

GRADUATE SCHOOL

Doctoral Research Highlights 2022

WELCOME

Welcome to our 2022 Research Highlights.



**PROFESSOR
ADRIAN WILLIAMS**
DEAN OF
POSTGRADUATE
RESEARCH STUDIES
AND RESEARCHER
DEVELOPMENT

Here you'll find a snapshot of some of the excellent research and community engagement work produced by our doctoral researchers.

Around 1,700 doctoral students from over 100 countries work across our academic disciplines, providing the foundations for the University of Reading's research excellence. The breadth and depth of their doctoral research is remarkable; it spans time and space – quite literally – from the evolution of dinosaur movement to contemporary issues around climate change. Projects focus on local issues, such as the air quality school children are exposed to in Reading, as well as global challenges, for example how fieldwork is conducted in the Arctic. The Highlights also showcase the poignant and powerful research presented in the 2022 Fairbrother Lecture, 'Faces of War', featuring accounts of the varied roles played by women in conflicts around the world.

Our annual Doctoral Research Conference is a personal highlight for myself and many of my academic colleagues, providing us with the opportunity to see and discuss the work of our doctoral researchers. The quality (and humour) of the research films grows year on year, and the Research in an Object Competition emphasised the creativity of our researchers.

I very much hope that you enjoy reading these highlights.



Contents

- 4** Venomous Snakebites: A community education programme
- 6** Combatting: Disinformation
- 7** Old bones: The evolution of dinosaur movement
- 8** Faces of War: The hidden stories of female fighters
- 10** Flying through Arctic storms to understand their interaction with sea ice
- 12** Air Pollution: Hold your breath
- 14** Doctoral Research Conference 2022
- 16** Measuring Up
- 17** Working without hearing
- 18** Maitreyee Wairagkar – Inspiring women in science

VENOMOUS

A community

SNAKEBITES

education programme



Each year, venomous snakebites kill around 150,000 people and cause 500,000 life-changing injuries – including amputations, nerve damage and sight loss – among rural communities worldwide. India suffers the highest number of snakebite incidents, accounting for nearly 50% of global deaths.

Previous studies undertaken by the University of Reading identified that the lack of awareness about snakes

Snakebite envenoming (SBE) is a potentially life-threatening disease caused by toxins in the bite of a venomous snake.

and snakebites is the key factor in SBE-induced deaths and disabilities in rural, impoverished communities that have limited access to healthcare. The resulting socioeconomic

impact of SBE is huge, resulting from deaths or victims being unable to work.

Our research aims to raise awareness about snakes and snakebites among rural communities in India, specifically in Tamil Nadu, by identifying the knowledge gaps and training requirements among communities, healthcare professionals and health authorities who are involved in snakebite management. We deployed multifaceted community education programmes with creative and highly engaging tools (such as videos, leaflets, posters, pocket guides, and social media posts) and methods to provide essential information about snakes and snakebites. These programmes included information about what to do in the event of a snake bite, how to recognise venomous and non-venomous snakes, and stressed the need for urgent medical treatment. Direct assemblies in schools, colleges, hospitals and other public places enabled us to reach over 500,000 children, students and villagers, while 150 articles in newspapers and magazines, video documentaries on television channels, and social media posts helped us reach over 100 million people across India.



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This approach has led to a significant increase in the number of people seeking treatment for SBE in the crucial early hours after being bitten. Therefore, the awareness campaign has resulted in a significant change in the treatment-seeking behaviour of SBE victims and their relatives. This new knowledge improves the health outcomes for SBE victims and can mitigate the socioeconomic ramifications.

Our goal is to develop a sustainable community education programme model to reduce the impact of snakes and snakebites on rural communities in India. The tools and approaches developed as part of this project can be adapted for use worldwide in order to collectively reduce the effects of SBE.

ANIKA SALIM IS A DOCTORAL RESEARCHER IN THE DEPARTMENT OF PHARMACY.

Our animation videos can be found at:
bit.ly/avoid-snakebites
bit.ly/if-a-snake-bites-you

School children in India taking part in the community education programme



The increasing prevalence of surveillance capitalism – the widespread collection of our personal data by corporations – means that awareness of the ways in which we can be manipulated is critically important.

Surveillance capitalism is what allows us to use social media for free, what makes Google such an effective search engine, and is the reason why uncannily appropriate things might be advertised

to us at uncannily appropriate times. However, this sophisticated use of our data also facilitates manipulation and the spread of disinformation.

There is already strong evidence that psychometric profiling has been used in attempts to alter political outcomes, from the Cambridge Analytica data scandal – in which the personal data of millions of Facebook users was harvested without consent to inform targeted political persuasion – to the Mueller Report into Russian interference during the 2016 US presidential election. While the report didn't incriminate Donald Trump, it did suggest that information warfare had contributed to his election.*

My path to exploring these issues stemmed from an undergraduate thesis in English literature examining madness and conformity, through to a master's thesis on the cultural and psychological factors behind prejudice. My doctoral research, from a basis of looking at the practices of a specific publisher, engages with ideas about critical thinking and cooperation. This research has led me to design and deliver teaching on critical thinking, including school resources, talks to a range of audiences, as well as a commission to deliver training to a local authority. In some ways, my research journey has turned out exactly as intended (originally, I wanted to understand why people treated one another badly – I was born in South Africa and still have family there); in others, it has been entirely unexpected (I intended to teach within universities, and my future now looks quite different).

Exploitation of our data has the power to influence how large sections of our population think and to deepen social divides. The 2020 murder of George Floyd and the subsequent global protests that followed clearly demonstrated that racism still plays a major role in our modern world. Similar moments of clarity relating to other challenges we face – from the environmental to the democratic – are needed. Explicit teaching of critical thinking skills, integrated into everyday learning, may be one tool to help address some of the most pressing issues of our age.

Natasha Robson describes an unlikely journey from studying literature to teaching critical thinking skills to address the social problems arising from surveillance capitalism

Combating DISINFORMATION



*This issue features in the Netflix documentary 'The Great Hack'.

OLD BONES

The evolution of dinosaur movement



When environments change, animals are forced to adapt or risk extinction. But how quickly do animals adapt their ability to move and what influences drive the evolution of animal movement?

Animals are uniquely shaped to move through their environments.

My thesis tackles these questions by studying the evolution of locomotion in dinosaurs. Dinosaurs dominated the earth for over 170 million years and are ideal for studying locomotion as they came in all shapes and forms, from the lumbering long-necked Diplodocus to the swift Velociraptor and flying birds. This variation offers an opportunity to study how animals adapt to new forms of movement, such as powered flight or quadrupedalism (walking on all fours).

Bones, ligaments and muscles are the structures that form levers in the body to create movement. To study dinosaur locomotion, my colleagues and I measured the primary levers that controlled arm and leg movement in over 100 dinosaur fossils in museum

collections around the world. We applied statistical models to the lever data to reconstruct the movement ability of different dinosaur species, which identified which dinosaurs moved their limbs with greater force, like Diplodocus, or with a greater range of motion, like Velociraptor.

Alongside the muscle mechanics measurements, we used computer modelling to reconstruct the evolution of dinosaur locomotion across a family tree. These trees depicted the common ancestry among dinosaur species and were scaled by time in millions of years, allowing us to estimate the rate that movement ability evolved

over time. For example, we found that evolution accelerated in the legs of birds and their bird-like dinosaur relatives as they explored new forms of locomotion, such as gliding and powered flight. This acceleration was kickstarted by a shift to a more bird-like style of movement where the leg muscles become detached from the tail. However, horned dinosaurs like Triceratops slowed the rate at which their arms evolved, possibly due to the constraints of quadrupedalism and the enlargement of their heads with more elaborate horns and frills.

The evolution of new forms of movement by dinosaurs helped them to survive drastic climate change and expand their numbers across the globe. Therefore, the study of dinosaur locomotion can provide insight into how animals can adapt to long-term environmental challenges.

JACOB GARDNER IS A DOCTORAL RESEARCHER IN THE SCHOOL OF BIOLOGICAL SCIENCES AND IS CURRENTLY WRITING HIS THESIS.



Art by Gabriele Tesfaye, founder of the Tigray Art Collective. Francesca Baldwin: "It was a privilege to have permission to tell these stories in part through the beautiful art of Gabriele Tesfaye."

The hidden stories of female fighters

The Tigray Conflict

Ethiopia is made up of nine regional states, each with their own language and culture. Home to six million people, Tigray is the northernmost region. With its ruggedly mountainous terrain and remote rock-cut churches, it is often seen as the cradle of Ethiopian civilisation, a historic significance found not least in the myth of the Queen of Sheba. In 1974 a military junta known as the Derg deposed the ruling Emperor, Haile Selassie, and began a repressive, violent administration based on ethnic hierarchies and a climate of fear. In response, a small student group formed in Tigray, known as the Tigray People's Liberation Front (TPLF), and began a resistance movement seeking regional self-determination. Over the next seventeen years, the TPLF grew from a small, ideologically motivated group of students to a highly organised military insurgency, uniting other revolutionary groups in Ethiopia and leading the toppling of the Derg in 1991.

regional level. This was relatively novel in late-twentieth century Ethiopia where women were typically not permitted into spheres of activity perceived as masculine, like violence and conflict. It was, however, not new or novel in the broader history of gender and war.

Women in War

In every war since the dawn of time women have, in fact, been active, present, conscious participants. Sometimes they have been soldiers, sometimes spies, together with a host of other roles from hospital worker to messenger. Their responsibilities have spanned morale, ideas, strategy and nationalism. Yet they are broadly missing from many histories of wars. Based on a prevailing idea that femininity is somehow incompatible with violence and war, we paint war as a predominately masculine phenomenon; women who interact voluntarily in spheres of violence are recast into supporting roles such as wives or followers.

violent. Those prevailing assumptions are, in large part, why women are left out in post-war narratives, particularly for Africa, where scholars in the Global North have had a propensity to write off African women as passive, disempowered victims rather than acknowledging their initiative and agency.

But it is even more complicated than this. For women who do, in fact, take on active fighting roles, participation has enduring social consequences post-war. Women who are known to have been particularly involved in conflict are often marginalised when peace returns. Once women are no longer required as soldiers, controlling their political, social, economic, and reproductive activities may become central to the peacebuilding process. In such contexts, the efforts to reconstruct a society in disorder frequently rely on the return of recognisable gender norms to restore social cohesion and the expectations of a peaceful, secure, orderly nation.

VIEW THE FULL LECTURE TO DISCOVER MORE OF FRANCESCA'S RESEARCH BASED ON INTERVIEWS WITH INDIVIDUAL FEMALE COMBATANTS IN THE TIGRAY CONFLICT AT [BIT.LY/FAIRBROTHER-LECTURE-2022](https://bit.ly/fairbrother-lecture-2022)

Historical researcher, Francesca Baldwin, summarises the background to her research on female fighters in the ongoing conflict in Tigray, the basis of the 2022 Fairbrother Lecture.

Historically, this picture is far from accurate, not only for wars which we might deem just, but also in cases where women have been perpetrators of heinous violent crimes. For instance, in Rwanda it was a woman (the Minister for Family Welfare and the Advancement of Women) who was charged with inciting genocidal rape, and the Rwandan war was also the first time that rape was officially prosecuted as genocidal in an international criminal tribunal. In the Democratic Republic of the Congo, women are incriminated in 41.1% of female rape cases in conflict, and 10% of male cases. This data radically contradicts prevailing assumptions about the capacity of women to be

The TPLF was, at this time, roughly one-third female, with a core directive that women were able to take up arms and participate in battle on equal footing to their male counterparts. Beyond the role of soldier, however, women were also considered combatants if they dedicated themselves to the war effort in other areas. They were trained as technicians, drivers and health workers, and were political actors at a community and

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Francesca Baldwin and Professor Adrian Williams at the Fairbrother Lecture, 17 May 2022.

FLYING THROUGH ARCTIC STORMS

to understand their interaction with sea ice

In summer 2022, PhD researcher, Hannah Croad, took to the Arctic skies to gather data from a small aircraft. Hannah explains what she was doing and why.

Arctic cyclones, or storms, are the major weather hazard in the summertime Arctic, producing strong winds and ocean waves that impact sea ice over

large areas. The loss of Arctic sea ice due to global warming is permitting human activity (such as shipping) to expand into

the summertime Arctic, where it will be increasingly exposed to the risks of Arctic cyclones.

One of the biggest uncertainties in our understanding of Arctic cyclones is the nature of their interaction with sea ice. Strong winds can move and alter the sea ice, however sea ice also affects cyclone development. For example, global warming causes summertime ice to be thinner and more fragmented, increasing surface roughness and surface drag. Understanding this coupled relationship is key to improving cyclone forecasts in the Arctic region.

In July/August 2022, I had the opportunity to join the Arctic Summer-time Cyclones field campaign in Svalbard (Norway) as part of my PhD project. I was excited about going to the Arctic for the first time, and to learn from and help the team with flight planning. I was also pretty nervous about flying on the aircraft!

The aims of the field campaign were two-fold: fly through Arctic cyclones to map cyclone structure, and obtain measurements of near-surface fluxes (i.e. the transfer of momentum, heat and moisture by turbulent motions between the surface and overlying atmosphere), as these dictate the impact of the surface on cyclones, and of the sea ice morphology. These observations are needed to evaluate and improve the representation of surface processes in weather models. We would be flying through the cyclones aboard a British Antarctic Survey (BAS) Twin Otter aircraft, equipped with Meteorological Airborne Science INstrumentation (MASIN), as it can fly close enough to the surface to obtain these measurements (< 100ft).

Svalbard is a strange place, with 24-hour sunlight in summer months and the danger of polar bear encounters outside of the main settlements. The field campaign was based in Longyearbyen, the main town on Svalbard, and at 78°N, the most northern town in the world!

The field campaign team was based at Longyearbyen airport, and was comprised of scientists, engineers and pilots from the University of Reading, University of East Anglia, BAS, alongside collaborators from France and the USA. We were primarily looking for strong winds over the sea ice, within range of the aircraft (600 nautical miles). For flights where low-level flying was planned, it was key that there should not be low cloud in the target area as this would prevent us from flying below 1000ft for safety reasons.

I really enjoyed helping the team with studying the weather forecasts for the coming week or so, and making decisions on flight plans.

The small aircraft holds three to four people, including the pilot and an instrument engineer, leaving room for one or two scientists. During the flight, it is the scientist's job to alter the flight plan, if necessary, and take notes of the environment and any notable events that occur. This includes recording what they can see out of the window (e.g. sea ice fraction or cloud) and any notable observations from the live feed from the aircraft instruments.

I was excited to get the experience of being a scientist on the aircraft, and to see the sea ice with my own eyes.

On my flight, the aim was to obtain surface flux measurements over the sea ice off the eastern coast of Greenland. Unfortunately, upon reaching the target region, we were unable to descend lower than 500ft due to unexpected cloud and Arctic sea smoke. This experience demonstrates the difficulty of flight planning in the Arctic environment. Thankfully, we were able to conduct many other successful flights during the field campaign.

During the month-long field campaign, a total of 17 flights were conducted, amounting to 80 hours of flying time. The data collected will be used to improve the representation of surface turbulent exchange (i.e. parameterisations) in weather models. Subsequently, model simulations of the Arctic cyclone cases will be run with, and without, the revised parameterisations to help understand the impact on cyclone development.

I really enjoyed my time on the field campaign, and I learnt a lot. It was great to help the team with forecasting and flight planning, and to be on a science flight. It was a fantastic experience, and now the team and I are looking forward to getting started with the analysis and using the data!

HANNAH CROAD IS A PHD RESEARCHER IN THE DEPARTMENT OF METEOROLOGY. HER RESEARCH IS FOCUSED ON THE DYNAMICS OF ARCTIC CYCLONES AND IS FUNDED BY A SCENARIO NERC DOCTORAL TRAINING PARTNERSHIP.



The Campaign Team with the Twin Otter aircraft. Hannah is pictured second from the right.



AIR POLLUTION

Hold your breath

Air pollution, next to climate change, now represents one of the biggest environmental threats to human health, with the World Health Organization estimating that close to 99% of the global population breathes air which exceeds limits for safe air quality. As many as seven million deaths a year are attributed to air quality. This is in addition to the one-third of deaths caused by stroke, lung cancer and heart disease. At a UK level, the Government sees poor air quality as the largest environmental risk to health, with long-term exposure potentially contributing to cardiovascular and respiratory diseases, lung cancer and, ultimately, reduced life expectancy. In particular, people are breathing in unhealthy levels of fine particulate matter and nitrogen dioxide.

Our increasing knowledge of the consequences of exposure to high levels of air pollutants is out of sync with the reality of a daily school run. If you do not regularly take a child to school, you may be surprised to see how at odds some driving behaviour can be with regulations designed to protect health. Rules against stopping, idling (keeping the car stationary with the engine on) or dropping off are regularly ignored by parents who would otherwise have to park at a short distance from the school and walk the last stretch. This disregard for rules, I would argue, essentially prioritises five or 10 minutes saved over the health and safety of others, including the driver's own children.

The health stakes may be poorly understood by parents responding to the often-difficult logistics of combining a school drop-off with arriving at work on time, but they are serious. Children breathe faster than adults, are closer to the sources of emission, and are particularly vulnerable to harmful levels of pollution. Toxic air can trigger asthma attacks and stunt children's lung growth, affecting their long-term health. Air pollution can also damage the brain and may be implicated in Attention Deficit Hyperactivity Disorder (ADHD), learning disabilities, and other cognitive development issues linked to attention and memory – both of which are important to succeeding at school.

My research addresses air pollution around school gates in Reading and seeks to help schools and families understand when and where pollution is worst. I have undertaken and organised a widespread local air quality monitoring exercise; the data from this monitoring will inform recommendations for the most effective measures that can be put in place. I have also conducted surveys and interviews with parents and school staff.

Parents' concerns align with broader fears, with over 65% of parents agreeing that the number of parked and idling cars outside the school gate during the drop-off/pick-up time is worrying, and over half of parents confirming that they notice air pollution during the school run. Parents are asking for safer walking and cycling routes, cheaper public transport, more pressure on idling drivers, and awareness sessions to teach families and school staff about the dangers of air pollution.

The research has fed into a Healthy School Run Toolkit booklet which explains the air pollution issues that we face on daily basis and effective measures that we can use to reduce health damage.



Environmental science researcher and parent, Marta O'Brien, on the daily exposure of school children to hazardous levels of air pollution

MARTA O'BRIEN IS A DOCTORAL RESEARCHER IN THE DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL SCIENCE WHERE SHE ALSO WORKS SUPPORTING TEACHING AND RESEARCH. SHE HOLDS A UNIVERSITY OF READING REGIONAL BURSARY PHD AWARD WHICH IS AVAILABLE TO RESIDENTS OF READING AND THE SURROUNDING AREAS. MARTA, TOGETHER WITH HER SUPERVISOR PROFESSOR HONG YANG, WON A 2022 UNIVERSITY OF READING RESEARCH ENGAGEMENT AND IMPACT AWARD.



Doctoral Research CONFERENCE 2022

2022 heralded the return of the first annual Doctoral Research Conference (DRC) since the pandemic. The event on 15 June saw 250 members of our doctoral community gather in the Palmer Building to celebrate the excellence and diversity in doctoral research at the University. Along with the Conference competitions, delegates listened to an inspiring keynote presentation on entrepreneurship from Dr Fiona Marston (Royal Society Entrepreneur in Residence, Liverpool School of Tropical Medicine).



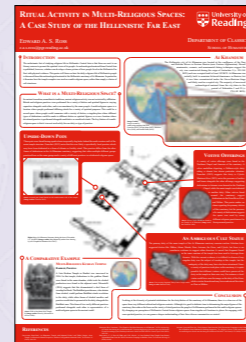
Research Image Competition

The Research Image Competition was won by Carys Cunningham (School of Biological Sciences) for her image of two Blue Tit chicks entitled 'Sibling Rivalry'.



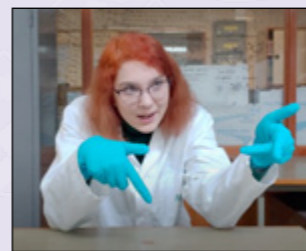
The Poetry, Rhyme and Rap Competition

The Poetry, Rhyme and Rap Competition prize was awarded to Mathy Sannasi (Henley Business School) for her poem entitled 'The (Not) Faraway Life'.



Research Poster Competition

Edward Ross (School of Humanities) won the Research Poster Competition with his poster entitled 'Ritual Activity in Multi-Religious Spaces: A Case Study of the Hellenistic Far East'. The poster focused on how the daily religious life of Hellenistic people was discerned from archaeological material at the Hellenistic sanctuary of Ai Khanoum.



Research Film Competition

Tunde Geher-Herczegh (School of Biological Sciences) won the hugely popular Research Film Competition for her entry entitled 'Drama in the lab'. The short film presented the misguided attempts of two self-righteous and overworked investigators on their quest to question a PhD student about her project and alleged mistreatment of experimental subjects.



Research in an Object Competition

A new Research in an Object Competition was introduced to encourage doctoral researchers to submit an object that relates directly to their research, or which represents key questions, methods, challenges or concepts of their research studies. JingHeng Huang (Henley Business School) won with his 'National Registration Identity Card (NRIC)'. The card is a symbol of control and oppression for some Singaporeans due to the racial categorisation. However, JingHeng explained how, for him, it is transformed from a personal object into a prism that helps him understand both the perspectives of others and his own subjectivities.



Research for a Better World Competition

The Research for a Better World Competition was introduced this year to recognise doctoral research projects that change lives, enrich creativity, help shape our understanding of the world, and address local, national and global challenges. Natasha Robson (School of Literature and Languages) won the national category and gave a talk entitled 'Critical thinking for a Global Society in the Age of Surveillance Capitalism'. Her work concerns people's interaction with one another and the growing problem of misinformation. You can read about Natasha's doctoral research on page 6.

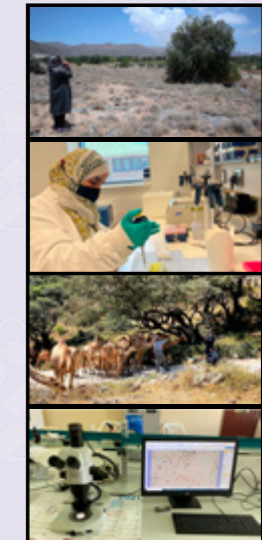


The global category was won by Anika Salim (School of Chemistry, Food and Pharmacy) for her research project to develop novel strategies to mitigate snakebite-induced socioeconomic burden on rural communities in India. You can read about Anika's research on page 4.



Three Minute Thesis Competition

Eight finalists competed in the highly entertaining and popular Three Minute Thesis Competition, with talks ranging from consumer litigation in Thailand to why people buy fake medicines online. Choshani Dalukdeniya Arachchilage (School of Chemistry, Food and Pharmacy) won the Three Minute Thesis Competition for her talk on 'An Atlas of Gut Bacterial Function'. Choshani represented the University of Reading in the national VITAE Three Minute Thesis competition.



Research Life in Pictures Competition

Thuraiya Al Jabri (School of Biological Sciences) won this year's Research Life in Pictures Competition with an entry entitled 'Wild olive biodiversity in Omani Mountains'. Her entry consisted of four separate pictures depicting different aspects of her doctoral research.

We are increasingly using technology to surveil different aspects of our lives, measuring everything from weight, steps taken, paths walked, the number of friends we have, and what we have eaten – even breastfeeding a child can be monitored, quantified and evaluated

in this way. Tracking devices and applications proliferate and are heavily marketed to us. My research, grounded in both art and philosophy, focuses on what might be lost by examining our

lives through a series of standardised outputs from different apps, as opposed to experiencing life in all its complexity and richness.

In my practice-based PhD, I use art and philosophy to examine these new habits of numerically tracking and grading our lives. Focusing on the quantitative judgmental nature of self-measurements, I ask whether numbers and the sanctity accorded to them in western society, are always the best way of monitoring the progress of our lives? I explore the reasons for favouring objective information, and look at the impact that the preference for technological measures over subjective

experience might have on us. The data resulting from these measures can be seen as a kind of what I call data pollution – in the same way that city light pollution can confuse songbirds so that they perceive night as day, this artificially gathered data may obscure our inherent understanding of ourselves.

In a recent art project, *The Archive of the Lost Embodied Knowledge*, I collected interviews exploring a range of approaches to understanding the world, our bodies and ourselves. Collectively, these testimonials might suggest that humans have a much older wisdom which does not require technology to mediate understanding of our own bodies. My research seeks to amplify this wisdom, which some call embodied knowledge, and question whether this human ability is fading under the bright lights of new technologies.

As an artistic representation of these insights, the stories were recorded onto light-sensitive chips and stored in metal tins. When the installation's visitors opened up a tin, a story was momentarily revealed to the listener and then vanished again once the tin was closed, representing the possibility of losing our own embodied knowledge.

HAYA'S RESEARCH PROJECT IS CALLED HUMANITY MEASURES ITSELF.

Doctoral researcher, Haya Sheffer, describes her *Humanity Measures Itself* research at the interface of art and philosophy, critically exploring the growth of self-measuring technologies to track and grade whether our lives measure up to expectations.



MEASURING UP



Working WITHOUT HEARING



Being deaf from birth brings unique challenges, different from those faced by people who become deaf after learning to speak. The prelingually deaf (covered by the term 'Deaf' as opposed to 'Hearing Impaired') tend to communicate by sign language and, as a result, tend to develop their own communities.

Ilan Dwek, profoundly deaf since birth, undertook a part-time doctorate on how the educational experiences of deaf children – and the Deaf identity – relates to employment success.

The Consortium for Research into Deaf Education Annual Report of 2018 highlighted that approximately 32% of Deaf children achieved five GCSE passes, in comparison with 70% of their hearing peers. This report led me to think about the consequences of deaf school leavers seeking employment without full or appropriate qualifications from schools/colleges. With plenty written about the education of deaf children, there was a gap in the literature on Deaf people gaining and maintaining employment.

Thanks to my network of contacts in the Deaf community and Deaf clubs across England I collected information on the working experience of Deaf people via questionnaires (generally administered electronically) and interviews (often conducted in British Sign Language and translated to written English for replicability). Some of the data gathered was quite shocking; one Deaf person's supervisor stated that if Deaf people were to work they should do as "the Romans do" – in other words, learn to hear and speak normally! Other Deaf people spoke of their frustrations at being passed over for promotion because employers could not think of ways that they could function effectively. Many felt that they missed out on opportunities at work because they were unable to take part in the 'water fountain' conversations which often form part of team building. Participants also highlighted the need to improve deaf awareness in the workplace.

The collection of data and writing up of findings took six-years. My thesis concluded that a Deaf identity was important for life in general but not a critical factor in dealing with workplace issues. Results showed that individual resilience was key to managing a challenging workplace environment and maintaining good mental health. My research highlighted that a certain type of upbringing, typically a Deaf person with a cochlear implant with a good understanding of written and spoken English language, did lead to higher self-esteem at work and employment success.

ILAN DWEK IS A LECTURER IN THE INSTITUTE OF EDUCATION AND WAS AWARDED HIS DOCTORATE IN SEPTEMBER 2022..



Above: Photo of Ilan, aged eight, having a speech lesson with his teacher at a school for deaf children

Maitreyee Wairagkar

INSPIRING WOMEN

in science

Alumni CONNECTED spoke to Reading PhD graduate Maitreyee Wairagkar – runner-up in the Scientific Achievement category in the Nature 'Inspiring Women in Science' Awards 2022.

"I hope to use this opportunity to be a role model as an Indian woman scientist and to help inspire more girls to pursue Science, Technology, Engineering and Mathematics [STEM] subjects. This recognition is especially important to me because neurotechnology is a highly male-dominated field and this platform will help me reach women and girls around the world who are interested in careers in technology and sciences."

With the Women in Science UNESCO Institute for Statistics highlighting that women make up less than 30% of the world's researchers, there are still great strides that need to be made to encourage more females into this field.

Maitreyee hopes that this award not only brings a spotlight to the global benefits of her research, but also influences young girls from all around the world to consider careers in STEM fields.

Ground-breaking research

Maitreyee's research focuses on the Brain-Computer Interfaces (BCI) she built that enable people with severe motor and speech impairments to communicate directly via their brain signals.

"Workings of the human brain have always fascinated me since childhood. We still do not fully understand how this gigantic mesh of interconnected neurons in our brain gives rise to such

complex cognitive behaviours and fine control of our body. Severe neurological conditions can render people in a locked-in state where their cognition and awareness is intact, but their body is fully paralysed – they cannot move or speak. Being aware and able to think but not being able to communicate is absolutely devastating and a potential way to help them is by deciphering their brain signals that are intact to understand their intentions."

Maitreyee started her BCI research journey at the University of Reading where she was awarded the University of Reading International Research Studentship which enabled her to pursue a PhD in her now award-winning research.

"Through my research I aim to restore lost movement and speech abilities that can improve the quality of life and functional independence in people with severe neurological conditions. Our ultimate goal is that no-one will ever lose their ability to communicate due to neurological injury, improving the lives of millions of people around the world."

Real-world applications

Committed to translating her research to real-world applications, Maitreyee's research has not only had a global impact but has the ability to change the lives of those living with debilitating illnesses and diseases on a day-to-day basis.

"I have developed different types of assistive and rehabilitation neurotechnologies to help people with neurological conditions such as stroke, paralysis, dementia, brain injury,

Parkinson's disease, and Amyotrophic Lateral Sclerosis [ALS], many of which do not have a cure yet."

Whilst at the University of Reading, Maitreyee impressively developed an interactive motor and language rehabilitation therapy system for stroke and traumatic brain injuries for home use in collaboration with the Royal Berkshire Hospital. This has since been commercialised by the health tech company, Evolv, and has been made available to patients in multiple countries.

The Nature Awards celebrate those who have made an exceptional contribution to scientific discovery, and who are also inspiring the next generation of scientists, in particular supporting the retention of women in science careers.



Maitreyee with Professor Robert Van de Noort, Vice-Chancellor

"These neurotechnologies will enable us to provide better, and more efficient care to people with neurological conditions focused on improving their quality of life. My aim is to develop low-cost devices that can be affordable to people all around the world and bring these cutting-edge technologies out of the lab to their target users," she explained.

A transformational experience

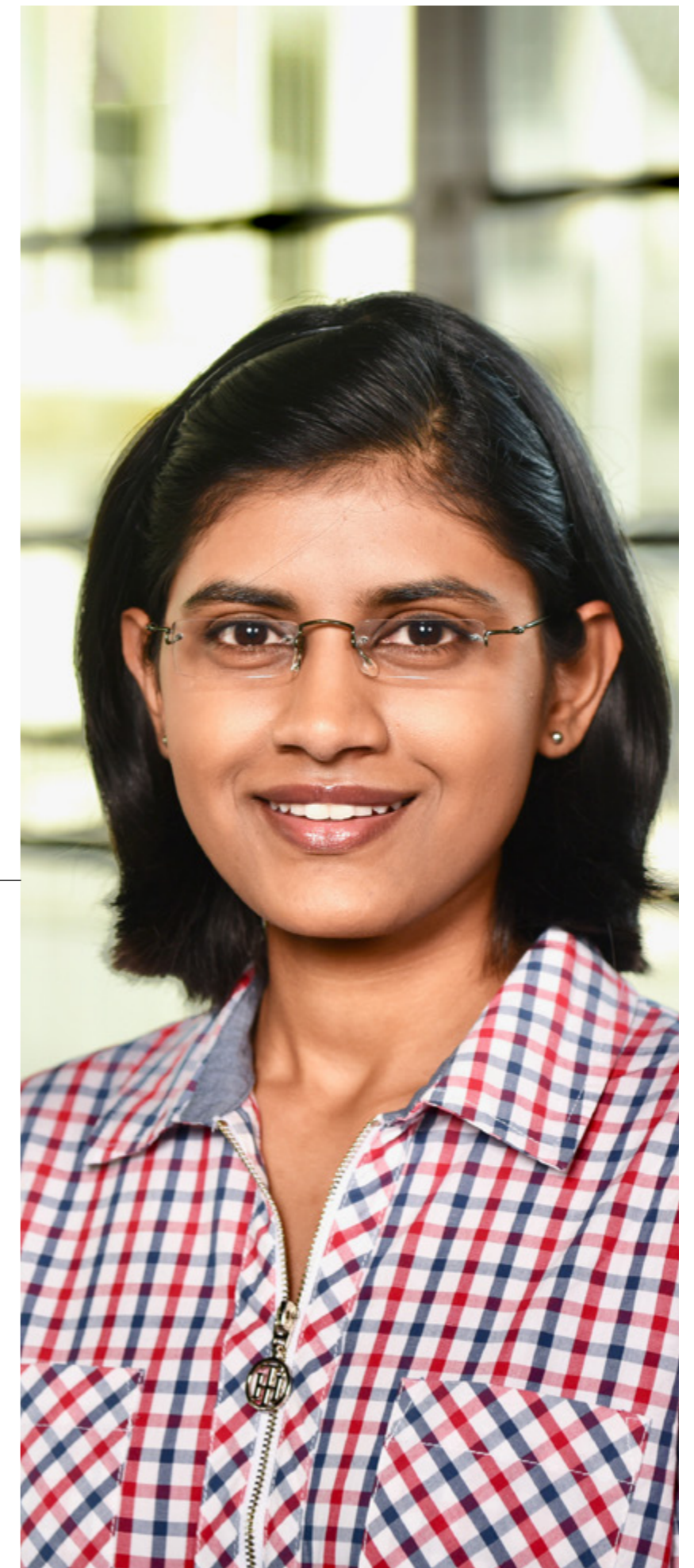
"Reading offered me an ideal and stimulating environment to study and grow as a researcher which has been instrumental in shaping my career path."

Maitreyee now continues her scientific career path as a postdoctoral fellow at the University of California, Davis:

"My advice to anyone interested in working in science, is to not become discouraged by the setbacks, be confident in your abilities, and keep growing. Be at the forefront of showcasing your amazing work, strive to be visible and always help others to achieve success."

IN EARLY 2023, MAITREYEE WAS NAMED AS WINNER OF THE 2023 INDIA UK ACHIEVERS HONOURS IN THE CATEGORY OF SCIENCE AND INNOVATION, WHICH RECOGNISES AND CELEBRATES THE WORK OF 75 YOUNG INDIAN STUDENTS AND ALUMNI WHO HAVE PURSUED A BRITISH PROGRAMME OF STUDY, AND HAVE GONE ON TO ACHIEVE EXCELLENCE IN THEIR FIELD, INSPIRING AND ENCOURAGING MANY OTHERS TO DREAM AND ACHIEVE.

Read her full interview with Alumni Connected at sites.reading.ac.uk/connected/2022/12/15/inspiring-women-in-science/



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