening to the results of their research, exchanging ideas and experiences is one of the things I have been missing.

Sadly, we had to postpone to next year the IFORS triennial conference, scheduled for June this year, to which more than 2000 participants had already submitted an abstract. The question we asked ourselves became: what can we offer to the IFORS community this year? Karla Hoffman, responsible for conferences in the IFORS Administrative Committee, came up with the idea of organizing webinars, IFORS webinars. Great idea, Karla. Let us work on it. We developed the idea further and decided to create the IFORS Global Webinar Series, with the intention of connecting our community and getting to know each other better.

What makes the IFORS Global Webinar Series different from other webinars or series of webinars is that each webinar is organized by a regional grouping of operational research societies. In fact, IFORS has four regional groupings: ALIO (the group of societies in Latin America), APORS (the societies in the Asian-Pacific area), EURO (the societies in Europe and Africa), NORAM (the societies in North America). The Vice-President that represents a regional grouping in the IFORS Administrative Committee is in charge of organizing the webinar that will have the aim of presenting some of the best research carried out in the region. The first IFORS Global Webinar, dedicated to ALIO, took place at the end of July and was very well attended. A success, I dare to say. You will find in this newsletter a report by Rosiane de Freitas. The next will take place in September and the others will follow, one every two months. Keep an eye on the IFORS web site and do not miss this opportunity.

I look forward to seeing you at the IFORS Global Webinars!

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What's Inside

NEWS FLASHES

ORSSA - Operations Research Society of South Africa
07 Aug at 09:40 •

Special Issue Alert!
European Journal of Operational Research: The role of Operational Research in the future epidemics/ pandemics.
Opening Submission: November 1, 2020.
Closing Submission: February 15, 2021

ORSSA - Operations Research Society of South Africa
38 mins •

The Winter Simulation conference is going virtual for 2020
Register (early bird before 16 October):
http://meetings2.informs.org/wordpress/wsc2020/

MEETINGS2.INFORMS.ORG
Home - Winter Simulation Conferen 2020

ORSSA - Operations Research Society of South Africa
28 Jul at 15:28 •

In the IFORS newsletter (March), the newly elected AFROS (African Federation of Operations Research Societies) president, Hatem Masri, highlights the opportunity of growth for operations research in Africa and encourages African OR societies and industry to support this mega project.
https://www.ifors.org/newsletter/ifors-news-march-2020.pdf

One of our ORSSA members, Bernie Lindner, was elected as secretary and treasurer for AFROS. Thanks Bernie for representing ORSSA in AFROS!

The next AFROS 2021 conference will be organized by ORSSA in South Africa. Excited to be part of the AFROS mega project!
http://www.afrosocieties.org/

BEHIND THE SCENES OF COVID-19 MODELLING

Kit Searle
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Since the start of the Corona Virus Disease of 2019 (COVID-19), there has been a team of scientists working tirelessly to develop a model which may be employed by local governance to provide accurate predictions as to the extent of the spread of the virus in South Africa. It so happens that a core member of this team, Dr Sheetal Silal, is a well-known ORSSA member.

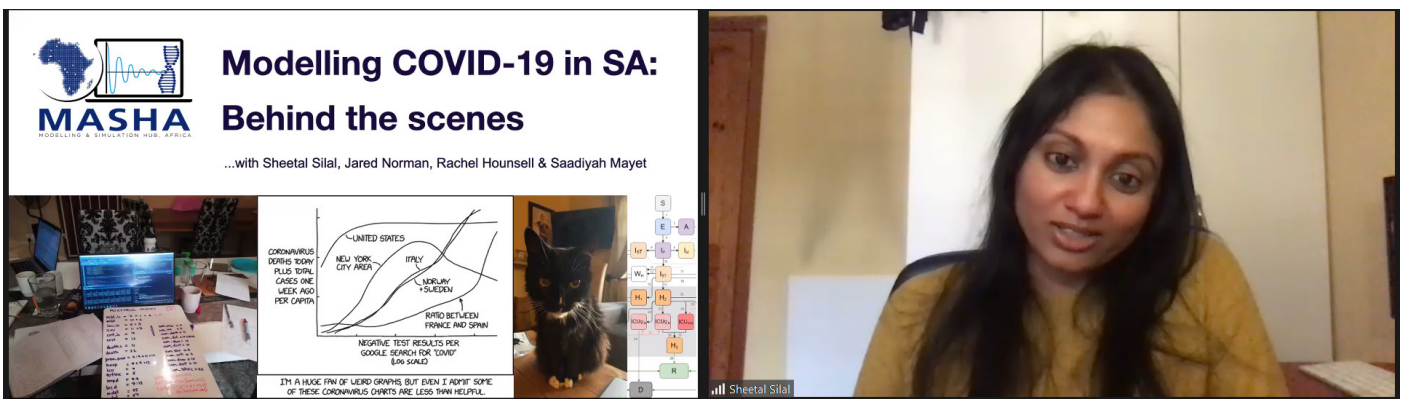
On 25th June, the ORSSA Western Cape chapter hosted a webinar in which Dr Silal shared what it looks like behind the scenes – the challenges that were faced by the team in modelling the spread of COVID-19. It occurred to me that there are many scientists working around the clock to provide both the public and government with predictions pertaining to the development of the virus, but we, as the public, may be ignorant as to what and how much work goes into the development of these predictive models. It was this thought that led me to approach Dr Silal with the idea of hosting a webinar with such a focus. Attempting to provide a summary of the webinar is somewhat a daunting task, so instead I will mention a few personal takeaways from the webinar.

The first is to start simple. As a result of the novelty of COVID-19, there are many unknowns pertaining to the dynamics of the spread of the disease as well as the effects of the disease on the human body. Adding to this problem, there are no previous data that could be used to calibrate and validate the developed model. Therefore, Dr Silal and her team had no choice but begin with a simple model and take a dynamic approach in adding complexity to the model as data become available and the relevant microbiology surrounding the nature of the virus is revealed. While attempting to solve a problem with so many variables and unknowns is a challenge in its own right, one has to admire the work completed by Dr Silal and her team considering the national importance of the results whilst dealing with considerable time constraints.

This leads me to my second take away, the fact that sleep was not an option. At the start of the outbreak of the COVID-19 pandemic, there was a sense of hysteria and a need for information. For Dr Silal, this implied that her team would be required to work around the clock processing new data and researching in a bid to uncover new information in their efforts to adequately model the effects of COVID-19. Working such long hours, devoting their days and nights, to provide accurate predictions as to the extent of the COVID-19 outbreak was indeed a personal sacrifice for Dr Silal and her team, one which I have the utmost respect for.

Finally, the ability to communicate results. Dr Silal spent a considerable amount of time in meetings with relevant stakeholders and policy makers, most of whom are not scientists. It is a critical skill to be able to convey a complex, detailed model to laymen to such an extent that they rely on the model output in making important decisions. In her presentation, Dr Silal also mentioned that the results they obtained were a joint effort and the disease modelling community pulled together for the greater good. It is indeed encouraging to note how the academic community contributed to developing knowledge as oppose to individuals developing their own career.

The webinar was attended by approximately 60 people, of which approximately 65% where ORSSA members. I can without doubt say that everyone in attendance has the utmost respect for Dr Silal and her team in their commitment and sacrifice to provide adequate predictions to our government. It makes me proud that a fellow Operations Research practitioner is making a difference and being an ambassador for our society.



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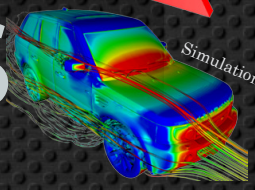

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HANDBOOK OF MILITARY AND DEFENSE OPERATIONS RESEARCH

Handbook of Military and Defense Operations Research by Natalie M. Scala, Towson University and James P. Howard II, Johns Hopkins Applied Physics Laboratory (Editors), 2020, Chapman & Hall/CRC (Series in Operations Research), 1st Edition, CRC Press Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300 Boca Raton, FL 33487-2742, pp. 479, ISBN-13: 978-1-138-60733-0 (Hardcover), ISBN-10: 1138607339 (eBook), 161.17 US dollar (Hardcover), 58.64 US Dollar (eBook).

Hans W. Ittmann
hittmann01@gmail.com

Operations Research (OR) originated during World War II and after the war the primary focus of OR shifted from military applications to addressing problems in both the private and public sector. This diffusion has been so extensive that today OR applications can be found in almost every sphere of life. As OR developed in these areas the same also happened in the military environment. OR applications have advanced significantly, addressing an ever-changing military and security problem space. The breadth and complexity of issues that need to be addressed and attended too, has increased, and expanded considerably.

The Handbook of Military and Defense Operations Research, with contributions from a wide spectrum of leading experts, both practitioners and researchers, presents an up-to-date view of cutting edge OR work in the military and defense area. Research, practical applications, case studies and lessons learned in the field forms the basis of the contents of the book. What is presented is a biased American view, though not exclusive, but this does not distract from the value of the book because of the broad similarity of issues faced by the military in all countries. The applications contained in the book encompass, inter alia, national security, policing, cyberspace, foreign policy, terrorism as well as homeland security.

There are twenty chapters divided into four broad Sections. Section I, Approaches, or OR techniques, has eleven chapters, with two chapters in Section II, addressing Soft Skills and Client Relations. In Section III, Applications, four case studies, illustrating best practices, are outlined while three different topics form part of Perspectives in Section IV. Although the handbook is aimed at undergraduate students in OR and analytics, it will be of value for a much broader audience.

In Section I various approaches to solving problems are presented. The first approach is a high- level narrative of the more useful tools in the data analytics tool kit, including several well-established statistical methods. An entire chapter is then devoted to Microsoft Excel. The motivation being that there are many tools that can be used by OR people but when the need arises in a crisis, Microsoft Excel is the "universal tool of analysis". Most of the functionality of Excel is presented.

It is interesting that the first real technique discussed is decision analysis (DA). In the military environment, where, for example, a system needs to be acquired or the location of a base is at stake, the best course of action is not always that obvious. Methods of formal DA are most useful in these cases. Eliciting preferences and values from the decision makers and from those with a legitimate stake in the outcome of the decision are required. Various aspects, with applications, using multi-attribute decision analysis (MADA), are discussed in Chapter 3. Military workforce planning and manpower modelling are well suited to be addressed by OR techniques and is the topic of Chapter 4. Placing the appropriate and accurate numbers of the correct types of people in the right jobs at the right time taking aspects such as recruitment, retention, promotion, and attrition as well as talent management into consideration is important. Various mathematical model classes, or techniques, that can be used, and several case studies are presented.

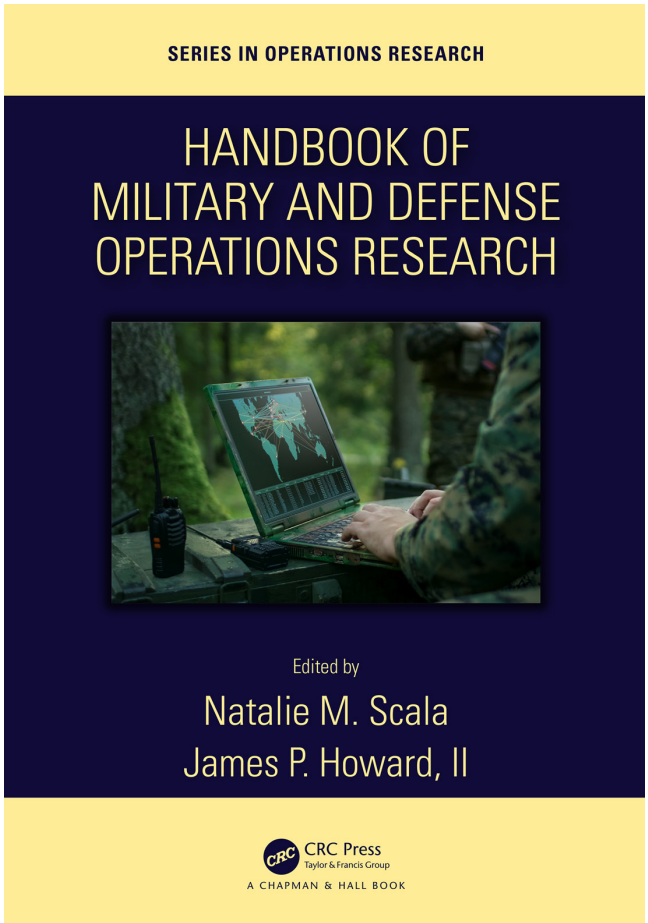
The next chapter is focussed on military assessments, something typical of the military. For the development of a strategy, a campaign, or an operation the process is to plan, then assess, to prepare, assess again and then to execute with a final assessment. A generalized framework for assessments is presented with more detailed discussions of campaign, operations, and training assessments.

A new phenomenon that has been around for several years is the intersection of digital and physical security. How to cope and deal with technological advances in the form of, for example, cyber-social, cyber-physical, and cyber-kinetic attacks is becoming essential. Visualizing, understanding, and preparing for what

such a future will hold, and what new threats could emerge, is the basis of an analytical process known as Threatcasting, presented in Chapter 6.

Discrete event simulation, Markov chains and queuing models, with their respective advantages and disadvantages, are discussed in Chapter 7. In recent years, the intelligence and operational communities have been confronted with the activities of terrorist organizations, insurgent groups, organized criminal enterprises, drug cartels, human trafficking, piracy, and cybercrime. These entities utilize a whole range of support networks such as money laundering, weapons smuggling, etc. and to mitigate, and cope with these threats an analytic technique, social network analysis (SNA), was developed. A graph theoretic analyses of social networks is the focus of Chapter 8.

Chapter 9 illustrates the use of the well-structured 8-step problem-solving approach to process optimization. The life cycle and anatomy of a process is described and the approach illustrated with the following eight steps: clarify and validate the problem; break down the problem and identify performance gaps; set improvement targets; determine root causes; develop countermeasures; see countermeasures through; confirm results and processes; and standardize successful processes. Simulation and optimization, both powerful methodologies and widely used within the military, are two further techniques presented in the next chapter. Military related examples, for both methods, are given and discussed. The final chapter in this section deals with an important function namely scientific testing for defense acquisitions, a function that has grown in importance especially as weapon systems have become more complex. Typically, a requirement is identified, the performance requirements are defined, and these are evaluated by the contractor. Finally, the military does its own evaluations to ensure requirements are met. For this purpose, Scientific Test and Analysis Techniques (STAT), were developed to generate the data efficiently and effectively for such evaluations. A comprehensive outline of these techniques is provided.



In Section II one of the aspects highlighted are "soft skills". These are non-technically related issues that hamper the adoption of new technologies leading to questions such as "what went wrong" and "why won't they (clients) use our model"? This phenomenon can be attributed to "social, behavioural and cultural issues, including people's resistance to change, fear of knowing the truth, reluctance to share data or information and a "we don't do that here" mindset. Ways to try to prevent such situations are outlined with the emphasis on motivating users to move to acceptance and adoption. A second issue is addressing client relations by better team meetings. Suggestions to achieving this are the use of facilitators, the use of thinking aids such as Structured Analytic Techniques (SATs), etc. This will assist the problem-solving and decision-making of facilitated teams, etc. Several additional ways are discussed, all which endeavour to improve teamwork and thus contribute to better client relations.

Four different case studies, or applications, are presented in Section III. The titles of these are:

- A Model for and Inventory of Cybersecurity Values: Metrics and Best Practices.
- Applying Information Theory to Validate Commanders' Critical Information Requirements.
- Modelling and Inferencing of Activity Profiles of Terrorist Groups.
- Expert COSYSMO Systems Engineering Cost Model and Risk Advisor (COSYSMO is Constructive Systems Engineering Cost Model).

What is striking of these case studies are the wide variety; the "new" application areas of most of them; the complexity of the problem areas; the innovation required to address these, and the usefulness of the OR approach to problem solving. Not many traditional OR methods, or techniques, are used in dealing with these problems. In depth knowledge and know-

how of the specific problem areas is a necessity.

Section IV starts with an outline of data science, a growing area that spreads across data mining, statistics, computer science, etc. Data science allows practitioners to find "deep patterns" within data and turn this into actionable information. Data collection and management, data exploration and making predictions using data are some of the aspects discussed in Chapter 17.

Modernizing, and continuously upgrading, military OR education is critical to keep pace with the changing challenges the military face. There is a growing demand within the security environment for more and improved data analysis, quantitative reasoning, innovative modelling and simulation, and improved technical and intellectual decision-making. This can be achieved by modernizing and enhancing OR education programs. A comprehensive outline of how this may be achieved is presented. The final chapter is devoted to strategic analytics and the future of military OR. Strategic analytics is characterized by: OR-based decision support systems; a transformational approach to strategic planning; and creative management policies. What is required for the future is to harness and apply the full power of analysis across all supporting institutional enterprise endeavours.

The use of several of the traditional OR techniques, as applied in a military and defense environment, are discussed in the The Handbook of Military and Defense Operations Research. Several divergent areas of application, as necessitated by new threats, together with the techniques that were developed to address these problem areas, form the core of the book. One is struck by the complexity, and difficulty to quantify problem areas. Although the focus is clearly on a military audience, many non-military operations researchers will find this book of value. For example, cybersecurity is almost a common problem across all institutions nowadays. This Handbook gives insight and a view into modern military and defense OR.

MARGARETE BESTER'S JOURNEY WITH OR

Margarete Bester
mbester@live.com

How did you end up in the OR field?

Approximately 20 odd years ago, I completed my honours degree in applied mathematics. I discovered the wonderful world of optimisation in my honours and decided that this is my passion and gift in life to optimise processes, resources and so much more. I absolutely fell in love with the world of utilising numbers to make life better for businesses and people. After my masters were completed, I worked for about 5 years in the credit industry.

What journey did you follow to lead you to where you are today?

In the credit industry, I spent most of my time developing predictive models, but my desire to make life better for people and businesses kept on burning and in 2008 Oprecon (Operations Research Consulting) started. As a "one man show", my husband and I started doing optimisation in the forestry industry. In 2012, our business name changed to XTranda and we moved into various other industries. Today XTranda is still doing OR in the aviation industry as well as supporting a variety of business providing insights and quick agile solutions to make life better.

What are you currently doing?

In 2018 I left XTranda on a journey to explore corporate life mainly to see why analytics and OR are not taken up. I filled the position of head of data science and analytics. The corporate world has been challenging - not being used to all the admin and big wheel moving. It was an amazing growth curve and through many painful challenges, customer data science has been born successfully at Shoprite. I re-joined my first employer again six months ago as the head of decision science/analytics at Principa. I enjoy the agile and fast pace nature of consultation. I am absolutely in love with the Principa family that I met many years ago and am glad to be back home.

What is the most interesting problem you have encountered in the OR world?

There are too many to highlight. As every problem is so unique and the joy in OR, for me, is the smile on the clients face saying: "This is making my life so much easier!", it is hard for me to single out one problem. The most recent amazing problem I had the opportunity to be part of, was the "customer level next best product to buy" optimisation. OR has the amazing capability to pick up patterns in multi-dimensional spaces.

What do you wish other people would know about OR?

I really wish that people will understand the history of OR and the differences or similarities between OR and data science. Along with this I wish that people will understand the true difference between optimisation with a big "O" versus optimisation with a little "o".

What would you say to students who are unsure about the field?

Listen to your heart. It is sometimes scary to be challenged with so many different problems, but there is always a solution to any problem. Keep working hard and you will find it, but above all, OR taught me to think outside the box. To forget about the box and create a new container, that is invisible to most people's eyes.

How would you describe Operations Research in one sentence?

OR is the scientific transformation of life's problems into solutions.

How does your typical workday look?

As manager of an analytical team I am in meetings most of my day. Doing a lot of hours in sales support and reviewing analytical solutions as well as training and mentoring junior analysts. It is an amazing position to be in as I can touch analytical problems as deep as I wish to. I have a burning drive to train and educate and it gets satisfied continuously in my job.

How do you spend your time when you are not working?

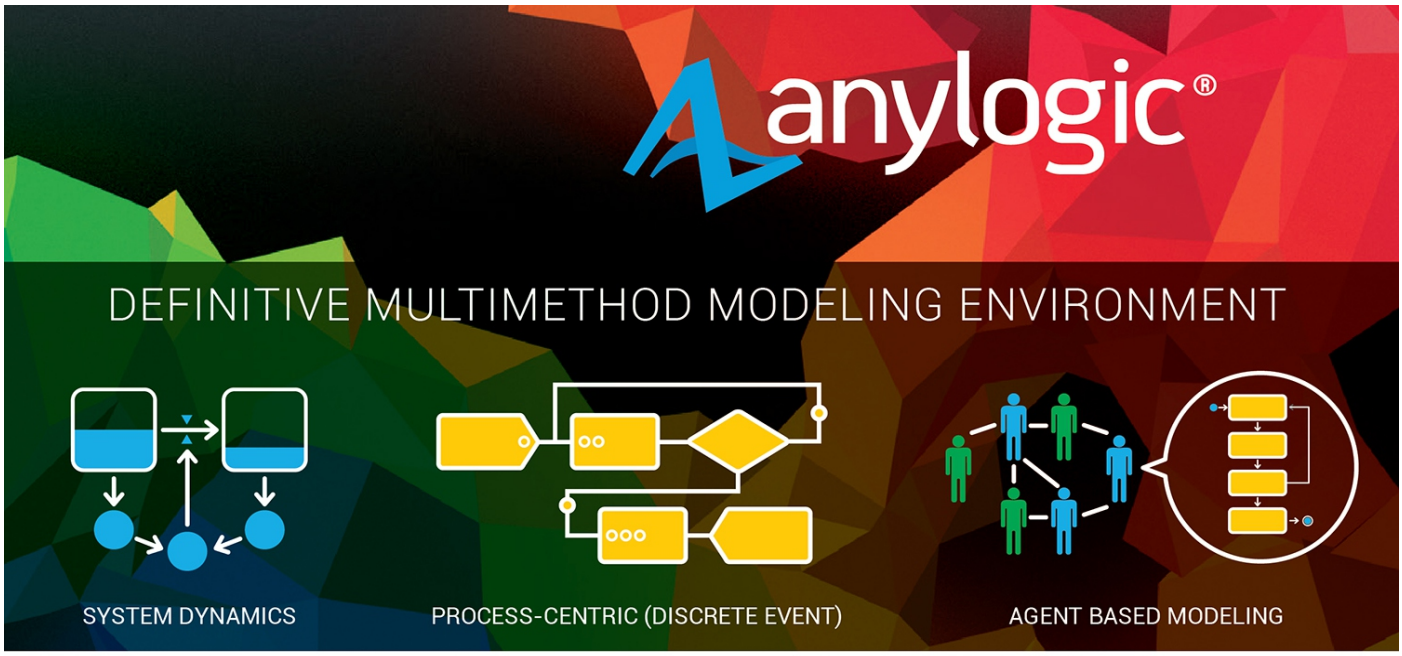
I have been blessed with three boys and my non-working hours I spend with them and my husband mainly, but I also love to read about new OR methodologies being born daily.

What would you have done if you had not followed the OR route?

I have a passion for people and if not OR I would probably have gone into psychology, specialising in children and the developmental stages and high functional autism.

Can you pick a career highlight (or two) in your life?

Running a profitable business without an investor is probably my biggest highlight.



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HOW COVID-19 HAS CHANGED OUR DAILY LIVES

Lieschen Venter
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The conceptual tea room musings of the future of higher learning in an age of massive open online courses (MOOCs) suddenly became of utmost practical importance as the 2020 Covid-19 crisis closed our classrooms and forced our students online. Stellenbosch University was one of the first institutions out of the blocks, giving the lecturers about two weeks to get all of their remaining first semester content online. Staff worked tirelessly during this time, fast-tracking their own onboarding on the inner workings of Moodle, recording lectures, and brainstorming online assessment possibilities.

The change has been, to say the least, challenging and life-changing. The hours required to get the content online was astounding. Like video killed the radio star, it was about to kill the physical lecturer. I doubt any academics ever imagined themselves in a career as a youtuber, yet there we were setting up ring lights and procuring better sound equipment and figuring out how to sound engineer that hadida call out of the audio recordings. Halfway through the second semester, I dare generalise that lecturers at SU are much more comfortable with the process. And within this slight breathing space, the existential questions arise.

Universities have to convince students for almost a full year that remote education is worth every bit as much as an in-person one, and then pivot back before students actually start believing it. It's like only being able to sell your competitor's product for a year. What is the value proposition for institutions that have done well to transition to online learning when considering reverting to physical learning again? It has been said that the value of the modern university lies not so much in the knowledge sharing, but in the networking and assessment. Do students pay to learn or do they pay to be assessed? Maybe the role of the university has moved from being like a driving school to being more like a traffic department. Maybe the new role of the university is not to teach, but to certify.

> “Do students pay to learn or do they pay to be assessed?

And the value of networking cannot be discounted. How often did a roommate grow up to become an influential CEO or politician? How often did leadership within student organisations lead to greater career opportunities? And how often was interest in postgraduate study inspired only by a friendship with a professor founded on cracking jokes in their office or accompanying them to conferences?

Very few people have a fully formed vision of what the new normal for higher learning will be. No doubt the lack of long commutes and redeemed hours with the children at home have changed a large number of lecturers' professional ambitions and priorities. To a large extent many lecturers valued the freedom of academia highly without realising how much of it was trickling away with ever increasingly corporate management policies. The sudden disruption seems to have reminded at least some of what the old days were like.

I expect to an extent for some disciplines physical lectures will instead remain in video format online with only weekly contact time in the form of tutorials or practicals taking place in the classroom. I expect a greater push from academics to remain working from home, and I expect a much higher research output as result. This is a vision of a future in academia that I could back, and I am in a way grateful for how this strange year forced us into a new approach.

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Over the course of this pandemic I've been working in three spheres, namely:

I've been studying towards my Master's in Biostatistics at UCT, I work as a technician for a company doing access control for residential estates, and I work as an analyst at the Red Cross War Memorial Children's Hospital.

Fortunately the changes to working through the pandemic and it's associated lockdown regulations have been relatively seamless.

My work as a technician requires that I fix equipment like fingerprint readers when they stop working, and as security was considered an essential service, this work was relatively uninterrupted. Changing only in regards to strict sanitation and screening procedures.

With regards to my work with the Red Cross, most

of my data analysis was done from home before the lockdown, with the exception of weekly data team meetings which have subsequently been moved to Zoom.

The most notable change in my work routine has come from the switch to blended learning for my lectures at UCT. All lectures have been switched to Microsoft Teams and all testing and examination has been taking place in the form of electronically submitted assignments. I believe this has really highlighted many of the issues with mainstream testing. I do not believe that the short-term, high-pressure environment of an exam with no access to resources is the most realistic way to test one's hold on learned skills. The university has noted improved results for students across the institution and the intention to carry a blended-learning approach to teaching into 2021 is something that is going to be taken seriously.

Fortunately all the students in the Statistics Masters cohort has sufficient resources at home to be able to fully engage with the online resources provided. Though the university has been trying to aid all students that lack these resources in every department, from distribution of laptops and data, to selective re-invitation for students to return to campus on a needs basis.

Personally I have found the move to working from home much easier, as I can easily take breaks as needed and plan my day freely. I have found it necessary to impose structure to my days with a strict routine as it can be easy to take more leisure time than necessary, but have been managing to be more productive without the distractions of social interactions.

Kit Searle & Christa de Kock
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The COVID-19 pandemic has taken us all for a white-knuckled ride on an unprecedented rollercoaster. The ups and downs that came along with this journey are fairly relatable to many. As a young engaged couple, the greatest disappointment during this time was the postponement of our wedding, merely weeks before the big day. Our home arrangements during the last few months varied from moving back to one's parents and sharing a house with eight others, to facing a situation where we had to move and merge two houses into our new home during a single weekend with no other help.

The idea of working from home seems pleasant, but many meetings, classroom engagements and lecture recordings were met with dogs barking, grazing lawnmowers, or a two-year old's enthusiasm of wanting to join in on the fun. The challenges of lockdown were met with some blissful experiences. Our daily commute was replaced by walks with the two French poodles in the fresh air of the winter mornings. Golf chipping competitions were held in the backyard, while vigorous aerobic classes took place on the patio. Wine rationing, along with cleaning and cooking schedules were part of the weekly planning.

Jurie Zietsman
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I am currently a first-year Masters student at Stellenbosch University. I live in a flat here and stayed in Stellenbosch for the whole of lockdown so, unlike many students, I did not go home to my parents.

What are some positive or negative aspects of lockdown?

I feel there was a big initial shock of having to change your entire normal routine. No longer could we enjoy semi-undistracted office hours and come and relax at home afterwards. Having to switch between 'home mode' and 'work mode' proved much more difficult than I anticipated. So if I have to sum it up to one positive and one negative, I did not nearly get the work done that I planned and wanted to do, but I think this time gave many people a bit of perspective on what they value in their lives and what they should or want to prioritise. I think many people (including myself) now recognise the fact that they can simply enjoy their lives more and make time for everything that is important, while still producing excellent work.

Do you work more effective from home or do you prefer the office?

I prefer the office for its convenience, close proximity and intellectual stimulus, but if I had to commute 1-2 hours per day, I think my answer might change.

Working from home is only as effective as your effectiveness in blocking out distractions (which, don't get me wrong, can work very well).

Is the traditional office setup still relevant today?

I think society has largely moved away from this and I think we will see large corporations making less use of massive office buildings, but never entirely. Due to differences in how people operate, I think offices will always be relevant as some simply need that structure

to be productive.

Was there support available for colleagues without internet access?

I feel that a shift to remote working is, naturally, virtually impossible without internet access. The added 'Eskom-factor' certainly doesn't help to simplify things.

Do you think the working environment will change after the lockdown? How?

I think we have already seen a big change with companies renting smaller offices. One strategy which I find very interesting is doing away with all corporate offices, letting employees work from home and then having monthly or bi-monthly weekend 'meetings' to plan, strategise, criticise and celebrate.

Which changes do you think will survive lockdown?

I think the future will resemble a more secluded society with people increasingly keeping to themselves and the people closest to them. This is unfortunate as, before COVID-19, the world was already engulfed by social media and an increasingly sedentary, indoor lifestyle.

Do you have any routine that helped you to work better or more effectively in your virtual office?

Some things that work(ed) for me are not to worry to much about a morning routine when you work from home – you invariably can't stick to it as much as you like and this causes unnecessary, self-inflicted stress. Surprisingly, curfew has lead to an earlier bedtime and overall increase in energy. I started walking 5-8km, about two or three times a week, with close friends and this has proved very relaxing, physically beneficial and gives a break from the things at home. Regular workouts (even just 20 mins) is a must if you spend most of your time at home (I feel). Then, maybe the most important, it helped me tremendously to minimise physical and virtual clutter. These act as distractions and prevent you from going into a state of deep work required to produce academic content of a high quality. Also, not worrying too much about your schedule and sticking to it, but rather focussing on getting the work done that you planned for.

How do you experience all the Zoom/Teams/Skype and other online sessions/meetings?

In my setup it definitely helped to keep productivity up and connect with my supervisor. I also think people realised the potential of how much knowledge could be shared through online presentations/conferences/seminars. Especially the possibility to remotely present your academic work at a conference you cannot physically attend is very exciting and, I think, may prove to play a big role in academic and non-academic conferences in years to come.

Do you prefer physical meetings or do you think that virtual meetings will stay with us in the future?

I think I still prefer physical meetings when possible. I think virtual meetings present the opportunity to incrementally work on problems and collaborate – for example, instead of visiting your financial adviser every 6 months or every year, one can conveniently re-assess your financial position every month virtually.

The same goes for many other examples and applications in a multitude of fields where frequent physical meetings are not always possible.

How do you think the academic world will change after Covid-19?

I think the biggest change we might see is increased collaboration – people now realise it is easier than they thought. I also think we might see an increased interest in 'disease X' and research towards strategies for the rapid development of vaccines.

Inge Guess
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I am a 24-year-old and recently graduated with my degree in Industrial Engineering from the North-West University. I was still trying to find my footing in the workplace, when the pandemic knocked on South Africa's door.

The first month of lockdown presented its own set of challenges, adapting to a new routine, learning how to balance work and private life and staying connected with your team via Teams, just to name a few.

In the beginning, it was difficult to stop working and being productive was a good distraction from the news, however, I seemed to miss the quick coffee run with colleagues and the lunch sessions when we needed a break.

Although technology has equipped us to work effortlessly from home, it does limit our ability to have productive brainstorming sessions, create community in the workplace and collaborate. I believe that the pandemic will have a lasting effect on both social and workplace interactions. I hope that companies realize the importance of community and find a way to effectively drive company culture whether employees work from home or the office.

People inherently do not like change and the pandemic has definitely challenged each one of us to regroup and rethink about business, health, family and friends.

Linke Potgieter
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What are some positive or negative aspects of lock-down?

I have mixed feelings about the forced working from home environment that was necessitated by the Covid-19 pandemic.

From a family perspective, lockdown with my kids was such a privilege – even though I had to work in between, they still had the opportunity to have both their parents with them throughout the day. We could spend a lot more time together, and as a family, we needed and appreciated the slow living in contrast with the fast-paced modern life before lockdown. I hope that some of our new habits will remain after lockdown.

From a work perspective, lockdown with kids was a completely different challenge. Especially during lockdown level 4 and 5 when there was no extra support. It was impossible to maintain a full time work schedule. During the day, Cobus and I took turns between work, kids and the household, and we ended up doing a lot of our work in the evenings when the kids were asleep.

Do you work more effective from home or do you prefer the office?

I definitely work more effective at the office, or should I rather say especially now when campus is quiet. From level 2 onwards we were allowed to return to office in a limited capacity, and I booked a slot at least two times a week between nine and five. I have a lot of quiet and alone time to focus when I am at the office in the current setting. At home the opposite is true – there are a lot more distractions, and then of course the laughing, the crying, the small feet running around and the small arms giving the most fantastic hugs.

Was there support available for colleagues with children?

I won't say there was extra support available for colleagues with children – some of my colleagues really had a difficult time with undergraduate teaching in the first semester, the expectations and deadlines were at times very difficult to handle in the academic context. But I do think people in general had more empathy with parents than usual. Family life became a reality that was hard to ignore behind the Zoom and Teams

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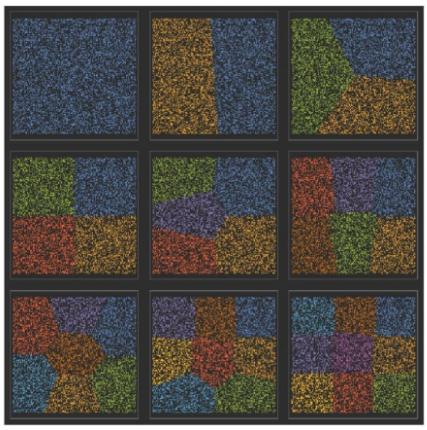

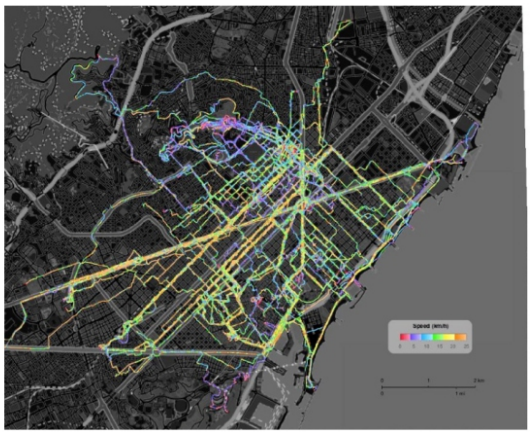

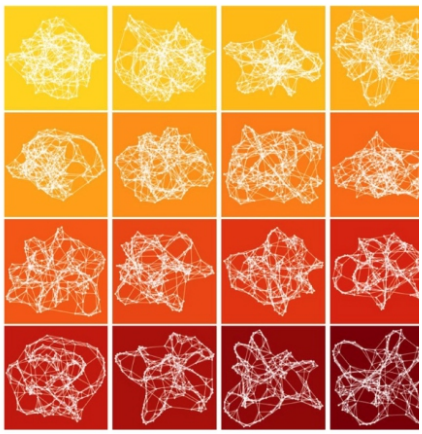

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lens. When I tried to thoughtfully discuss the random behaviour of simulated agents during an online class, my three year old agent decided to help out and gave a real life demonstration of this behaviour by walking in and playing his heart out on my guitar.

Do you prefer physical meetings or do you think that virtual meetings will stay with us in the future?

I dislike the online meetings and presentations – I find it very impersonal, especially when people turn of their videos. On the one hand, I feel disconnected. On the other hand, it was exciting to be able to easily take part in international conferences, which is something that was not so easy before, and more expensive.

> “It was exciting to be able to easily take part in international conferences

The opportunities to learn via webinars and online conferences were endless. I hope that this level of virtual connectivity remains with us after the pandemic, as an add-on, not a replacement of more personal contact.

How do you think the academic world will change after Covid-19?

Online learning platforms will continue to expand, and compete with traditional universities. I think traditional universities will focus more on postgraduate students, since their training requires a more personal relationship with a study leader than what undergraduate training requires, and one study leader only has a limited capacity.

Undergraduate training might very well become online learning, with students having access to the best universities in the world.

HAVE YOUR SAY

The ORSSA Newsletter is an excellent medium for showcasing one's work or interests to the Operations Research community, not only in South Africa, but around the world.

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EXPERIENCING LOCKDOWN ABROAD

Annelie Wessels
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What seemed to be only a shooting star wish, came true much quicker than I anticipated. I never considered studying abroad, but when the opportunity presented itself, I just could not say no.

I did all the research, all the administration, filled in numerous forms and did all the planning with a lot of excitement, but never really thought of actually going.

I did a semester exchange in Tilburg, Netherlands. At Tilburg University I took Professional Business Analytical Skills, Supply Chain Dynamics, Statistics and Dutch. The classes itself were not that much different from what I am used to. The students are very interactive and the lecturers were always happy to assist. The timetables changed almost weekly and classes consisted of two periods of 45 minutes each with a 15 minute break in between.

The campus is really pretty with lots of trees, fountains, beautiful lawns and benches. And of course, an uncountable number of bike stands that were always full. Finding a space for your bike is like finding parking in Stellenbosch.

Sadly, I did not experience much of campus life, as the university closed middle March and I only attended six weeks' worth of classes. Luckily, Tilburg University has a orientation programme for international students in the beginning of the semester, so I was able to meet a lot of international students.

My favourite part of my studies (except for the Dutch classes which I absolutely loved) was the Professional Business Analytical Skills where we had to solve a capacity optimisation, together with financial output, for a Dutch company. Although the actual problem did not interest me that much, it was a group project and mostly about your presentation and selling your solution to the client with actual interviews and presentations with and for the firm. I do not think I have ever enjoyed group work as much as I did with that group. There were two Dutch students in my group and two students from Turkey.

I stayed on campus, one kilometre from the university and biked to campus every day. I lived with four other students, two Dutch and two German girls,

which I really enjoyed. There was a bus stop one kilometre from our flat and a train station one and a half kilometres away, so transport was quite easily accessible and I could comfortably travel to any city in the Netherlands. Travelling to other countries required a bit more administration, but was also relatively easy.

During the semester, before lockdown started, I managed to visit Brussels and Antwerp in Belgium as well as a few cities in the Netherlands.

Our lockdown was not as strict as others and we called it a "smart lockdown". We were not allowed to travel, trains only operated at 30% capacity and we were asked to only visit the shops when necessary. We were however allowed to move freely outside our houses.

Most shops were closed and large gatherings and groups outside with more than five people were banned. For approximately two months, I was stuck inside my flat. All four my flatmates went home for that time as everything at the university was online.

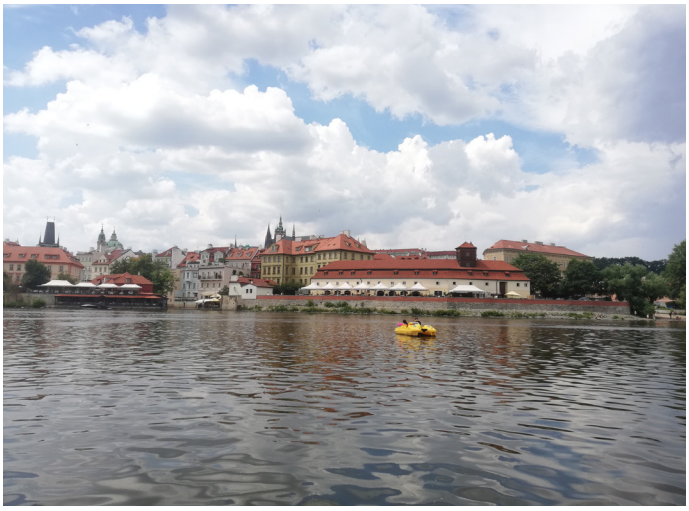
After two months, I slowly started traveling again with only short day trips and hiking outings in the woods. In July I caught the first student trip after lockdown to Switzerland and we visited the Rhine Falls, Lucerne and Zürich.

After the semester ended, and my lease expired, I went on a 10 day trip with a Greek girl I met in orientation week, to Bratislava (Slovakia), Vienna and Salzburg (Austria), Prague (Czech Republic) and Frankfurt and Cologne (Germany). After my trip I stayed with friends (a Dutch family that lived in my town in South Africa for nine years) until I managed to get a repatriation flight back home.

Some of my highlights were our Switzerland trip as well as visiting Prague and Salzburg. I really enjoyed taking the train everywhere and I thoroughly enjoyed everything being clean, on time and always working.

Altogether I visited seven countries, 28 cities in the Netherlands, 10 cities outside of the Netherlands.

During my whole exchange programme I felt like I was living in a dream. An above average dream, I would say. I would go back in a heartbeat.



Prague, Czech Republic.

Sunset in Zürich, Switzerland.

We took a canoe through the waterstreets of Giethoorn, Netherlands.

The windmills at Zaanse Schans (Zaandijk), Netherlands.