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understanding of inequality

Bootstrapped: how to build a
business from the ground up

In the modern world, can
war ever be just?



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Editor

Mira Katbamna

Managing editor

Steve McGrath

Design and art direction

Rob Flanagan

University of Cambridge

Bruce Mortimer
James Hardy
Charis Goodyear

Publisher

The University of Cambridge
Development & Alumni Relations
1 Quayside, Bridge Street
Cambridge CB5 8AB

Editorial enquiries

Tel +44 (0)1223 332288
cameditor@alumni.cam.ac.uk

Alumni enquiries

Tel +44 (0)1223 332288
contact@alumni.cam.ac.uk
alumni.cam.ac.uk
facebook.com/cambridgealumni
@Cambridge_Uni
#camalumni

Advertising enquiries

Tel +44 (0)20 7520 9474
sharon@lps.co.uk

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Jana Sophia Nolle

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Your alumni directory.



Welcome to the Easter Term edition of CAM. It feels far too early to start thinking about what comes after the pandemic – but whenever that moment does finally arrive, top of the economic agenda will be the ‘productivity puzzle’. Key to raising living standards, productivity has flatlined since 2008. On page 12, Professor Diane Coyle sets out why she thinks a re-examination of how we value capital of all sorts is long overdue.

Elsewhere, on page 44, the Vice-Chancellor, Professor Stephen J Toope, argues that the humanities are as vital to the modern world as the sciences, and on page 11, Professor Giles Oldroyd sets out why a radical approach is needed to address the sustainability of food production.

Finally, this year’s new graduates will have two things on their minds: finding a job and, if the rules allow it, finding somewhere to live. On page 34, we discover how housing policy is playing out around the world, and on page 16 we delve into the archives to discover Cambridge careers advice – since 1899.

On these topics – and on all things Cambridge related – we look forward to your contribution to the debate, online at magazine.alumni.cam.ac.uk, by post, email or on social media.

Mira Katbamna
(Caius 1995)



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Inbox

Activism

✉ Frank Wilson's letter (CAM 92) seems to suggest that activism is an alternative to democracy. In a democracy, activists have the opportunity to establish their own political party or draw the attention of the main political parties to the "policy blunders" and "injustices" which they consider are in evidence.

Hugh Wrigley
(Clare 1960)

Mother of parliaments

✉ I not only enjoy reading CAM but tend to believe almost everything I read in it. Having spent all my working life in the House of Commons, I did enjoy the feature on parliamentary reform in issue 92. But readers deserve reassurance that the suggestion in Professor David Feldman's piece that some MPs "have no secure, indoor access to the chambers" is not correct. All MPs (though not peers) have offices within the secure perimeter, even if some are indeed obliged to take their chances with the weather. There would be a self-evident security risk if MPs did not have such access. He is absolutely right that the buildings present serious problems, whether best solved (as Parliament has already agreed) by an ambitious restoration and renewal programme or by a new building, as David suggests. Either will, of course, be very expensive.

David Natzler
(Trinity 1970)

✉ Professor Tombs should resist the temptation to abolish the House of Lords altogether. The report of the Royal Commission on the Reform of the House of Lords (from 2000) explains why a second chamber is essential and shows how that would bring a range of expertise and different perspectives to bear on the consideration of public policy issues, improving the scrutiny of legislation and of government actions, but without undermining the role of the

House of Commons. Reform of the House of Lords is necessary and overdue, and it must be done carefully; but there is undoubtedly an ongoing need for Parliament to have a second chamber.

David Hill (Caius 1973; Secretary to the Royal Commission on the Reform of the House of Lords, 1999)

✉ Unsurprisingly, since your four experts were drawn from the legal and political fields, there was not a single mention of the need for greater representation in Parliament of members with a scientific or engineering background. Parliament is responsible for spending huge sums and most of it involves science or technology, in whole or in part.

Tony Hanwell
(Christ's 1956)

✉ Consensus among parliamentarians is seldom a great idea because it flies in the face of public opinion. Voters commonly disagree sharply, if not quite "tribally", about the big issues of the day. We hold elections to see which side is in the majority, and it is the duty of MPs to argue over policies, as they feel they should. It was gloopy, elitist consensualism that led to the (thankfully bloodless) revolution of Brexit. Parliamentary ding-dongs are a sign of democratic strength.

Quentin Letts
(Jesus 1986)

Public service. Private good?

✉ Your recent article on the importance of procurement in shaping the governance of public life was spot-on. One area where this is particularly pertinent is urban development, where procurement processes have a material impact on what gets built in UK cities. In your article, Dr Fazekas points out the importance of public interest and transparency. However, public-private contracts for the development of housing are shrouded in secrecy because of their commercial sensitivity. Consequently, while buildings and places are inhabited by all, they are controlled by elites through opaque contractual relationships.

Hannah Williamson
(Downing 2012)

Always on my mind

✉ In popular culture, and especially movies, robots are played by humans. I suggest we will have reached a point of significance (the 'Cohen singularity') when robots play themselves in movies.

Jack Cohen
(St Catharine's 1961)

CUTRS

✉ I was fascinated to read the article about the Cambridge University Tape Recording Society (CAM 91). As a green

undergraduate in my final year in 1969, I decided to submit a recording of a piece I had written, a clarinet concerto, as part of my music portfolio. Enter the Society which, despite short notice, did a superb job. Fifty years on I still have the tape, and a duly digitised version of it was performed at a programme of my music compiled for my 70th birthday three years ago. Congratulations to the Society and to all who were involved!

Shelagh Godwin (née Claxton)
(Newnham 1966)

✉ I purchased a Ferrograph Series Seven reel-to-reel tape recorder from CUTRS Secretary John Dawson, to record and replay original music written and performed by College friends. Mixtapes for College parties were also a staple use of the Ferrograph, which I am proud to say I still own to this day.

Robert Stoker
(St Catharine's 1972)

This idea must die ('Irish' history, CAM 91)

✉ Not the least of the many tragedies of the Irish Civil War was the execution of Erskine Childers (Trinity 1889) on trumped-up gun possession charges. His final words were addressed to the firing squad: "Take a step or two forward, lads, it will be easier that way."

Nigel Sherratt
(Trinity 1971)



Alumni Festival

Booking for the Alumni Festival opens on 19 July. The Festival will take place online 24-28 September with a programme of lectures, tours and discussions from the Cambridge community.

alumni.cam.ac.uk/festival



Widening participation

University admitted record number of underrepresented students this year

Cambridge is continuing to attract record numbers of economically disadvantaged and underrepresented students, with slightly more than 70 per cent of students who successfully applied for Cambridge in the 2020 academic cycle from state schools.

The number of Black students increased by 50 per cent, while 29.3 per cent of last year's new arrivals identify as BAME (Black, Asian and Minority Ethnic), up from 27.8 per cent.

There were notably high success rates for applications from Wales and the north-east of England, and more than a fifth of undergraduate students now come from economically disadvantaged backgrounds.

There was a 13.3 per cent increase in admissions due to the revision in A level grades in the summer: 3,997 were admitted compared to 3,528 the previous year. However, the University was able

to admit each student who met the terms of their offer with no forced deferrals, despite the increase.

Director of Admissions for the Cambridge Colleges, Dr Sam Lucy, said she was delighted by the figures, coming as they do at a time when many of those students have been particularly affected by the pandemic. "This is testament to their resilience and determination and to the hard work of colleagues in Colleges and the University, liaising with schools and their students up and down the country."

Senior Pro-Vice-Chancellor for Education, Professor Graham Virgo, said: "What these statistics show is that we are meeting, or even exceeding, our benchmark targets. It's encouraging to see the number of BAME students rising again. We have a commitment to seeing more students from underrepresented backgrounds here at Cambridge and this work will continue."

Cambridge Initiative for Planetary Science and Life in the Universe

A new research initiative led by 2019 Physics Nobel Laureate Professor Didier Queloz will bring together physicists, chemists, biologists, mathematicians and earth scientists. The Cambridge Initiative for Planetary Science and Life in the Universe will investigate fundamental questions – from how life emerged on Earth to the processes that could make other planets suitable for life.

cam.ac.uk/iplu



Deconstructed

Professor Mary Beard's 'retirement present' to fund Classics students

Cambridge historian Professor Mary Beard will help fund two UK Classics students from underrepresented backgrounds as part of efforts to encourage more diversity in the subject.

Her £80k gift will pay the living costs of a full degree course for two undergraduates who are from both an underrepresented minority ethnic group and a low-income home.



Professor Beard, who will retire at the end of 2022 after almost 40 years at Cambridge, said the gift is 'payback' for everything Classics has given her as a student and an academic.

Beard's gift will be named the Joyce Reynolds Award, honouring the tutor who inspired her: a pioneering Cambridge classicist, a Fellow of Newnham and a world-renowned ancient historian.

Three-minute Tripos

LOAN APPLICATIONS PROCESSED AROUND MIDDAY MORE LIKELY TO BE REJECTED.

Are you going to lend me that tenner?
I have decided – not.

Why not?

Because I've been thinking about more important decisions all day and it's easier to just say no to you rather than go into a long and detailed pros-and-cons monologue. Also, it's lunchtime, and I am hungry.

So if I'd got my tenner loan request in earlier, you might have said yes?

Possibly. It's not me being stingy, though. It's decision fatigue. It's a thing, even in big banks. It's all just too exhausting.

Decision fatigue! Nonsense. I thought we had unimpeachable algorithms for that kind of thing.

Nope! A study by Dr Simone Schnall and her team from the Department of Psychology looked at 26,501 'restructuring requests', where the customer already has a loan but is having difficulties paying it back, so asks the bank to adjust the repayments. Bank staff were more likely to grant a more lenient loan repayment in the morning. But making that decision took more time and effort than just saying no. By midday, they showed decision fatigue and were less likely to agree to a loan restructuring request.

Should we always call the bank in the morning, then?

Probably. Although the study also showed officers were more refreshed after a lunch break. Plus, you'll be helping the bank. It's estimated that the bank could have collected around an extra \$500,000 in loan repayments if all those decisions had been made in the early morning.

OK, so how about if I ask you for a tenner tomorrow morning? Will you say yes?

No.

cam.ac.uk/lunchtimeloans

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A WINNING FORMULA: AQUILA is published by a small and dedicated team of writers and artists in the downland seaside resort of Eastbourne.

Una Xu is a third-year Engineering undergraduate at Newnham, Charlie Brooker is a third-year Maths undergraduate at Queens', Matthew Wang is a first-year Engineering postgraduate at Christ's, and Dian Lu is a fourth-year Clinical Neuroscience PhD at Queens'.

High flyers



The Cambridge University Gliding Club is making flying exciting, competitive – and, perhaps surprisingly, accessible.

WORDS **DIANE SHIPLEY** ILLUSTRATION **KATE COPELAND**

Is it a bird? Is it a plane? Or is it a combination of the two? As the ultimate adventure sport, gliding sees participants hand over all control to the power of nature, soaring at great heights at average speeds of more than 100 miles per hour.

“There’s just something about the freedom of being up in the air,” says Charlie Brooker, president and co-captain of the Cambridge University Gliding Club (CUGC). “On one of my early training flights, the instructor was teaching me how to use a thermal – warm rising air – to gain height and there was a buzzard with us which kept having to duck to avoid us! When you’re in the same place as a creature like that, doing the stuff they’re doing, flying in the same way they are, it’s almost like being a bird yourself.

“One day we’d had some bad weather in the morning but in the afternoon, there was a break in the clouds, so we went up to about 4,000 feet. I could see an enormous rain cloud over Cambridge stretching from just above the ground to probably 15,000

feet into the atmosphere and another one to the west, and we were in this crystal-clear gap in the middle, doing aerobatics. That was one of the moments where you go, ‘Wow, this is so cool. This is why I fly.’”

Gliding might look like a solitary sport, but it takes a team to get airborne. The club shares resources with Cambridge Gliding Club at Gransden Lodge airfield and, for every flight, volunteers are needed to log take-offs and landings, communicate with the pilot and operate the winch that launches gliders. This community spirit makes for a tight-knit group, bonding at events such as the annual Varsity and trips such as the week-long expedition at the end of term.

One of Brooker’s favourite memories is the club’s trip to Sutton Bank in Yorkshire before the first lockdown, where the North York Moors allowed for take-offs that aren’t possible in East Anglia. “At the end of one of the runways is a cliff, so when the wind is in the right direction, you take off and the ground just falls away below you. You’re

isolated up in the air in the sense that you’re completely on your own. But it’s not isolating. It’s freeing.

“In my early days of flying, when the instructor is in control, you get that roller-coaster of adrenaline. But once you’re training, you’re focused on doing it right and then you get to enjoy it in a different way. It’s not a sense of being out of control, it’s more like, I’ve mastered this and I can have these experiences that I understand completely.”

Keen to expand his skills as a pilot, Brooker started aerobatics training last autumn, describing loops as “fairly easy” but steeply banked turns as more technically demanding than they look. And it’s those challenges that keep him coming back – he plans to do so for as long as he can. “Gliding is the type of sport you can pick up as a 13-year-old and keep doing into your 90s. Wherever you are in the world, there will always be a gliding club, and there’ll always be a sky to find.”

cugc.org.uk



Cambridge in America

American alumni and friends have been supporting the University for decades – and this year marks a special anniversary for this exceptional relationship.

What is Cambridge in America? Not a physical university, but a home for our many alumni (more than 20,000 of them in North America at the last count) – and a great outpouring of goodwill to a place that so many alumni remember with much fondness.

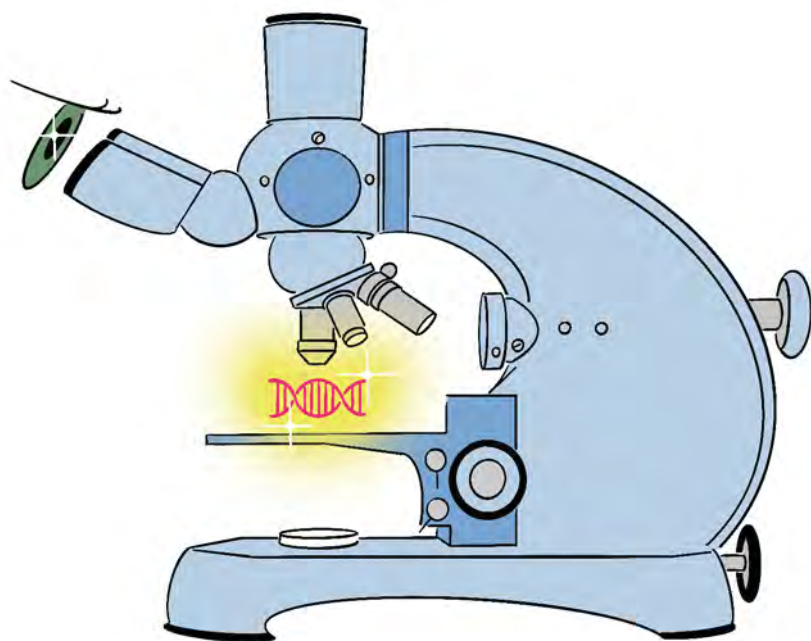
Led by an independent volunteer board of more than 20 distinguished alumni, Cambridge in America (CAm) is the formal name for the Collegiate University's US fundraising and engagement operation, which this year celebrates its 20th anniversary. And what a 20 years it has been: as well as working closely with alumni and friends from across the continent, CAm has raised more than \$800 million (£565 million) for Cambridge.

Americans have been generous to Cambridge for many years – indeed the University Library was built in 1934 with money from the American philanthropist John Rockefeller. CAm itself is the result of the 1990 merger of the American Friends of Cambridge University, which was founded in 1967, and the Cambridge University Development Office in the US. Together, these organisations have raised a cool \$1.2 billion (£850 million) in support of the University.

So, this year, we hope you'll join us in raising a glass to CAm and to the many, many US donors who, through their generosity, continue to support the groundbreaking research and teaching at the University.



CAM is the result of the 1990 merger of the American Friends of Cambridge University, which was founded in 1967, and the Cambridge University Development Office in the US. Together, these organisations have raised a cool \$1.2 billion in support of the University



Millennium Technology Prize

Joint award for DNA chemists

Two University of Cambridge chemists have been jointly awarded one of the world's most prestigious science and technology prizes, the 2020 Millennium Technology Prize, for their development of revolutionary DNA sequencing techniques.

Professor Sir Shankar Balasubramanian and Professor Sir David Klenerman are the first ever joint winners of the prize for the same innovation, celebrating the significance of collaboration in science. The prize is awarded by Technology Academy Finland every two years.

Balasubramanian and Klenerman's co-invention of Solexa-Illumina Next Generation DNA Sequencing has enhanced our fundamental understanding of life by enabling fast, accurate, low-cost and large-scale genome sequencing – the process of determining the complete DNA sequence of an organism's make-up. It has transformed genomics, medicine and biology by allowing a millionfold improvement in speed and cost when compared to the first sequencing of the human genome.

Balasubramanian, of the Yusuf Hamied Department of Chemistry and Cancer Research UK Cambridge Institute, paid tribute to his co-winner and his team: "It's not just for us, I'm happy on behalf of everyone who has contributed to this work."

Co-winner Klenerman, also of the Yusuf Hamied Department of Chemistry, highlighted the University's role in developing the technology. "The idea came from Cambridge and was developed in Cambridge. It's now used all over the world."

In brief

LORD SIMON WOOLLEY TO BE PRINCIPAL OF HOMERTON

Lord Simon Woolley, the founding director of campaigning NGO Operation Black Vote, has been elected as the next Principal of Homerton College. In 2018, he was appointed to create and lead the Race Disparity Unit.

SIR RICHARD HEATON APPOINTED AS THE NEW WARDEN OF ROBINSON

Robinson College has appointed Sir Richard Heaton as its new Warden. He joins following a distinguished civil service career focusing particularly on justice, the constitution and human rights.

PROFESSOR MAURO F GUILLÉN IS NEXT DEAN OF CAMBRIDGE JUDGE BUSINESS SCHOOL

Professor Mauro F Guillén, a prominent expert, award-winning scholar and teacher at the Wharton School of the University of Pennsylvania, has been appointed the next Dean of Cambridge Judge Business School.

DR KAMAL MUNIR APPOINTED PRO-VICE-CHANCELLOR (UNIVERSITY COMMUNITY AND ENGAGEMENT)

Dr Kamal Munir has been appointed Pro-Vice-Chancellor (University Community and Engagement). He is Academic Director at the Centre for Strategic Philanthropy and a Reader in Strategy and Policy at the Cambridge Judge Business School.

A style guide to the *outside*

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Lisbon - Garden Lounge Set

Give your garden space a modern and stylish upgrade this year with the Lisbon Garden Lounge set. It seats 5 people in comfort and comes in charcoal grey. It includes a comfy 3-seater sofa, 2 spacious armchairs and a rectangular slatted coffee table. The cushions are made from poly spun fabric, so soft to touch and have removable covers for washing, to maintain that fresh look. The frame of the lounge set and coffee table is electrostatically coated aluminium to give a durable and sleek finish. Normally £1299, now available at an amazing **£899***, but only when you quote your £400 discount code **CMJUL21** at checkout.



Stockholm - Chaise Lounge Set

Enjoy your garden like never before with the Stockholm Chaise Lounge Set with Armchair. This versatile set includes, 1-chaise seat, a 2-seater sofa, a spacious armchair and a wood-effect table with open storage underneath. Made from polyrattan which gives durability and virtually no maintenance, this garden set sits up to 4-5 people. The plump seat and back cushions have poly spun covers so soft to touch and can be removed for washing, keeping your lounge clean throughout the warm months. Normally £599, now available at an amazing **£449***, when you quote your £150 discount code **CMJUL21A** at checkout.



Marrakesh - Garden Lounge Set

The contemporary charcoal grey Marrakesh corner lounge set seats up to 5 people and comes with a handy square coffee table. This 5-seater frame and table is electrostatically coated, giving it a durable premium finish and is virtually maintenance free. The chunky seat and back cushions have polyspun covers for that soft touch and can be removed for washing to keep that fresh look. There is practical slatted detailing either side of the sofa so useful for placing your drinks, books or snacks whilst entertaining. Normally £799, now available at an amazing **£699***, only when you quote your £100 discount code **CMJUL21B** at checkout.



To receive your discount on any of these products quote discount code at checkout at www.outandout.com or call **02037 728 752** before 06.08.2021. *Excludes delivery. Prices correct at time of going to press.



Professor Giles Oldroyd is Russel R Geiger Professor of Crop Science at the Crop Science Centre.

We need a radical approach to address the sustainability of food production

ILLUSTRATION KATE COPELAND

In 2021 food production sits in conflict with the health of the planet: wild ecosystems, such as rainforests, are being converted to agriculture, and most of our food production relies on chemical inputs that have a negative impact on the natural environment. Smallholder farmers, many of whom are in sub-Saharan Africa, farm very sustainably, but are barely able to grow enough food to support themselves and their families. We have a polarisation in global farming, the richest farmers using extensive mechanisation and inputs to maximise productivity, while the poorest farmers farm very sustainably but lack the necessary productivity to support themselves. How, then, do we reinvent our food production systems to be both more sustainable and more equitable?

Back in the 1960s the green revolution brought new varieties of crops that were very productive, but highly dependent on the application of inorganic fertilisers. The impacts in South and East Asia were enormous, raising productivity and profitability for smallholder farmers in these regions. Norman Borlaug, the pioneer of the green revolution, won the Nobel Peace Prize in recognition of its impact on poverty reduction. However, the green revolution created problems with agricultural pollution, and its impact on the world's most impoverished farmers has been very limited.

Biology provides an alternative to inorganic fertilisers. In the natural world, plants engage with beneficial micro-organisms that help with the capture of the nutrients, nitrogen and phosphorus. Thanks to incredible advances in genetics, we now have a deep understanding of how these beneficial microbial associations form.

My work, funded by the Bill and Melinda Gates Foundation and the Foreign, Commonwealth and Development Office, attempts to integrate these microbial systems into agriculture, as an alternative to the use of inorganic fertilisers. For instance, we are looking at ways in which we can bring fungal networks – where plants form associations with beneficial fungi that

invade the plant roots and deliver nitrogen and phosphorus – into our farming systems, providing a route for soil preservation and reducing the need for fertilisers.

We are also studying the role that some bacteria can provide, creating a completely sustainable source of agricultural nitrogen. We are trying to transfer the capability to fix atmospheric nitrogen to all crops, driving up productivity in a sustainable fashion. To achieve this, we need to use genetic modification. Legumes can do it, other crops can't, so we have to move genes from peas to wheat. From my perspective, as far as safety goes, we eat these proteins when we eat peas; it doesn't make any difference which plants you take them from. And the benefits for smallholder farmers would be enormous, while environmental benefits for the planet would be transformational.

Come 2050 we need a radically different farming system, one that can sustainably feed the world and one that works for all the world's farmers, not just the richest. I find it extremely frustrating that the debate on food production has become polarised between technology versus organic.

I believe that a farming system that can deliver for the population and the planet will combine the best of all worlds: sustainable agronomy integrated with the technologies we need to achieve productivity. I feel inspired by regenerative agriculture and rewilding – they excite me for their potential to deliver space for nature and support sustainability in food production.

We need to use all the tools we have – both technological and natural – to achieve a world that is equitable and sustainable in its food production. The longer we stay in a polarised debate, the less time we have to deliver the step change we need in agriculture. And every day, we lose more acres of rainforest to agriculture.

For more about research at Cambridge visit cropscentre.org, and to find out how to get involved visit philanthropy.cam.ac.uk/give-to-cambridge/more-food-for-more-people

Natural





Capital

Professor Diane Coyle says solving the productivity puzzle is key to raising living standards – but it should not be at the price of sustainability.

WORDS LUCY JOLIN PHOTOGRAPHY CAMILLA GREENWELL

How do we start to make things better? It's a question that's been much on Professor Diane Coyle's mind of late. As an economic adviser to the government, she has seen the ruinous effects of the Covid-19 crisis on the economy at first-hand. But, she says, this is also a moment of opportunity.

"We have created huge generational inequality in all kinds of different ways. We have run down natural resources and contributed to climate change. Young people are more likely to be in precarious jobs, unable to get on the housing ladder, and have a burden of debt from their education. Investment in their future is not just economically necessary; it's also, I think, a moral obligation. The structure of the economy is changing and there is now a lot of interest in thinking about different policy frameworks."

Increased productivity has long been identified as a way to make things better for the largest possible number of people. "Loosely speaking, productivity is what you get out of what you put in," Coyle says. "It's important for driving up living standards over long periods as it's how market economies have escaped the Malthusian trap, when you produce a bit more but then population rises as a result and people end up as hungry as they ever were. If there hadn't

been productivity growth, we would still be living like 17th- and 18th-century agricultural peasants."

As Co-director of the Bennett Institute, where she heads research under the themes of progress and productivity, Coyle's work addresses what's known as the productivity puzzle. While it's normal for productivity to

fluctuate, in the UK it has flatlined since the economic crisis of 2008. Before then, it was growing at a rate of around two per cent a year. If it had continued to grow, it would be a fifth higher than it is now.

"It's a big change and nobody entirely understands it," says Coyle. "It probably has several different causes. One is the zombie company effect: after the financial crisis, because interest rates were so low, companies who should have gone out of business survived. Now, their profits just about cover the cost of their debts; but they are unable to thrive, nor do they close, thus releasing their directors and staff to do something more productive. Demographics matter, too: we have an ageing population and it's reasonable to believe that a younger workforce will drive productivity up." >

Thinking space

Professor Diane Coyle at the Cambridge University Botanic Garden, a key natural space within Cambridge's urban environment.

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Dear World...

Yours, Cambridge

But, she points out, that's just the start. There are also many longstanding issues in the UK economy. We lack the skills to carry out valuable activities that can create exports. Institutions for innovation need better ways to turn brilliant ideas into products that can be sold and used widely throughout society. Then there's a lack of finance for growing companies, which has been a problem since the 1930s.

All these different possible explanations suggest that solving the puzzle "isn't so much about finding the ingredients as understanding the recipe and how those ingredients interact together," says Coyle. "For example, the impact of how decisions get made both in policy and in business. And the fact that we are a centralised country. Decisions are made in Whitehall without enough information on, for example, what specific skills are needed in certain areas of the country."

And we are probably not even measuring the right things – which brings us to the question of GDP (gross domestic product), the number you get when you add up all 'productive' (ie paid for) work in the economy. Coyle has long advocated replacing or supplementing GDP, currently our main measure of economic success. "It's a very narrow lens through which to decide if things are getting better." In 2017, she won the Indigo Prize with co-author Benjamin Mitra-Kahn for their essay, *Making the Future Count*, which outlines six critical assets to replace the conventional economic model: physical, financial, intangible, human, natural and social capitals.

GDP, she points out, is not a natural entity. It's a construct. It came about in the specific circumstances of the Second World War, when the US and UK governments wanted to understand what resources they had available for wartime production and the sacrifices populations had to make to free up resources for the war effort. And it's largely about monetary exchanges in the economy: it doesn't account for unpaid work or things without a market value.

Sustainability and higher productivity aren't mutually exclusive, either. Today's economy, she points out, isn't necessarily about products and materials. While these matter, most leading economies are now service-based and increasingly intangible. "You can continue to have intangible economic growth which uses more material but at a decreasing pace. So, there's a hope that we can get to a sustainability that would not increase our material footprint on the planet but still deliver increasing economic value. For example, in the past you might have paid a jobbing gardener to tidy up your garden. Now, you might pay a higher rate to a garden designer. As we get richer, we are willing to pay more for different kinds of services."

Coyle herself has experienced how economics works in the real world through numerous different lenses. She was born into a working-class family in a Lancashire mill town – her father and several of her aunts and uncles worked in the cotton mills until they closed down. Her two brothers and sister went to grammar school, and then Oxford – Coyle took the same route, studying Philosophy, Politics and Economics at Brasenose College. Inspired by her tutor,

legendary economist and polymath Professor Peter Sinclair – who died in March 2020, one of the early victims of the Covid-19 pandemic – she decided to become an economist.

She gained a scholarship to take her PhD at Harvard, then worked at the Treasury and as an economist in the private sector before switching careers to become *The Independent's* economics editor. "That gave me a fascinating insight into how policy works in practice, the interaction with politics and the political imperatives that decision-makers face. But I am driven by trying to understand the economy, and I was limited in what you can do in 500 words. I wasn't doing any sustained research."

A private consultancy followed, along with significant public service roles, including Vice Chair of the BBC Trust and membership of bodies such as the Competition Commission, the Migration Advisory Committee and the Natural Capital Committee. She joined Manchester University as Professor of Economics, was awarded a CBE for her contribution to the public understanding of economics in the 2018 New Year Honours, and became the inaugural Bennett Professor of Public Policy and co-director of the newly formed Productivity Institute. "So I've done pretty much every career you can do as an economist," she says.

Now focused on the productivity puzzle, she stresses the importance of thinking about what people need to help them make the most of their lives, something a recent report from the Bennett Institute's Wealth Economy team investigated. Policy, says Coyle, is supposed to make things better for people, but "that raises two questions: which people, and what do we constitute as 'better'? I think the answers are partly about a broader understanding about assets and what it is like to live in a certain place. What kind of community do people have? What kinds of schools and hospitals can they access? Do they have transport connections and broadband? Is the air clean or polluted? It's like a balance sheet for their community or, nationally, a balance sheet for the economy."

As an individual, she points out, there's a limit to how much you can change your life for the better. "Working hard might make some difference. But it's the context in which you find yourself that makes a big difference to your life. Improving that context is all about policy. And we've got to do a lot of investing in the future. That's going to be by government spending money – whether they borrow it or increase taxes – because at the moment private businesses are not going to invest. They've got no revenues coming in. They don't know what demand is going to be like next year. So only government can step in at the moment."

Nonetheless, how we make things better is a question that we should all be asked, and be answering, says Coyle – it's not just a matter for technical experts, statisticians and economists. "It isn't a technical question. It's a value-laden one. As experts, we need to pay more attention to what people themselves consider to be their own progress and their own wellbeing." ©

Diane Coyle's latest book, *Markets, State and People – Economics for Public Policy*, examines how societies reach decisions about the use and allocation of economic resources. For more about the Bennett, visit bennettinstitute.cam.ac.uk

The University has been setting a course for Cambridge graduates since 1899. But back then, the advice issued by the Appointments Board, as it was known, was rather... different

CAM uncovers the fascinating history of the Careers Service, and how it evolved into today's modern institution.

WORDS LUCY JOLIN ILLUSTRATION JONESY



On 4 November 1899, Vice-Chancellor William Chawner opened a meeting at Senate House to put an interesting new venture before the University: a service to help graduates into their chosen careers.

"The University, from one point of view, might be regarded as a large manufacturing concern," he remarked. "Every year in June it turned out a number of students with trained capacity, and willing to work if work could only be found for them. Most of them had been wise enough to choose their profession beforehand. They meant to be clergymen, doctors, lawyers and civil servants. Yet even they in many cases required some assistance to guide them to the particular places they wished to occupy in their profession."

Of course, he pointed out, there was also that other "not inconsiderable class" of those "who had not been so wise" to pick a profession for life at the age of 18. But despite their lamentable lack of forward planning,

Undergraduates remember being steered towards PhDs, even if headed for a third, on the basis that "Edinburgh will probably take you..."



“Okay, okay – we’ll start paying you”

these men (and they were, at this point, all men) still had potential and were “well fitted for practical work.” They just needed a guiding hand. The University agreed. And so began the Cambridge University Appointments Association, later the Appointments Board and now, of course, the Careers Service.

“And today, we are more relevant – and more needed – than ever before,” says Jenny Blakesley, current Director of the Careers Service. “We sit at that intersection between the labour market and the talent pipeline. In an age where we are all hyper-connected, it is still very possible to simply not encounter opportunities beyond your bubble. We can show you the range of opportunities that is out there.”

Indeed, today’s Careers Service can put an incredible array of information and tools at a student’s disposal, plus a staff of highly trained advisers and a global employer network – a far cry from more humble beginnings. The

Association began in just two small rooms at Kenmare House, 73 Trumpington Street, but by 1901, 525 undergraduates, BAs and junior MAs were paying their annual five shillings to get a suitable career start in everything from agriculture to shipbuilding.

The Day Book gives a flavour of the service in its early days. On 20 March 1905, a Mr Armstrong enquired about a career in the Consular Service. “He should talk to people and then I’ll call the Foreign Office,” was the advice. Employers were keen to take advantage of this new service, too. On 23 March 1905, a Mr Candy visited. “Estate in Cachar, 29 hours from Calcutta – just below the Manipur Hills. Paying £100-£120 for a year. Everything found except liquor. Good shooting, fishing, tennis and polo. Man wanted as soon as possible.”

As the Board grew, it gained a reputation for somewhat unorthodox advice. In the 1960s, law student David Denton (Selwyn 1962) was told: “If you don’t want to be a lawyer, >



“Johnson here is our contact with the corporate intelligence sector – but I didn’t tell you that”



sales is for you.” And when Richard Tucker (Trinity 1969) asked about merchant banking, the Appointments Board “did not think to explore in conversation whether I was suited to such a ruthlessly competitive field. It wasn’t until the actual interview process that I discovered I was temperamentally unsuited to merchant banking.” (The story ends well, however: after a short career in the civil service, Tucker resigned to train for ordained ministry in the Church of England.) Undergraduates remember being steered towards PhDs, even if headed for a Third, on the basis that “Edinburgh will probably take you...”

But it could also hit the mark: Sue Latimer (Newnham 1980) was given what she calls the “best careers advice ever” when she went along to find out about a career in museums. “The advice was... don’t get a job! The best way into museums at that point was the Manpower Services Commission (MSC) Community Programme, a job creation scheme for people who had been unemployed for at least six months,” she says. “Museums were making great use of the scheme to get things done. I took the advice. In the autumn after graduating, I volunteered in a museum until several MSC jobs came up nearby. I applied, and six months to the day after my last Tripos paper I took my first paid steps into a museum career.”

For Ken Bulteel (Fitzwilliam 1966), who cycled down to the Appointments Board one chilly, overcast November morning in 1968 “with a relatively low degree of expectation of what my journey that day might achieve”, the advice he received changed his life. “I was greeted by a tall, elderly gentleman wearing a heavy tweed suit, possibly even sporting plus-fours – and my expectations plummeted further. His opening line rather threw me, ‘Aargh, yes, Bulteel... you’re the numerate artist, aren’t you?’ Failing to comprehend, I responded jovially with ‘well, a sort of artist maybe, but my chums would choose a rather more vulgar adjective than ‘numerate’.”

He was not deterred and explained to Bulteel that although he was reading Geography, his CV showed an HND Maths course at night school; therefore he was a ‘numerate artist’ and perfect for a career in a relatively new but exciting field – computing. “I was aghast and explained in very forthright terms that I had not the slightest interest in computers or anything to do with computing, and that I had come to discuss openings in marketing or market research,” says Bulteel. However, under pressure, he agreed to an interview with a London stockbroker. He found himself part of the firm’s first computing department and went on to have a highly successful career in the field. “I have been ever-grateful for the advice and guidance

which took me down an avenue that I would never have considered and delivered me a career that exceeded my wildest expectations.”

During the early to mid-20th century, the Appointments Board grew and changed with the times but was still more of an appointment agency – hence the name – than a true careers service, concentrating more on finding and recommending students for posts than giving more general careers advice. But by the 1970s, most companies preferred to use direct advertising. The Board was now a channel rather than a selector for graduate employment, and to reflect that change, it became the Careers Service in 1976 – a change which then Secretary Bill Kirkman described as a “minor triumph”.

The renaming also saw the women’s and men’s boards amalgamated, under the auspices of the final Women’s

I was greeted by a tall, elderly gentleman wearing a heavy tweed suit, possibly even sporting plus-fours

Appointments Board Secretary, Joan Holgate. The Women’s Appointments Board had come into existence, officially, in 1948, so aggrieved were women at the lack of careers advice provision for them. But, in fact, a Cambridge University Women’s Appointments Board (CUWAB) began in 1930, on the initiative of Newnham College, as a joint enterprise with Girton.

Two formidable women drove its initial success. The first Chair, Ray Strachey (née Costelloe, Newnham 1905), was a leading figure of the women’s movement. Her sister-in-law, Virginia Woolf, said of her: “She makes me feel like a faint autumnal mist, she’s so effective.” Sybil Campbell (Girton 1908), the first Secretary, was among the first half-dozen women admitted to Middle Temple in 1920, the year in which women were first allowed to enter law.

Sadly, just a recommendation was not always enough to break down the considerable barriers to women’s employment. “I well remember my visit to the Appointments Board in 1969,” says Shelagh Godwin (née Claxton, Newnham 1966). “I was greeted by a most charming woman who told me what I didn’t want to hear! I had been engaged for about a year, and was told that, therefore, two of my dream careers would be closed to me. ›



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Find us here:
www.careers.cam.ac.uk
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The Careers Service has a unique convening power. We sit at that intersection between the labour market and the talent pipeline

They were a post in the administrative grade of the Civil Service and a post at the BBC.”

What a difference a few decades make. When Melanie D'Mellow (née Sadler, Newnham 1992) joined the CU Automobile Club, got hooked on cars and motorsport and realised that she wanted a career in engineering and not physics, the Careers Service was key to her success. “I was guided towards an Automotive Engineering MSc at Cranfield University, which helped me land my first job as a Development Engineer in the Research Department at Ricardo,” she says. “I am still loving engineering and am now Head of Engineering at Animal Dynamics, developing autonomous unmanned air vehicles.”

Today's Careers Service is still an incredible fount of career wisdom and data-driven practice, providing careers guidance to undergraduates, postgraduates and post-doctoral researchers, honing career-management skills and providing links to those who have gone before

via Alumni Careers Connect. Its extensive industry connections enable it to stay ahead of the game, preparing graduates for jobs which may not even exist yet, and it provides a world-leading programme of talks, events and networking opportunities.

But, says Jenny Blakesley, it's also about providing a space for the modern-day equivalent of Chawner's so-called “not so wise” who, back in the early days of the 20th century, wanted to broaden their horizons and look beyond traditional career choices. “Where we are now is so far from the traditional approach of ‘why not be an accountant? Here's how you become an accountant.’ And perhaps that's the biggest and most positive change of all. We are a space where you've got time to think and reflect with somebody who's only interested in you making the right decision for yourself. You can be honest and open about who you are and what drives you.

“We meet our clients wherever they are – whether they've got no idea what they want to do or have a clear idea,” continues Blakesley. “In today's fluid and volatile labour market, we're helping people spot opportunities and then position themselves well to maximise those opportunities. We're preparing people for the kind of fluidity and change that they need to be able to actively manage their careers. Our job is to help people make good decisions for themselves – and to keep making those decisions as they move through their career.” ☺

Visit the modern Careers Service here: careers.cam.ac.uk

Sandy Douglas (Trinity 1946)
- 1952 OXO (first computer
game with graphics)

Computer games were very basic when Sandy Douglas created OXO – a graphical noughts and crosses game that is arguably the first such game ever to have been invented. It was run on Cambridge's vast early computer, EDSAC, which at the time could run programs of no more than 800 words. The player would input using a rotary telephone as a controller, and graphics were displayed on the computer's 35x16 dot matrix cathode ray tube. Each game was played against an artificially intelligent opponent. However, the game could only be played for academic research purposes, as computing time was limited and hugely expensive.



Bootstrapped

The UK is Europe's leading startup nation. Venture capitalists and business angels abound, looking for the entrepreneurs of the future. But despite the opportunity, running a start up remains challenging – which is why alumni are banding together to learn from their successes and mistakes.

WORDS SARAH WOODWARD PHOTOGRAPHY SARA AGUTOLI

When Richard Lucas (Pembroke 1985) was raking in the money selling lollipops as a seven-year-old schoolboy, he saw a bright future as an entrepreneur ahead of him. “It was pure profit and I thought it was so easy, I would never get a ‘normal’ job.”

That dream of thriving on your own is one shared by many: indeed, despite some of the toughest trading conditions in more than 50 years, entrepreneurship continues to be hugely popular – with a record number of new companies created in 2020. But the reality of startup life is often a world away from the dream of ‘being your own boss’.

Lucas himself didn't discover what it was like to lose money until eight years into his business venture, at the ripe old age of 15, “when a mail order business I set up at my secondary school got into trouble”. (Happily, he soon got back on track, reselling bicycles to freshers while an undergraduate studying economics.)

Since then, as a serial business and social entrepreneur and co-founder of Camentrepreneurs – a group for Cambridge alumni entrepreneurs – Lucas has invested in, and helped develop, 35 businesses worldwide. He is still a shareholder today in the Polish plastic card technology company that was his first investment, but there have been failures along the way. “I did not truly come to terms with failure until my early 30s. It is such an important lesson for any entrepreneur to frame failure in terms of objectives rather than emotions.”

Peter Cowley (Fitzwilliam 1974) is also no stranger to failure. A Cambridge-based serial tech entrepreneur and angel investor, today Cowley is on a mission to help angels and entrepreneurs make fewer mistakes, work better together and produce more successful exits.

“I have founded 14 companies, but also am/have been on 76 entrepreneurial journeys as an angel investor, some of them disasters, some great successes. I can't say one single journey has been more positive than another,” says Cowley. “I have learned from them all and certainly come out of them as a better angel.” Now President Emeritus of the European Business Angel Network, Cowley chooses his investments based on the people behind them rather than the business plan, and spends a lot of time with budding entrepreneurs.

He is keenly aware of the strain on mental health, and wary of sole founders. “Starting a business is a hell of a burden. A team of two is ideal, with 50/50 ownership from day one. You can stretch that to three or occasionally four people, no more. Most important of all, they must want their business to scale, to be able to grow in value by at least 10 times. And that is a very small subset of new companies.”

Cowley encourages new business startups to look for funding from their customer base by selling to them before seeking external finance, and if they do seek investors, to do their due diligence first. “There are unfortunately many toxic investors out there. Since I started running businesses in the 1970s so much has changed in terms of the availability of information, opportunity and capital for investment. What has not changed is the need for an appetite for risk.”

Owen Thompson (Wolfson 2018) has certainly never shied away from risk. Now Head of Training (Europe and International) for BAE Systems, Thompson ended a 13-year career as a Eurofighter Typhoon pilot to start on his entrepreneurial journey with a Master's in Entrepreneurship at the Cambridge Judge ›



**I liken it to being a grandparent.
I have already had my own
children with my businesses,
now I can help others with their
baby businesses – and hand
them back at the end of the day**

Business School. “Looking back now I see that it was, in a way, my entrepreneurial drive that led me to join the Royal Air Force. Even after the six years’ training and several years of stability through being fully qualified, I chose to follow my passion and finally move on to entrepreneurship. It was a tough choice to leave the RAF to pursue a path that others might deem quite risky.”

Thompson acted on a business idea during his first week studying for his Master’s. “Several classmates asked me if there was a Cambridge equivalent of the RAF Breitling watch I wear.” Thompson investigated, made a demo pitch, obtained branding licences, signed up with a major luxury watch manufacturer, attracted an angel investor who saw the dummy pitch – and Oxbridge Watches was born. Today the company is part of Doublegood, an ESG licensing partnership company, and Thompson is also the co-founder of Cambridge Future Tech, a venture builder for deep tech startups.

“There is a romantic notion of an entrepreneur burning their boats behind them, throwing everything into a high-pressure thrive or die situation. I do not see a lot of success in that route. I have a family, baby, mortgage, and prefer to take calculated risks. I translate romantic as difficult – if you start a business while keeping a regular income, the financial pressures are less, but you have to work even harder. But I wanted the thrill of acting on my personal choice, in support of my values. I tell my wife startups are my hobby.”

Thompson recently negotiated a major sponsorship deal with the Rugby Football Union (RFU), which he describes “as more stressful than I could ever have imagined” – quite something for an instructor in electronic warfare who has seen active service. “You have to be resilient. After my first meeting with the RFU I wrote the initial business plan for our sponsorship deal on the back of an envelope on the train back to Cambridge. The numbers were astronomical for a small business like ours and lots of people I talked to thought it was out of the question – laughable in fact. But you have to have the belief, and 14 months later I signed the deal.

Quentin Stafford-Fraser (Caius 1986) and Paul Jardetzky (Darwin 1988) – 1991 XCoffee (first webcam)

In 1991 (predating the ability of web browsers to display images), the coffee machine of the Computer Laboratory sat in the Trojan Room, “a long way” from the desks of Quentin Stafford-Fraser and Paul Jardetzky, who where understandably frustrated at finding it empty on arrival. The pair set up a camera that took a 128 × 128 pixel photo of the coffee pot at regular intervals, and provided it to all the computers on the local network through a program they wrote called *XCoffee*. This was later moved onto the fledgling World Wide Web, where it became a popular site until the Computer Laboratory moved premises in 2001.





The negotiations to get there sometimes felt like something out of the movies, going back and forth. It was more stressful than I could possibly have imagined.”

Two recent graduates just starting out on their entrepreneurial journeys are Nina Warner (Churchill 2017) and Yasmina Ellins (St John’s 2016). Warner, a former President of Cambridge University Entrepreneurs (CUE), the student-run organisation which runs an annual three-stage business creation competition, has been working for the past three years on a novel beauty concept. BOS, or Built on Science, uses creative chemistry to solve common beauty problems such as hair bleaching. “I plan to finish my Chemistry PhD this summer and then I am moving to San Francisco to launch my company. It is a scary prospect, but I’m looking forward to connecting with networking support groups, meeting with other entrepreneurs who are just as passionate about their business, and who can understand your fears by providing a comfortable place for you to feel uncomfortable in.”

Ellins, who was inspired to begin her podcast series, *The Young Entrepreneur’s Journey*, a month before starting her BA course in Management Studies at the Cambridge Judge Business School, has also set up her own consultancy firm, Kingpin Network, which helps entrepreneurs and professionals build networks. “I believe we have found a niche. I have helped my clients connect with high-profile individuals, such as TED speakers and the Chief of Defence of Norway. Being an entrepreneur is a very steep learning curve, and if you are doing it by yourself you have to learn to wear a lot of different hats. The podcasts are great to listen to, but they are even better to make! I learn so much.”

If Thompson has one lesson to pass on it is not to be afraid of failure. “The RAF taught me to learn to deal with failure constructively. I did not want to be perceived as naïve when I started out on my entrepreneurial journey. In business, you have got to assume there are going to be a lot of setbacks along the way. And if I am not enjoying it, I hope I’ll stop.” ©

For more information, visit:
jbs.cam.ac.uk/entrepreneurship

Just



War?



The idea that war is justified in specific circumstances has held sway for almost two millennia – but as technology evolves, can it hold?

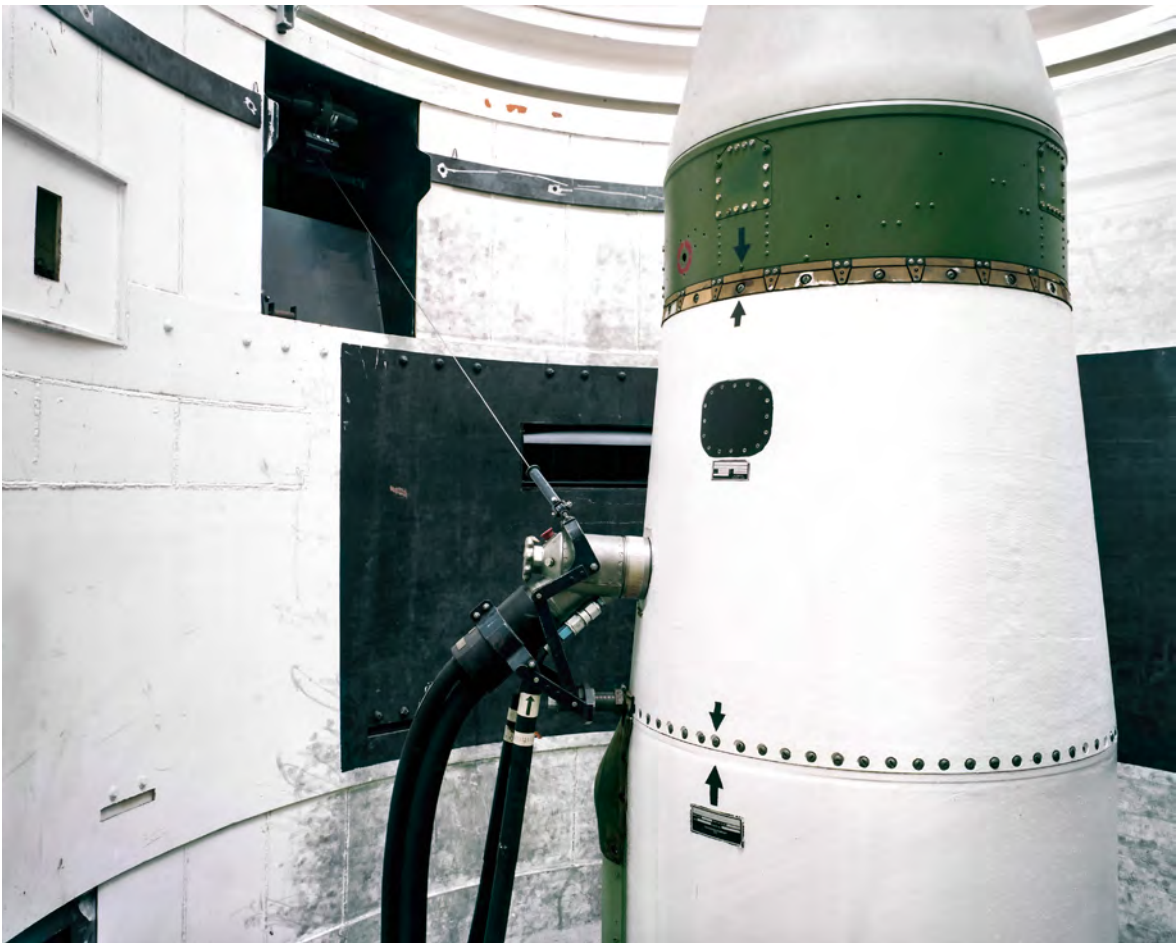
WORDS VICTORIA JAMES PHOTOGRAPHY ADAM REYNOLDS

Eight hundred-year-old theological deliberations don't often make it into the opinion pages of *The New York Times*. But that's what happened when Dr Daniel Weiss, Senior Lecturer in the Faculty of Divinity, found his analysis of St Thomas Aquinas's stance on 'just war' invoked in the US debate on gun control. The *Times* op-ed's author asserted that "Christianity insists on the protection of the innocent", and cited a paper by Weiss that read: "Aquinas holds that causing the death of innocents in a foreseeable manner, whether intentionally or indirectly, is never justified."

"It was certainly a surprise," says Weiss, who is also actively involved in the Cambridge Interfaith Programme. In response, a conservative publication, the *National Review*, took a different line. If Aquinas had held such a view, it argued, "it would mean that he had practically endorsed pacifism – since even a just war of self-defence entails foreseeably, although unintentionally, causing the death of innocents". Weiss found the whole exchange fascinating. "There's clearly a desire to have Aquinas as an authoritative source in relation to contemporary discussions of just war," he says. "His work is still a touchstone."

Gun control is only one of many contexts in which just war thinking is being re-examined. Technology such as drone warfare or facial recognition is blurring boundaries between supposedly passive surveillance and active aggression. And the growing visibility of social justice movements is prompting a greater willingness to re-examine the most fundamental concepts that a just war entails: what are the nation states that wage war? Whose bodies are those protected or eliminated?

The notion of 'just war' as understood today holds that conflict may be justifiable even though innocents will suffer as a consequence, if it is undertaken for morally sound reasons. Its roots stretch as far back as Old Testament scripture, such as the injunction in the Biblical book of Deuteronomy (20:19) that "when you besiege a city for a long time, while making war against it" you should not cut down its fruit trees, "for the tree ›



Previous page

**Antenna cluster
Complex 571-1**

Surface of the underground Titan II launch facility at the Titan Missile Museum near Tucson, Arizona.

Above

**LGM-30 Minuteman II
Launch Facility Delta-09**

Missile guidance set of a Minuteman II training missile at Minuteman Missile National Historic Site, South Dakota.

Opposite

**LGM-25C Titan II
Complex 571-1**

First-stage engine of a Titan II intercontinental ballistic missile as seen from Level 7 of the Titan II missile silo.

Right

**Protective (RFHCO) suits
Titan Missile Museum**

Suits used for propellant transfer hang outside the cableway tunnel leading to the Titan II missile silo.





No Lone Zone

In this series, documentary photographer Adam Reynolds explores America's Cold War-era nuclear arsenal, most of which is deactivated and dismantled today. A handful of these frozen time capsules are open to the public, catering to an array of nostalgic 'nuclear tourists', and serve as shrines to an Armageddon, preserving the dramatic vestiges of a power that can destroy the world. The sites stand sentinel as potent reminders of military might, but also serve as a cautionary tale for future generations.



of the field is man's food". But as Weiss notes, this is "not a formulation of what would make a war just or unjust. That's a conversation for later Jewish rabbinic tradition, and the 4th and 5th-century Christian Church Fathers Ambrose and Augustine. Even in Augustine, the concept of just war is not fully fleshed out. It's a gradual development."

Dr Hazem Kandil, Reader in Political Sociology, points out that by the late 20th century, "modern governments seldom refer directly to the just war doctrine, due to its particular religious connotations". Instead, secular equivalents abound. "The United States, for instance, has put forth several moral justifications for waging war since 1945. One prominent excuse is liberating the oppressed. In countries like Cuba and Vietnam, Iraq and Libya, the narrative is that people long for freedom, but are held down by dictators and their nefarious international allies." A closely allied justification is humanitarian intervention in the face of genocide and crimes against humanity. "This principle was espoused in the 1990s, applied in the Balkans, and reinvented as 'responsibility to protect' by the United Nations," says Kandil.

Other rationales for combat have a more Orwellian tinge, in which "war means peace", Kandil proposes. In this framework, "an international community can only hope to live in harmony if rogue states are reined in. Military aggression must be reversed, as in the Gulf War of 1991. Sponsoring violence must be punished, as the Taliban learned after 9/11. Indeed, peacemakers ought to remain vigilant, pre-empting renegade regimes, such as the axis of evil running through Baghdad, Tehran and Pyongyang, before they can cause too much damage."

Aquinas held that causing the death of innocents in a foreseeable manner, whether intentionally or indirectly, was never justified

And a third strand of thinking about just war is now dominant among governments worldwide – democracies as well as autocracies – argues Kandil. "It borrows from the legitimacy of domestic law enforcement. External warfare should be as routine as internal policing, and for the same reasons. Outlaws must be pursued and penalised." This is the logic underlying the War on Terror, for example.

But that legitimacy of domestic law enforcement is now increasingly under scrutiny. Dr Lauren Wilcox, Deputy Director of the University of Cambridge Centre for Gender Studies, notes how 20th-century theorists – such as Aimé Césaire, the poet and politician from Martinique who published his seminal *Discourse on Colonialism* in 1950 – have detailed the "blurred lines between colonial wars and domestic policing practices" in Europe and the US. More recent work, she says, has further detailed "the ways in which imperialist counterinsurgency strategies and domestic policing of racialised minorities intertwined and reinforced one another in the post-war years".

For Wilcox, the very terms that historically have been used to frame debate on the justness or otherwise of ›



There is a growing sense that many countries experience a perpetual condition of war – one which exceeds the temporal and spatial boundaries of war as it is usually conceived

war, require examination. “Feminist accounts question the terms by which ‘war’ and ‘peace’ are understood, precisely because of the exclusions of certain kinds of violence – such as sexual violence, structural violence and environmental violence – from our understanding of ‘peace’, as well as the ways in which these forms of violence stem from, and contribute to, more commonly understood forms of ‘war’.”

Technology, too, is forcing re-examination of the way war – and its justness – is conceptualised. Weiss’s assertion that Aquinas could simultaneously endorse “just war while not permitting the killing of innocents” (an assertion that has provoked debate among Aquinas scholars, though not, he notes, any clear refutation) rests in part on the fact that contemporary military

technology and practice, including armour that identified combatants and the use of target-specific weaponry such as lances, swords and pikes, enabled the avoidance of non-combatants.

The use of drones and similar remote technologies seem to offer the same get-out clause today. In Kandil’s work, for example, he has “come across moral justifications relating to *how* rather than *why* force is applied. If war can be waged in a way that produces minimum collateral damage and disruption to both aggressors and victims, then military power can be used with a clear conscience. Technology, of course, is the best hope for these humane warmongers.”

Reality, of course, is rather more complex. Rather than producing a limited, morally tidy form of warfare, these new technologies instead threaten to generate a state of perpetual war. Weiss recalls reading testimony from a Pakistani boy “who said that he now preferred cloudy rather than sunny days, as the drones don’t fly”. Kandil invokes the great war theorist, Carl von Clausewitz, to suggest that “charitable belligerents and their antiseptic campaigns can end up causing more harm. The delusion that war is controllable encourages them to embrace it much more readily than those resigned to the fact that war is destruction, pure and simple.” ›



Opposite

**Day room
Launch Control Facility Delta-01**

A game of Battleship is set up in the day room of the Minuteman II Launch Control Facility at the Minuteman Missile National Historic Site, South Dakota.

Left

**Titan II Missile command console
Complex 571-1**

Command console and launch control equipment in the underground Launch Control Centre in the Titan II missile silo.

Below

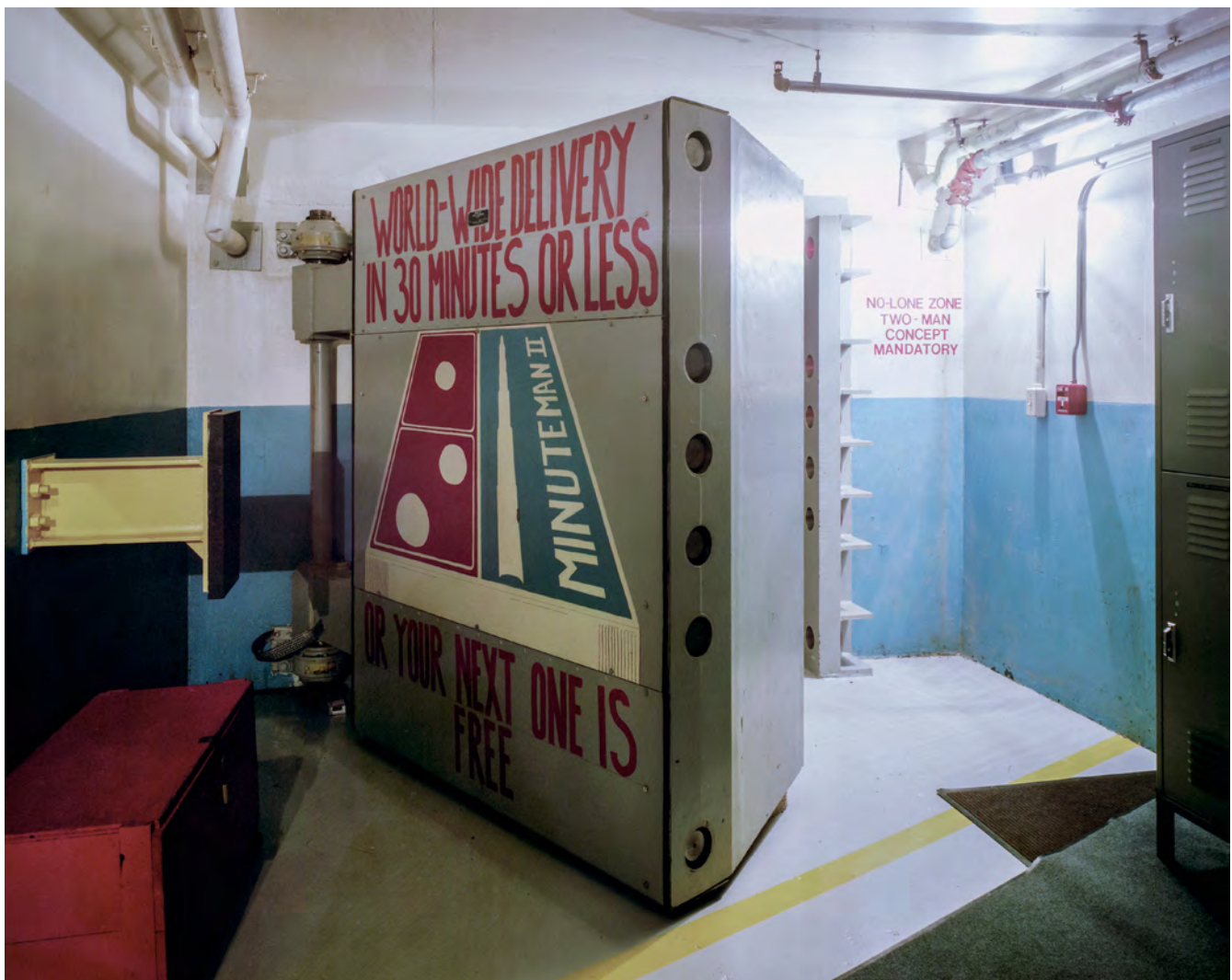
**Minuteman II blast door
Launch Control Facility Delta-01**

Blast door that seals the two-person crew inside the underground Launch Control Center in South Dakota.

Following page

**Security telephones
Launch Control Facility Delta-01**

Row of telephones in the Security Control Centre at the Minuteman II Launch Control Facility Delta-01, South Dakota.



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Nuclear, chemical and biological weapons and technology have granted war an uncontrollable, destructive power over great numbers of innocent civilians

According to Wilcox, who is currently completing a book manuscript titled *War Beyond the Human*: “The rise of ‘drones’ as prototypical instruments of post-human warfare corresponds to a growing sense that many countries are experiencing a perpetual condition of war – one which exceeds the temporal and spatial boundaries of war as it is usually conceived.” But she questions how new this phenomenon really is. “‘Permanent’ or ‘unending’ war without clear victory is not only a problem in a post-9/11 world of global surveillance, drone strikes, counterinsurgencies and such. Histories of colonial warfare reveal much continuity, particularly where air power is concerned.”

Moreover, she says, just as the use of technology and AI algorithmic decision-making complicates the idea of the subject or enactor of war being human, the objects – the targets or recipients – of its violence equally “have

been considered to be other than fully human”. Wilcox points out that feminist, queer, anti-racist and Black Studies scholars, question who the ‘human’ is in the posthuman, and note that, all too frequently, human is limited to the Western and masculine.

These questions exist at the forefront of theoretical thinking, even reaching as far as the Vatican. In October 2020, Pope Francis authored an encyclical letter that was widely interpreted as signalling a shift away from traditional ecclesiastical just war theory. In it, the Pope wrote that new forms of weaponry “have granted war an uncontrollable, destructive power over great numbers of innocent civilians”. Consequently, “it is very difficult nowadays to invoke the rational criteria elaborated in earlier centuries to speak of the possibility of a just war”. Particular interest focused on a footnote explicitly referencing Augustine, as one who “forged a concept of ‘just war’ that we no longer uphold in our own day”.

It remains to be seen whether Pope Francis will pursue this line further and distance the church entirely from the concept of just war. However, it is perhaps questionable how much impact it would have even if he did, for as Kandil notes: “War creates its own momentum, thwarting doctrinal musings articulated in peacetime. Soldiers say no plan survives first contact with the enemy. Similarly, war doctrines rarely outlast the realities of war.” ☺

LIVING





ROOM

Housing is core to understanding inequality. So what does the research tell us about how housing policy is playing out – for better or worse – around the world?

WORDS MEGAN WELFORD PHOTOGRAPHY JANA SOPHIA NOLLE

Land – who owns it, what you do with it and what it costs – is core to understanding growing inequality in cities across the world. Shanty towns next to gated communities in Accra; Georgian mansions close to sleeping bag-lined subways in London; asset-rich pensioners living with fuel poverty; millennials locked out of the housing market – if housing policy is meant to ensure fair access to a home for all, it is failing around the world.

Dr Richmond Ehwi, Research Associate at the Cambridge Centre for Housing and Planning Research (CCHPR), says this is because, globally, we have moved away from the idea of engineering fairness towards relying on the market to bring justice – which it does not.

He explains how this ideological shift happened in his home country of Ghana. “Before colonisation, land in Ghana was communal property,” he says. “It wasn’t owned by individuals and it wasn’t tradeable. You’d go to your community leader and say you needed land for farming and to live on, and you got access to land because of your membership of the community. Post-independence, there was a developmentalist state policy, with the welfare state providing housing to bring dignity, not as a commodity.

“During the 1980s, with economic upset in developing countries, the World Bank brought in structural adjustment, moving housing policy towards a neoliberal, capitalist system based on market price and competition. In this system, the state steps back, and the market must create the conditions of justice – property rights and land titling – so that investors can be satisfied, rather than to fulfil the needs of the population. Market logic is based on profit – what you can sell, not what people need.”

But it’s starting to dawn on political leaders that this current approach – with a gated community next to a poor area with no running water – is not working, he says. “If the state doesn’t reclaim housing, to ensure that provision doesn’t only benefit one tiny section of society, then they will have a problem.”

In the UK, a similar time bomb is ticking, this time comprising an out-of-date welfare state model and an ageing population, says Dr Gemma Burgess, Director of the CCHPR. “For the past 50 years in Britain, we’ve had a welfare state model that assumes that pensions can be small, because in later life people will be without housing costs,” she says. “But that model is being disrupted. People are living longer. And unless they have access to the bank of mum and dad, first time buyers are buying later in life, so their mortgages run later. And the longer you have mortgages, the less the model holds up. This is hard to change, however, without addressing pensions at the same time.

“In parallel, we’re not building enough new homes. We’re not building social housing; we’re choosing to spend on housing ›



benefit instead. The government set itself a target of 300,000 new houses a year, and they've built well under that. Our construction industry depends on an ageing workforce and migrant labour, and we build slowly and over budget."

Then there's the problem of old housing stock, with low accessibility. "Few homes are properly adapted for older people," says Burgess. "We rely on older people downsizing to free up housing stock, but that's a myth – grandparents may need space to work or look after grandchildren, or they may be asset-rich but living in poverty, and selling won't release enough equity."

"We're locked into a system that depends on the growth of house prices, which is a disaster for affordability. In Cambridge, house prices are almost 14 times average earnings, yet we don't want housing prices to fall. What we need is a more diverse range of housing options."

That range of housing options should include rental, she says, as in some European countries, where people can spend their whole lives happily renting. "Renting itself is not a problem, but we're not nudged towards it. We would need more tenants' rights and secure tenancies. Home ownership is a very powerful, dominant idea."

It's the same in Accra, says Ehwi, where young people are forced into "coupling up" before they're ready, to be able to buy a home. And in Tehran, too, home ownership is culturally important yet remains a pipe dream for most of the population, according to Dr Reyhaneh Shojaei, Research Associate at the

CCHPR. "The fragmented political situation in Iran is reflected in the housing market," says Shojaei. "There is no social housing, and the housing sector is 99 per cent dominated by private actors." She describes a system monopolised by small developers, who will approach the owners of a semi-detached house, for example, and offer them a share in the profits made from knocking it down and building a high rise in its place. "It's a system that favours developers and landowners. Plus, there are no mortgages, so people are struggling to access housing."

The answer in Tehran, as in Accra or London, she says, is that government must intervene. "It's not in one city or one country – the global experience is that the housing market usually fails to meet demand and provide affordable housing for the population. In London, Covid has worsened the situation, pushing people on low incomes out of the cities, with the quality of homes and security of tenure decreasing."

Shojaei agrees with Burgess that we need a much more joined up approach to housing. "We need to align planning, economic and housing policy. For example, a new affordable housing scheme must also consider mortgages and interest rates. Sometimes, new housing policy and fiscal policy pull in opposite directions."

Something like Section 106 in the UK, which puts some social responsibility on to the developer, can be helpful in addressing inequality, says Shojaei. "We criticise local authorities because they don't have enough money or skilled people, but the >



Living Room

In this series, Berlin-based photographer Jana Sophia Nolle rebuilds temporary homeless shelters in the living rooms of the wealthy. The photos represent housing inequality through an act of artistic intervention, as the worlds of the rich and poor are brought together in stark contrast. The series asks us to consider social questions and connections through a purely material perspective, one not based on human interaction.

It's starting to dawn on political leaders that this approach – with a gated community next to a poor area with no running water – is not working



**It's not in one city or one country
– the global experience is that
the housing market usually fails
to meet demand and provide
affordable housing**



principle of forcing developers to negotiate is something that could work. We need a comprehensive scheme that considers investors, landowners and builders together. Our financial system means that investors are looking for profit, so how do we make it attractive for them to invest in affordable housing? Local authorities could provide access to land in instalments, to lower the initial costs, and offsite manufacturing could make housebuilding quicker and cheaper. Seeing housing in silos doesn't work."

Burgess is co-investigator on the Construction Innovation Hub, a partnership that aims to drive digital innovation in the UK construction industry. "My work is focusing on what the barriers are to things like offsite manufacturing," she says. "It's not the technology – we have that. But we need to know more; you need a golden thread of information to run through the whole process. The Grenfell Tower disaster has been a big push towards getting better built-asset data."

"The supply chain is very fragmented, but we could build virtually first, so everyone engages with the same digital model of a block of flats, for example, before the contractors go on site. It could be tested in this virtual environment to avoid the common situation where builders put up walls then see problems, or with plumbers and electricians sometimes having to 'make it up as they go along'. That way we also keep all the data in one place going forward, to allow proper management of the safety of materials and of servicing over the long term."

You also need excellent leadership, she says. "You need a strategy and a road map, you need to know where you're going, and get people on board. You need to understand what the new models mean for the individuals concerned. People fear job losses, so we need to make sure we are upskilling people all along the supply chain. We also need to get a new generation going into construction."

Having a digital platform, says Shojaei, could even make house-buying a less lengthy and stressful process. "This integrated platform could be end-to-end – like Amazon – from developers and local authorities being able to select land for development out of what's available to buyers finding their house, as on Rightmove. And then they could buy it without having to deal with estate agents and mortgage brokers – it would all happen in the one place."

As ever, visions of a brilliant, digital future come with a caveat. If we focus on the technology rather than the people, we rebuild the same world. "We know the future of planning is digital," says Burgess, "from smart cities to digital twinning to the Internet of Things. But public bodies and tech companies need to start by thinking about people, and how to engage them from the beginning, including those who are marginalised. They need to think, 'What do local people need? And how can we build for that?' Otherwise, we will not tackle inequality." ©

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Leaving a legacy has a long-term, extraordinary impact, enabling Cambridge to do more, whether that is in providing support to students or pushing forward the boundaries of scholarship and knowledge

WORDS LUCY JOLIN PHOTOGRAPHY PAUL MICHAEL HUGHES

From establishing a professorship to helping disadvantaged students succeed, leaving a legacy can have long-term, extraordinary impact.

Take funding for vital, blue sky scientific innovation, for example. After Dr Harold Aspden (Trinity 1950), IBM's Director of Patent Operations in Europe and a dedicated scientist, died in 2011, his wife Wendy made provision in her will for the establishment of a new Professorship in the Department of Physics. As a result, the £2.5 million legacy gift she left established the Aspden Professorship of Fundamental Physics in her husband's memory.

"This most generous gift enables us to pursue a vision of the physics of the future – one dominated by quantum science – in a way that would simply not otherwise have been possible," says Malcolm Longair, Emeritus Jacksonian Professor of Natural Philosophy. He points out that to make significant discoveries – that change the

way we think about the world – takes a long time, and the investment in the longer-term future is paramount.

"Recall the case of JJ Thomson's discovery of the electron of 1897. The whole of the semiconductor industry depends upon that discovery, although that could not be foreseen at the time. We expect to appoint an outstanding physicist to the Aspden Professorship, with a vision for what will be the new physics and technologies 10, 20 or more years from now. The ability to appoint a brilliant scientist to carry out

This most generous gift enables us to pursue a vision of the physics of the future in a way that would simply not otherwise have been possible

their own research, unconstrained by the need to be immediately useful to society, is a truly wonderful gift."

Dr Emma Cornwall is Girton's Development Officer for alumni relations and legacies, and says these gifts are a vital part of University life. "Every step of the way, legacies have enabled us to do more – award more scholarships, bursaries and prizes, establish more Fellowships, expand the estate and grow our special collections," she says. "And our future, every bit as much as our past, depends on the generosity and forethought that drives this form of giving."

Rosalie Crawford (Girton 1949) was also focused on a better future when she left two-fifths of her estate to Girton College and a further two-fifths to the University. "Each year, brilliant students are unable to take up their offers, or are deterred from applying at all, due to lack of funding," says Cornwall. "The University's ambition is that any talented scholar, no matter their background





or financial circumstances, should have the opportunity to study at Cambridge, whether at undergraduate or postgraduate level. So, Rosalie's generosity will be used to leverage partnership funding and increase the number of Postgraduate Scholarships available, meaning we can welcome and support more graduates than ever before. Their specialist knowledge and research is in great demand and so, with this gift, both students and wider society benefit."

Leaving a legacy can also enable the giver to mark a lifelong interest by helping to protect and preserve for future generations. "Leaving a legacy to the Fitzwilliam Museum makes a lasting difference to the future of its work and collections," says Jane Munro, Keeper, Paintings, Drawings and Prints at the Fitzwilliam Museum. "Small and large gifts left in will help to preserve, protect, build and research the magnificent collection of works of art the Fitzwilliam holds and cares for."

To make significant discoveries – which change the way we think about the world – takes a long time, and the investment in the longer-term future is paramount

In 2019, antiquarian bookseller John Vaughan Hart gifted an outstanding group of drawings by French artists of the 18th to early 20th century, from artists including Paul Huet, Eugène Delacroix, Henri Cross and Aristide Maillol. They reflect Hart's passion for the art of the period and complement the Fitzwilliam's existing collection of French drawings.

Hart also left a £20,000 gift with the instructions that it should be used

to purchase further French drawings. Thanks to this, the Museum has acquired a strikingly vivid coloured chalk drawing, *A Roma Woman*, by the French artist Georges Dorignac (1879-1925). Dorignac's figure drawings are rare and show a remarkable mastery of line and form.

"A legacy such as Mr Hart's represents an extraordinary gift – the gift of trust," says Munro. "It acknowledges that a world-class collection such as the Fitzwilliam's can never be static. And it signals a confidence that, within the stipulated parameters of the legacy, acquisitions made by the museum will ensure that the collections remain meaningful and relevant to future generations, to be enjoyed by all."

You can find out more about how to leave a gift in your will to Cambridge by visiting philanthropy.cam.ac.uk/give-to-cambridge/legacy-giving or contacting your College's Development Office.

A black and white photograph of a bicycle leaning against a brick wall. Overlaid on the image is a large, colorful abstract graphic consisting of several overlapping shapes in shades of teal, purple, magenta, and yellow. The text 'ALUMNI FESTIVAL 2021' is centered over this graphic.

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Just a plain cup and saucer

Luke Syson, Director of the Fitzwilliam Museum, says Henri Fantin-Latour's haunting and commanding masterpiece is a destination in itself.

WORDS LUCY JOLIN PHOTOGRAPHY MEGAN TAYLOR

With its “quiet command that we pay attention to the detail of our lives,” as the author Ali Smith (Newnham 1985) once wrote, Henri Fantin-Latour's *White Cup and Saucer* is an enigma. “It's a destination. Like a modest Holy Grail,” says Luke Syson, Director of the Fitzwilliam Museum. “It's stripped down, almost like a stop sign. It comes at you out of the dark – something on a cinema screen. It has a photographic quality – it feels unmediated by an artist. There is a directness of encounter to it.”

Syson is fascinated by how we interact with the inanimate, how a thing which shouldn't have a character or a soul takes that on, and how the painter conveys that to us. There is a purity to the painting's stripped-down light-and-darkness, taken out of context and almost transfigured, he says. “It's a distillation in almost every sense of the word. The ultimate cup. The cup that exists only in God's brain.”

But there is a story there, too. The cup and saucer are not centred: they are slightly askew. Why? What has the spoon been used for? The cup is empty: has something just been drunk? You can choose your own story. Syson likes to think of the famous scene in Alfred Hitchcock's *Notorious*, where Ingrid Bergman is given poisoned coffee: the cup and saucer are up there in the foreground, fetishised, treated almost like a protagonist.

Yet these seemingly small details are also sophisticated choices and big artistic decisions, says Syson. “The artist has used them to manipulate us into believing the absolute truth of this image without making it too complicated. I'm fascinated by this world of fake news and post-truth and what actually constitutes a truthful image. People don't always understand the effort that simplicity takes – and how complicated it is to arrive at the truth.”

“Usually, it's only when we break something that we realise how much we loved it, and the story it told within the mass of our belongings,” says Syson. “That's the thing you've lost, perhaps – not the object, but the memory of who gave it to you. I think somehow Fantin-Latour picked up on that. That each ingredient of your life has that specialness if you only concentrate. But to see those things, you have to look.”



A timeline of simplicity

1836

Henri Fantin-Latour is born into an artistic family in Grenoble, southeastern France.

1854

He enters the École des Beaux-Arts, where he's encouraged to study the Old Masters.

1864

A regular visitor to the Musée du Louvre, Fantin-Latour paints *White Cup and Saucer*.

1906

Mrs Edwin Edwards, the painting's owner, bequeathes it to Herbert Thompson.

1920

Thompson donates the painting to Cambridge's Fitzwilliam Museum.

This idea must die: the arts are less important than the sciences

The Vice-Chancellor, Professor Stephen J Toope, says we need to abandon the idea that the arts are nice, but not essential.

WORDS **PROFESSOR STEPHEN J TOOPE** ILLUSTRATION **GEORGE WYLESOL**

The idea that the arts are less important than the sciences is a zombie: scary, dangerous and apparently impossible to kill. And that matters, because it remains a shockingly powerful idea for a lot of people – it's still very much alive.

Why? Over the past 30 years, public policy has become increasingly focused on the 'measurable usefulness' of an activity, rather than on its inherent value. Of course, when there are financial pressures, people have to make choices, and it's just a lot easier to count up the obvious benefits of science, technology and mathematics.

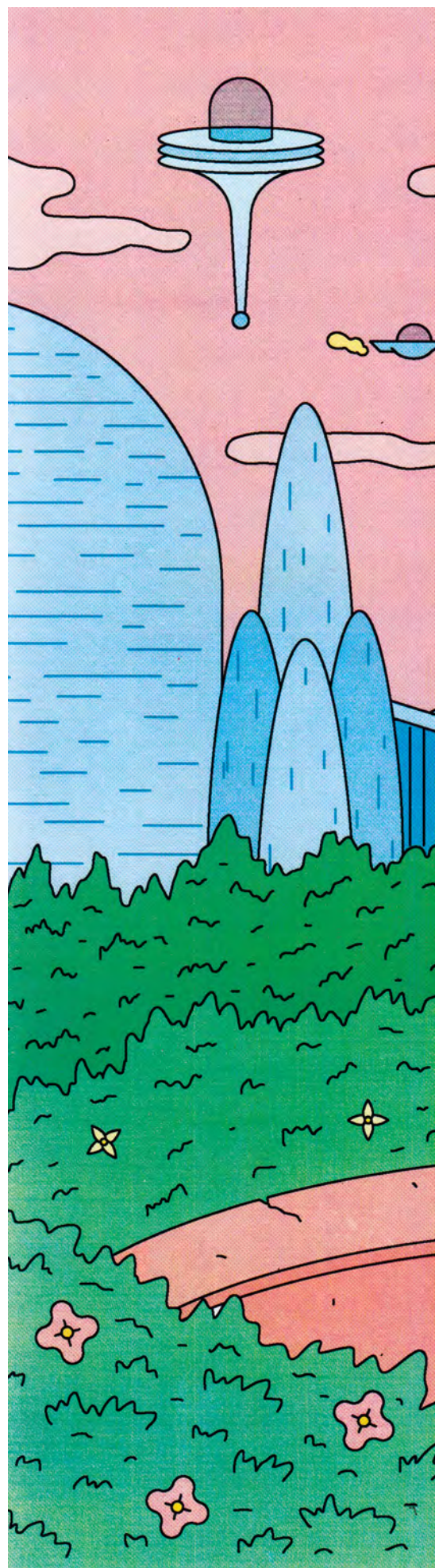
But that does not mean it is not possible. For example, tourists do not come to the UK to visit our great scientific facilities – even if I wished they did – but to see our architecture, art, theatre, music and culture of all sorts. The UK is not that big, but its cultural industries contribute a vast amount to the economy, and its cultural knowledge gives the UK tremendous soft power in the world.

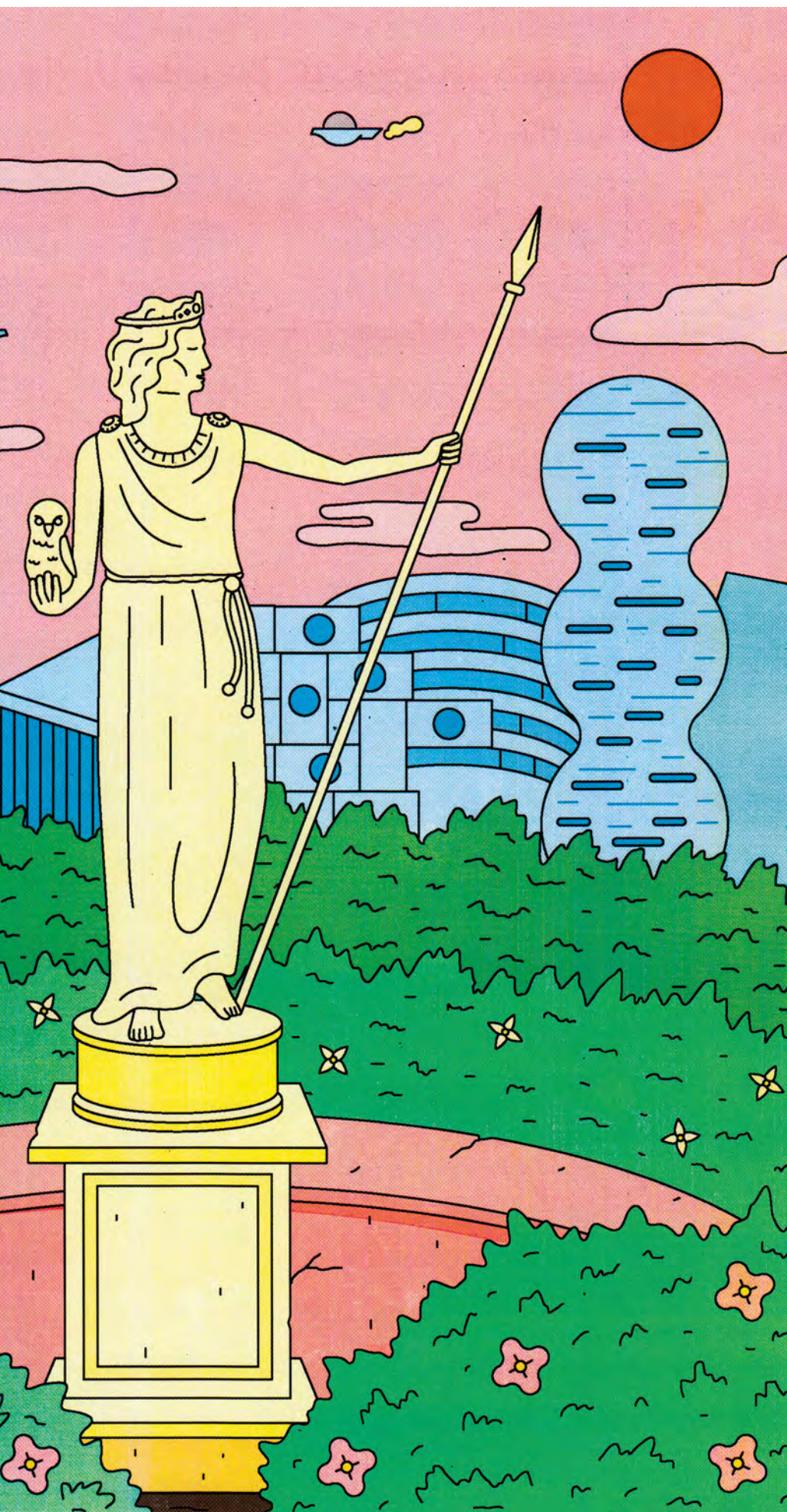
But while I believe that the arts and humanities – especially in the UK – are an important part of our economy and should therefore be recognised as such by government, I also think that focusing solely on what you can measure underplays value. We saw this with Covid. If we don't understand psychology, if we don't understand history, if we have no basis for interpreting how people think and feel because we have only our own experience

to go on, then we're very likely to make mistakes or miss opportunities, whether that is vaccine rollout or designing a track and trace system.

Indeed, it's not an 'either/or': we absolutely need the scientific discoveries, the vaccines, the treatments and the rest, but we also need people who can help understand how to make those function effectively in diverse societies. Take, for example, the digital world. Without law, ethics and storytelling, the digital public sphere becomes unusable. Similarly, right now, the newspapers are filled with debates about the ethics of artificial intelligence, how we treat memorials, and the notion of free speech. These are all right at the heart of the humanities, and they cannot be solved without the tools and information that the humanities give us, not least in helping us understand how we can talk with one another and debate in effective ways.

Culture is multifarious and multifaceted, and that's why comparative cultural understanding and diversity of understanding is so important. There is no either/or. For example, our School of Arts and Humanities has been imagining what the humanities might look like in the future, working with partners around the world to effectively share our resource in the social sciences. We want to think about big-picture questions – the future of the human world and the human spirit – from a whole series of different perspectives, but drawing together





Every person has to have some sense of who they are. The humanities is the space in which people think hard about, and endeavour to gain greater understanding of, themselves and others

insights from African, Asian, Latin-American and North American partners at other great universities – no single university can capture the entirety of human knowledge.

Every person has to have some sense of who they are – where they come from, where they're going – and that's about implicit philosophy, implicit ethics and implicit cultural inheritance. I've always thought that we have to be careful not to fall into the trap of thinking that everyone is the same underneath – indeed, my experience is that people are actually quite different. The humanities is the space in which people think hard about, and endeavour to gain greater understanding of, themselves and others, and that seems really important to me.

Critically, the humanities help us understand humans and humanity. We do this in myriad ways, through poetry, through philosophy, through history, through psychology and law, and so on. I just can't imagine a world in which we don't care about those things. And this knowledge, just like that of the sciences, is priceless.

To further the dialogue between the School of Arts and Humanities and voices and viewpoints from the broader community, Cambridge has launched a new Global Humanities Initiative. The initiative aims to develop innovative approaches to teaching and research, and create the links that will positively influence what we teach, what we do and who we are.

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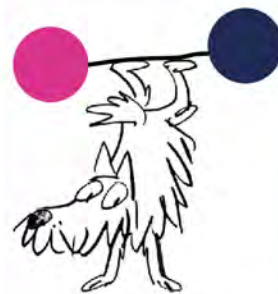
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Eating Out by Nimrod

The answers to 10 normal clues must each be thematically modified before entry. Each of the other clues contains a definition of the answer (one word or more) plus a consecutive jumble of its letters, beginning at the beginning or ending at the end of a word in the clue. Each jumble involves a single extra letter; in clue order the letters spell the first two words and last two words of a three-sentence quotation involving a thematic comparison (from the person whose name is jumbled in the silver squares) and the surname of its originator.

The central across answer must be deduced. Solvers must highlight an appropriate direction in one row of the final grid.

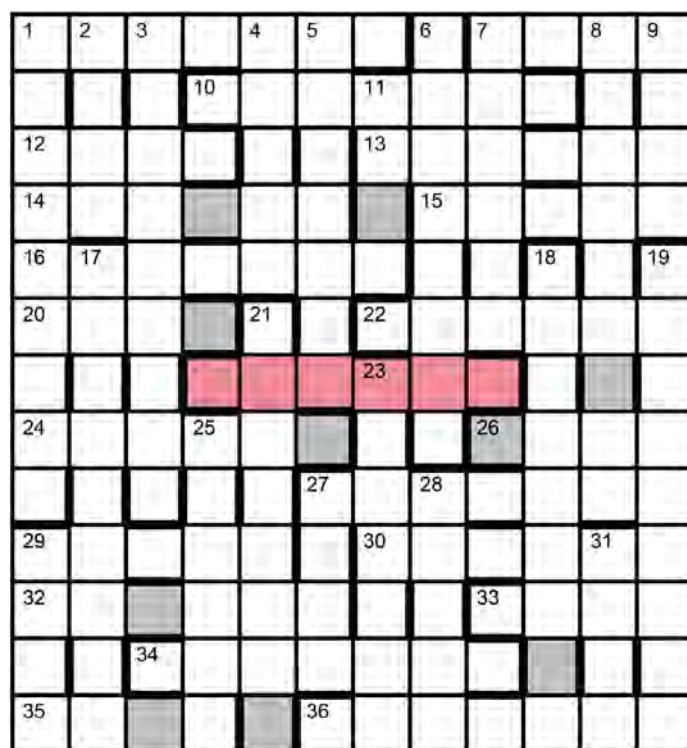
The entry at 29dn may be verified online.

Across

- 1 Opening case of crab-food, it hurt woman's hand (7)
- 7 Great meal! (Mum hugs maitre d'!) (4)
- 10 In Iran, peppered wing is the epitome of bliss! (7)
- 12 Comic hit barbie, set kindling alight (4)
- 13 The ale mugs of Old Bones brasserie (6)
- 14 Coffee morning is expecting record attendance (6, 2 words)
- 15 Flavour is hindered by infusion of sage (5)
- 16 Living, say, on beef and chorizo pie? Ice cream follows (7)
- 20 Outlets called "Taj Mahal" flung far and wide (4)
- 22 Men fighting for Sir Walter I treat in McDonald's! (6)
- 24 Note from Escoffier maybe to elect trade committee (6)
- 26 Morse joins me at All Souls High Table (4)
- 27 Order ciabattas – plain, no olives (7)
- 29 Wildly chimerical, serving this juicy fruit with cream! (5)
- 30 Colouring matter from our OU cookery classes (6)
- 32 Sweet pieces of pain aux raisin or pain au chocolat? (6)
- 33 Bar mitzvah food synagogue hubs locally sourced (4)
- 34 Councils provided checks – one can tuck in! (7)
- 35 A little vintage light ale to refuel me (4)
- 36 Ceremonial carriage? Take one's starter in it with Rosie Lee (7)

Down

- 1 Key part to play while boxing salad plants (9)
- 2 Fish soup will be on the hob, I know (4)
- 3 Committee found garlic rigatoni Best in House (9)
- 4 Spoilt in Old Aberdeen fish restaurant (5)
- 5 Nine vegetarians in tonight's party (7)
- 6 Scandal rocks hotel! Bar manager and waitress resign (8)
- 7 Feature of bathroom in B&B – and breakfast room, irregularly? (6)
- 8 Loosened up after a few doubles in Savoy bar! (9)
- 9 Buffet has to win the heart of the King (4)
- 11 Calculator out for bill to cap balti night (4)
- 17 Agree the prix fixes, featuring cheesecake? (9)
- 18 What Thomas accidentally dropped from food bag? (9)
- 19 Contacts that will do turns arranged potato on cold counter (9)
- 21 Café sorting "rations" for the troops! (8)
- 23 Tendency not to change from certain Indian takeaways (7)
- 25 Feature of sponges served in novelty hotel (6)
- 27 A knife, please, for the Cheviot lamb! (4)
- 28 How retro gastronomer's goose is cooked! (5)
- 29 Feature of crab salad topped with a dash of Colman's (4)
- 31 Passover drink, when putting plates of matzo out (4)



All entries to be received by 3 September 2021. Send your entry:

- **by post to:** CAM 93 Prize Crossword, University of Cambridge, 1 Quayside, Bridge Street, Cambridge CB5 8AB
- **online at:** magazine.alumni.cam.ac.uk/crossword
- **by email to:** cameditor@alumni.cam.ac.uk



The first correct entry drawn will receive a £75 CUP book token and a copy of Walking Cambridge by Andrew Kershman (Metro Publications). This illustrated guide details eight fascinating walks around the city.

Two runners-up will receive a £50 CUP book token. Solutions and winners will be published in CAM 94 and online on 10 September at: magazine.alumni.cam.ac.uk/crossword

Solution to CAM 92 Crossword What's My Line? by Nimrod

My Line: VOICE OVER ARTIST

Superfluous letters give THE POWER OF SPEECH OR SONG (across) and SOMEONE WHO PROFESSES ALCHEMY (down), leading to VOICE and ARTIST. In the grid, voices (TREBLE, BASS, COUNTERTENOR, ALTO and FALSETTO) appear 'over' the artists (RIVERA, MIRO, GAINSBOROUGH, DORÉ and WHISTLER).

Winner:
Nesta Thomas (Newnham 1965)

T	R	E	B	L	E	N	D	S	B	O	R
R	I	V	E	R	A	A	D	W	A	R	E
A	V	E	N	I	R	P	B	A	S	S	E
F	E	N	S	T	E	A	M	I	R	O	N
F	R	A	M	E	D	T	I	N	H	A	T
I	B	S	E	N	I	A	N	S	I	F	E
C	O	U	N	T	E	R	T	E	N	O	R
G	A	I	N	S	B	O	R	O	U	G	H
R	T	M	P	S	O	L	I	D	A	R	E
A	L	P	E	E	N	G	A	S	T	A	R
D	A	L	T	O	N	I	S	M	L	M	I
A	D	O	R	E	O	S	T	R	A	I	T
T	E	R	E	F	A	L	S	E	T	T	O
E	N	E	L	W	H	I	S	T	L	E	R

Runners-up:

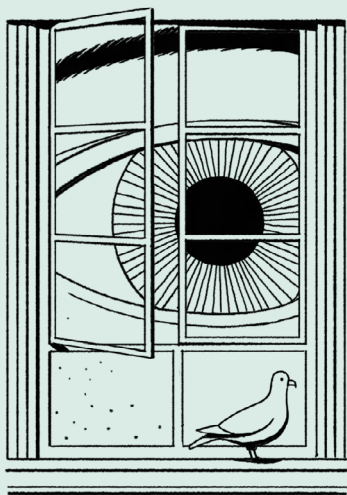
Tom Blakeson (Pembroke 1991)
Andrew Gilham (Emmanuel 1977)

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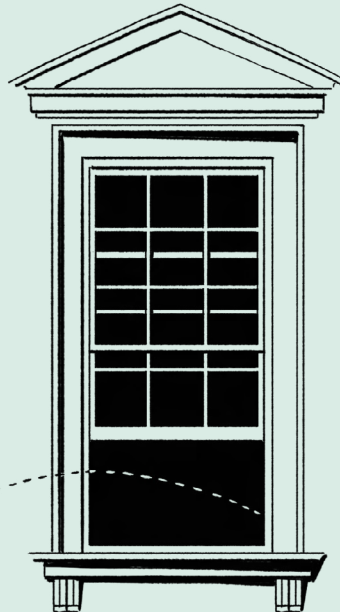
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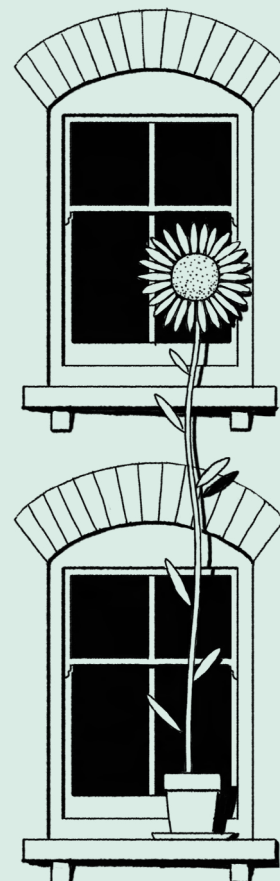
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 & - & \\
 & 5 & = \\
 & = & \\
 9 & - & 7 = 2 \\
 & = & + \\
 4 & & 3 \\
 & + & = \\
 5 & & 5 \times 3 = 8 + 8 - 1
 \end{array}$$



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