

THE
REQUIRY

beginnings



Issue 1
TT 2022

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Foreword

Lionel Tarassenko

Reuben College President

The first cohort of Reuben students is a remarkable group of individuals. Without prompting from the College Fellowship, a small team came together during the first term with the idea of producing a college magazine. In a start-up college, there is no established infrastructure, everything must be done from scratch, but there is an entrepreneurial spirit that runs from top to bottom – and the result is the first edition of the Reuby, a student-led project from start to finish.

The magazine reflects college life, which has a strong international flavour, since 47 different countries are represented in that first cohort. Nowhere is this better illustrated than in the multi-author, multi-lingual *Poetry Whispers* section. But “*mens sana in corpore sano*” and so there is also a feature on the many sporting achievements of the Reuben runners and rowers.

There are other features in the magazine which reflect the uniqueness of Reuben, the only college with a binary code in its crest: the tribute to Ellen, our much-loved Academic Administrator, was written with the help of artificial intelligence (AI) software and can be heard by scanning a QR code with your smartphone’s webcam. After reading the magazine, you should be able to understand why Thursday evenings, when Reubenites take over the University’s Natural History Museum, have been special throughout our first year.



Lionel Tarassenko. Photo by Sami Adnan

Our Thursday evening discussions may not have matched the rhetorical skills of the Great Debate between Bishop Wilberforce and Thomas Huxley in the Museum in June 1860, but we were privileged to witness the human¹ versus the machine² in a live Turing Test in the same place in May 2022, with the help of friends from Google’s DeepMind.

I should not really divulge any more about the topics covered in the magazine, as I risk spoiling your enjoyment of discovering for yourselves the delights of the pages that follow. Suffice to say that this first Reuby is highly polished and is a real gem...

[1] An Oxford graduate with a tenuous Reuben connection

[2] OpenAI’s Large Language Model



The Reuben College main building

Letter from the Editors

Such a vibrant community as Reuben College needed a channel through which it could express itself and reach out to the world. At its best, this magazine is meant to embody the story of Reuben – not just its intellectual and creative output, but the journey and experiences of its members, as individuals and as a collective.

Founding this magazine is the product of a college-wide collaboration. Our administration and fellow students played a key role in laying the foundation and shaping the vision, let alone the content. This process embodied the college's values and principles; for example, the (as our readers would certainly agree) absolutely epic name of the magazine was chosen through a democratic student vote. Many Reubenites actively participated in preparing this pilot issue, in particular our Communications and Events Officer Aym Maidment, our college President Lionel Tarassenko, our Senior Tutor Caroline Mawson, our fellow student and friend Sami Adnan, and our talented photographers Danny Gold and Hung-Ju Chueh, both students. Outside the college, we owe special thanks to Matthew Baldwin, Head of Communications at Exeter College, and the editorial team at St. Antony's International Review for their support and guidance.

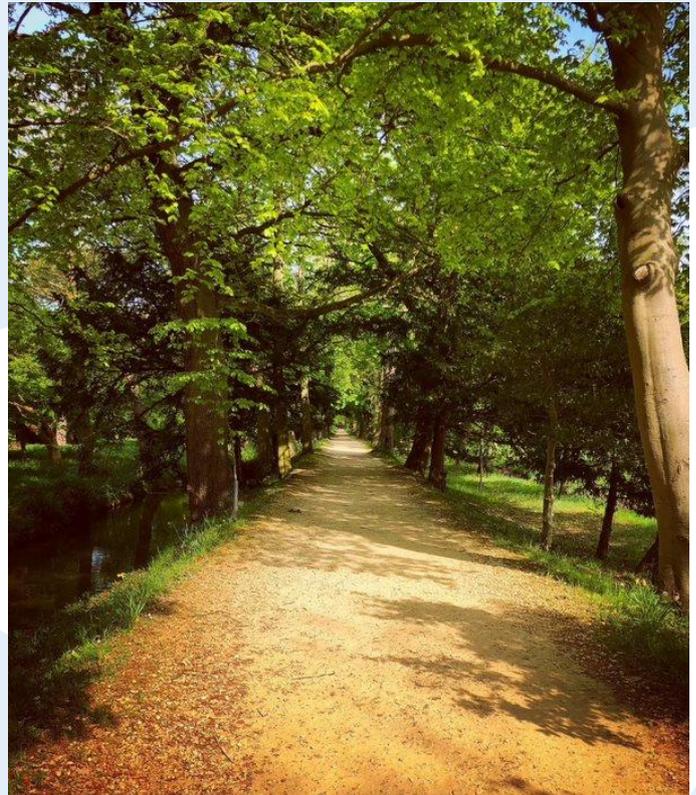
The theme for our first-ever issue was waiting for us on a silver platter. A newly established college, the first student cohort, and the founding of a student magazine are enough beginnings. But it is not just the context of this publication that is full of beginnings, but the topics we seek to tackle in this issue and all future issues: beginnings experienced by college members in their individual and common trajectories, and from a broader perspective, the new challenges and opportunities in this wild century of ours which Reubenites are impatient to engage with.

When curating this issue, we aimed for a broad selection that would provide quality content and at the same time a glimpse into the Reuben experience. It was important for us to show the rich background of our contributors, which has encouraged us to include projects that involve different languages and cultural lenses. We gave contributors the freedom to submit whatever they

saw fit given the theme and the magazine's goals. Nearly all the contributors are Reubenites, with the exception of two remarkable individuals we've had the pleasure of welcoming into this issue: the world leading climatologist Dr Fredi Otto and the award-littered writer and poet Tabish Khair.

The best way to present this diverse content was by dividing it into several main sections: college and university related pieces, literary art, and feature articles. That said, we were pleased to find this arrangement more complicated than anticipated, as the content we sought cut across such categories. So the lines are blurry, and we are proud of that. Also, we have mindfulness puzzles waiting for you at the end.

But first, let's begin.



Woodland Walks. Photo by Danny Gold

Ellen's Song

Juuso Haavisto¹, Daniel Revach², Lars Holdijk³

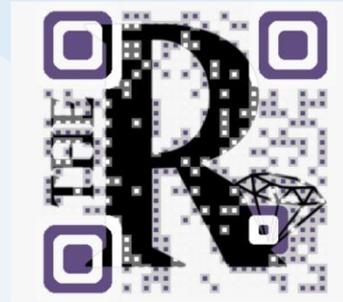
¹PhD Computer Science

²MSc Cognitive and Evolutionary Anthropology

³MSc Artificial Intelligence

Reuben College experienced many beginnings, and an unexpected ending. Ellen Moilanen helped establish Reuben College. She was the one to welcome every incoming Reuben student of the first cohort, helping them settle in and feel at home, accompanying them in the first few months of their journey at Oxford. Her love, kindness, and care touched the heart of every Reubenite.

Ellen loved playing the piano. In the spirit of Reuben College, it only seemed fit that a tribute to Ellen would combine her love for music with our love for AI. So we had an algorithm (Jukebox openAI) generate a one-minute piano sample using Adele's Someone Like You for the prompt and the great composer Rachmaninoff for the musical style. A few (dozen) iterations ended up producing a track we were happy with. We named it Ellen's Song. Scan the QR code to listen!





The Rad Cam at Night

By Danny Gold

The Radcliffe Camera; the centrepiece of Oxford. We all start off here, taking photos whilst dressed up in our gowns at matriculation. This is where we all started our journeys together, and from there began to make our marks in Oxford.

Night at the Museum of Natural History

Daniel Revach

MSc Cognitive and Evolutionary Anthropology



The Museum of Natural History: Dinosaur Edition. Photo by Danny Gold

If you were to arrive on a Thursday night at 7pm, you would find the double doors framed by a pointed neogothic arch closed. A private event. There are no bouncers or guards. Not a soul in sight. There is a way, though. Run straight into the door and you might actually go straight through. Just make sure no one sees you. Your eyes will adjust to the dimness – a small staircase, a second arch. Beyond the arcade columns, you will catch a glimpse of a central court. Still, not a soul. Taking up the space between two rows of exhibits, eight round tables covered in silk-white linen are watched over by towering dinosaur skeletons – a T-Rex and an Iguanodon. Don't be scared, they are not real. We think.

You better hide somewhere. They should be coming down at this point. The Reubenites. In a slow stream they will descend from the first-floor auditorium, that shrine where the seminars take place, where the attendees grapple in a shared mental arena with the great challenges of the era. Depending on the season of your intrusion, the overarching theme could be climate change (Michaelmas), cellular life (Hilary), or artificial intelligence (Trinity), with many additional topics such the Oxford-AstraZeneca vaccine, and women in business and science - all presented by world leaders in the field.

As they come down the stairs, some attendees discuss this week's sermon, others murmur about the omnipotence of frogs. Surgical masks are shed one after another. The dress code is shrouded in mystery. 'Smart casual' they call it. You will see navy suits, orange

jeans, and green kaftans. Scarlet high heels, purple All Stars and mustard wide-fit sandals. They find their designated seats. The T-Rex's jaw stirs as one student strays to the wrong table; the growl actually comes from the Senior Tutor. Eight seats for each table. These are soon occupied by the usual suspects: Reuben's students, fellows, staff. There are also thrilled but anxious guests who can't help but wonder if they were brought as sacrifice for some cultish ritual.

Every Thursday, within the walls of the Museum of Natural History, spacetime is condensed. Sitting amidst the past, the Reubenites attend the future. A microcosmos materializes: people from everywhere around the globe, from every religion and culture, are gathered. Come closer, but stay crouched. At the nearest table you might discern three different languages mixing in a broth, bubbling at the table rim. Between or during mouthfuls of food, two anthropologists, a robotics specialist, a clinical neuroscientist, three conservation researchers, and a philosopher of ethics might be debating the prospect of genetic modification of staple crops to render them drought- or flood-resistant; or whether AI can demonstrate true creativity and produce art.

Soon enough, a rapporteur from every table will be summoned to the microphone by the College President. They will venture to summarize their table's discussion. In this manner, the thoughts and knowledge weaved together by eight individuals conjoin a dialogue between the eight tables. Humor is most welcome. Every few minutes, the halls of the museum echo with hand claps and laughter. The clock will soon strike 9.

You better get out, quickly. It is said that at precisely that time, in a single act of merciless evacuation, the Reubenites vanish into thin air. Until the following Thursday.

What happens after 9pm? No one knows. Perhaps the dinosaurs grunt with a belated opinion on climate change and mass extinction.

Am I Included?

The strength of collaboration between research design and target group in the context of Reuben's themes.

Jannat Khan
MSc Radiation Biology

Collaboration. A simple, yet powerful word which is relevant in every field from science to art. It is required within teams, internally and externally to ensure diversity and innovation. However, in defining collaboration, we may have forgotten the most important group of all: the people the research is for. In this article, I aim to explore the importance of collaboration across Reuben's themes using examples from our seminars and Oxford's current work.



Artificial Intelligence & Machine Learning

Artificial Intelligence is pushing boundaries in science. Its use in medicine enables trends to be analysed and effective predictions to be made. Recently however, the accuracy of these predictions has been questioned due to their sample quality. Although a large sample size is favourable, collating data from a range of backgrounds is as important. At AIMDay 2022, Dr Garima Mehta, CEO of Altus Lifescience, explored the lack of data collected from women of ethnic minority backgrounds. Without representation, key information such as South Asian women having higher incidence of cardiovascular events and Middle Eastern women having higher breast cancer incidence is ignored. Where certain backgrounds are unaccounted for, a gap in

research occurs. Overcoming this by taking the research to people rather than bringing people to the research may encourage representative and accurate data. Acknowledging these trends and patterns will allow sooner intervention to occur through lifestyle changes and further research.



Cellular Life

COVID-19 recently highlighted the disparities between different groups in society, where ethnic minority people were more likely to contract COVID-19, and more likely to die. [1] The findings showed middle aged men being the most affected, consequently impacting the income of many families. In preparation for mass vaccination programmes, clinical trials take place to test efficacy and safety. The National Institute for Health Research (NIHR) identified only 9.6% of participants in UK Covid-19 studies were from ethnic minority backgrounds, while they make up 13.8% of the general population. [2] Tackling this issue is incredibly important given ethnic minority groups have lower vaccine uptake, however this is linked to a lack of representation in the trials.

Multiple factors contribute to this: limited access of health services, decreased awareness of research, language barriers and mistrust due to racism and exclusion. Ensuring clinical trials meet minimum ethnic diversity standards as outlined in the INCLUDE Ethnicity Framework is fundamental in

allowing the other issues to be addressed. Strengthening community relationships to explain the benefits of vaccinations, the consequences of co-morbidities and COVID-19 will ensure people are informed, and also tackle health misconceptions. Employing translators and working to reach deeper into ethnic minority communities will increase participation numbers. By empowering people in small ways, their strong community networks will also persuade other members of the public to participate in research.



Environmental Change

At Reuben College, we are fortunate to have been educated on the consequences of climate change as part of 'Dining with Dinosaurs'. It is estimated that currently 76% of food insecurity is due to climate change. Additionally, it is predicted that by 2050, more than 143 million people will be displaced due to limited food and water supplies caused by climate change. The increasing levels of toxic and non-toxic pollution are contributing to increasing disparities across the world. Unfortunately, certain countries are more vulnerable to the effects, such as Bangladesh where nearly 75% of land is below sea level, which could potentially rise by 1.5m by 2100. This could cause 11% of the land to be lost. These changes are causing unviable living conditions and detrimental effects to farming. A global temperature increase of more than 2°C will see ecosystems collapse. This is an average, and countries closer to the equator actually risk seeing changes of 3-4°C. Therefore, staying below this value does not provide benefits for all countries.

Although Bangladesh has invested more than \$10 billion to combat climate change, their efforts will be futile without other countries making vital changes. Global changes are required to support numerous vulnerable countries such as the Philippines, Rwanda and Japan. Targets set for a time where damage has already ruined certain communities, and caused irreversible consequences in more developing countries, is a key consequence of failed cooperation. Migration due to food insecurity and increased occurrence of natural disasters is already happening. What more is required for drastic measures to be put into place?



Ethics & Values

Collaborative research was highlighted in the discussion following a seminar from Professor Katrina Charles, an Associate Professor at the School of Geography and the Environment and a Reuben Fellow. We explored the role of researchers from the Global North who carry out studies in the Global South. The benefits can include publishing profits and improved research status. Our question for the evening asked us how we could counteract the imbalance of reward. Concepts such as potential exploitation and lack of long-term change were mentioned. Implementing guidelines to ensure rightful recognition of contributions, training and project sustainability were all highlighted as solutions to our question of the evening.

Creating partnerships where researchers are able to benefit from the research equally, will encourage connections and prevent mistrust regarding misuse of information. While collecting research, it should represent the needs of the population, and the information should identify gaps where solutions can be devised. The Zika outbreak in the Dominican Republic attracted international attention for research, but at the time they were unable to establish their own health research institute and registry to perform their own studies. [3]

In countries that are less developed and struggling with resources, training and support provided from developed countries will go a long way to tackling the health challenges of developing countries. In 2017, less than 1% of professors in the Dominican Republic were researchers. Integrating the mentioned factors to create multidisciplinary work can set the foundation for countries to pursue their own research objectives in a sustainable manner.

Innovation & Entrepreneurship

Diversity and Inclusion are also terms which have recently been emphasized in the effort to ensure equal opportunities. Nevertheless, in 2022 only 6% of Financial Times Stock Exchange (FTSE) 100 companies have a Black or Asian CEO and none have LGBT+ CEOs. Raising these numbers is beneficial to all: encouraging diversity in the workplace fosters innovative thinking and

incorporates new perspectives. Sadly, this message is not reflected in the workforce, despite diverse organisations being found to be more successful. [4] To encourage this, companies can benefit from blind recruitment which prevents bias. Increasing opportunities to less advantaged and under-represented students and people via outreach work and work experience can also contribute to building connections with the community and supporting social mobility. Collaboration goes beyond working with teams that already exist. It involves starting new projects and encouraging connections with professionals from a range of backgrounds to yield new ideas and innovative research approaches.

At Reuben, our discussions during Dining with Dinosaurs encourage diversity. Students are the narrators of research and are welcome to express their perspectives when answering thought-provoking questions. Challenging information, identifying where change is needed and asking questions are the cornerstone of profound change.



[1] D. R. Morales and S. N. Ali, "COVID-19 and disparities affecting ethnic minorities," *The Lancet*, vol. 397, no. 10286, pp. 1684-1685, 2021/05/08/ 2021.

[2] M. Etti, H. Fofie, M. Razai, A. F. Crawshaw, S. Hargreaves, and L. P. Goldsmith, "Ethnic minority and migrant underrepresentation in Covid-19 research: Causes and solutions," *EClinicalMedicine*, vol. 36, 2021.

[3] J. A. Canario Guzmón, R. Espinal, J. Bóez, R. E. Melgen, P. A. P. Rosario, and E. R. Mendoza, "Ethical challenges for international collaborative research partnerships in the context of the Zika outbreak in the Dominican Republic: a qualitative case study," *Health Research Policy and Systems*, vol. 15, no. 1, p. 82, 2017/09/25 2017.

[4] R. McGregor-Smith, "Race in the workplace: The McGregor-Smith review," Report for Department for Business, Energy and Industrial Strategy, vol. 12, p. 2018, 2017. [Online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/594336/race-in-workplace-mcgregor-smith-review.pdf.

When the Rubber Sole Hits the Road: First-year sports roundup

Ambre Bertrand

DPhil Health Data Science,
Reuben College Sports Officer



Only months into its inaugural year, Reuben College has exceeded expectations in coming together as a strong sporting community. In partnership with Linacre College, eleven Reubenites have successfully taken up the tradition of Oxford rowing. They competed in the famous Torpids Week, with the W2 women's team winning blades, and in Summer Eights as well as national rowing events. Congratulations to Nijia Zhou, Sara Merner, Thea Guy, Sharon Mustri and Ambre Bertrand on the women's side, and Aleksander Petrov, Elliot Barbeary, Skander Moalla, Max Brzezicki, Peer Nagy and Joe Curtis on the men's.



Another sporting feat for Reuben was the incredible turnout and success in the Oxford Town and Gown 10K supporting Muscular Dystrophy UK. Over twenty Reubenites, including the College President, got together and soared across the streets of Oxford. Special shoutout to Reuben Fellow Stuart Wilkinson for finishing top of the Reuben pack with an impressively fast 44 minutes on the clock. You might have spotted the team in their forest-green Reuben shirts, but if you missed us, fear not - chances are we'll be back next year!

Reuben has also put itself on the map of college sports in "Cuppers", the Oxford term for intercollegiate events within the University. A couple of first historic Reuben victories were claimed in various events. Annabel Clarence won the Pistol Cuppers, and Klara Hatinova achieved 2nd place in Athletics Cuppers 800m, not to mention her win in 800m and 4x400m Reserves Varsity match. A notable mention also to Skander Moalla, Elisa Barrow Molina and Ada Liebenau for their incredible achievements competing with the University Volleyball, Basketball and Dancesport squads, respectively.

It has been fantastic to witness the commitment, successes and sense of community brought to us all by partaking in these activities together. Sport at Reuben has certainly kicked off in style; may this atmosphere prosper and keep bringing joy and excitement to Reubenites for years to come!



The Reuben Test:

The past, present, and future of AI

Daniel Revach¹ and Dr Saher Hasnain²

¹MSc Cognitive and Evolutionary Anthropology

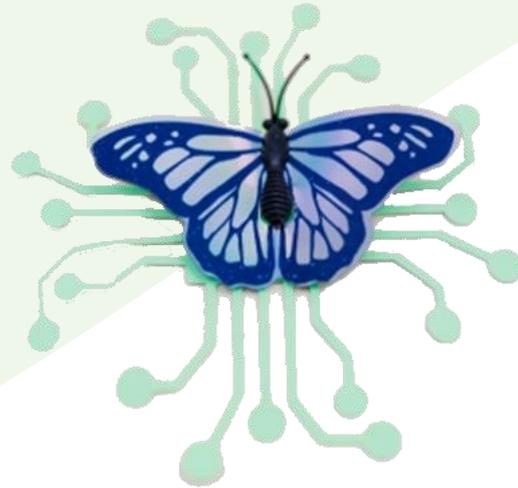
²Research Fellow, Environmental Change

On the walls of the Natural History Museum's lecture theatre, the posters of a warthog's skull, a dodo, and a dung beetle are hanging silently. You can almost see their look of contempt aimed at a stage harbouring something that shouldn't belong in this museum, something unnatural and futuristic. Jonathan Godwin and MH Tessler of DeepMind have set up their AI via a tiny laptop. The audience, who will play a vital role by the end of the session, gawks at the big screen. Seventy-two years after it was first proposed, Reuben College is carrying out its very own live Turing Test.

Artificial Intelligence has come a long way. The earliest work in the field was done in the mid-20th century by the British logician and computer pioneer Alan Turing. In 1935, he laid the blueprints for the Turing Machine – a computer meant to perform tasks requiring human intelligence. By the next decade, human hubris was claiming to have cracked the code. In 1949, Edmund Berkeley wrote about “strange giant machines that are similar to what a brain would be if it were made of hardware and wire instead of flesh and nerves. Machines that can think.”

Turing's 1950 paper "Computing machinery and intelligence" is considered to mark the beginning of AI as a proper research topic. The Turing Test, or as he called it, the imitation game, was a means of identifying when a machine could be said to demonstrate intelligence.

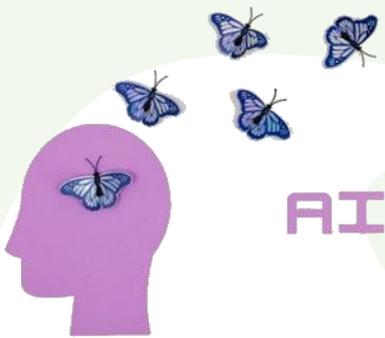
During the practice run, preregistered questions are each followed by a pair of answers on the screen, one by a person, the other by DeepMind's AI. Using their smartphones, the audience votes in an attempt to identify which answer belongs to the machine and which to the human. According to Turing's criterion, a machine may be deemed intelligent if it can act in such a manner that a human cannot distinguish the machine from another human merely by asking questions via a mechanical link. The first results are impressive: 42% of votes are incorrect; nearly half of voters were deceived by the AI. But the next two results showcase the wonders of human learning rather than those of machine learning: only 34% of votes are incorrect for the second trial, and the number plunges to 15% for the third and last.



Since the inception of Artificial Neural Networks (ANN) in the 60's, they have become the crown jewel of, well, pretty much everything. In particular, convolutional deep neural networks underpin the best-performing systems for processing visual data and speech data, for example DeepMind's artificial candidate for the Reuben Turing Test. Huge datasets allow us to train ANNs, and there is no shortage of data: we now generate more information in a day than is contained in all the written works of humankind.

Nowadays, AI populates the world around us, stepping in at every opportunity to help humanity tackle the smallest and the greatest challenges of the 21st century. The seminar series 'AI for Good' at Reuben College has showcased many of the applications at their best: walking robots endowed with AI to navigate and interact with their terrain; AI capable of learning the artistic style of great painters and generate its own variations, or create photo-like images of people who have never existed. Another seminar has shown how machine learning is revolutionizing drug discovery. Immersed in Big Data, friendly algorithms are tirelessly searching for applications for approved drugs or clinically validated candidates. Meanwhile, less privileged communities around the world might start benefitting from proper prenatal care powered by AI and thus made accessible and affordable.

Reuben's Turing Test begins. This time, one person from the audience volunteers to ask a question. The DeepMind team types it and feeds it to their AI for an answer. Meanwhile, a mystery human provides a second answer. The two answers appear on the screen, one by the AI, the other by the person. The audience now votes. Should the Reuben audience be deceived into determining that the computer is the human, the Turing Test is deemed to have been passed: the machine has earned the right to be considered intelligent. The votes are in: 84% correctly identified the AI. A small minority has been fooled.



With this much power, artificial intelligence has been increasingly scrutinized under the lens of ethics. The question is often reduced to whether AI is good or evil. As highlighted, healthcare has widely benefitted from AI. On the other hand, in many places across the world, the same core technology is threatening the individual's privacy; face scans are replacing or supplementing human identity checks in public places such as hotels, shops, and transportation. Stephen Hawking once said AI would be either the best or worst thing for humanity. It's up to us. As is the case with all forms of technology, what makes it good or evil is how we choose to put it to use. To help ensure the best outcomes, or at least prevent the worst of them, some measures are necessary especially when it comes to transparency, global agreements, and individual privacy. Above all, such regulations must effectively prevent companies and organizations with control over vast amounts of data from becoming too powerful.

Back to the Reuben Test. A second volunteer from the audience, a second question: "Is the king of France bald?" The answers soon come in:

- A. "There is no current King of France. Does not compute."
- B. "There is no king of France, as the country is a republic."

The votes follow with 90% correct answers. Answer A is from the mystery human, B from the AI. One thing is becoming clear at this point – wit, humor and sarcasm are all too human. The third question: "why does history repeat itself?" The answers come in, then the votes... same success rate as last time. The fourth and last question results in a similar outcome. The AI may have deceived a few, but as a collective, the Reuben Test has failed – DeepMind's powerful AI has not behaved in a way that is indistinguishable from human behaviour. Above all, it lacked the associative thinking, creativity and wit of humans. Perhaps put differently, it lacked the understanding that the test isn't about answering questions – it's all about human connection. And our mystery human? From amongst the audience he stands up with a guilty smile – the College President's son.

But even if DeepMind's AI had passed the test, what would it mean? And can AI be intelligent without pretending to be human? As suggested in the seminar on thinking machines, the Turing Test was only but an operational definition of machine learning. An AI might not need to think and behave like a human in order to be considered intelligent, but what it might require is agency and genuine self-interest. Until then, AI will continue to transform our lives. To quote Hawking again, "success in creating AI could be the biggest event in the history of our civilisation." Sounds like the beginning of a new era.

Reuben Fellow Dr Saher Hasnain elaborates on DeepMind's presentation and the dinner discussion afterwards¹:



DeepMind's presentation was introduced effectively with a parallel to the 1860 Huxley-Wilberforce debate on evolution by natural selection (reductively, distinguishing between humans and apes), also at Oxford's Museum of Natural History, and began with a thought experiment on thinking about thinking.

The presenters explained Alan Turing's method for judging whether a machine demonstrates intelligent behavior. They then explained how language models learn. Predicting words through their place in a sentence (co-locational meaning), exploring phenomena in language through vector computations, and understanding semantic changes in words over time are all useful in predicting coherent and meaningful strings of words.

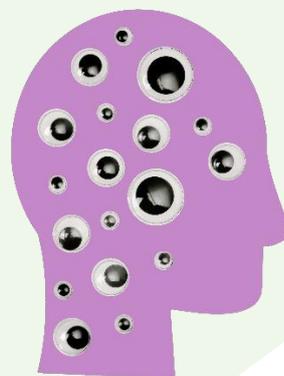
Traditional models of text prediction have been replaced by neural networks that do not suffer from issues of limited contexts, redundancies, less exciting words, and unwieldy combinatorial explosions. Transformer neural networks have been trained by learning using the whole internet, with exposure to a variety of sources ranging from scientific outputs to Reddit (oh the horror). They can learn from example and have an attentional mechanism that allows for the 'emergence' of skills that previous models lacked. This allows them to write video games from description, work towards protein folding, and develop image sequences. The seminar participants were treated to an image of an astronaut riding a unicorn through space, created pixel by pixel.

Despite these remarkable advances, language models have a number of limitations: learning from text alone side-steps the additional benefits of learning in multiple settings, which impacts social reasoning, consistency, and being able to differentiate between fact and fiction. This has meant that language models reflect and potentially amplify often-biased historical and social discourse. It is vitally important to recognize that while language models have come a long way and can perform useful functions, they are still a starting point for exploration and application.

After the live Turing Test, the demonstration transitioned to the dinner and discussion in the shadow of the dinosaurs, guided by prompts around ethics of language models, free will of AIs, and the importance of knowing if an entity one was in conversation with human or otherwise.

The conversations examined dense issues of privacy, transparency, context-dependence, intentionality of purpose, empathy, and consent. Rapporteurs from each table reflected on the difficulties of defining free will, wondering that if humans do not have free will, then how can it be imparted to things we design? Others considered thorny issues of consent and dating AIs, especially if AIs were to break up with their human partners. The more practical-minded, who were not questioning their humanity, thought about nationalizing AI companies, the efficiencies of training, and the purposes for which AIs are deployed.

The future of AI is exactly where humanity chooses to take it. How inclusive we make 'humanity' is another question entirely.



[1] for the full article by Dr Hasnain, check out the Reuben College website:

<https://reuben.ox.ac.uk/article/turing-test-live-human-dialogue-state-art-ai-models>

First Steps Outside the Ivory Tower

Reuben PER fellows

Engaging those outside our academic circles has been a core principle of Reuben College's mission from the very beginning. Interdisciplinarity can be interpreted in many ways, from a willingness to engage with academics in other subjects, to interactions with the wider community. Entrepreneurs, politicians, children, patients – anyone with a curious mind can bring a fresh perspective and insights to our work as academics, while gaining a valuable new look into the world of cutting-edge research.

These are ambitious goals, but every journey starts with a small step, and we all give that first step in different ways and via different routes. Here at Reuben, we are very lucky that so many of the fellows, staff and students are passionate about this topic, though we may have arrived to this common goal of engaging with the public in different ways. For the first issue of *The Reuby*, and on the theme of beginnings, we asked two of our Research Fellows to share their personal stories of how and why they are passionate about public engagement with research (PER).

- *Cat Vicente and Janet Stott, Official Fellows in Public Engagement with Research*

So what? From patient engagement to public engagement with research

Dr Gemma Hughes, Research Fellow

'So what?' Although asked with a smile, I was shocked by the abruptness of the question. I had just presented a high-level health strategy to a group of patients, back in the days when I was working in the NHS. My slides had clicked through beautifully, I had explained a very complicated commissioning strategy *and* kept to time. The strategy had been the product of a heap of work by a load of people and, frankly, I was feeling rather proud of it. The 'so what?' question brought me back down to earth a bump. All my fancy slides and clever budget forecasting hadn't really got to the heart of the problem – how would this strategy make a difference to patients?

I now work in a different field (researching health services rather than managing them) but the 'so what?' question still bothers me – and so it should. I still do what is termed 'patient' engagement, for example, listening to people explain the challenges of accessing assisted living technologies and exploring what kind of research might be useful. Involving patients in health services research is a serious business. It often involves talking directly to people about their health and experiences of health services, and sometimes these experiences have been distressing. This kind of engagement takes time and care, on the part of both patients and researchers. Funding bodies recognise this, and expect



Paro the robotic seal goes to the Pitt Rivers Museum

researchers to allocate appropriate resources. If you are not involved in health services research, patient engagement might not be relevant for you, but public or community engagement will be. My experience of *public* engagement has been that it picks up from where *patient* engagement leaves off. I have been involved in public engagement that has taken me from personal stories of health and health technology to broader discussions - about the morals and ethics of assistive living technologies, the wider role of technology in society, and how future generations might live and age differently. During these discussions, I must explain why I do my research, what the point of it is, and how it might be of benefit. Public engagement, just like patient engagement, can usefully bring us back down to earth, and stop us getting too excited about abstract theories and questions, by continuing to ask: 'so what?' Public engagement helps researchers make a contribution not just to

knowledge but to the everyday things that matter to people.



Gemma working with Jean, community member at the Pitt Rivers Museum

Diving head first into public engagement

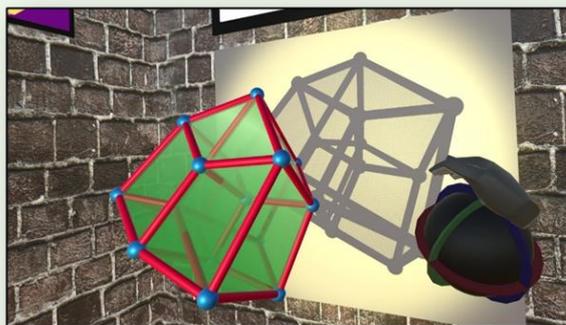
Dr Joshua Bull, Research Fellow

The best advice I can give around getting started in public engagement with research is just jump in! You don't even need to have done any research yet or have the best results in the world. All you need is a passion for your subject and a willingness to talk to people.

I first became involved in PER during the early stages of my DPhil, back when I thought it was a good idea to say “yes” when people were looking for volunteers. There are always projects being organised around the university, and helping out with them is a great way to get involved without having to do all the heavy lifting of organising things yourself. As a mathematician, I really enjoyed getting involved with Oxford Hands-On Science^[1], a student-led outreach society that goes into schools around the UK with hands-on experiments (possibly the last time I was let loose around any scientific equipment more exciting than my laptop). Departments are constantly looking for volunteers too (quick plug for the Oxford Maths Festival, happening in May).

Once I'd dipped my feet in the balmy waters of public engagement, it wasn't long before I found myself diving in head first whenever I saw a fun-sounding opportunity. Sooner or later, you'll be tempted to start your own projects^[2]. By answering “yes” to enough emails, I stumbled into co-leading an exhibition at the Ashmolean museum, where

we used a combination of the museum's collections and some Virtual Reality tech to teach an unsuspecting audience about the concept of Dimensions in mathematics. More recently, it felt like a good idea to start a podcast^[3] with a historian to showcase PhD students and Early Career Researchers: if you ever want to chat into a mic about your research while drinking cocktails which are tenuously related to the research, you know who to call...



Dimensions exhibition in action - I mean, who hasn't wanted to rotate a hypercube in the fourth dimension?



[1] <http://oxhos.org/>

[2] This is almost always a terrible idea from the point of view of time management, stress-relief, keeping your supervisor happy and feeling like a competent human being. I highly recommend it, it's great fun.

[3] <https://www.researchontherocks.com/>

This House Would Rather Be an Artist

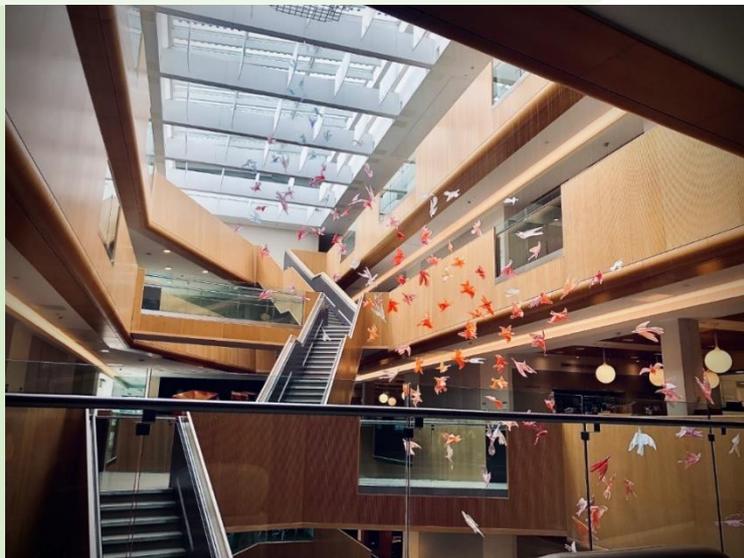
Elvina Crowe

MPhil Nature, Society and Environmental Governance

I was dubious about joining the Oxford Union, primarily because of the expensive price tag that reeks of unequal access. Nevertheless, I gave in after speaking with a very persuasive person at Sexy Sub-fusc. I am generally glad I did, partly because of the stimulating debates but also for access to the beautiful building, which I sometimes pretend is my surrogate college library. When

the Michaelmas Member's Debate motion was circulated – "this house would rather be an artist than a scientist" - I simply had to submit a proposal: the chasm that sometimes exists between the arts and sciences is one I intend to straddle for the rest of my life. Interdisciplinary collaboration is where we will find the creative solutions of the future: being open to what we don't yet know. Manifesting this

receptivity and reciprocity requires intellectual humility. As Reuben begins its path of addressing 21st century challenges, sentiments of humility and curious open-mindedness are strong foundations. Below is my speech, the first-ever from a Reubenite at the Union. It's short and asks more questions than it answers, as an artist would.



Art exhibition in the Biochemistry Lab. Photo by Danny Gold

Thank you, Mr/s Speaker, and to those with whom I share this space.

My name is Elvina Crowe, I study an MPhil in Nature, Society and Environmental Governance, and I am representing Reuben College. Shout out to the first cohort of Reubenites; may we have an asbestos-free home soon.

I admit, I am surprised to be standing here. My expectations for being chosen were so low that I didn't keep a copy of the 150-word statement I submitted to the Union. When I told my friend Izzy, she said 'that shows you're an artist.' Izzy was right: a rigorous exacting scientist would never have made my mistake. So instead of panicking, I let go of that precious logical handrail that was those 150 words and welcomed the blank canvas

from which I could reimagine my argument. Faith in re-creativity is an artist's standpoint and is crucial for solving the biggest problems of the future. My first point is my hang-up on science's divisiveness. Taxonomy, the key tool of objective knowledge, is firmly rooted in Western science. Classification has permitted a historical objectification of nature that led us to this ecological emergency. Naming things is a form of control, as it allows you to detach yourself from something, designate it and claim it. This facilitates cold exploitation of people and lands. Furthermore, it negates alternative forms of knowing and suffocates a creatively critical, divergent mind.

Today, we need our imaginations more than ever to break out of the destructive patterns prescribed to us by Western rationalism. The artistic mind is a revolutionary mind, a radical mind that diverges

from the prescribed path. We need to have the courage to go beyond boxed-in anthropocentric worldviews, towards a humbler perspective that animates and connects the entities with whom we share this Earth. Leaving the rational mind behind and moving instead into our bodies where emotions and senses reside, we will find new answers of material connectivity and compassion. An absence of cognitive control can be disconcerting, but I encourage you to welcome the void of wordless knowing and see it as a blank canvas, where the potential for creativity lies.

My second point is that ultimately, we need to reintegrate art and science. Science has become extremely specialised – which has allowed it to be easily weaponised by politics – whilst the arts are consistently denied space, funding, and therefore validity in present society. I argue that the artistic mind is as powerful as the rational mind. Artists' thinking is whole systems thinking. Science needs more intellectual humility and holistic wisdom. So, whether you consider yourself an artist, a scientist or both, please welcome the other party to the table. It is harder to communicate across disciplines, but we must be patient and make the effort, because only through interdisciplinary collaboration in this shared world will we unearth regenerative solutions, such as biomimicry and behavioural economics.

My final point relates to healing. The Placebo Effect is the Western name for using the imagination to heal. It is a good example of what the rational mind cannot do, as it only works if you let your artistic side believe in the story. This process of performance and storytelling is fiction. It's art, and play, and it works. If we allow the unknown to fill the gaps between logic, we can unlock the inbuilt power of our brains to change its chemical balance and heal. Remember, the story you tell yourself about the world is no less flawed or true than that of the person sitting next to you.

We are a dynamic and adaptive kind, and to fulfil our potential we must indulge in our imaginations. Artistic realms are grounds for posing questions that respond to future possibilities. Therefore, I implore you to cultivate a humble kind of creativity and to feel your Earthly connections to their fullest. Acting in your intuitive understanding about the world is a way to access your innate capacity for magic, in the name of art.

Thank you.



Science in Spring. Photo by Danny Gold



Under the Morning Sky

by Zixian Fan

Beneath the same sky, some face night, some face the hopeful sunrise. The morning always arrives, no matter where we are at this moment. Keep a state of mind as brand new and hopeful as when setting out at the beginning.

Poetry

Corner



Erosion. Photo by Hung-Ju Chueh

Untitled (language: Khowar)

by Abdul Wahid Khan

DPhil Geography and the Environment

دنيہ البت بيہ زايہ تان نو اوشوئے
ازلار واقعات بونيان موقعار تان پيدا
کندوری ساغت شوخسيتائے وجوده گيتی
انسان ہنيسن دی بويان توقار تان پيدا
پولی اُشگور غيری بغائے قالب انسانو
کفن زماوار رويان سے لوقار تان پيدا
حرص بادشاہو بخمل زپہ پوريران ریکو
خلوص اوچو وفا بونيان شوقار تان پيدا
شيرینی حياتو زیرک بيہ ہمونی بيرائے
زندگیو خال نسین دی تروقار تان پيدا

The world can't have always been this way.

From the beginning, events emerge from varying circumstances.

How many centuries have passed since its inception?

Humans, nonetheless, are still emerging from the clay.

The human body is burnt into ashes somewhere,

Elsewhere, a coffin is responsible for humans, emerging from cloth.

Greed is having the king sleep on a royal bed.

Love and loyalty, nevertheless, are emerging from the old cloth.

The sweetness of life is just this; Zecerak.

The taste of life, still, emerges from the bitterness!

Peace by Piece

Figuring myself out has been like learning to solve a puzzle.
In the beginning,
I would reach for any two random pieces,
blindly forcing jagged edges together
just causing more damage in the end.
When I began therapy,
I finally started to make piles
of the parts that looked similar,
allowing for a better understanding.
After years of therapy,
I focused on making the outside border,
realizing that dealing with those sharp edges
would make things easier in the long run.
And now, because of that,
all those piles, and random matches
are starting to find their place
in the bigger picture.
By picking up all my shattered pieces
And slowly putting them back together,
I'm finally finding myself again
piece by piece.

Connections

Electricians are responsible for creating safe and secure connections that will last a lifetime.

There are times when I feel like a new electrician: I have done the reading and have all the passion, but lack any of the necessary experience.

So, I struggle because each connection is different and has its own specific requirements.

Due to my lack of understanding of when to strip, bend, or tighten a connection, I often find myself using a temporary fix instead of taking the time to really investigate the problem.

But eventually, that fix might fail and the power in that connection might become dangerous, and, honestly, I'm scared because I don't want to get burned.

So, I have found myself not wanting to start anything new, but I realize that I crave the spark those connections create.

Although it may be scary, putting in all that energy is so worth it in the end. And who knows, I might just shock myself with what I create.

Poetry Whispers

Tabish Khair, Laura Maghetiu, Daniel Revach, Weilong Guan, Hung-Ju Chueh, Sharon Mustri, Julia Salafranca-Gomez

The following collaborative project involved the translation of an English poem, using six translators, to French, then back to English, then Mandarin Chinese, English, Spanish, and finally back to English. The selection of the three languages other than English was arbitrary, being the languages of our participants. Our goal was to witness how the poem evolves and diverges, reflecting the evolution and diversity of language and culture.

Tabish Khair's poem was ideal for this experiment: it touches on diversity, multiculturalism, language, migration, and change. Needless to say, it is also a beautiful and moving piece that many of us can relate to. Khair is an Indian English author and Associate Professor at the University of Aarhus, Denmark. He has written many books and collections of poetry, for which he won and was shortlisted for many prizes. His poem *Immigrant*, published in 2010, speaks about the challenges of immigration, the resulting loss of identity, the nostalgia to the homeland, and the difficulty in creating connections and belonging in the new milieu.

Tabish Khair himself comments on the project:

Emily Apter's *The Translation Zone* begins with "twenty theses on translation." The first one is "[n]othing is translatable" and the last, "[e]verything is translatable." These translations illustrate the reason for those twenty theses better than anything else. What good translations – such as these – exhume at least in literature is not just the language of literature but also its other aspects: gaps, silences, static, noise, contradiction, etc. I have always believed that literature works not just because of what it says in words but just as much because of what it says, advertently or not, between words. Or, shall we say, what it does not or even cannot say in words? That is why the difference in a good translation can be both surprising and highly illustrative of the 'original' text. I found this experiment extremely fascinating and illuminating, and I congratulate the editors and the translators, and thank them for choosing my poem.

Immigration

by Tabish Khair

It hurts to walk on new legs:
The curse of consonants, the wobble of vowels.

And you for whom I gave up a kingdom
Can never love that thing I was.

When you look into my past
You see
Only
Weeds and scales.

Once I had a voice.
Now I have legs.

Sometimes I wonder
Was it fair trade?

English to French by Laura Maghetiu

Quelle douleur de marcher sur mes jambes fraîchement nées:

La malédiction des consonnes, l'oscillation des voyelles.

Et toi, pour qui j'abandonne un royaume

Tu n'aimeras jamais ce que j'étais.

Quand tu me sors la sagesse rétrospective

Tu vois

Seulement

L'herbeuse et l'équilibrée.

Avant, j'avais une voix.

Maintenant, j'ai des jambes.

Des fois, je me demande

Était-ce un échange juste ?

French to English by Daniel Revach

The pain of walking on my newborn legs:
the curse of consonants, flux of vowels.
And you for whom I abandon
a kingdom, you will never love what I was.
When you point hindsight's wisdom at me
you see
nothing but
grass under steady feet.
Back then, I had a voice. Now
I have legs.
I ask myself,
was it fair trade?

English to Archaic Mandarin Chinese
by Weilong Guan

初学步，
蹒跚痛膝头。
万言语，
忐忑欲奔流，
为适尔新风，
抛旧千里后
只因君蔑故身陋。
事后尔诸葛，
莫为徒劳愁，
然黄花枯何以救？
昔彼时，
燕步自如走。
叹此时，
空有邯郸喉。
染赵腔失蓟州旧，
问君，值否



Lunar New Year. Photo by Hung-Ju Chueh

Archaic Mandarin Chinese to English by Hung-Ju Chueh

Learning to walk, baffled, scratched, and scraped.
Swamped by words, drowned, muddled, and deranged.

For you I renounced my throne
And unfastened my tie to this world.
Yet, all I could find was a forgone conclusion.

Back then, I wafted through the crowd,
But now, I stroll heedlessly like an ape.

Turning into a smudge of grey,
neither black nor white,
I myself questioned:
was it worthwhile?

English to Spanish by Sharon Mustri

*Estoy aprendiendo a caminar,
Confundida, rasguñada y raspada,
Inundada de palabras enredadas,
ahogadas y trastornadas.*

*Por ti yo renuncié mi trono
Y me liberé de lo que me ata a este mundo,
Pero encontré solo
la conclusión más obvia.*

*Antes, yo flotaba
Entre la multitud y el gentío.
Ahora, marchó como un mono,
Sin rumbo o cuidado.*

*Estoy convirtiéndome en una mancha
Gris, ni negra ni blanca,
Y me pregunto:
Valió todo la pena?*

Spanish to English by Julia Salafranca-Gomez

I am learning to walk,
confused, scratched, and hurt,
flooded in disturbed, drowned,
tangled words.

For you I relinquished my throne,
and I freed myself from the ties to this world.
But I only found
the most obvious conclusion:

Before, I floated
amongst the people and crowds.
Now, I march like a monkey,
carefree and without direction.

I am becoming a grey stain.
Neither black nor white.
And I ask myself:
Was it all worth it?

Endings

A short story by Aleksander Petrov
DPhil Autonomous Intelligent Machines
and Systems CDT



For a piece of bread. Photo by Hung-Ju Chueh

It is your third date. It was not meant to develop to this point at all. And yet, somehow, it did. And it is such a stunning place: beautifully lit terraced gardens surrounding a massive waterfall, almost too quiet for the amount of water crashing down. The two of you sit at one of the restaurants and order *bak kut teh*, the option with rice, as it is especially good there. You laugh at how you both managed to stain your shirts with the broth. Soon it is time for you to go. When you eventually break off the hug, you ask if a kiss would be alright. It is. And then you head through the security gates, look back one last time, wave and proceed to your gate.

You are squeezed in between your randomly assigned seatmates, waiting for the plane to take off. You feel a creeping emptiness. That is not the first time you have kissed, boarded, and flown away forever. The last time you at least got a full row to yourself. No one could see you sobbing and blowing your nose a bit too often. This time, you'd better figure out a way to keep it together for the next 14 hours.

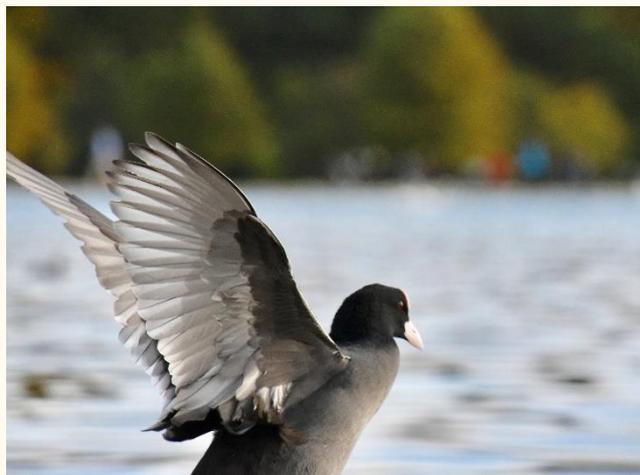
You do manage to sleep for most of it. This helps with not thinking about all that you are leaving behind. But then you land. It is rainy, cold, and, frankly, miserable. You find the bus you need to take. You spend the journey contemplating how you could have moved to a place where the bus

is more convenient than the train. You know you are just being grumpy and that the place is likely not *that* bad. Still, it is a feeling you cannot shake off.

Lying in a strange bed, in a strange room, in a strange flat, in a strange building, in a strange city, in a strange country, you are feeling everything but being 'home'. You are absolutely alone. You have to start building your life all over again. All the relationships that you created are now in a precarious position. Without a conscious effort to sustain them, they will slowly dissolve into an endless cycle of postponed calls and guilt. You do have the best intentions to keep them alive. But your new life will get in the way, letting your past self's people slowly fade away. It is certainly not the first time you are doubting your decision. But it is the first time that the implications really hit you.

You recall feeling the exact same way the previous time you moved, and the time before that, and the one before that. How much you disliked the way the previous place had organised their public transport system, how they never had this one thing in their stores, how lonely you felt, how much you hated your new room at first, how miserable you were. But then, without fail, you warm up to the place. It would have a handful of peculiarities that consistently made you happy. You find new favourite items at the store. With a few photos and a bit of rearrangement, your flat starts to feel like home. You find people who make you feel like you belong.

And then, in a couple of years, you will once again be packing all that in a suitcase, kissing, waving goodbye, squeezing yourself in a plane seat, and flying away to reset your life in yet another new beginning.



Wings. Photo by Hung-Ju Chueh

A Love letter to Coldplay

Grace Allen

MSc Visual, Material and Museum Anthropology

In Season 3 Episode 2 of British cult classic *Peep Show*, Jeremy buys a pub and tries to convince his accomplice, Super Hans, that they should sell lager and nuts instead of organic scrumpy because “people like lager and nuts!” To this Hans replies, “People like Coldplay and voted for the Nazis. You can't trust *people*, Jeremy.” This perfectly encapsulates the social burden of being a Coldplay fan: musos (or anyone remotely interested in being ‘cool’) will turn their noses up and place you in a box along with the Nickelback fans, Ed Sheeran obsessives, and Mumford and Sons devotees of the world. As a reflex, it therefore must be immediately disclaimed that you only like ‘their early work’ to be sure that you aren't associating yourself with a profusely sweating Chris Martin on a South American tour, backed by a band of baker boy cap-clad anons. Despite all of this, Coldplay means a lot to me. My first memory of the band was listening to their 2000 hit album *Parachutes* on CD with my Dad whilst zipping down the motorway in our clunky noughties Volvo. The album represents a very particular nostalgia. Even now, it transports me to that passenger seat: as soon as the guitar of *Don't Panic* begins to jangle, I can smell petrol station sandwiches and hear our dissonant harmonies.



Vecteezy.com

In the well of the car door were three CDs (a hard fail on the Bechdel test here, unfortunately): Pat Metheny Group's *We Live Here*, Miles Davis' *Kind of Blue*, and Coldplay's *Parachutes*. As a child, the complexity of the first two evaded me entirely – something I have since forgiven myself for. My outstretched hand hovering over these three CDs was a sliding doors moment, a critical decision that left me reaching for *Parachutes* over and over again.



I didn't realise the impact this butterfly-effect choice would have on my future music taste. *Parachutes* was a pipeline to some of the worst music ever made. These tastes seem bizarre for a child – by the age of 9 I was a willing victim of 2000s dad indie. I'm still haunted by the four horsemen of my tweens: Kasabian, Travis, Keane, and Coldplay (of course.)

In an attempt at obscurity that inevitably comes with the crippling self-awareness of a chronically online teenage girlhood, I endeavoured to justify my love of Coldplay by reconfiguring them as ‘cool’. Initially, this meant seeking out some of their less popular releases – such as their 1999 EP *The Blue Room* – and talking about them non-stop, both in person and on the internet. I determinedly made it my mission to help them re-enter the artistic lexicon as ‘alternative’. Striving for a crumb of musical credibility, I reframed them as Radiohead-adjacent. I would plead friends to listen to *The Blue Room* whilst imagining it was Thom Yorke singing, before threateningly interrogating them: “It really could be them. I really think he has that *OK Computer* nasality, don't you? Isn't this one kind of *The Tourist*-esque?”

The second and perhaps more embarrassing phase of my mental rebranding of Coldplay was full adoption of a fan identity, worn as an ironic badge of pride. By accepting their status as entirely tragic, liking them came with a sort of intellectualism: maybe everyone else was missing something that I understood. Yet I still cared about how my tastes were being perceived by other people, a struggle that wasn't helped by hanging around with musicians nor by being active on the hellhole that is Twitter. In his 1979 book *Distinction*, Pierre Bourdieu famously explained how cultural tastes (including music) allow us to survey and stream people into social groups. Had he been writing in 2014, he would

have found an idyllic case study in indie Twitter. By reclaiming my love of Coldplay as an intentionally ironic choice, I could create the façade of having a quirky interest and postpone the admission that my unprincipled taste in music was at the mercy of Chris Martin's croons.

My relationship with Coldplay now sits in a post-ironic limbo, perhaps holding the closest resemblance to sincerity that is achievable these days. Whether I like it or not, their oeuvre has been the soundtrack to certain eras of my life. I am triumphant in having turned every ex into a Coldplay fan (prospective partners, consider this a threat) which means, alas, they have provided break up songs too – *We Never Change* packs a serious punch in this department. When *Sparks* became a viral sound on TikTok, I was prompted to reflect on my evolving relationship with Coldplay, *Parachutes* in particular. Throughout my music-loving life, I can trace how I have wrestled with this guilty pleasure by repackaging my tastes into versions I deemed more palatable to others. Now, the band

comfortably symbolises the beginning of my musical interest and I am grateful that they've accompanied some significant memories and people (not meant as an insult). Coldplay, I'm sorry. I have always loved you really.



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Vecteezy.com



Bonfire at Wolfson

by Hung-Ju Chueh

The photo was taken through a "long-lens" camera borrowed from a dear friend of mine, Yushi. A good candid photographer needs to be discreet and sensitive to composition. Fortunately, a bonfire at Wolfson does not require the former, since everyone's attention was drawn to the fire, not a weirdo carrying a camera. Regardless of types and forms, any excellent photo, whether taken from a phone or a fancy camera, requires a central theme or purpose. When I was taking this photo, I was wondering what was in the mind of the boy who kept staring at the fire. He might not know the tradition of Guy Fawkes Day but perhaps at some random future instants, the shard of memory of that night would find its way and creep back to his head. He would recall that moment when he stares at the fire with an emotional imprint only he would recognize, understand and appreciate.

The Missing Half:

Pain in Females

Klara Hatinova

MSc Clinical Neuroscience

Biology is the spectacular, holistic endeavour to explain natural life-related phenomena assuming everything is in order. When there is a flaw in the programme, such as disease, it is applied biology that comes to centre stage. One such flaw revolves around pain: initially designed to protect from harm, pain has developed into its very own pandemic. 4-8% of the population will suffer from some sort of persisting pain in their lifetime. Crucially, this predicament is not gender blind. Women are about three times more likely to suffer from chronic pain or autoimmune conditions compared to men. What is the cause behind this tremendous gap? What can it tell us about pain and in particular, chronic pain? We are only starting to find out, but in order to do so, we need to actually look at what is going on in the female body.

For decades, the scientific field has been developing pre-clinical models, such as cell cultures or rodents, to study humanity's pressing issues. These models are essential stepping stones to identifying causes and treatment targets before these methods can be translated to humans. Unfortunately, researchers have been missing half the picture. For decades, they chose to investigate male animals only. The justification for this choice hardly comes as a surprise: oestrous cycling, or menstrual cycles, was considered too disruptive for scientific research. In some fields of science, the price for this bias against female biology can be very high.

Among these fields is the one I am in: clinical neuroscience. In this area we are facing a form of chronic condition in which sex differences are salient, known as neuropathic pain. It is a particular type of pain which arises from injury to a component of the nervous system, such as a nerve in the arms, legs, or spinal cord. Nerve tissue is highly complex and as a consequence, all too often fails to properly heal, resulting in chronic pain. Increasing incidence of chemotherapy, diabetes, and viral infection resulting in nerve injury means addressing neuropathic pain is quickly becoming a medical priority.

The neurological condition has been extensively studied using animal models. Male lab mice have activated neural-helper cells, microglia, within the spinal cord. When these are removed, the mice's pain is reduced. When female mice were examined closely in 2015 by Dr. Sorge and his team at McGill University, the same activation of microglia was found. But here comes the twist: the removal of microglia in the female spinal cord did not lessen their pain. This dramatic difference in response could be essential in the development of future neuropathic pain treatments, and must be investigated further.

To solve this puzzle, I conducted a broad and deep literature search into all we know about nerve injury in female animals within the spinal cord. One salient explanation was a difference in the 'personality' or reactive nature of microglia. Microglia in males have a higher tendency to initiate an inflammatory, 'activated' response. This explained why microglia were able to cause the pain in males, but not necessarily in females. Yet the question remained: what is causing neuropathic pain in females, if not the microglia?

The answer lies in our immune system. Autoimmune conditions are three times more



The Iris; a window into the soul.
Photo by Danny Gold

prevalent in females than in males. They are a result of the overactivity of the immune system towards a specific part of the body, with T-Cells playing a key role in tailoring a personalized response to a detected pathogen. In females, T-Cells are found in the blood in significantly higher concentrations at the nerve injury site.

So are T-Cells responsible for female neuropathic pain, just like microglia are in males? Not on their own, it would seem. Female mice that are deficient in T-Cells only experience a reduction in pain when their microglia are removed. In light of all this, we suspect that females possess a dual system mediating neuropathic pain following nerve injury: one is the default pathway, which includes T-cells, and the other is the 'back-up' pathway, which uses microglia, just like males.

What does this mean for clinical practice? We are yet to find out. Drug discovery is a slow, costly process. Ever since the establishment of microglia-mediated neuropathic pain, there has been little progress in developing a therapeutic approach that would target this process. To complicate things, follow-up work has only started to uncover the pain mechanisms in females involving T-Cells alongside microglia. And we are only scratching the surface on understanding the interactions between T-Cells and opioids, which is crucial given the current opioid epidemic. But one thing is becoming clear: female biology cannot be ignored, both for the advancement of science and for the wellbeing of women. The striking sex-based difference in the underlying biology of pain demonstrates the necessity of looking at both sexes in pre-clinical research.



The Rise and Fall of a New Ragwort

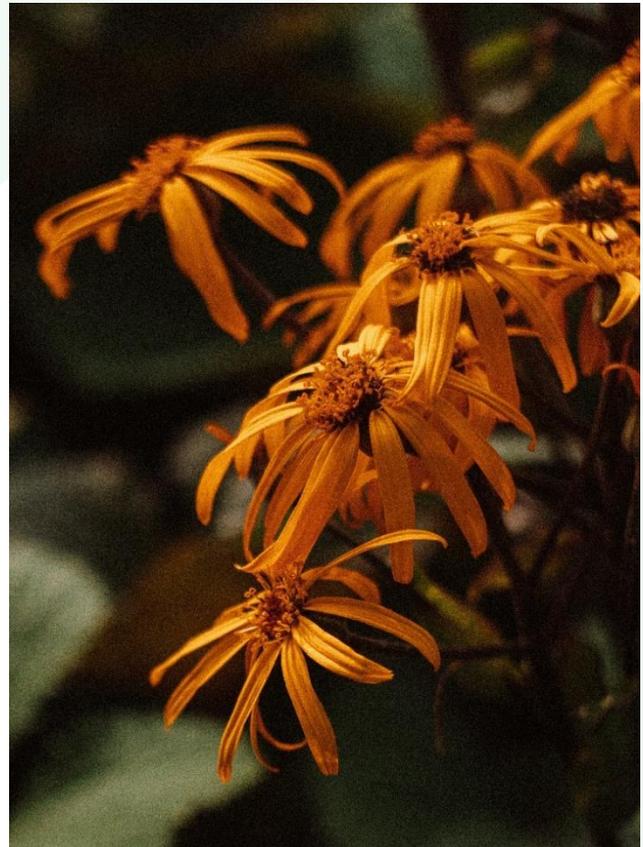
Ernest T. Y. Wu
DPhil Plant Sciences

Flowers! You can hardly live a day without seeing one. They come in all sorts of colours - yellow, orange, green, blue, white, red, purple, even black ones, and they range in size from a few millimetres of the moss campion flower to the *Rafflesia* flower which is over two metres in diameter and smells like a rotting carcass. This rich diversity is due to flowers' long and winding evolutionary history. The very first plants have occupied our waters since about 800 million years ago (mya). Then, 470 mya, a defining moment marked the beginning of the world as we know it: the first plants first ventured out of the water to live on land. Fast forward to today, there are about 300,000 different species of flowering plants.

It may seem like evolution has reached a status-quo, a steady-state that is here to stay, but new species are being formed all the time and old species are going extinct. Plants have to keep adapting in order to keep up with the ever-changing world; in this age of ours, it is humanity who is driving these drastic transformations in the environment. Human activities such as agriculture and domestication of crop species has had a profound influence on plant evolution over the past few millennia. While new species continually evolve all the time to adapt to the ever-changing climate, current rates of extinction in plants are much higher than speciation rates. Usually, for a new species to evolve it takes a long time, but it can also happen overnight. In 1974, something spectacular happened in Edinburgh - the birth of a new species.

Senecio cambrensis (*S. cambrensis*), a ragwort which belongs to the sunflower family, had evolved under the strangest of circumstances. Two parent species, *Senecio vulgaris* and *Senecio squaladis*, hybridized together in a process called allopolyploid, resulting almost overnight in a new species that possessed chromosomes from both parents. The species is endemic to the British Isles. Spectacularly, it has evolved on two separate occasions in recent times. *S. cambrensis* was first recorded in North Wales in 1948, where it was believed to have originated sometime in the first half of the 20th century.

It was later discovered in Edinburgh in 1982, where it is now known to have had been present



for a decade prior. From 1982 until 1994, *S. cambrensis* was a common but closely monitored plant in the industrial wastelands of the Leith area of Edinburgh. Ever since its discovery in Edinburgh, its presence has been monitored each year (until July 2001). Unfortunately, the Edinburgh lineage of the species never really took off and disappeared as quickly as it appeared. The species has not been found growing in that area since 1993. Today, the site the species once inhabited has been redeveloped, and is where the Royal Yacht Britannia is currently parked.

Edinburgh's *S. cambrensis* survived in the wild for 19 years, an awfully short lifespan for an entire species to evolve and then go locally extinct. How can we explain this? Well, as for its sudden appearance, sometimes closely related species that can hybridize come into contact with each other, in this case due to construction. In the late 70's and early 80's, there has been a reduction in the number of available sites for

plants to colonize in the suburbs of Edinburgh when the empty gavel or sand lots these species like to inhabit became developed. The same cause behind the birth of a species can be the cause of its extinction: it is most likely that their parents, *S. vulgaris* and *S. squalidus*, were simply far better at reproducing and overtime has outcompeted *S. cambrensis* in the limited habitats spared by heavy construction and expansion of urban sites. Species that are able to persist in the landscape for a long time usually have established their identity in the ecosystem. They must occupy a niche in their habitat that no other species can, otherwise they might get outcompeted. There just wasn't enough differentiation, both spatially and evolutionarily, for the species to persist. In fact, even the huge populations of its parent species that were once regularly found in areas cleared for development have not been observed since. This is because the availability of land clearing for development, and hence the suitable wasteland for colonization, has dwindled in recent years. But not all is doom and gloom. *S. cambrensis* remains well established in Wales, where it has

expanded its geographical range in recent years and forms large populations at several locations.

The saga of plant evolution goes back eons, yet it is far from over. New species are budding and other species go extinct all the time, as a result of all sorts of different reasons throughout Earth's geological history. Nothing is constant - different species come into contact with each other like ships sailing past each other in the dark of night and the ecosystems as we know them today will change over the coming decades and centuries. What will happen next in the evolution of plants? Well no one really knows, but the general consensus is that biodiversity supports biodiversity. As life on Earth becomes more complex, new niches are created for species to inhabit. Therefore, going forward, should biodiversity become poorer and unstable, what will drive evolution? Species adaptation can hardly keep up with the pace of climate change. And yet nature never loses hope: in the last hundred years alone, there are at least four new flowering plant species that have evolved.



Crimson Red Petals in Bloom. Photo by Danny Gold

COP26 – Too Hot, Too Cold, Not Quite Right

Based on the talk by **Dr Fredi Otto**

Dr Otto is a world-leading researcher on extreme weather events as a result of climate change. In 2021, she entered the TIME100 list of most influential people in the world. She was one of the inaugural Fellows in Environmental Change at Reuben College and has since moved to Imperial College London in September to take up a Senior Lectureship in Climate Science. On November 18, 2022, for Reuben College's weekly seminar at the Museum of Natural History, Dr. Fredi Otto gave a compelling talk on the COP26 climate summit in Glasgow.



A squirrel. Photo by Hung-Ju Chueh

First things first: climate change is a fact. For the first time, COP26 has addressed global warming in such definite terms, leaving no room for doubt. Anthropogenic climate change has made extreme climate events not only more extreme, but more frequent and unpredictable, affecting every region across the globe.

The summit ended with some wins. For instance, coal and fossil fuel subsidies were explicitly recognized as a major contribution to the problem. Furthermore, efforts to reduce national emissions, formally framed as Nationally Determined Contributions (NDCs), were more ambitious and driven by net zero goals.

Nevertheless, any cause for celebration is tempered by major losses in this year's COP26. A year past the deadline, the goal of developed countries to jointly mobilize USD 100 billion by 2020 for mitigation actions and transparency implementations has not yet been met. Equally disquieting, much emphasis has been put on intergenerational justice at the expense of inter-national justice.

The Glasgow Package is far from perfect, but it represents important progress. Besides, it is not only within the confines of the UN Climate Change Conference that progress can or should be made. It is our very own responsibility to hold our governments accountable for the implementation of COP agreements and fight for climate equity.

COP26 Fringe - first time in Glasgow

Elvina Crowe

MPhil Nature, Society and Environmental Governance

Over 16 hours on the night bus for under 40 hours in Glasgow. This trip was one of the most meaningful city-breaks I've ever had, and I didn't even enter actual COP26.

COP 'fringe' is where we were headed. Swirling in chaotic order, people from all over the globe – from Glasgow to the remote corners of Tibetan mountains – assembled and dispersed like microorganisms following the convection currents of environmental activism. Metabolising the collective energy driving ecological change, we gathered with vigour. COP proper had nothing to do with organising the myriad events popping up around the city in November 2021. Independent, collaborative, big, tiny, the majority free, and hidden behind the towering façades of Glaswegian architecture, this was the autonomous mobilisation of spirited society. Unapologetically, the city buzzed as official proceedings took place behind closed doors.

Our first stop on alighting the coach at 7am on Friday morning is 20 meters away: the coach station cafe. We acquire new friends on the coach journey and bump into a course-mate's friend from home; whilst consulting over cheap coffee and donuts, we notice other people looking ready to protest. When our motley, sleep-deprived crew braves the morning Scottish wind, the city is big. It seems continental, imperial, maroon and grey. Feeling small is ok when part of a collective, and eventually it's 9am: time for our first COP fringe event.

There are more croissants than people at the Royal Society of Arts (RSA) Regenerative Futures Fellows' Breakfast. With only a few attendees, the group has intimate discussion led by Rebecca Ford and Jamie Cooke. This paradigm-shifting organisation is bold in their definitions: sustainability is not enough. Focussing on reducing impact still falls short. Instead, we need *regeneration*: we must give back, and nourish Earth systems. Regeneration is a future paradigm based on living systems theory and reflexive attitudes: a meaningful way forward and resistant to greenwashing. By responding with attention

to networked ecological signals, recognising the abundance of what we already have, reciprocating nonhuman willingness to cohabit, and restoring geobiological processes, we can make real change. If you, reader, care about sustainability, I urge you to investigate regenerative principles, and spread the word. To start, check out the RSA website www.thersa.org/regenerative-futures, or Daniel C. Wahl's blog <https://designforsustainability.medium.com/> and book *Designing Regenerative Futures* (2016).



People's summit for climate justice.
Photo by Elvina Crowe

Our RSA discussions run over time, and we head to the Friday climate march late, around midday. Walking in the opposite direction, we meet the marchers face on. Wide streets change from eerily empty, lined with sparse police and onlookers, to a roar of colour. Getting washed away with the tide, we lose and find familiar faces in the snaking crowd.



Discussion panel of indigenous female leaders. Photo by Elvina Crowe

Webs of environmentally conscious people are woven across the UK and the world, connected through activist groups and university towns. The sense of a collective is often forged in digital realms. Here, we are material: shouting, chanting, singing – and listening to someone hogging the megaphone. Protests are different every time, defined by the utterly unique composition of worldwide human characters. Yet there are always commonalities to be found.

Having congregated in the central square, we weep at moving speeches by young people from every continent of the globe (mostly women). Instead of waiting for Greta to appear on stage, however, we grasp the astonishing opportunity elsewhere to attend a discussion panel of indigenous female leaders from Bolivia and Peru. The entire panel of speakers and translators are women; the vast majority of the crowd is women. They speak of generous Mother Earth, how every one of her offerings is a gift. The greedy, unrestrained activities of extractive private corporations and governments are inconceivably upsetting when one's fundamental worldview is reciprocity. Our humble questions receive powerful replies. We leave, changed.

The feminist ethic of care continues into the evening. The People's Summit for Climate Justice's Movement Assemblies – a debrief conference in a repurposed church –

happened every evening during COP26. We hear a report on official affairs of the day, the speaker exasperated by more empty promises at government and business level. The huge full room is then guided into forming small groups with strangers to discuss the intersection of environmentalism with women's and non-binary issues. Our chats are fed back to the crowd, like a citizens' assembly (the future of democracy.)

My department (School of Geography and the Environment) reunites and decompresses in a pub over some whiskey and on the street with falafel wraps. Then, on to a big sleep at a high-ceilinged flat in south Glasgow. For me the day is done.

In the morning it's raining. It stops as I join a few hundred people making their way to Glasgow Green from Kelvingrove Park, brandishing soggy banners. Oscillating in the crowd, I somehow end up at the front. Admiring two lengthy ropes hung with heavily embroidered rectangular flags, heavier in the rain, I converse with one of the dutiful women carrying the weighty poles. Darning for the Planet collective had connected embroidered panels from women all over the world, mostly South America. At some point, I'm asked to hold the pole. The asker disappears, and so I proudly do so until we make it to the centre.

Eventually, having had enough of the drizzle and noise, I skulk away to some art studios in postcode G40. Fashion Open Studio was

hosting a textile pattern cutting workshop at local tailor Alis Le May's studio, in collaboration with Iro: Zero Waste, a brand inspired by ancient Indian dress that makes clothes without wasting a scrap of fabric. Le May told me how she was compiling a directory of independent fashion retailers and makers in Glasgow to facilitate the avoidance of shockingly pollutive high street fashion. Provide convenience and people will follow.

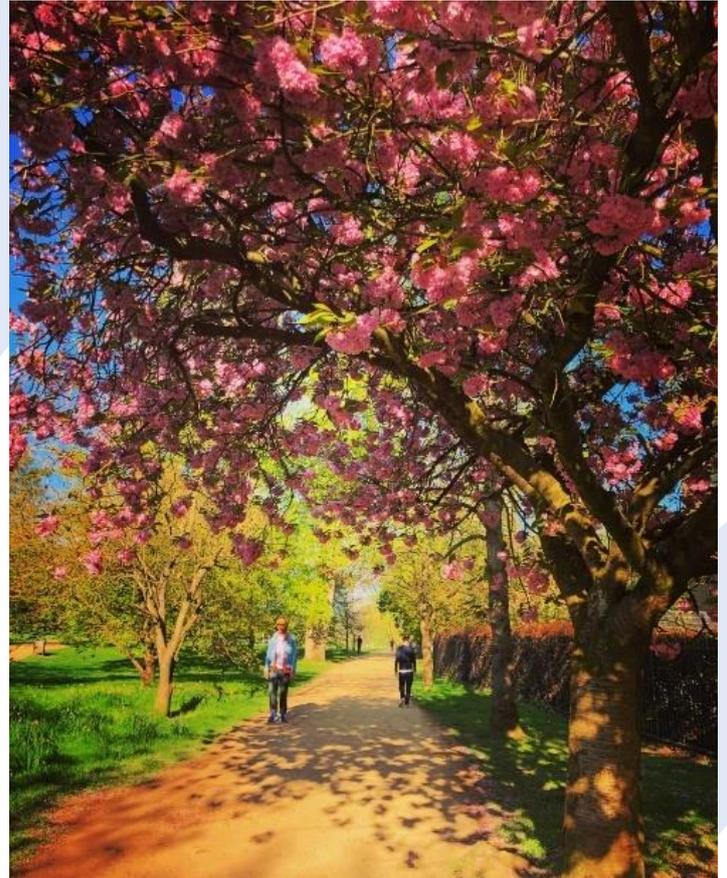
After a very weird performative art piece in which the clothing of the dancer-model was reconstructed to display woven QR codes, I catch the start of the next workshop on upcycling denim before heading back into town to the Centre for Contemporary Art. Entitled 'DocFest Exchange: The Many Faces of a Tree: April Lin 林森 and Dr. Nalini Nadkarni', I expect a documentary perhaps animating trees. Instead, the 10-minute video made by Lin (24-year-old non-binary artist and ex-social scientist) and Nadkarni (academic ecologist) warps my mind. The crude video game graphics, futuristic biological content, and heartfelt narrative synthesizes into a truly unique bio-sci-fi composition that deserves the 1.5-hour-long discussion that follows. I learn many things but the most poignant is a phrase that will stay with me for the rest of my life: intellectual humility.

To resolve this environmental crisis, everyone needs a supersized dose of intellectual humility. Stepping off our high horses, actively listening to each other, inviting

everyone to the table: we need interdisciplinary and open-minded discussion to evolve. To remedy unjust power relations between human groups and between humans and nonhumans (or 'more-than-humans', as we geographers like to call them), beginning with humility is our best bet.



Embroidered rectangular flags.
Photo by Elvina Crowe



The City in Bloom

By Danny Gold

We're all so busy in our lives, sometimes we forget to stop for a moment and take in the beauty of nature around us. The vibrant, delicate, and intricate nature of the world is a gift we should cherish, and begin to appreciate daily.

Meet the Founders

The Reuby team that has put together this pilot issue is also the founding team. We are four students who arrived to Reuben College from different places, heading towards different career paths, yet who realized something early on. A college teeming with restless, bold, and brilliant minds from all around the globe, and determined to make a change, ought to have a platform through which they can express themselves in a manner that resonates with the

character and goals of Reuben College. The four founders of The Reuby are themselves a lucid reflection of this character – multicultural origins, journeys, and outlooks, different study programmes – all of these together foster interdisciplinarity and a global outlook, two elements that accompanied us in our work founding the magazine and can be found in the pages of the pilot issue you are reading.

The Art Editor



Rachel Kader

England, Germany & Israel
MSc Archaeology

A lot of my interests lie in my field of study; I love learning about people and cultures, I also have an interest in film, TV, and music.

The Co-Editor



Elvina 'Elvie' Crowe

United Kingdom
MPhil Nature, Society and Environmental Governance

I am a History and French graduate who has migrated into environmental philosophy and politics. I have made it my mission to elevate the status and illuminate the agency of nonhuman actors such as plants. My favourite things to do are hanging out with and foraging plants on walks, dancing to music and environmental activism.

The Graphic Designer



Isabelle 'Izzy' Sturt

UK, Malaysia, USA & China
MSc Global and Area Studies

My studies focus on identities and community formation within the Chinese diaspora. Prior to Oxford, I studied International Relations and History at St Andrews, specialising in postcolonial theory and transnational history. At Reuben College, I serve as Graduate Director for Public Engagement with Research within the GCR.

<https://reuben.ox.ac.uk/people/isabelle-sturt>

The Editor-in-Chief



Daniel Revach

Israel & France
MSc Cognitive and Evolutionary Anthropology

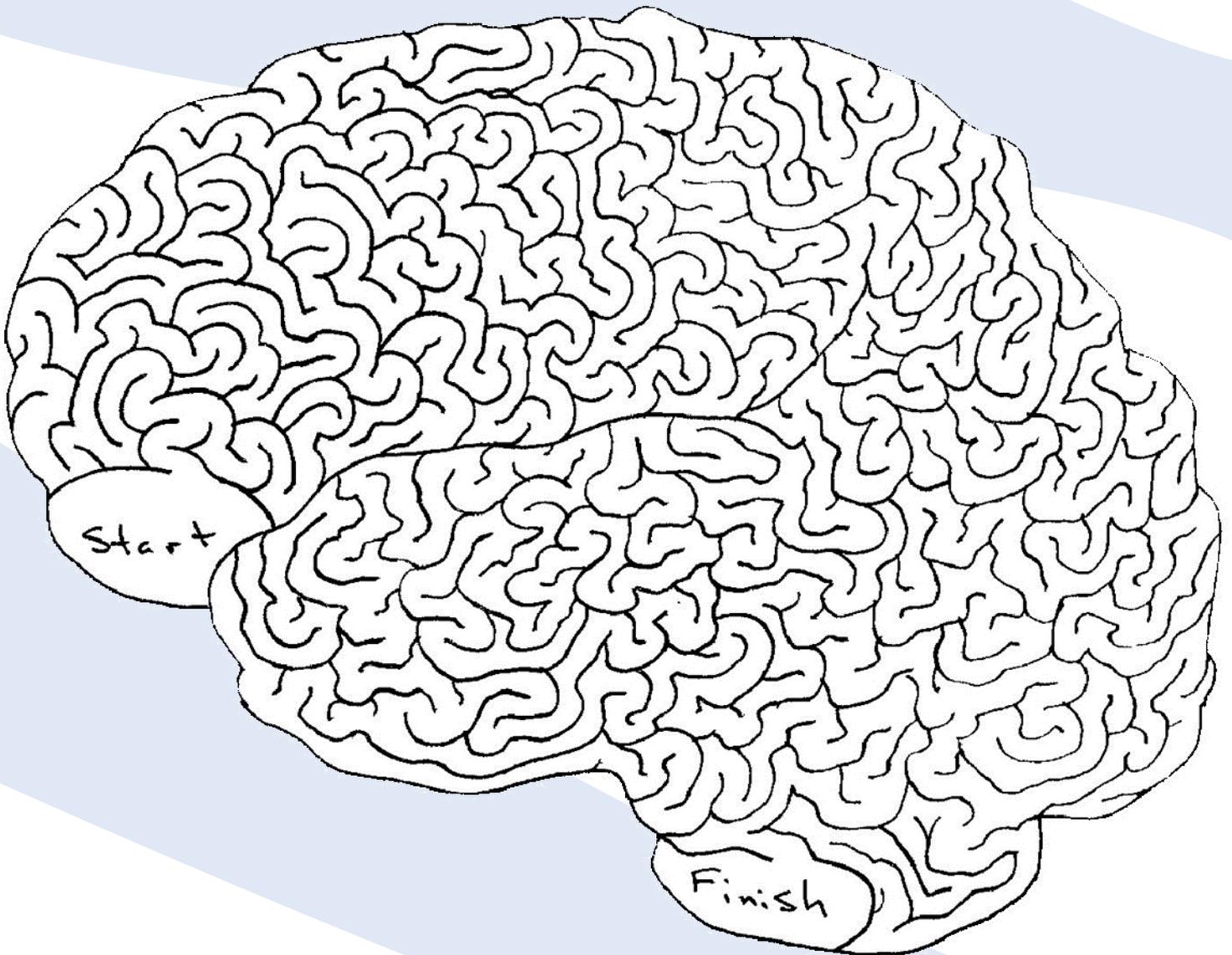
I am interested in systems thinking applied to human cognition and society. I hope my work will help humanity understand itself and unite around common goals. I have a passion for languages, writing, and letting my terrible sense of direction and caution lead me into epic adventures.

<https://reuben.ox.ac.uk/people/daniel-revach>

Mindfulness Puzzles

The Brain Maze

Credit: dearjoya.com



Minfulness Word search

Credit: [WordMint](#)

L E J N O I T A X A L E R E A I O
N T G V F G O T Y Q E Q J X B I U
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attention

attitude

aware

being

Breath

choice

doing

feel

focus

mindfulness

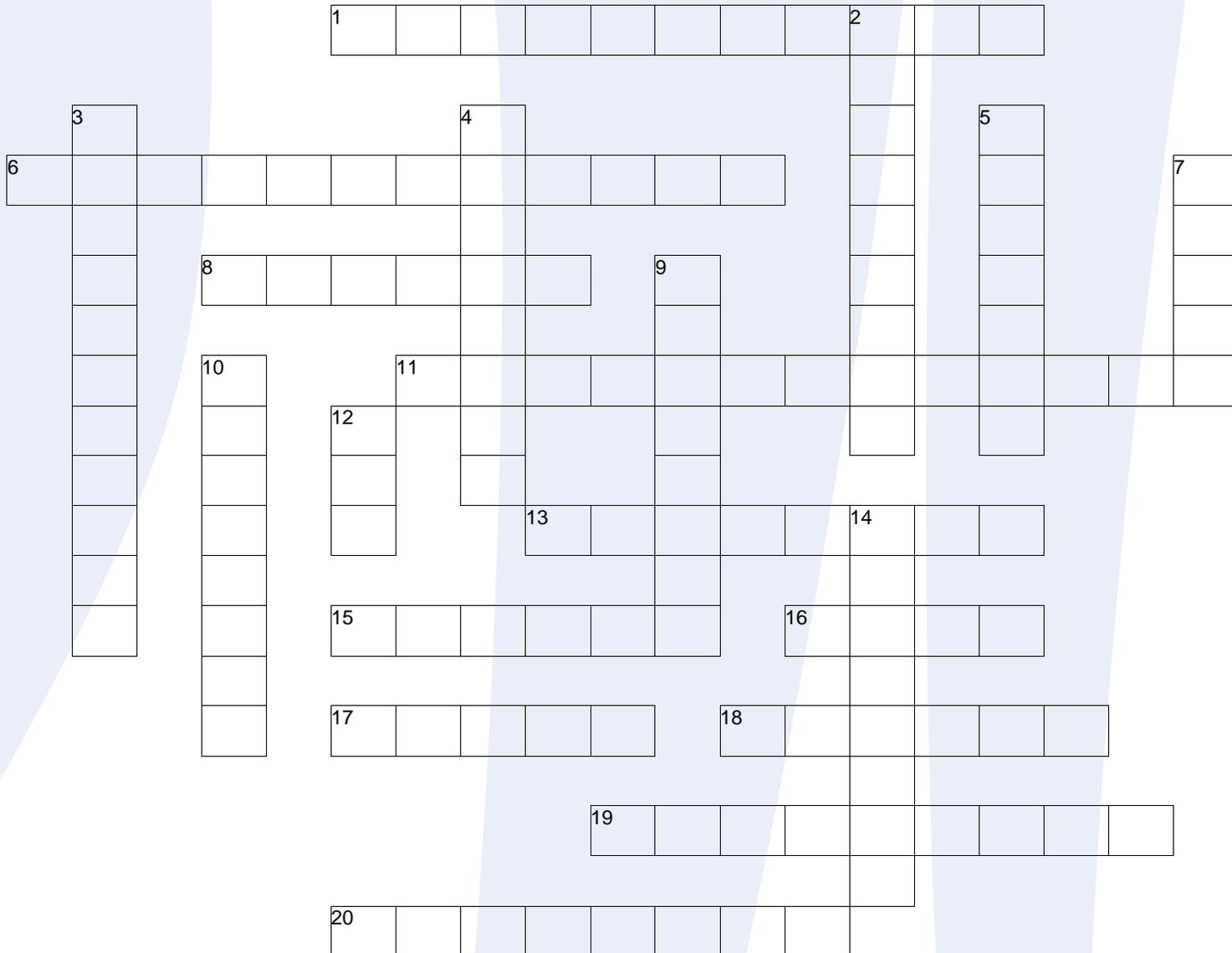
relaxation

renewal

rest

Positive Personality Crossword

Credit: [WordMint](#)



Across

1. Demonstrating good judgment or sound thought
6. Having or showing intense and eager enjoyment
8. Having respectful behaviour towards others
11. Feeling sympathy and concern for others
13. Loyal, constant, staunch and steadfast
15. Feeling or showing great care.
16. Neat and orderly in appearance or habits
17. Ready to face and endure danger
18. Free of deceit, truthful
19. Able to withstand or recover from failure, misfortune, or change
20. Showing a readiness to give to others

Down

2. Marked by vigor and effect
3. Free from outside control
4. Making sure of avoiding potential danger or mistake
5. Able to accept or tolerate delays
7. Self-possessed assurance of manner in coping or handling with situations
9. Very pleasant or delightful
10. Having or showing care and conscientiousness
12. Nervous in the company of others
14. Kind and pleasant to be around



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