THE BRIDGE

The mystery of sleep
Why do we need it and how do we do it?

Life as a virtual librarian
The challenges of running a library online

Doctors made invisible
Shining a light on the hidden history of black women physicians

Head, hand and heart: what do we really need to learn in the 21st century
An exploration of the future of learning

2021

From the Editor

The past 12 months have seen the way in which Hertford functions as a college, a place of work, and a home away from home become strained by global challenges. However, despite the difficult circumstances, life for the Hertford community has continued. We're delighted to share with you the third edition of The Bridge, which offers a snapshot of what our Fellows, alumni and staff have been up to in recent months.

We are always keen to hear your feedback on our publications, as well as any ideas for future articles should you have them. Please also connect with us on social media via Linkedin, Facebook, Instagram and Twitter for updates and, of course, cat photos!

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Creating a climate for change

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Life as a virtual librarian

Did you think libraries were just physical spaces? Alice Roques explains how much more a library can offer, especially during difficult circumstances.

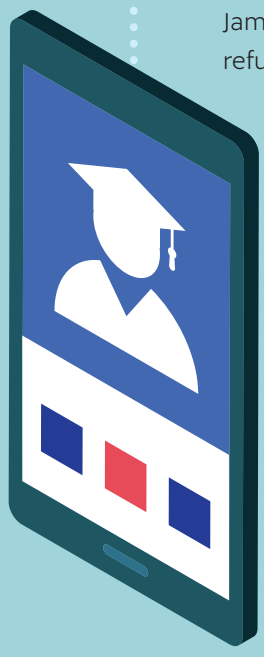
Doctors made invisible

Alumna Jasmine Brown explores how the success of black physicians have been historically erased and how one such woman overcame countless barriers to trailblaze in the profession.

As we emerge from a year of disrupted education, we are all having to think more about our role as educators and learners. Before becoming Hertford's Principal, Tom Fletcher spent two years leading a team investigating the future of learning.

HEAD, HAND AND HEART: WHAT DO WE REALLY NEED TO LEARN IN THE 21ST CENTURY?

By Principal Tom Fletcher



Elsa quit her school in Paris at fifteen. But she is no classic dropout. She has just aced her baccalaureate, and is writing a guide for others who want to 'hack the bac'. "It is already happening," she whispered over dinner in a Brussels restaurant, "young people are taking control of their future."

Jamal, a twelve-year-old Syrian refugee, has been out of formal education for four years, since his family in Homs fled Assad's barrel bombs. But in a rainy camp in Lebanon's Bekaa Valley his eyes were shining at the possibility a makeshift UNICEF school might soon open up. "I want to be an astronaut," he told me, "I want to find safer planets."

Charlie, a twelve-year-old British pupil in Abu Dhabi, is fortunate to learn from great

teachers in a secure and positive environment. But as part of a family of migrants, he is in his fourth education system in eight years. There is little overlap on what is taught and assessed.

"Why are school systems so different?" he asks. "And why are we memorising things we can look up online?"

Politics and society are being buffeted by three striking trends: a rapid rise of distrust in traditional institutions; a perception of growing economic inequality; and a more existential uncertainty about the future created by technology.

The answer to each is of course education. So, are we ensuring that humans are learning the right things? Are they learning them in the right way? And if not, why not?

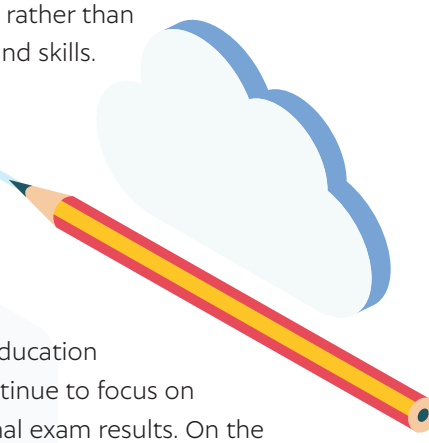
For me, these questions grew out of three experiences. First, being a parent of two boys, and agonising over what they needed to know to live a good life. What were the ideas and values that I had been most fortunate to inherit from my parents and ancestors? Every parent is a bridge, the story bearer between the past and future of their family.

Second, my experience working in the Middle East. I arrived as Ambassador to Beirut with the Arab Spring just starting, and I saw what happens when children are taught in sectarian or authoritarian education systems. And we have now all seen the same argument about whether we have more in common than that which divides us, being played out in the West. Friends of mine in the UK and Lebanon have died for it. All this after a century when we sacrificed so much working out the answer. Once again, as Kipling lamented, "the burnt fool's bandaged finger goes wabbling back to the fire."

Thirdly, from my experience working on the Syrian refugee crisis. Wherever you stand on who is responsible for the industrial slaughter, we can surely agree that the million kids still out of school should not pay the price. Time and time again, they and their parents told me that what they most wanted was education. Yet as they moved between countries seeking refuge, they were going through multiple education systems, each time losing valuable time and vital hope. Migrants in Europe are twice as likely to drop out of school, and a Syrian refugee can go through five different education systems in a year. More widely, six out of ten young people can't read or add up, and a staggering 75 million are not receiving any formal education at all.

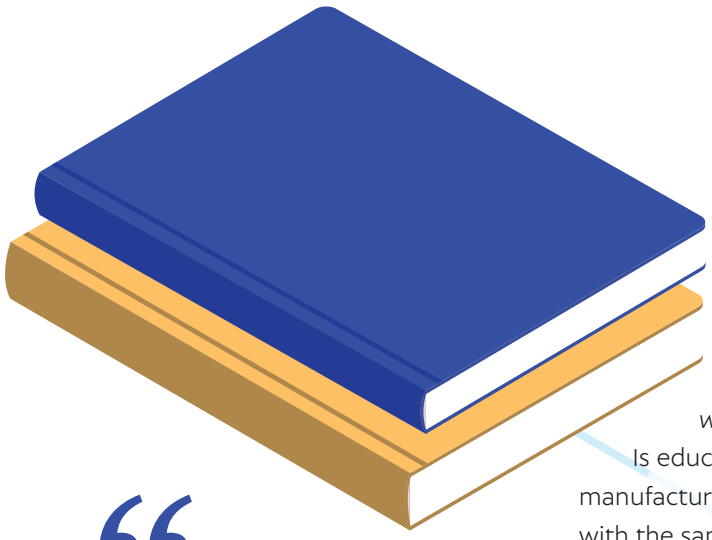
There is no reason why Jamal should not have as much potential as others with a more fortunate postcode. I struggled to understand: how was it that in a world of such daring innovation and genuine compassion it was so hard to deliver such a basic right?

I spent two years grappling with this question. And I discovered an even sadder truth: most young people on the planet learn the wrong things in the wrong ways. Too often we fail to spark the delight and magic of learning. We force feed kids what we ourselves learnt, without recognising how different their lives will be. Content and assessment persistently focus on classic academic knowledge rather than character and skills.



And the league tables that compare education quality continue to focus on conventional exam results. On the current trajectory a generation on the move will therefore not be equipped with the skills they need. Polarisation, extremism, inequality, drift, intolerance and distrust will increase.

This would be an urgent challenge in normal circumstances. But technology will also bring new threats. States, ideas and industries will go



> *On the essential wisdom we inherit, we would study how humans have developed, from cave paintings to driverless cars. How have we learnt to live together? And what do we need to understand about the planet we inhabit?*

out of business. We are told by the Davos elite that two thirds of young people will work in jobs that do not yet exist. With previous paradigm shifts we had decades or even centuries to adapt. We won't have that luxury this time. Managing this is the greatest challenge of our era. Yet our political and social systems are in danger of being overwhelmed.

So I believe that we need a revolution in how and what humans learn. This does not mean simply expanding access to education, or adding fashionable topics to the content of the curriculum, or even evangelising or warning of how the next shiny gadget changes the structure of the classroom. Instead, it means revisiting *why* and *how* we learn.

Is education intended to manufacture cookie-cutter followers with the same indoctrination? Is it to produce the next generation of factory workers? Or is it to produce generation after generation of global citizens who can thrive and coexist in a rapidly changing world.

The foundation for this education revolution should be new global learning goals of the head, hand and heart. Of knowledge, skills and character.

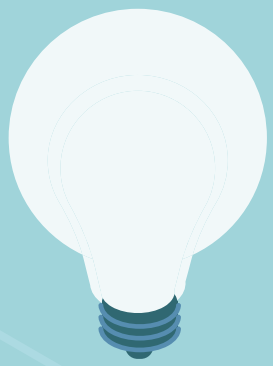
On the essential wisdom we inherit, we would study how humans have developed, from cave paintings to driverless cars. How have we learnt to live together? And what do we need to understand about the planet we inhabit? As Oxford historian Peter Frankopan puts it, "our natural instincts are to cooperate and to learn from each other. I am much more interested in how people exchange ideas and goods than in glorifying what happens when men fight each other for power and status."

The skills needed to thrive in the 21st century would include an understanding of how we learn, and can keep on learning. How can we adapt to a world in which industries will disappear, and where we will need to work more closely together across cultures and societies? How can we manage our mental and physical health, and organise our lives? As we become *phono sapiens*, learners will also have to understand how to manage technology. As neuroscientist Tara Swart told me, "our children are constantly multitasking. And our memory and concentration centres in the brain have started to shrink. We don't remember things because we don't need to. The crux of the problem is that education hasn't kept up." But this does not simply mean teaching digital smarts. As the co-founder of Tech Will Save Us, Daniel Hirschmann explains, "my job as a parent is not to force our child down the world of coding... it is to demonstrate all the ways that he can express himself."

And so, the new global learning goals should also focus on the heart: how can we ensure that future generations are kinder, more curious and braver than us.

The good news is that the digital economy will bring extraordinary opportunities to learn, innovate and create together. Global citizens will gain greater control of their own lives, including their education. Learning will be more collaborative, digital and human. The internet can liberate humanity's ability to reason together. As the next billion come online, they will have better access to

knowledge, free and accessible, than Einstein or even Steve Jobs. This is a more significant moment than even the printing press in reducing the barriers to information. Computers and the internet replace the printed textbook. A smartboard replaces the blackboard. A blockchain 'wallet' replaces the exam certificate.

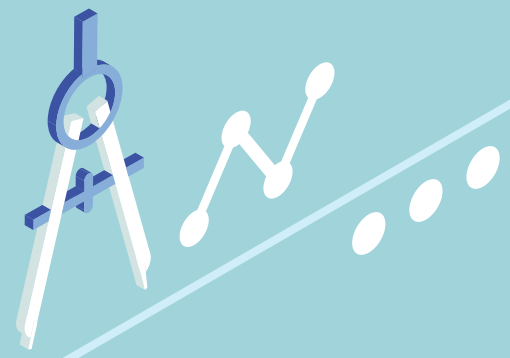


Visiting the California schools that the tech emperors send their kids to, I found the arguments over the need for more social and emotional learning are already won. Problem solving, team working, critical thinking and creativity are prioritised over remembering things or passing classic exams.

The bad news is this educational experience is available only to a small elite. The result is that it reproduces social and economic inequality. "This is the great civil rights issue of our time," says UN Education Envoy Gordon Brown. We risk a new digital divide, where only a few can educate their children in the right ways.

Four constituencies – despite the best of intentions – are part of the problem.

Firstly, the tech industry itself. They invest more time re-wiring underprepared employees than working out how to spread the benefits of education of the heart and hand. Rather than fixing the symptoms of the education crisis, they simply pay more for the treatments. Worse, much technological disruption of education tends to be about the tech not the teachers. As education campaigner Graham Brown-Martin puts it, "the message is that 'we've got self-driving cars, couldn't we have a self-driving classroom'. But that's not what learning is about, we know that from our own life. Learning is a deeply personal experience. The idea that we could dispense with the teacher and just give them a tablet? To my ears, it sounds horrific."



Second, national governments. You only have to look at how little the average classroom has changed over 200 years, compared to, say, the average doctor's surgery, to see how hard reform is. Even in countries traditionally seen

as education leaders, political trends can often take education towards nationalism, rote learning and hierarchy rather than global citizenship, creative learning and networks. Even within the most developed economies, the gap between the best and worst education is alarming. In a more human, digital and connected world, it will be harder for governments to retain a monopoly over what young people learn. At the same time, the fragility of the world order will make it harder for the UN to fill that vacuum. The countries that change fastest will produce the global elite of the 2040s, filling the top international positions and dominating the global economy.

Third, too many of our universities. continue to invest in a factory model. Selection is too rooted in academic performance rather than potential. Technology is increasing the workloads of academics rather than freeing them for research and teaching. Disruption is already happening. There are calls for university courses to be reduced from three to two years. Code boot camps are now a 250 million USD a year industry for engineers, and more of their graduates find work than those from equivalent courses at universities. By 2025, universities could lose 30% of their market share to these leaner alternatives.

The universities of the future will be more accessible, as a resource for all of society, not just a small group who study there for three years. A hub for sharing knowledge, not a refuge for hoarding it. They will offer more programmes for those who choose not to attend full time, allowing them to combine their learning with work and life. Their curricula will include courses that develop citizens of a global world, with the ability to connect ideas, environments, and places, to experience failure and to solve problems. They will harness personalized learning and protect individual choices to ensure that students are able to maintain their autonomy and individualism. They will lead the ethical debate about the human values that we want to imprint in technology, and how we live with machines.

> *Most importantly, as artificial intelligence replaces mechanical tasks, universities will cultivate creativity.*

Most importantly, as artificial intelligence replaces mechanical tasks, universities will cultivate creativity. As Harvard education professor Howard Gardner says, "Don't ask how intelligent anyone is; but rather, how are they intelligent?"

The final constituency unwittingly holding back change is most of us. Every parent wants their child to thrive. But in the absence of ways to assess hand and heart, and because of the requirements for a place at the right university or business, we are blinkered by the need to pass the test. Just sit at the back of any parent meeting where a headteacher proposes spending more time on drama or art than exam preparation. Parents' doubts are rooted in genuine concerns for our children's prospects in a rapidly changing world. The experience of home schooling during the pandemic could, I hope, be the catalyst that shifts parents into a more active

role as reformers of how and why we learn.

Against this resistance, it is the learners themselves who have the most to gain from global learning goals, and the most to lose from the status quo. Will the founders' generation find a way to equip themselves with the right skills? Not just to pass a university degree or school exam, but to thrive?

The answer is almost certainly yes. I asked students on every continent to develop a global curriculum for the head, hand and heart. They chose to learn more global history, more life skills, and more communication. They wanted credible global assessment standards against which to measure progress, including skills and character. As these become established, the incentives will shift. Businesses and higher education institutions are less likely to recruit based on knowledge-based exams alone. More educators will create content, with the highest quality rising to the top (literally in the case of tables of YouTube hits). And governments will have more interest in ensuring that knowledge, skills and character are validated in a robust and fair way.

Generation Z grew up playing *Tetris*. It was neat, top-down, with clear rules. Our children are playing *Minecraft*. Their desire to change puts us on the cusp of a great leap forward in not just what we learn, but how and why we learn. Only if more humans learn the right things in the right way can we meet the challenge of the 21st century: how to create more winners from globalisation and technological

change, while better protecting those left behind.

So, the Oxford professor battling to create space on the curriculum for a global view of history can take heart from the art teacher battling to show that mastering creativity is not just an after-school painting club. The headteacher convincing teachers and parents that mindfulness helps academic success can take heart from the tech entrepreneur testing how play develops brain power. The business leader frustrated that her employees aren't equipped with the right problem-solving skills can take heart from the YouTube campaigner making popular videos on why education isn't working. The UN official exhausted by trying to make it easier for refugees to pass through multiple education systems can take heart from the students demanding they be taught global competencies rather than the list of wars their country won.

"Education is not the filling of a vessel," Socrates reminds us, "but the kindling of a flame." Humanity faces technological and environmental change at a pace we cannot comprehend or control. We will have to be brave enough to master technology rather than be mastered by it. To be kind enough to reduce inequality rather than widen it. To be curious enough to invent new ways of living and organising ourselves.

We will need the knowledge that humankind has built over millennia. And the skills and character to thrive, adapt, learn, create, and coexist as global citizens.

That's what I hope my children learn. More importantly, I hope it is what the next Marie Curie, Albert Einstein, Al-Khwarizmi or Bill Gates learns.

And maybe Jamal gets his moonshot.

Tom Fletcher CMG has been the Principal of Hertford College since 2020. He served as the foreign policy advisor to Prime Ministers Blair, Brown and Cameron, before becoming British Ambassador to Lebanon and then a Visiting Professor at NYU. He's a member of the EU Global Tech Panel and his Foundation for Opportunity supports good people doing good things in public life.

The Mystery of Sleep

By Dr Vladyslav Vyazovskiy

Renowned Oxford neurophysiologist and Nobel Prize laureate Charles Sherrington once wrote: "*The wonderful which comes often is soon taken for granted*". This is a perfect description of what we know as sleep. We are all sleep experts: after all, we sleep every night! However, why we have to sacrifice 1/3 of our life for this bizarre state of altered, if not absent consciousness, and how we do it in the first place is still a mystery. Falling asleep can be described by what American philosopher Daniel Dennett called "*competence without comprehension*". We are capable of sleeping, but do we actually *know* how we do it? It was proposed recently that our "default" state of being is not wakefulness, as we like to think, but sleep. In other words, our life is spent primarily asleep, and we only wake up when it is vitally necessary, for ourselves or for the sake of our species. Others argue that sleep itself has an important function: otherwise why would you sleep at all? It does not seem to be an optional way to behave: we must sleep no matter what, and sleep deprivation has far reaching adverse consequences for our health and well-being. It is as if mother Nature did not trust our judgement (if we were free to choose whether to sleep or not, who would voluntarily agree to sacrifice 1/3 of one's life?) and imposed a certain, non-negotiable sleep quota that we are programmed to perform every night. Well, there must be a reason for that! And perhaps what is most striking is how careless most of us are about sleep, and how often we neglect this vital biological necessity for dubious benefits of wakeful activities.

Then, what is sleep about? Shall we start with defining what sleep is? We take sleep for granted but it is notoriously difficult to define. Just imagine trying to explain what sleep is to an alien from a planet where sleep does not exist! I would say that, by and large, sleep and wakefulness are defined by the strength of our interaction with the environment. During sleep, we are disconnected from the sensory world outside (although it is important to note that it is easily reversible, unlike coma or anesthesia). On the other hand, during sleep we do not engage in voluntary movement, and do not act upon our surroundings. Therefore, when we fall asleep, it is not only that the world ceases to exist for us, but, figuratively speaking, we also take a leave of absence, and effectively stop existing, from the outer world's perspective. Speaking about objective criteria, our traditional definitions of sleep refer to changes in sensory functions, behaviour and brain activity. However, even invertebrate organisms, including those without a well-defined brain, as we know it, such as scorpions, insects, worms, jellyfish or the octopus show sleep-like states! This suggests that sleep does not require the complexity and size of our nervous system, and, importantly, sleep must be essential if most, if not all, organisms sleep in some way.

Sleep research is a relatively young field. Only 70 years ago we did not even know that sleep is not of one, but of two kinds. We call the two main sleep stages rapid-eye movement (REM or paradoxical) sleep, and non-rapid-eye movement (NREM or slow-wave sleep). During the night we typically experience 4-5 NREM-REM cycles, each lasting approximately 90 minutes. Traditionally, we talk about sleep and wakefulness as two distinct, fundamentally different states; yet now we know that the boundary between waking and sleep is not that clear. "Fluid boundaries" between wake and sleep, as American neurologists Mark Mahowald and Carlos Schenck put it some time ago, and, according to our

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current understanding, we are never fully awake or fully asleep! One of the pioneers of sleep research Italian neurophysiologist Giuseppe Moruzzi would use the term *dormiveglia*, a sleep-wake, to denote mixed states of vigilance. We are more likely to be "half asleep" when we are sleep deprived – that all too familiar feeling of being tired – or after we just woke up; the state called sleep inertia, when we feel we are not entirely awake.

How sleep is controlled by the brain and how it is regulated by intrinsic and extrinsic factors is the main area of research in my laboratory at the Department of Physiology, Anatomy and Genetics. I was fortunate to obtain training in some of the leading laboratories in the field. I did my PhD at the University of Zurich in the laboratory of Irene Tobler – a remarkable mentor, who taught me how to be a scientist and cultivated my interest in studying how different animals sleep – and Alexander Borbély, at the time Vice President of the university and the author of one of the most influential theories in sleep research, referred to as the two-process model … I then spent seven years in the USA, at the University of Wisconsin-Madison, working in the laboratory led by Chiara Cirelli and Giulio Tononi – some of the most creative scientists I ever met, literally bursting with ingenious ideas, and who, to a large extent, defined some of the key research directions in the fields of sleep research and consciousness. I moved to Oxford in 2013, and here I benefit from many collaborations at DPAG and other departments, and especially from my involvement in the Sleep and Circadian Neuroscience Institute (abbreviated as SCNi), which tackles a broad range of fundamental questions addressing the role of the biological clock and sleep for the brain and for the body.

> *I must confess, sometimes I feel that I wish for sleep to remain a mystery forever. What can be more rewarding than working on such a fascinating topic? Perhaps I do not need to worry, and it will be enough work for a few generations of sleep researchers.*

The famous American sleep researcher Allan Rechtschaffen once wrote: "*If sleep doesn't serve an absolutely vital function, it is the biggest mistake evolution ever made.*" Alexander Borbély, in turn, remarked that maybe we should be asking not why do we sleep, but why it is so difficult to answer this question? We have the most advanced methodological tools at our disposal, which we use to address the mechanisms and substrates of sleep. Yet, often all we establish at the end of a most sophisticated experiment is, paraphrasing from Molliere's "*The imaginary invalid*", another "*virtus dormitiva*". New, original ideas about how to study sleep are sorely needed, and now more than ever. Insufficient and disrupted sleep has been linked to a broad range of mental, neurological and physical illnesses; this needs an urgent solution. The current demands – not least those related to the ongoing pandemic and how it affects our lifestyle and working schedules – put a tremendous pressure on mental health, and consequences of disrupted sleep may be among the first to take their toll. The stakes are high, and there is no time to lose, but research funding is scarce, and it is now more difficult than ever to retain talented students in academia, given how unpredictable the current climate is.

I must confess, sometimes I feel I wish for sleep to remain a mystery forever. What can be more rewarding than working on such a fascinating topic? Perhaps I do not need to worry, and it will be enough work for a few generations of sleep researchers. What is more urgent, and equally challenging, is to educate everyone to become mindful of their sleep, learn to cherish it, and not to look at it as a loss of time or an inconvenience. It is a precious part of our life – at the individual level and on the global scale. We live on a half-asleep planet. If sleep did not exist, it would have been a different world.

Vladyslav Vyazovskiy is Associate Professor of Neuroscience at the Department of Physiology, Anatomy and Genetics, University of Oxford, and a Tutorial Fellow in Medicine at Hertford College.

CHERO: A PRACTICAL SOLUTION FOR EFFECTIVE CLIMATE ACTION (FOR REALISTS, NOT IDEALISTS)

By Joe de Hoop (Economics and Management, 2009)

When you boil a kettle to make a cup of tea, you emit 40 grams of CO_2(1). When you wash a load of laundry, you emit 0.5kg of CO_2. Driving 5 miles? 2.5kg. Everything we do contributes to our individual carbon footprint.

CO_2 itself is not a bad thing. But as many of our lifestyles have expanded – consuming more, doing more – the aggregate amount of CO_2 released into our atmosphere has exceeded that which our planet can absorb. We have rapidly gone from the pre-industrial atmospheric CO_2 levels of 280 parts per million (ppm) to over 410 ppm, the highest concentration in more than 3 million years. Our climate is therefore becoming less stable, driving extreme weather, ocean acidification and failing ecosystems.

The problem lies in that CO_2 is invisible. The carbon footprint of the average UK citizen is 8.5 tons per year, or 23kg (51 pounds) per day. Imagine if you had to physically take account of your CO_2 emissions, taking out multiple black bags each day. Unfortunately, that's not the case. And so, despite being a very real problem, it remains out of sight, out of mind.

Growing up watching David Attenborough documentaries, I have always been aware of how fragile nature can be, and climate change more broadly. Perhaps because I subconsciously thought it would uncover some uncomfortable truths about how my lifestyle contributes to it, the problem never developed beyond a known fact at the back of my mind.

This was until 2019, when I watched a video of koalas trying to escape apocalyptic wildfires in Australia. Beyond the fires' devastating impact for humans – lives and homes lost, dangerous air pollution – it was the toll on animals that hit me the hardest. Over a billion died. As a passionate animal lover, trying to comprehend this tragedy was sickening.

So for me, it was time to take action. To go from being part of the problem to part of the solution, I knew I had to reduce my carbon footprint. I looked at how the different elements of my lifestyle – diet, travel, home and consumption of goods and services – contribute to it and came up with an estimate. This provided the data to move from stabbing in the dark (e.g. 'I'll try to avoid plastic and hope that does some good') to concrete, actionable steps (e.g. 'if I avoid taking one flight per year, I will reduce my footprint by 5%').

But nobody is perfect. I don't eat meat, but I'm not completely plant-based. I use a car to get around sometimes. I take flights to go on holiday (in normal years, anyway). And that's ok. I know that ideally, I would make these lifestyle changes to reduce my carbon footprint, and over time I'm sure I will. But anyone who preaches we must all live life like a monk has got the wrong idea. And I worked out that even if I did avoid all flights, eat a plant-based diet and never use a car, my footprint would only reduce by 12%. If I was to make a difference, I needed a realistic solution to really move the needle, starting right away.

The good news is that I found plenty of solutions, ready and waiting to be acted upon. So why didn't more people use them? Well, there were so many solutions that I struggled to know where to start, or which were the most effective. While the concept of offsetting was sound – we have one atmosphere, so a ton of CO_2 removed in one place can offset a ton you emit elsewhere – I read several articles bashing certain offset projects for not removing the CO_2 they said they did. Unless you can be certain of the impact, the whole thing becomes a pointless feel-good exercise.

I therefore developed a framework to find the most effective solutions from around the world. Drawing on research such as *Project Drawdown*, and since amended based on the *Oxford Offsetting Principles*, this framework filters for specific projects that transparently, verifiably remove and permanently store CO_2.

Armed with my estimated carbon footprint, I used one of these projects to remove twice my next year of emissions, going beyond a balanced life and becoming a net contributor by removing more CO_2 than I emitted each month. At last, I felt like I was doing the right thing.

All this happened just as I left my job in investment banking, and was founding a start-up of my own. Over the coming weeks, it became increasingly apparent I really couldn't care less about the start-up I was working on; sure, it was a promising business idea, but in ten years, would anyone have missed it if it didn't exist? Probably not. I kept coming back to my work on climate. And so Chero was born, with a mission to bring you a simple, affordable and transparent climate change solution that lets you make a difference. Here's how it works:

For individuals and families, we've built a simple 2-minute quiz to measure your carbon footprint, behind which is a more complex carbon calculator based on research from University California, Berkeley. You'll immediately know how much CO_2 you need to remove each month, and which parts of your lifestyle contribute most to your footprint (and so where you can consider making positive choices over time). For companies or other organisations, we use pre-set employee profiles – such as those working from home vs. more extensively travelling – to quickly estimate the combined footprint of your workforce.

We have partnered with incredible carbon removal projects to do this, each of which have been selected based on our framework. Both nature- and technology-based solutions are included.
For example, we work with a small San-Francisco based company that has developed patent-pending technology to heat waste natural material, such as sawdust and almond shells, to 500°C in a few seconds without any oxygen present. This creates oil, which contains the CO_2 that the plants had captured from the atmosphere. This oil is then injected deep underground and permanently stored in natural caverns that safely stored crude oil for millions of years. Incredible technology, working today, but hardly anyone has heard of them.

On the nature side, our primary tree planting partner runs an established project in Madagascar. These are mangrove trees, which sequester 4x more CO_2 than land-based trees, and are at less risk of wildfire given they're water- based. The project works with small communities to plant and protect the

> *The project works with small communities to plant and protect the trees, simultaneously providing long-term employment in the world's 6th poorest country, and ensuring the carbon removal is permanent.*

trees, simultaneously providing long- term employment in the world's 6th poorest country, and ensuring the carbon removal is permanent.

I hope you'll agree, these are incredible projects. These teams do not have the administrative capacity to deal with removing the footprint of thousands of individual people or companies, so many remain reserved for only the largest of enterprises. But with Chero, we leverage the power of collective action, to pool our support each month and gain access to these world-class solutions. As we discover new projects, we update the portfolio to make sure our members are always getting the best combined solution we can put together. Importantly however, each member's personalised plan will always be defined benefit (e.g. remove 2 tons of CO_2 per month), not defined contribution (e.g. pay £5 per month and wonder what happens to it).

As part of this, we allocate a small part of each plan to supporting broader social impact projects. These are specifically selected based on furthering the 17 UN Sustainable Development Goals, including increasing gender equality, reducing poverty, and providing access to clean water and energy.

We all have the power to really make a difference, by taking meaningful action starting today. Carbon offsetting is a data-driven, evidence-based solution. It is by no means perfect, but by the time we have a perfect solution, it will be too late.

Acting right now is our last hope to avoid going through a series of upcoming one-way doors (picture huge areas of polar ice irreversibly melting and permanently raising sea levels). While attention naturally drifts to national events such as COP26, hosted in Glasgow this November, the actions we take today as individual people, families and companies can be just as, if not more, important, and will have compounding effects for years to come.

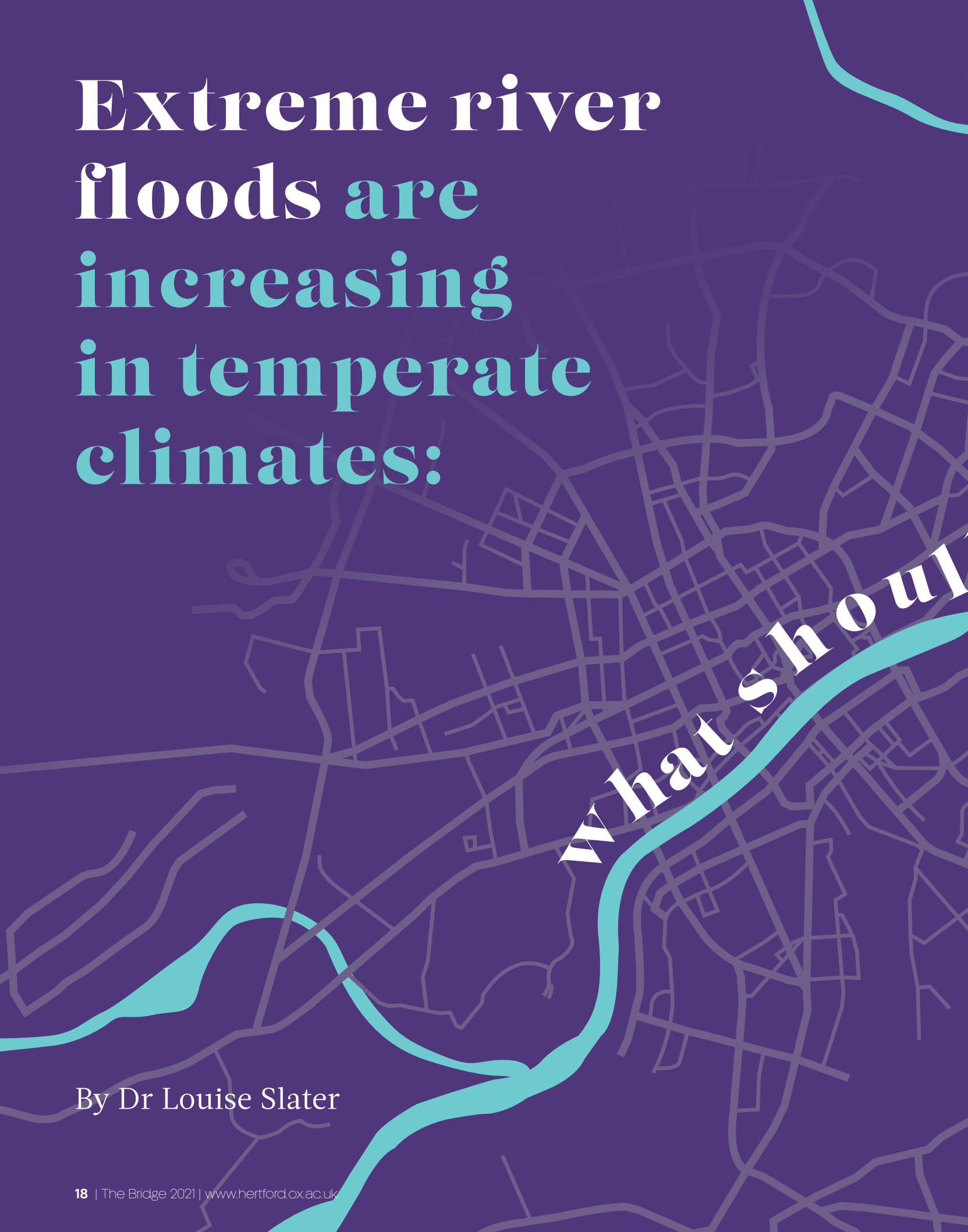
So, take the first step by taking our 2-minute quiz at chero.org. Remove your footprint. Go beyond living sustainably and go climate positive. And most importantly, tell friends, family and colleagues to do the same!

(1) Noted as CO_2 for simplicity throughout, this actually refers to CO_2e, or carbon dioxide equivalent, including the other greenhouse gasses.

Joe de Hoop (Economics & Management, 2009) is the Founder of chero.org, a social enterprise focused on environmental action. Prior to that, he advised and helped technology companies grow as a Vice President at the investment bank Credit Suisse.

We're proud to share the entrepreneurial efforts of our alumni but do not specifically endorse or promote any programme. You should undertake your own research before committing to any financial initiative.

Extreme river floods are increasing in temperate climates:



By Dr Louise Slater

Severe flooding regularly hits different regions of the world. Earlier this year, parts of New South Wales in Australia witnessed a "once-in-100-year" event. In February 2020, excessive rainfall in England and Wales led to the wettest February since records began.

In the UK, the cost of floods and their management is estimated at over £2 billion per year on average, with over 5 million homes exposed to flooding or coastal erosion. These costs are feared to keep rising as state-of-the-art climate models project warmer, wetter winters.[1]

Yet, to be able to project how floods might evolve in the future requires a sound understanding of how they have been changing in the recent past, as well as the causes of change.

Historical patterns of change

In recent work, we investigated how floods have been changing around the world since the 1970s[2]. We used historical river gauge records at over 10,000 locations. These are measurements of the river flow rate obtained at daily intervals over many decades. At each location, we used these data to examine whether the magnitude, frequency, and probability of extreme river floods had been changing over time. We then investigated changes across the five main climate regions of the world: temperate, arid, tropical, polar, and cold climate zones.

Overall, we found that floods have mostly decreased at the global scale: their magnitudes, frequency, and probability of occurrence have been decreasing on average. However, these are just average values of change for thousands of locations. The reality is that there is tremendous variability in these patterns at local, regional and global scales.

In arid, tropical, polar, and cold climate zones, the floods that used to be considered "20-year floods" in the 1970s have today decreased between –33% and –12% on average. This is most visible in regions like north eastern Brazil, eastern Europe, parts of western US and parts of northern China. In these regions, many 50-year floods, as assessed in the 1970s, might now occur only once every ~150 years, on average. Decreases in river flooding may be caused by a range of factors such as flood control measures, groundwater depletion, and decreasing soil moisture, where drier antecedent conditions offset flood magnitudes.

In temperate regions, however, such as the British and Irish Isles, we found that both the size and frequency of major river floods have been increasing since the 1970s. Floods that were considered 20-year events in the 1970s have now increased by 22% on average in regions such as Atlantic-facing Europe, south eastern Brazil, and south eastern China. In many locations, the "50-year floods of the 1970s" might now be expected to occur every 20 years, or even less (on average). These increases in flooding are likely to result from a combination of factors, such as climate change and variability, and urbanisation.

Why do these patterns matter, and what should we do?

Traditionally, engineers employ what are known as "stationary" methods to estimate river flood risk. This means the floods of today are considered to have equivalent characteristics to the floods of yesterday (in terms of their size and frequency of occurrence). But we know this is not strictly true. The characteristics of a flood are affected by a range of factors operating over different spatial and temporal scales, including changes in the climate, shifts in land cover such as urbanisation or deforestation, and human water engineering.

To obtain accurate flood risk estimates, there is growing recognition that we must consider these dynamic factors which may alter the characteristics of flooding over time[3]. But there is still insufficient knowledge and research on how to incorporate these change factors into our estimates of future flood risk. So what should we do?

First, flood risk maps must be kept up to date. Major changes in flood characteristics have occurred in different regions around the world. This implies that former estimations of flood risk, based on data from the 1970s, or even the turn of the century, may no longer be accurate. Local risk estimates must be regularly updated to keep up with these changes and to protect people and their livelihoods.

For this to happen, good data are required. Historical river measurements are the foundation for accurate flood risk estimates, but they are not fully available everywhere. As a result, in many regions of the world

To obtain accurate flood risk estimates, there is growing recognition that we must consider these dynamic factors which may alter the characteristics of flooding over time. But there is still insufficient knowledge and research on how to incorporate these change factors into our estimates of future flood risk.

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we do not really know how the flood risk is changing. Data-rich regions, like the British and Irish isles, have historical measurements of river flow that may extend back 100 years in some cases. Yet some other countries have almost no freely-available data. There is a need to develop new 'pooled' methods that can shed light on how floods might be shifting in different environments.

Finally, perhaps most importantly, it is essential to continue working on the complexity of factors that cause flooding. The overwhelming majority of studies that project future changes in flood characteristics base their results principally on climate model outputs, which can tell us where the climate is becoming warmer, wetter, or drier on *average*. But climate models only provide part of the picture – namely, the large-scale patterns of change.

What many models and studies omit are the complex local factors that affect flood risk, such as urbanisation, de/afforestation, changes in population dynamics, water management, and flood control measures. Often, the impact of these local factors may outweigh that of changes in temperature and rainfall, and the interaction between these large and local scale mechanisms is poorly understood. This is leading to flawed projections of future flood risk.

There is currently a major gap in flood science, which is understanding how the combined effects of local and large-scale flood drivers might affect future flooding, especially in data-sparse regions. More funding and research needs to go into developing hybrid models which take advantage of the strength of climate models to predict and explain large-scale phenomena, and the strengths of machine learning and artificial intelligence to estimate the probabilities of extreme events, conditioned on observed historical measurements.

1. Environment Agency (2020). National Flood and Coastal Erosion Risk Management Strategy for England https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/920944/023_15482_Environment_agency_digitalAW_Strategy.pdf
2. Slater, L., Villarini, G., Archfield, S., Faulkner, D., Lamb, R., Khouakhi, A., & Yin, J. (2021). Global changes in 20-year, 50-year, and 100-year river floods. Geophysical Research Letters, 48(6), e2020GL091824. https://doi.org/10.1029/2020GL091824
3. Environment Agency (2021). Rapid Evidence Assessment of Non-Stationarity in Sources of UK Flooding, https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/development-of-interim-national-guidance-on-non-stationary-fluvial-flood-frequency-estimation

Dr. Louise Slater is Associate Professor of Physical Geography at the University of Oxford and a Fellow of Hertford College. She is a recipient of the European Geosciences Union's outstanding early career scientist award and of the Royal Geographical Society's Gill Memorial award for outstanding early-career research in physical geography.

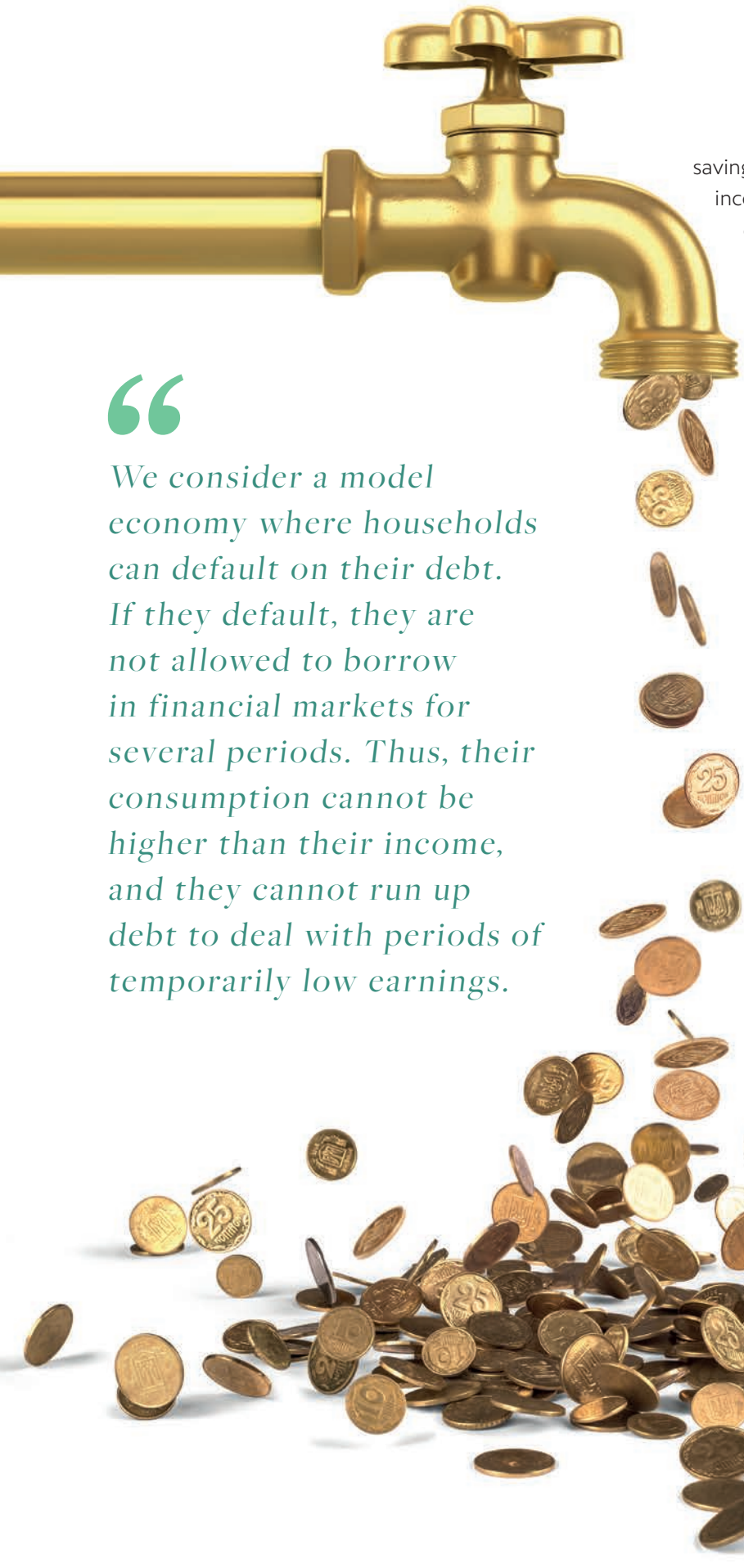
WHY DOES CAPITAL FLOW FROM EQUAL TO UNEQUAL COUNTRIES?

By Dr Federica Romei

Why does capital flow from equal to unequal countries? This question is at the heart of my research with Sergio de Ferra and Kurt Mitman. First, we document a new empirical fact: among advanced economies, unequal countries like the UK and the USA tend to accumulate fewer assets in the rest of the world than more equal countries do, such as those in Scandinavia. Second, we present a theory for why this happens: more unequal countries develop deeper financial markets. Therefore, households living in unequal countries can borrow more than households in equal countries. Well, that is the research in simple terms, but let's look at it in more detail.

In our study, we measure income inequality across countries using the Gini index for income after taxation. The Gini index is a measure of statistical dispersion widely used to measure income and wealth inequality; a higher Gini means higher inequality. We combine these data with the main measure of a country's external saving or borrowing, the current account balance to GDP ratio. The current account balance represents how many external assets a country accumulates or decumulates in each year. A country with a positive current account lends to foreign residents, while a country with a negative current account borrows from foreign residents. Economists generally think that, on average, a country's current account should equal zero, especially among advanced economies. However, important countries in this group, such as the United Kingdom or the United States, have consistently run current account deficits in recent decades. Understanding the causes of these deficits is an important open question in international macroeconomics, and our research contributes to answering it.

Our paper is the first to document that the correlation between the current account balance and income inequality is negative. Countries with high income inequality tend to run current account deficits, while countries with low income inequality run current account surpluses. Further, we show that this negative correlation arises from a negative correlation between private



> *We consider a model economy where households can default on their debt. If they default, they are not allowed to borrow in financial markets for several periods. Thus, their consumption cannot be higher than their income, and they cannot run up debt to deal with periods of temporarily low earnings.*

savings and income inequality. In countries with high income inequality, the private sector saves less than in countries with low income inequality.

Our empirical result is surprising since the standard models in macroeconomics would predict the opposite. To understand why we must first explain the two main causes of income inequality, known as persistent and transitory income risk. First, individuals might differ in terms of persistent characteristics that empirically are associated with different income trajectories, such as education or skill. A more highly educated person tends to earn more than a less educated one. The typical heart surgeon earns a much higher income than a bus driver, for example. However, as these differences tend to persist throughout these individuals' lives, individuals with higher income would have higher levels of consumption and not necessarily of savings. In concrete terms, the heart surgeon can enjoy fancier holidays and a larger car than the bus driver. If differences in income inequality across countries were mainly due to differences in persistent income risk, we would thus expect a similar level of external saving between equal and unequal countries.

A second reason for income inequality is that the same surgeon or bus driver can lose their job and thus experience a period

of their life where their income is temporarily lower. Economists call this transitory income risk. The higher this transitory income risk, for instance because of a high probability of losing a job or because of a big drop in earnings when this happens, the higher this income inequality. However, here comes the twist: a person who lives in a country with a high income risk should save more, according to traditional macroeconomic models. This is because having a stock of savings would allow this person to sustain higher consumption in periods of low income – an economic force known as the precautionary saving motive. Therefore, if transitory income risk is the main driver of income inequality, we would expect individuals in countries with high inequality to save more and the country as a whole to run a larger current account surplus. Puzzlingly, we document the exact opposite. Hence, we had to develop a novel theory to explain this novel fact.

We consider a model economy where households can default on their debt. If they default, they are not allowed to borrow in financial markets for several periods. Thus, their consumption cannot be higher than their income, and they cannot run up debt to deal with periods of temporarily low earnings. An individual living in a country with low income risk does not attach a high value to participation in financial markets. For this individual, the punishment of being excluded from the financial markets is small, since there is not a big risk of earnings falling much. Therefore, this individual has a strong incentive to default on their debt, even when such debt is small. Hence, going back one step, they will not be able to borrow much from financial markets. The opposite is true for households living in countries with high income risk. They value participation in financial markets highly. Therefore, they will repay even high levels of debt, and they will be able to borrow substantial amounts of resources. In countries with high income risk, deeper financial markets thus emerge, providing greater insurance to households who value participation in such markets highly. Thus, households in countries with high income risk can borrow more than households in countries with low income risk. Therefore, exactly as we find in the data, more unequal countries save less than less unequal countries.

> *However, important countries in this group, such as the United Kingdom or the United States, have consistently run current account deficits in recent decades.*

We find this research avenue very exciting, as it touches upon themes of inequality and financial globalization, which both myself and my co-authors see as some of the most critical issues of our time. While our research so far has focused on advanced economies, we will soon begin to explore similar forces among emerging market economies, where much of the recent economic growth has taken place. We plan to work for many years ahead on this and related topics, and we hope to gain many more important insights for researchers and policy-makers.

Dr Federica Romei is an Associate Professor at the University of Oxford, a Tutor Fellow at Hertford College and a Research Fellow at the CEPR

Creating a climate

By Frances Wheare, Director of Development

for change

My first draft for this article started by presenting the now familiar facts about climate change and the stark reality that, if drastic action is not taken, there will be an irreversible impact on global society, with poorer regions disproportionately affected. I read numerous articles and webpages to inform this overview, and then wondered why I felt so full of dread for the rest of the day. (There is, of course, a word for this: climate anxiety, a term which encompasses stress, depression and feelings of guilt.)

I'm sure I'm not alone in finding that fear paralysing. The sheer scale of what needs to happen to reverse the current trajectory can feel insurmountable, and the inertia of governments and corporations in responding to the climate emergency on a systemic level is frustrating. There are, however, glimmers of hope. I can't be the only person whose investment in the 2020 US election was largely motivated by whether or not the country would rejoin the Paris Accord; sadly, here in the UK we seem to be a long way off a Green New Deal.

Research by Professor Anette Mikes, Hertford's Tutorial Fellow in Management and Accounting, shows that businesses are moving in the right direction. Just a decade ago, companies 'invested in enormous advertising programmes concealing modest "green" moves. In extremis … some carbon-intensive companies … financed "contrarian experts" to contest and discredit the consensus view of climate scientists, promoting climate change denialism among the public and policymakers.'

The effects of such policies will doubtless take time to roll back, but today, Professor Mikes's research shows that companies are engaging 'with policy makers and governments to create the accounting, infrastructural and incentive frameworks that facilitate decarbonisation … While many argue that climate change is too big a problem to leave to business alone, we conclude that it is also too grand a challenge to solve without business's participation.'

While change drags on at an institutional level, communities and individuals are taking matters into their own hands. A recent article in the Guardian highlighted a number of grassroots initiatives that are springing up across the country, from affordable eco-housing to renewable energy projects. Campaigns such as Oxfam's Second Hand September or the Veganuary movement encourage people to make permanent changes after resetting their habits through a month-long challenge. At the more extreme end of the spectrum, no one could have missed Extinction Rebellion's activities in recent years, or the global Climate Strikes in 2019, in which it's estimated that around 6 million people took part. Whether you agree with their tactics or not, they have certainly helped to keep the climate crisis in everyone's minds.

I subscribe to the 'progress, not perfection' model of change, and it is heartening to see the number of people who are joining me in driving an electric vehicle, shunning flights and switching to green energy providers. I am far from a paragon of virtue – I'm afraid I'm not even a vegetarian, much less a vegan, and I have a shameful dependence on Amazon. But we must all make incremental, sustainable changes to the way we live our lives, whilst at the same time putting pressure on governments and corporations to make the systemic changes that are so desperately needed.

In this issue of The Bridge, you will read about one of our alumni, Joe de Hoop, who has launched the social enterprise, Chero. Joe is one of many alumni who are working in this sphere, and we'd love to throw a spotlight onto these ventures; please get in touch if you're also working in this area. However, many of you have asked about what the college itself is doing to tackle the climate crisis. This is central to the new Hertford 2030 strategy and vision, and we have committed to a goal of net zero carbon emissions, and a biodiversity net gain. We will achieve these goals by 2030 at the latest.

Our sustainability action plan focuses on two areas: operational and academic. As a first step, we will conduct an audit of current emissions and biodiversity levels to establish a baseline for measurement, priority action and costings. Our next step will be to agree specific targets for reducing waste and greenhouse gas emissions – you can expect to see a change in our menus and a move towards reducing our printed communications. Much will happen behind the scenes as well, as we embark on the process of making our historic buildings more energy efficient. And finally, importantly, we will develop our investment policies to align with emerging sustainable investment standards. We know that many of you have been calling for these actions for some time, and I urge you to continue to hold us to account.

We mustn't lose sight of the fact that Hertford is an academic institution, which has long been a centre for research on environmental change. Over the next decade more than 250 students will study climate issues at Hertford across a range of academic disciplines, many of whom will join the ranks of our alumni who are leading the local, national and international efforts to respond to the climate crisis. Their education will be backed up by practical support on how to contribute as an individual; how to campaign, influence, and make change happen. And we will continue to champion research on climate and sustainability: understanding evolving conditions and associated extremes; corporate climate risk management; and the social dimensions of environmental change.

50 years ago, Hertford revolutionised the traditional Oxford admissions model. We're confident that we can build on our pioneering heritage in the current fight against climate change. Judging by the conversations I've had with many alumni so far, I think there will be great support for these policies. I want to conclude with the words of one such alum, who told me: 'Sustainability is about creating something worthwhile which lasts, which contributes more to society than it takes away.' In making this public commitment to sustainability, we resolve to be good neighbours, good citizens and good ancestors. We're grateful for your support as we embark on this journey.

Frances Wheare is a Fellow of Hertford and Director of Development. Outside of work, she is involved with a number of eco-initiatives, and is a Trustee of Bicester Green, a local sustainability organisation.

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Life as a virtual librarian

By Alice Roques

It has been quite the surprise over the past year to discover that I have a very detailed and long-lasting mental map of the Hertford College Library. Looking for books on witchcraft in Britain? Why, you'll find them in the first basement room, just on your right in the third aisle. Oh, Einstein and Freud in German? You'll need a kick stool – they're on the top shelf at the end of the German section upstairs.

For the first few months of lockdown this mental map was a comforting imaginary retreat. Sadly, however, it was not of any practical use as the library building was closed to all, including staff, with the Archivist, Rare Books Cataloguer, Library Assistant and I working exclusively from home. Having to work remotely from March to June, we swiftly adjusted our services to support a college with members spread out across the UK and beyond. We purchased print books and had them delivered straight to readers' homes, bought access to eBooks and found online alternatives for our readers as many of them prepared for exams.

“For the first few months of lockdown this mental map was a comforting imaginary retreat. Sadly, however, it was not of any practical use as the library building was closed to all

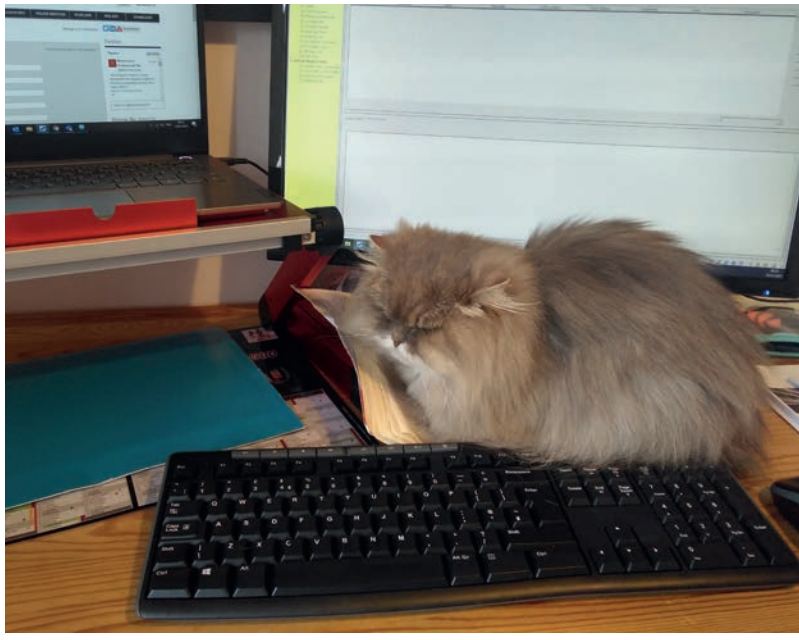
Thankfully, as restrictions eased, the aforementioned mental library map came into its own as I worked remotely with colleagues on site. To begin with, Hertford's Library Assistant, the endlessly patient Alex, cycled in a few times a week to run our postal loan service. Despite only seeing each other once in person in nearly 12 months, we have spent countless hours in Teams calls. When she could tell I was really missing Hertford, Alex would take her laptop and carry me round the Library on a video call. We spent August and September planning a COVID-secure layout for the Library which would enable us to reopen to readers at the start of Michaelmas. We also set up quarantine procedures for returned books, a new self-issue machine and one-way system for students to browse and borrow books, alongside operating a daily online ordering system so that students could pre-order books for collection. Inductions were all delivered remotely (with only one cat-related home working disaster when a rogue paw caused my laptop to restart in the middle of a live Zoom call).

> *Even with many resources available digitally, our students need somewhere calm, communal, and comfortable to work. Hertford's outdated, cramped and poorly ventilated library building has made it impossible to open it as a COVID-secure study space.*

This past year has highlighted the importance of two aspects of the Library service that might, perhaps, seem

contradictory. The first is that a library is more than just a physical space. The second is that the library's physical space is still really important. The resources and staff who make access to materials possible are at the core of the library. Many books that are essential to Oxford's teaching simply aren't available online, meaning access to printed copies remains vital. As the pandemic has progressed and temporary online access from publishers has disappeared, it has also become clear that many core textbooks simply aren't affordable in electronic format, with some eBooks costing tens of thousands of pounds for a single year of access. With this in mind, library staff supported tutors by creating 118 online interactive reading lists for Hertford undergraduates. These lists quickly direct students to online resources, library books that can be ordered by postal loan, and allow librarians to share secure, scanned excerpts of print material.

Even with many resources available digitally, our students need somewhere calm, communal, and comfortable to work. Hertford's outdated, cramped and poorly ventilated library building has made it impossible to open it as a COVID-secure study space. Library staff have been coordinating shifts to avoid contact with each other as we only have a single, compact office space. Lack of running water across the building also meant nowhere for handwashing without crossing the quad, while narrow corridors, tightly packed desks, and bookshelves jammed up next to them meant making a choice between study space and access to resources.



> *The students have been incredibly stoic about the limits on the Library service, but many have bemoaned the lack of library workspace*

The students have been incredibly stoic about the limits on the Library service, but many have bemoaned the lack of library workspace. A favourite desk by the window, nesting spots in the quiet of the basement, the gentle background hum of whispers and snaffled wine gums

in the upstairs reading room have been replaced with students spending endless hours stuck alone in study bedrooms, sleeping a metre from where they spend their day working. The demand for alternative works spaces has been very clear, with the bookable study spaces in the Bodleian becoming something of a holy grail. Students have told me they set alarms each morning to ensure they are ready and waiting on the booking website to reserve their space for the following week, with spots going faster than Glastonbury tickets.

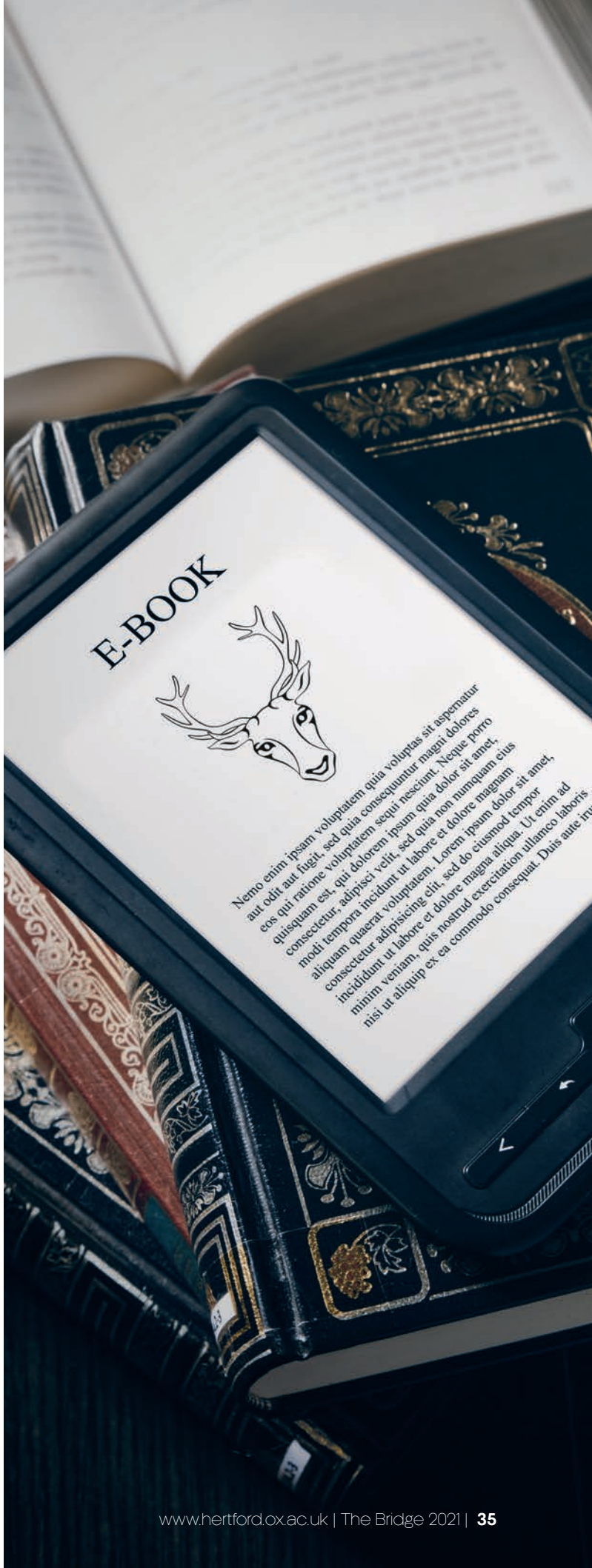
My library and archives colleagues have kept our services running and shown their skill, adaptability, and dedication. Alex and I have got remote cataloguing down to a fine art now. Jenny, who has been seconded to the Library from the International Programmes department, has proved particularly adept at creating online reading lists. Sophie has created a manuscript listing for Hertford that will be of use to researchers for many years to

“My library and archives colleagues have kept our services running and shown their skill, adaptability, and dedication. Alex and I have got remote cataloguing down to a fine art now.

come. Lucy has launched Hertford's first online archival catalogue. Professor Emma Smith, as Hertford's Fellow Librarian, has ensured the Library's central place in the planning of college services and kept morale up with her kind words and by letting her puppy join in our video calls.

All of the services the library has offered over the past months have also relied on not just library staff, but many of our college colleagues. The housekeeping team has kept us safe with increased cleaning regimes, the bursary has kept the book buying running smoothly, our academic office colleagues have helped us keep in touch with students and the domestic team have supported us to create COVID-secure spaces and retrieve books from abandoned student rooms. The IT experts have talked us through various technical quandaries, even when we don't know what type of cables we have or what the password should be! The Porters, most important of College staff, have monitored rare book conditions and patiently assisted in the safe dispatch and receipt of hundreds of parcels. Despite being a very challenging time for all concerned, including Simpkin who has missed his 24-hour access to the Library and has had to be prized out of his chair at the end of staffed shifts, we have also been able to learn more about what's really important in our library service. The pandemic has emphasised the essential role libraries play in university life and illustrated how important Hertford Library's renovation plans are to provide the best possible support to our college members for many years to come.

Alice Roques is a chartered library professional, as Hertford's Librarian she manages both the modern library and rare book collections at the College.



DOCTORS MADE INVISIBLE

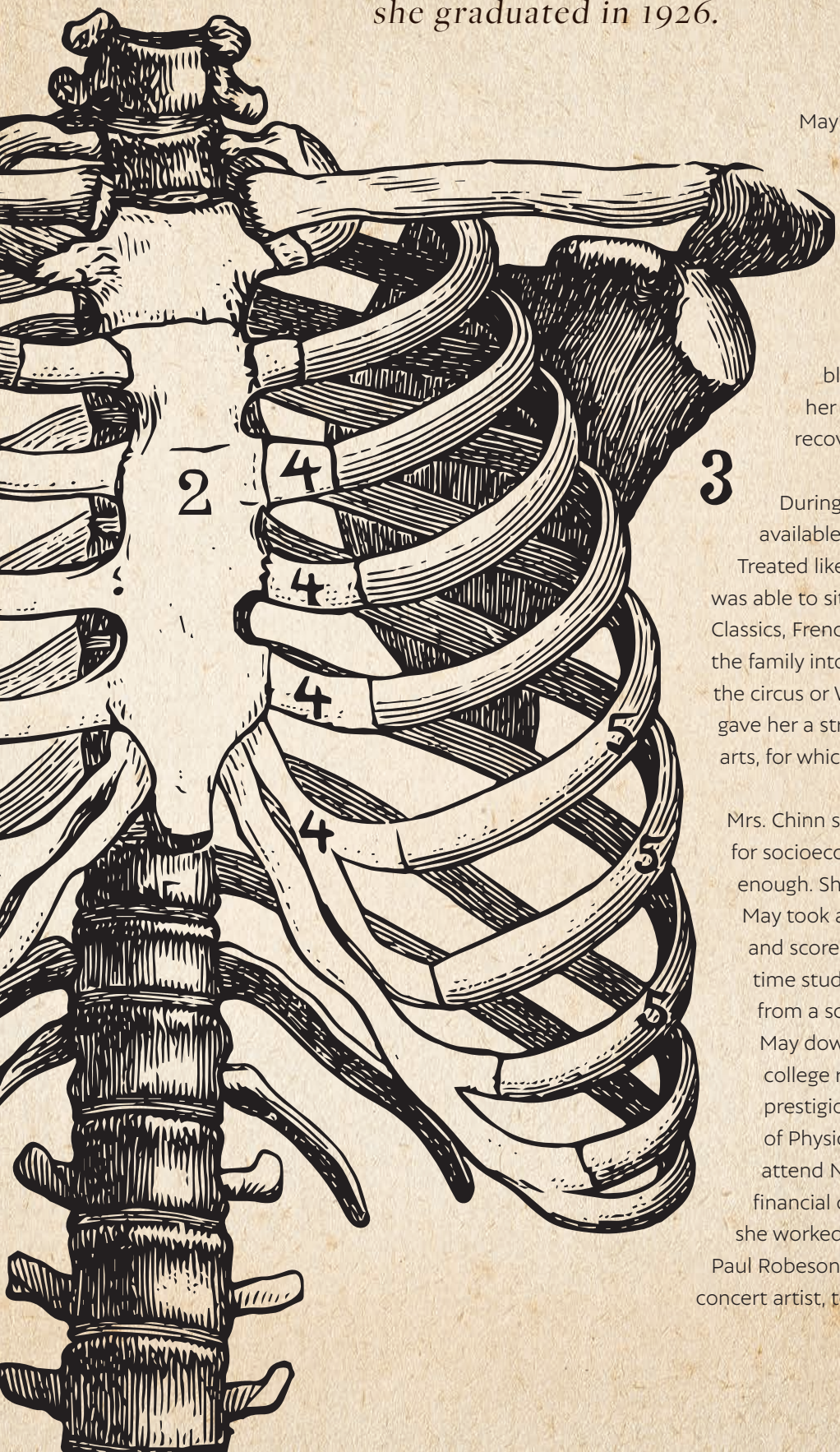
By Jasmine Brown

I am an African American woman who wants to become a physician. Throughout my life, I've been told that being black and a woman precluded me from this dream. I tried my best to ignore these hateful messages, but the absence of black women physicians in my life left a deep cave where these harmful words were free to echo. If black women could become physicians, why didn't I know about any?

It wasn't until I had trudged far enough through peoples' prejudice and my own self-doubt, making it to the medical school application cycle, that I finally came to know black women physicians. This discovery lifted a huge weight off of my shoulders. I needed to see someone like me in the medical profession in order to feel confident that I could also make it. The simultaneously shocking and frustrating aspect about this finding is that African American women have been successful physicians for over a century, but their triumphs have been hidden. This erasure bolstered prejudiced messages and convinced black girls that their medical aspirations were unreachable. Now that I am a medical student, embarking on my own medical journey, the stories of black women physicians who paved the way for students like me give me strength.

One such story is that of Dr. May Chinn. In 1896, May Chinn was born in Great Barrington, Massachusetts to a father who was a runaway slave and a mother whose birth, just after the Emancipation Proclamation was signed, meant that she narrowly avoided bondage. Neither parent had a college education. With

May made it through medical school relatively unscathed, but things became difficult after she graduated in 1926.



May's father only able to attain menial jobs, her mother worked as a live-in cook to help support the family. Mrs. Chinn was able to get a good job working for Charles Tiffany, the founder of the luxury jewellers, Tiffany & Co., and his family. After developing osteomyelitis, a bone infection, while at a predominately black vocational school, May moved in with her mother and the Tiffany family until she recovered.

During this time, May received opportunities available to very few African American children. Treated like another child in the Tiffany home, she was able to sit in on the tutoring sessions, learning Classics, French and German. She even accompanied the family into New York City for outings like watching the circus or Walter Damrosch concerts. This experience gave her a strong education and exposed her to the arts, for which she developed a passion over the years.

Mrs. Chinn saw strong education as May's only route for socioeconomic mobility. High school wasn't enough. She pushed her daughter to go to university. May took an admission exam for Columbia University and scored so well that she was admitted as a full-time student with 20 college credits. Mentorship from a science teacher at Columbia eventually led May down the path of medicine, and her shining college record earned her admission into the prestigious Columbia University Vagelos College of Physicians and Surgeons, though she chose to attend New York University Medical College due to financial constraints. Before starting medical school, she worked as a musician and an accompanist for Paul Robeson, a famous African American bass baritone concert artist, to help raise money for her studies.

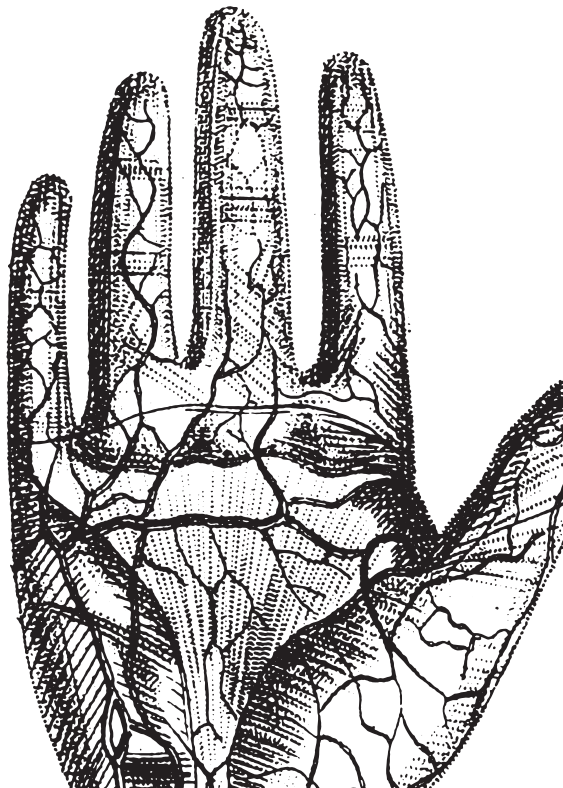
May made it through medical school relatively unscathed, but things became difficult after she graduated in 1926. Residency programs refused to admit her because she was a black woman, so she worked long hours as an apprentice for more experienced physicians. Racism and sexism marred these experiences, too, when even after working with them for years, treating their wives and children, the physicians she apprenticed refused to acknowledge May in public.

Eventually, she'd had enough of this maltreatment and decided to start her own medical practice. Due to racial segregation in hospitals, Dr. Chinn treated African American patients in their homes with far fewer resources than would be available in a hospital. She would deliver babies and carry out surgical operations in patients' homes, often utilizing family members as her nurses. Their bedrooms were transformed into the operating room. Their coal stoves became the sterilization unit for the wound dressings.

Dr. Chinn was an extremely hardworking and innovative physician, but she also had fun. She maintained her passion for the arts even after she began working in the medical field. In addition to Paul Robeson, she became close with other leaders of the Harlem Renaissance. She, along with other members of this black intellectual community, would go to coffee houses in Harlem and listen to prolific writers like Countee Cullen and Langston Hughes. But these writers were not performing their finished works. They were sharing their works in progress with their community and seeking feedback. In addition to supporting these writers and their creative process, Dr. Chinn remained in tune with her own creativity. She continued performing with Paul Robeson. Sometimes they would sing and play piano at recitals hosted by Madam C. J. Walker, a black woman who was America's first female self-made millionaire.

Dr. May Chinn's story is filled with great obstacles and immense triumphs. She and countless other black women physicians have made significant impacts to medicine and American society as a whole, oftentimes behind the scenes. These black women physicians have been erased from our history books for far too long. It's time that they, and their contributions, be made visible for all to see. My research into this topic began during my MPhil in History of Science, Medicine and Technology at the University of Oxford as a member of Hertford College. After completing my degree this past summer, I started medical school at the University of Pennsylvania in the U.S. Now I'm writing a book on the history of black women physicians to be published by Beacon Press.

Jasmine Brown (History of Science, Medicine and Technology, 2020) is a Rhodes Scholar and a rising second-year medical student at the Perelman School of Medicine at the University of Pennsylvania in the USA. When she's not studying, she's likely working on her book or a new painting.



“These black women physicians have been erased from our history books for far too long. It's time that they, and their contributions, be made visible for all to see.

We're all excited to welcome you back to college – especially Simpkin! Until then, please stay in touch.

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