

I wonder if...?

**10 PhD Students
10 Great Impacts**



Minute Thesis

Finalist Summaries

**6pm, 11 June 2019
Tempest Anderson Hall,
Yorkshire Museum, York**



UNIVERSITY
of York

**RESEARCH
EXCELLENCE**



vitae
realising
the potential
of researchers



3MT® **THREE
MINUTE
THESIS**
FOUNDED BY THE UNIVERSITY OF QUEENSLAND



**Graduate
Students'
Association**
UNIVERSITY OF YORK

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Programme

- 6:00 Welcome
- 6:05 Three minute thesis presentations from ten PhD students
- 6:05 Ian Foxley, Department of Politics
- 6:09 Marc Green, Department of Electronic Engineering
- 6:13 Rebecca Hall, Department of Biology
- 6:17 Eithne Kavanagh, Department of Psychology
- 6:21 Tamsyn Kiss, Department of Environment and Geography
- 6:25 Agata Lambrechts, Department of Education
- 6:29 Lucilla Lanzoni, Department of Psychology
- 6:33 James Lees, Department of Physics
- 6:37 Robert Smith, Department of History
- 6:41 William Trickey, Department of Physics
- 6:45 Greg Dyke talks communication
- 7:05 Prizes and close

Introduction

Welcome to the 2018 3MT[®] (Three Minute Thesis) competition at the University of York!

3MT[®] is a competition developed by the University of Queensland, Australia. Its success has led to the establishment of local and national competitions in several countries. Today, ten University of York research students have just three minutes to communicate their research and its impact to you – the audience – and our judging panel. Communicating to different audiences is important for researchers as it helps to demonstrate the contribution that research makes to wider society and the economy.

Competition rules

Participants:

- A single static PowerPoint slide is permitted. No slide transitions, animations or 'movement' of any description are allowed. The slide is to be presented from the beginning of the oration.
- No additional electronic media (e.g. sound and video files) are permitted.
- No additional props (e.g. costumes, musical instruments, laboratory equipment) are permitted.
- Presentations are limited to 3 minutes maximum and competitors exceeding 3 minutes are disqualified.
- Presentations are to be spoken word (e.g. no poems, raps or songs).
- Presentations are to commence from the stage.
- Presentations are considered to have commenced when a presenter starts their presentation through either movement or speech.
- The decision of the adjudicating panel is final.

Audience:

- No unwanted audience participation
- Mobiles off
- Be ready to vote for your favourite!

Prizes

First prize – iPad

Second prize - £150 Amazon voucher

Third prize - £75 Amazon voucher

People's Choice - £50 Amazon Voucher

The organisers

The Research Excellence Training Team (RETT) work on behalf of the York Graduate Research School to organise this annual event as a showcase of PhD talent. The RET Team are committed to providing a supportive, stimulating and structured framework in which research students, research staff, and those who support them, can improve the conduct of research and develop their professional skills and career profile. We are always looking for collaborators in the form of organisations and individuals who can support our work. If you, or your organisation, are interested in helping us to develop our programme of skills training or are able to offer opportunities for our researchers, please contact us at rett@york.ac.uk

For more information see: www.york.ac.uk/rett

Judging criteria

At every level of the competition each competitor is assessed on the two judging criteria listed below. Each criterion is equally weighted and has an emphasis on audience reaction.

Comprehension and content

- Did the presentation provide an understanding of the background and significance to the research question being addressed, while explaining terminology and avoiding jargon?
- Did the presentation clearly describe the impact and/or results of the research, including conclusions and outcomes?
- Did the presentation follow a clear and logical sequence?
- Was the thesis topic, research significance, results/impact and outcomes communicated in language appropriate to a non-specialist audience?
- Did the presenter spend adequate time on each element of their presentation - or did they elaborate for too long on one aspect or was the presentation rushed?

Engagement and communication

- Engagement and communication
- Did the oration make the audience want to know more?
- Was the presenter careful not to trivialise or generalise their research?
- Did the presenter convey enthusiasm for their research?
- Did the presenter capture and maintain their audience's attention?
- Did the speaker have sufficient stage presence, eye contact and vocal range; maintain a steady pace, and have a confident stance?
- Did the PowerPoint slide enhance the presentation - was it clear, legible, and concise?

Judging panel

Professor Lydia Njenga

Dean of the Graduate School, University of Nairobi

Professor Ted Sanders

Vice Dean of the Faculty of Humanities, University of Utrecht

Dominic Colenso

Performance Coach and Founder, In Flow Training

Jamie Khoo

2018 3MT winner, Department of Women's Studies, University of York

Professor Tom Stoneham

Dean of the York Graduate Research School, University of York

Dr Karen Clegg

Director of the Research Excellence Training Team,

Acknowledgements

The Research Excellence Training Team (RETT) at the University of York would like to thank the following people for their involvement and support with this event: Greg Dyke, all the members of the Judging Panel, the GSA (Graduate School Association), Vitae, The Festival of Ideas team, and, of course, our audience.



Ian Foxley, Department of Politics

Why Don't More (Good) People Speak Up About (Bad) Things?

Systems fail, bad things happen, people make mistakes and criminals continue to lust for sex, money and power. But there are also those whose principles, values and courage drive them to expose wrong-doing in all sectors of society, often at great personal and professional expense to themselves and their families. But why are they the exception? Why do more people not speak out when they see bad things? Is it just fear or are there other factors at play as differing loyalties compete for ownership of the individual's conscience? Using in-depth interviews in a single case study, my research seeks to identify the factors and pressures that persuaded a group of public servants not to speak out about corruption when they could have done so. My research offers a rare opportunity to impact on training of public officials to make key decisions in future policy and procurement appointments.

Ian is a retired Lieutenant Colonel with 24 years' service and operational tours in Northern Ireland and Bosnia-Herzegovina. He subsequently spent 14 years managing major telecommunications projects before embarking on a third career in academia. He has a BSc in Applied Science (1982), a Post-Graduate Diploma in Management (1995), an MA in Applied Human Rights (2017) and is now researching a PhD at the Centre for Applied Human Rights (CAHR).



Marc Green, Department of Electronic Engineering

Beyond The Decibel: Are There Better Ways To Measure Sound?

The places we live in, from bustling urban centres to the relatively calm countryside, have unique sets of sounds known as soundscapes. You could think of a soundscape as the sonic equivalent of a landscape. Soundscapes can be very multi-layered and have many effects on people, but are often only measured by their absolute sound levels - decibels. This ignores the varied content of the sound scene. A waterfall, for instance, may give a similar decibel reading to a busy road, though most listeners would tend to prefer the sounds of nature. In my research, I use 3D audio recordings to train AI systems to identify the sounds and patterns that make up a scene, giving a more in-depth understanding of the sound. With this information we can create more detailed soundscape metrics that could be used to suggest ways to help build worlds - both real and virtual - where the soundscapes experienced every day could be made more pleasant for everyone.

Marc Ciufo Green received a BA degree in Music Production in 2013 from the University of Central Lancashire followed by an MSc in Audio Technology in 2015 from the University of York. Presently a PhD candidate at the York AudioLab following a successful year as an Associate Lecturer, his research interests include spatial audio, environmental soundscapes and machine listening.



Rebecca Hall, Department of Biology

Lord Of The Flies: Simulating The Hidden Microbial World

Microbes are tiny, single-celled organisms. They co-exist with individuals across the animal kingdom, from humans and other mammals to the insects that spread tropical diseases like malaria and sleeping sickness. Some of these microbes are essential for the survival of the insect. It is hoped that manipulating these microbes could stop the insects from spreading disease. To do this, we need to go back millions of years and try to understand how the microbes became trapped by the insects in the first place. We have generated a computer programme that can mimic this process of evolution. This can then be used to simulate the evolution of a microbe in the wild to one living inside an insect. We can now use this information to find the Achilles heel of these microbes and capitalise on their weaknesses to stop the spread of tropical diseases.

Rebecca is a final year PhD student in the Department of Biology. Her research uses tools in microbiology and computational biology to investigate the microbes that live inside insects. She is particularly interested in how microbes become captured by insects, the games they play in order to survive, and how the relationships change over millions of years.



Eithne Kavanagh, Department of Psychology

Chilled And Chatty – Dominance Style And Communication In Primates

Human language is the most complex communication system that we know of, but it remains a mystery how and why it evolved. We can start to understand this by observing other primate species, and seeing what factors are associated with the most complex communication systems. I'm interested in whether dominance relationships are related to communication. More relaxed dominance relationships create the need for more negotiation, persuasion and bonding, which may create the need for more communication. I'm looking at communication and dominance relationships in 25 primate species to discover whether more relaxed species communicate more frequently and with greater complexity. This could indicate that a relaxed dominance style drives the evolution of complex communication in primates. It is thought that throughout evolutionary history, we humans had highly relaxed egalitarian social systems. It could be that this quality is what drove the evolution of the most complex communication system we know of; human language.

Eithne is a third year PhD student in Psychology, and is interested in the evolution of social and communicative behaviour in humans and other primates. She has spent time observing chimpanzees and bonobos in various zoos in Europe and hopes to one day study them in the wild.



Tamsyn Kiss, Department of Environment and Geography

Going With The Flow: How Flooding Affects Earthworms

We've all seen the devastating effects of flooding. But there are other effects you may not have considered. Earthworms are essential for soil health: some species turn plant material into soil, while others improve soil quality and the amount of water soil can hold. We think earthworms come to the surface after heavy rain because the soil is flooded, and they haven't got enough oxygen to breathe. But some species can endure flooding better than others. The species that survived longest in the lab were the most common in regularly flooded fields, with few other earthworm species present. As a result, earthworm biodiversity in regularly flooded fields was very low. As flooding in the UK increases, more fields may lose their earthworm diversity, leading to poorer soil health and affecting food production. To protect our soils, efforts to protect against the effects of flooding must include protection for our farmlands.

Tamsyn is a third year PhD student studying environmental science at the University of York. She's studying earthworms, flooding, and what happens when sewage sludge is added into the mix. When not messing about with worms, Tamsyn reads, plays video games, and starts (but rarely finishes) a lot of arts and crafts projects.



Agata Lambrechts, Department of Education

#RefugeesIntoUniversities

Today, there are 25.4 million refugees in the world. Of them, only 1% are estimated by the UN to have access to higher education opportunities. Despite being one of the world's most vulnerable populations, and the growing numbers in Europe in recent years, very little is actually known about how many refugees go to our universities, what barriers they may face in their educational journeys, and what can be done about it. This doctoral research project aimed to fill this gap, focusing specifically on England and Poland. The key findings include confirmation that the numbers of students with refugee background in universities in both countries are marginal - largely due to the lack of top-down policy support. The best responses to under-representation and marginalisation of refugees are delivered by universities working closely with charities - and the refugees themselves - to understand their specific needs and develop appropriate programmes of support.

Agata Lambrechts is a final year PhD student at the Department of Education. She specialises in higher education research and has a particular interest in the differential experiences of international students and students with a refugee background. Her research is primarily qualitative and draws on the theories from sociology of education and beyond, building on her background in law, international politics and human rights.



Lucilla Lanzoni, Department of Psychology

A World Of Meanings: How Do We Choose?

If you heard the word 'JAM' on the traffic news, what would it bring to mind? Now, what if you heard the same word at the breakfast table? In our everyday communication, we can easily understand different meanings of words depending on the situation. However, for stroke patients with a language condition called aphasia, this can be incredibly challenging. Following brain damage, their thinking is inflexible. For example, they struggle to understand ambiguous language. My research investigates the influence of environmental cues such as emotional facial expressions and the spatial surrounding of an event on patients' understanding of language. Results show that comprehension of words in patients is sensitive to emotional facial expressions and locations, even when these are not relevant. My findings have important implications for patient management and rehabilitation. In parallel, these insights could be used to inform the development of improved and more intelligent technologies.

Lucilla is in her third year of PhD in Neuroscience. She is researching the brain mechanisms that allow us to use learned meanings in a flexible way, and she is interested in applying these insights to solve real-world challenges. Before her PhD, she had experiences in clinical psychology and worked as a research assistant at Harvard



James Lees, Department of Physics

Measuring Heat On The Very Very Small Scale

Our world is full of electronics that keep getting smaller letting us fit more processing power in increasingly tiny devices. However, as we reach the scale of a few tens of atoms heat becomes a big problem. When devices get hot they can become unusable. Before dealing with this problem we need to fully understand exactly what's going on by measuring it. Traditional methods such as thermometers and laser monitoring don't work at such a small scale so we need a new method. I am investigating doing this is with a modified Atomic Force Microscope which uses a tiny heated tip. This tip is touched to the surface causing the tip to cool down slightly; exactly how much depends on the temperature of the surface. Then, using a bit of computer wizardry, it's possible to make a full heat map on a tiny scale. This new information can be used to help develop new cooling methods.

James Lees is a Physics PhD student at The University of York studying heat transport in nano-scale materials. Alongside his degree he also works as a science communicator; writing books, articles and talks on physics and merging it with his love of games and history.



Robert Smith, Department of History Flattering Tyrants: A 'glib And Oily Art'?

Tyrants from Julius Caesar to Stalin have sought outrageous flattery from their subordinates to fuel their monstrous egos. Medieval rulers were no exception to this: the ninth-century ruler of what is today France, Charles the Bald, encouraged writers to compose gushing poems praising his power. Modern scholars often dismiss these poems as self-interested flattery, but churchmen of the day believed they were dangerous. They spoke out, warning the king of the dangers both in his own mind and the real-life consequences for his subjects. But Charles preferred to hear the advice of his own poets who praised praise itself and told the king that it commended virtue. This story has an eerie modern parallel. In recent years, tyrannical leaders have encouraged and received drooling adulation from their supporters. Charles' churchmen failed to contain his ambitions, and he died pursuing rule in Italy – what might be the consequences if today's critics fail to hold back a modern-day tyrant's flatterers?

Robert is in the final year of a PhD in the History at the University of York, supervised by Mary Garrison, researching ideas about flattery in the early middle ages. His previous degrees were at Oxford and Toronto. Besides reading Latin literature of the middle ages, Robert is also a church organist, giving occasional recitals in the UK & Germany.



William Trickey, Department of Physics Harnessing The Power Of The Sun With High Power Lasers

Nuclear Fusion is a reaction between atomic particles that produces a vast amount of energy. Fusion is the power source for all the stars in the Universe such as our Sun. Fusion Energy on Earth is a highly desirable source due to its many positive qualities: low-carbon, abundance of fuel, safety and reliability. We can use high power lasers to rapidly compress the fusion fuel getting it to ignite and release the energy we need. Unfortunately, when we try and do this too quickly, it begins to act like a liquid, bending out of shape. We are trying to make adjustments to the lasers to address these problems and get closer to ignition. Computer simulations can be used to model this process to help us understand the physics of what's going on. These simulations then help us design experiments which get us closer and closer to Fusion Energy.

William Trickey is a 3rd year PhD student studying under the Fusion CDT at the University of York. His research concerns the interactions of lasers and plasmas with applications in Fusion Energy. He devotes much of his time to scientific outreach conveying his work to the general public, most notably he is a co-founder the University of York fusion podcast: A Glass of Seawater.

The Judges

Professor Lydia Njenga is an Associate Professor of Chemistry, in the Department Of Chemistry, University of Nairobi. She has served as Dean in the School of Physical Sciences for four years, Director for Board of Postgraduate Studies for two years, and currently she is the Director of Graduate School in the University of Nairobi since 2017. Apart from teaching undergraduate and graduate students, Prof Njenga has been supervising both Master and PhD student and also carrying out research in areas of Environmental, Analytical and Inorganic chemistry. She has several publications.

Professor Ted J.M. Sanders is a Professor of Discourse Studies at the Department of Languages, Literature and Communication and the Utrecht institute of Linguistics OTS at the Faculty of Humanities at Utrecht University. He published widely on discourse processing and representation, and on the (cross-)linguistics of coherence. He has a strong interest in improving communication through comprehensible texts. He has (co-)supervised 23 Ph.D.-students. He was the Head of the Department of Languages, Literature and Communication and currently acts as the Vice-Dean of the Faculty, responsible for the Graduate School of Humanities.

Dominic Colenso is an actor and communications expert. As an actor he has starred alongside some of the UK's most famous performers. As founder of In Flow, he now works with businesses around the world, helping individuals and teams take center stage and deliver outstanding performances. Dominic is also the author of the book 'IMPACT: How to be more confident, increase your influence and know what to say under pressure.'

Jamie Khoo was the 2018 3MT winner. Jamie is a third-year PhD student in the Centre for Women's Studies. She was a writer before returning to academia and has been published in magazines and websites including Elle Malaysia, Harpers Bazaar Malaysia, Huffington Post UK Blogs and elephant journal. She also does a lot of yoga, lifts weights and spends an inordinate amount of time pondering the simultaneous pleasures and tyrannies of lipstick.

Professor Tom Stoneham is Dean of the York Graduate Research School and Professor of Philosophy. Educated at Oxford University and the University of London, he is a specialist in metaphysics, epistemology, philosophical logic and the philosophy of George Berkeley. He has published on a variety of philosophical topics, including self-knowledge, metaphysical nihilism and issues in the philosophy of logic and language.

Dr Karen Clegg has a PhD in Education and is a trained coach and Senior Fellow of the Higher Education Academy. She provides strategic direction for the Research Excellence Training (RET) provision at the University of York. Working to support the University's Research Strategy, the RET team co-ordinate and deliver training for doctoral students, early career researchers, doctoral supervisors and professional support staff aligned to research.



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