

GRAVITY IS A MYSTERY. WE KNOW WHAT

IT DOES, BUT WE DON'T KNOW WHAT IT IS.

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# CAM

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## Contents



14



20

### 02 LETTERS

## Campendium

- 07 **DON'S DIARY**  
Dr Martin Ruehl.
- 08 **MY ROOM, YOUR ROOM**  
Sebastian Faulks (Emmanuel 1971).
- 11 **SOCIETY**  
The Cambridge University  
Squash Rackets Club.
- 13 **BRAINWAVES**  
Professor Graham Virgo.

## Features

- 14 **HALL OF WONDERS**  
From whales to moas – behind the scenes at the Museum of Zoology.
- 20 **BOP ON**  
The quintessential College entertainment, the bop has it all: music, dancing – and a sticky carpet.
- 26 **A NEW VICE-CHANCELLOR**  
We speak to Cambridge's new Vice-Chancellor, Professor Stephen Toope (Trinity 1983).
- 30 **SPOKEN WORD**  
No set. No music. Just you – and the mic. No wonder performance poetry is taking the culture world by storm.
- 36 **A FORCE TO BE RECKONED WITH**  
Gravity is one of the universe's last remaining great mysteries. From the apple to black holes, CAM investigates.

## Extracurricular

- 43 **SHELFIE**  
Bridget Kendall.
- 44 **STUDENT LIFE**  
Applying to Cambridge, then and now.
- 47 **UNIVERSITY MATTERS**  
John Pritchard (Robinson 1983),  
Chair of the Alumni Advisory Board.
- 48 **CROSSWORD**

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## Editor's letter

On 2 October, our new Vice-Chancellor, Professor Stephen Toope (Trinity 1983), took office – and ownership of a fairly substantial in-tray. On page 26, we speak to the man who will lead Cambridge through what are likely to be significant years. And if you'd like to know more about his thoughts on Brexit, the role of experts and technology, you can read his speech in full at [cam.ac.uk/newvc](http://cam.ac.uk/newvc).

The affairs of the world seem pleasantly puny in comparison to the puzzles of the cosmos. Gravity is one of the universe's great mysteries: we know what it does, but we don't actually know what it is. On page 36, some of Cambridge's leading cosmologists and physicists explain just what we do know – and why what we don't has the potential to completely revolutionise our understanding of the universe.

Elsewhere, on page 20, we investigate the pleasures of the bop – that most quintessential of College entertainments – and on page 14 we go behind the scenes at the new Museum of Zoology.

Thank you for your letters on antiquarian bookshops, your thoughts on where economists are going wrong and your bibliotherapy suggestions – as ever, you can read the amusing and erudite thoughts of *CAM* readers in full on our website at [alumni.cam.ac.uk/magazine](http://alumni.cam.ac.uk/magazine).

**Mira Katbamna** (Caius 1995)

## Mailbag

### Bibliotherapy

Re your amusing cover – and *pace* cartoon traditions – I'm sure a perfectionist would not allow so many dribbles on his paint pot.

**Barrie Lees**  
(Peterhouse 1962)

A perfectionist would have a step-ladder.

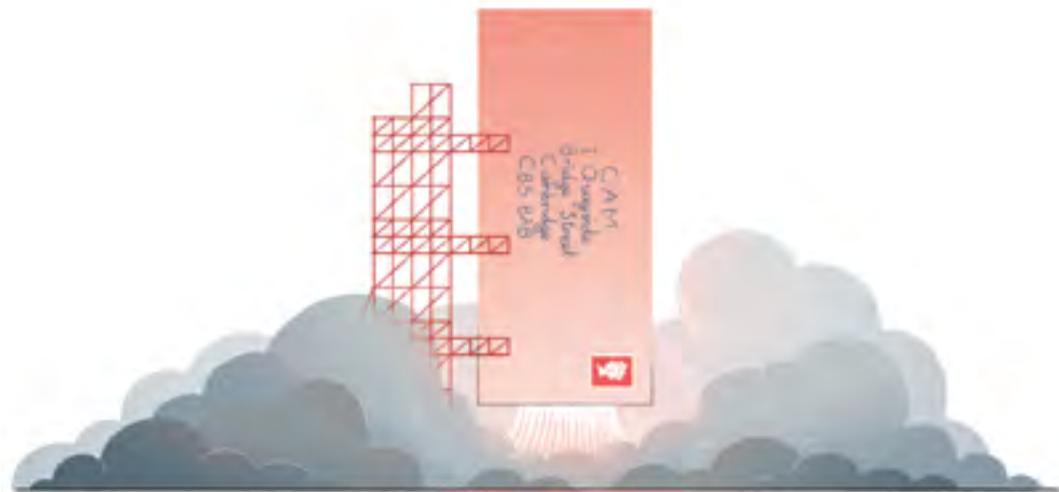
**David Potts**  
(Churchill 1970)

As an addition to the suggested bibliotherapies in *CAM 81*, might I suggest Matt Haig's *The Humans* as a cure for those at risk of becoming trapped in an ivory tower? When Professor Andrew Martin suddenly ceases to understand how to 'be human', he does have the excuse that he is actually an alien imposter. As he learns how to navigate the world around him, he learns that 'being human' is far more complicated than he imagined. A reminder that the true marvellous things in life are found in human relationships, however wondrous the contents of a petri dish might be.

**Adelheid Russenberger**  
(Newnham 2010)

### My room, your room

Room I2 was mine between 1957-59. On my first day, I was warned that I must never, even on the coldest Cambridge winter night, shut my bedroom window after 11 pm. That was the hour by which, in those days, all undergraduates had to be inside the College. Those who were late had to climb in, and the bar



## Write to us

We are always delighted to receive your emails and letters.

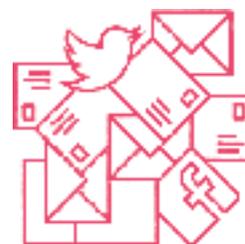
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 Write to us at:

**CAM, 1 Quayside, Bridge Street, Cambridge, CB5 8AB.**

Please mark your letter 'for publication'. You can read more CAM letters at [alumni.cam.ac.uk/cam](http://alumni.cam.ac.uk/cam). Letters may be edited for length.

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across my open bedroom window constituted the first (or it may have been the second) foothold in the ascent from Senate House Passage to the roof above my room. This meant I was able to keep an eye on the night life of the College, and I enjoyed the cheerful cries of 'Good night, Alex' from passing climbers, as I lay reading in bed.

One night there seemed to be more noise than usual from the passers-by in Senate House Passage, but it still came as a surprise to wake to the news that persons unknown had passed the night in lifting a car up on to the roof of the Senate House, where it remained for some time for all to see.

**Alex Garvie**  
*(Caius 1957)*

### A new normal

You say nothing (*CAM 81*) about the biggest current problem in economics: the fact that expansion cannot continue, growth has to stop, because the world is running out of resources. There are too many people on the planet, gobbling them up. What a disappointment. Where is the much-needed treatise on prosperity without growth?

**Anne Stotter**  
*(Newnham 1968)*

I was surprised to read this article in which three experts were consulted, and not find any mention of the issues of climate change or sustainability. How can you have a meaningful discussion about the future of

the global economy without discussing these issues? Perhaps you should have spoken to someone from the New Economics Foundation?

**Susanna Riviere**  
*(Churchill 1973)*

Economists seem unable to see beyond their fascination with growth. It is apparent that the growth our society has been pursuing over the past, say, 150 years, and selling on to the rest of the world, is not sustainable, is not stable, and has been instrumental in the destruction and pollution of the world – literally, not metaphorically. The detailed arguments are, of course, more complicated but the big picture is clear.

When will economists stop being in cahoots with politicians and wake up and smell the coffee? Then they might help fashion a modicum of salvation rather than peddling myopia.

**Maurice Herson**  
*(Corpus 1968)*

### On age

I would just like to say how much (at the age of 87) I enjoyed the very readable and sensible feature in your Easter issue *On Age*. I am constantly astonished by the number of people who, without having any physical or mental reason to retreat from creative life when pensioned, quite simply assume that, from that moment onwards, everything will and must go downhill.

**Graham Dukes**  
*(St John's 1948)*

I am 90 and my connection with the University is, of necessity, a bit tenuous, but I would like you to know that I read *CAM* with interest and pleasure, and a very strong suspicion that the place is a lot more exciting and lively than it was in my day!

**Julian Ayres**  
*(Corpus 1948)*

### Bookshops, continued

I was delighted to read Trevor Lyttleton's letter in your last issue putting right the version of the Bookshop ditty. I can only confirm that I believe this to be the version taught me by Reuben Heffer, my father.

**William Heffer**

I was pleasantly surprised to see Roger Smith's (St Catharine's 1957) letter about the bookseller, G David. His discovery of David's came commendably early in his time at Cambridge. I was introduced to antiquarian bookshops by Tim Munby, the librarian at King's. Tim would welcome anyone who showed an interest in books. He would tell stories of how, when an undergraduate, he and his friends would visit David's market stall and buy anything they could that dated from the 18th century or earlier! As a poverty-stricken county major student, I could not run to such extravagance. But I did catch the bug: when I am in the city, I visit David's. Roger's letter caught my eye for a second reason; our time at College overlapped by a year.

**Roger Smith**  
*(King's 1955)*

## IN NUMBERS

# 98

The total number of affiliates of the University who have been awarded a Nobel Prize. Richard Henderson (Corpus 1966) and Joachim Frank (formerly at the Cavendish) were jointly awarded the 2017 Prize in Chemistry for their work on cryo-electron microscopy.



## OLD SCHOOLS

### New Vice-Chancellor for Cambridge

On 2 October, Professor Stephen Toope became the 346th Vice-Chancellor of the University. Addressing a Congregation of the Regent House during his admission to office, Professor Toope (Trinity 1983), said: “My time as a PhD student at Cambridge was personally rewarding and career-defining. What I learned then has served me well, ever since. So I am thrilled to return to serve an institution from which I gained so much.”

Born in Montreal, Professor Toope studied History and Literature at Harvard, before earning degrees in common and civil law at McGill. He was previously Director of the University of Toronto’s Munk School of Global Affairs (2015-2017), and before that President and Vice-Chancellor of the University of British Columbia (2006-2014).

Addressing the global issues that the University of Cambridge can tackle through its world-leading research, he said: “I am convinced that the challenges today are more complex – and affect all of us more immediately. Take, for instance, the urgent dilemmas posed by new information technologies. Or consider the problems of global food security. For the University of Cambridge, which sees it as part of its mission to actively confront issues like these, one of the greatest difficulties is that we must constantly be prepared to deal with newly emerging questions that we did not know had to be answered.”

*To read the Vice-Chancellor’s speech, visit [cam.ac.uk/newvc](http://cam.ac.uk/newvc); and to see a special message to alumni visit [alumni.cam.ac.uk/vcmessage](http://alumni.cam.ac.uk/vcmessage).*

## KETTLE'S YARD REOPENS

The newly enlarged Kettle's Yard will open on Saturday, 10 February 2018, and will include major new exhibition galleries, a café and new welcome areas. The opening exhibition, *Actions '...the image of the world can be different'*, will feature works and commissions by 38 international and British artists including John Akomfrah, Rana Begum and Jeremy Deller. [kettlesyard.co.uk](http://kettlesyard.co.uk)



## THE CAMPAIGN FOR CAMBRIDGE

### Research boost

The campaign for Cambridge is rapidly approaching the £1bn mark, just two years after its public launch, with £947m in new philanthropic funding raised for the University and Colleges.

The campaign, which seeks to raise £2bn, is enabling Cambridge research to continue to find solutions to global challenges.

This year, gifts have included \$10m from Lisbet Rausing and Peter Baldwin's charitable fund, Arcadia, for the world-leading Cambridge Conservation Initiative (CCI), as it develops new approaches to some of the biggest problems facing the planet today.

Two research programmes into ageing, in the MRC Wellcome Trust Stem Cell Institute and Clinical Neurosciences, are being supported by a gift of £7m from William Harrison through the WBH Foundation.

*To find out more about how giving back to your College or the University makes a difference, visit: [cam.ac.uk/YoursCambridge](http://cam.ac.uk/YoursCambridge).*



## EVENTS

### Global Cambridge

Twelve cities. More than 2,000 Cambridge graduates. The Vice-Chancellor and three Pro-Vice-Chancellors. And a record 24 top academic speakers. Global Cambridge – the event series that brings Cambridge to where you are – is going from strength to strength, and the 2017/18 season promises to be just as eagerly anticipated.

Global Cambridge is an opportunity to hear about world-beating Cambridge research and thinking direct from the academics who are behind it. From climate change and

globalisation to a changing Europe, the events showcase how the University is addressing some of the biggest global challenges – and offer a chance to be inspired and to network with fellow alumni.

With events planned for next year in the UK, USA, PR China, Ireland, Switzerland, India, Singapore and Hong Kong, there's bound to be one near you.

*If you'd like to come and join us, you can find out more by visiting our website: [alumni.cam.ac.uk/gc17](http://alumni.cam.ac.uk/gc17).*

## TWO-MINUTE TRIPOS

### SUBJECT DNA FROM VIKING COD BONES SUGGESTS 1,000 YEARS OF EUROPEAN FISH TRADE. DISCUSS.

**I love Vikings. Pillage! Beards! Extreme violence!**

And also fish.

**By the beard of Loki! Fish?**

Yes. Fish. Cod, to be exact.

**Pillaged from soft-handed farmers in a bloody, howling raid?**

No. But it could well have been sold to them. New research, from Cambridge, Oslo and the Centre for Baltic and Scandinavian Archaeology, analysed DNA from cod bones found at Haithabu, an early mediaeval trading port.

**Had the bones been sliced with the cold steel of a singing axe-blade?**

No. But they contained genetic signatures seen in the Arctic stock that swim off the coast of Lofoten, the northern archipelago which is still a centre for Norway's fishing industry. This means that 'stockfish' – an ancient dried cod dish popular to this day – was transported over a thousand miles, from northern Norway to the Baltic Sea.

**But how might this challenge our preconceptions of the Viking age, by Thor's hammer?**

Dr James Barrett, senior author of the study from the McDonald Institute for Archaeological Research, says it demonstrates that the Viking world was complex and interconnected – where a chieftain from north Norway may have shared stockfish with Alfred the Great while a late-antique Latin text was being translated in the background, and town dwellers of a cosmopolitan port in a Baltic fjord may have been provisioned from an Arctic sea hundreds of miles away.

**The poets will make sagas of these fish that will make the gods weep.**

And they might also continue their research. Owing to the small size of the current study, researchers weren't able to determine whether the cod was transported for trade or simply used as sustenance for the voyage from Norway. *Ancient DNA reveals the Arctic origin of Viking Age cod from Haithabu, Germany, published in Proceedings of the National Academy of Sciences.*



## It's a tough question. But they're a good bunch – bright, keen. They'll come up with something.

*Dr Martin Ruehl* is University Senior Lecturer in German intellectual history at the Faculty of Modern and Medieval Languages.



“So... if this is the core of fascist ideology, can you think of a ruler or regime today that might be labelled fascist?” I look around the lecture hall with what I hope is an encouraging expression. Some students are staring intently at their writing utensils or smartphones, evidently hoping I won't call on them; others look back at me, but in a way that suggests they're still not entirely sure what to say.

It's a tough question. I've just given them a historical survey of National Socialism and Italian Fascism, the intellectual origins and goals of the movements, their style and organisation. Now I'm asking them to relate all that to the present, their present, and to pass judgement, in a way, on contemporary politics. They're a good bunch, though: bright, keen, if still somewhat wary to speak out in front of their peers. They'll come up with something. I'll just give them a bit more time.

It's the end of July. The Cambridge term is long over and our MML Finalists graduated a month ago. So what am I doing in Lecture Block 3 on the Sidgwick Site in the middle of the long vac, talking about fascist ideology? The short answer: outreach. Summer may be the time for research, but it is also the time for open days, masterclasses and student workshops. This is day four of the Sutton Trust Summer School in Modern Languages, a week-long academic residential that allows Year 12 students from around the country to live

and study at a College as undergraduates do: attending lectures, classes and supervisions (as well as Formal Hall and a bop).

All participants have to meet stringent academic requirements – and they come from so-called 'non-traditional backgrounds', that is, postcodes with low participation in higher education or schools with a below-average exam performance. Many of the students in front of me are recipients of free school meals; most will be the first in their families to go to university. To encourage them to think seriously about studying modern languages at university, and at Cambridge in particular; to debunk the old (but resilient) myth of Cambridge as a bastion of the posh and privileged; to make them appreciate the challenges as well as the extraordinary benefits of a Cambridge education – that is my task and why I am here in LB3 today.

I have been coordinating these Summer Schools on behalf of the MML Faculty for the past five years and I still find it the most rewarding of my academic duties. It gives me genuine satisfaction to work with the students, to broaden their interest in foreign languages and cultures, and to see a steadily increasing number of them earning a place on our MML course.

In today's lecture on 'The Language of Fascism', I'm trying to show them how vital linguistic and literary skills are for the work of the historian – and how vital knowledge of the past is for the work of the linguist and

literary scholar. On the one hand, I want to alert them to the fact that, as students of modern languages at Cambridge, they will also be students of history; on the other hand (and somewhat self-servingly), I want to draw their attention to the new joint degree in History and Modern Languages that Cambridge launched in October (and that I am chairing).

Most importantly, though, I want them to think of fascism as an intellectual and cultural, rather than a purely political or socio-economic, phenomenon – to look beyond the unemployment figures of the Great Depression or the machinations of the Hindenburg Kamarilla in January 1933 and consider the preoccupation with decline and 'degeneration' and the longing for comprehensive cultural and spiritual renewal. This myth of the violent rebirth of the nation, in my view, is the centrepiece of fascist ideology – and the piece that survives the collapse of fascism itself in 1945.

A hand goes up in the back row. It's a serious-looking girl, with horn-rimmed glasses and a hijab. She has not spoken so far. I expect her to go with Trump, but she surprises me and picks a head of state much closer to home, correctly pronouncing his surname. I ask her why and she gives a long, thoughtful, politically engaged explanation that triggers a lively discussion. I'm thinking to myself: I really hope she will apply here. I really hope they will all apply.  
*mml.cam.ac.uk*

“  
A hand goes up in the back row. It's a serious-looking girl, with horn-rimmed glasses and a hijab  
”



There was only one way to prepare: repair to P6 in the corner of Emmanuel's New Court and get stoned



## P6, New Court

*Sebastian Faulks (Emmanuel 1971) and third-year mathematician Fraser Waters discuss eclectic decoration and built-in storage.*



Back in 1973, the young Sebastian Faulks heard that prog-rock legends Procol Harum were coming to play at Cambridge. There was only one way to prepare: repair to P6 in the corner of Emmanuel's New Court and get stoned. "And we did," he remembers. "We got so wasted, in fact, that we missed the gig. Many years later I found out Procol's van broke down and they never made it either!"

It's a funny story. But it's clear that P6 holds mixed memories for Faulks. "I was kind of semi-detached," he says. "It's a volatile time for young men, as your brain finally completes its circuitry. I think I was also in some kind

of revolt. Though I don't quite know what I was revolting against – my privileged education, perhaps."

Today's occupant, Fraser Waters, is having a very different kind of student experience. A quick glance round the peaceful, spacious room reveals a sports enthusiast (rowing numbers, squash rackets, a bow complete with a quiver full of arrows), and a keen mathematician (denoted by that rare sight these days: textbooks on a desk).

"I don't spend much time here, to tell the truth," he says. "I'd like it to be some kind of social hub but I always seem to be rushing around. Recently, I've been helping freshers

move in. We have maybe three or four hours of lectures a day at most and then possibly a supervision, which would be an extra hour after that."

Faulks's days in P6 generally began at lunchtime. "I'd go and watch a film at the Arts Cinema in the afternoon, then come back here for tea and music. I had a great big music system which used to deafen the more studious people: Procol Harum, of course. Velvet Underground, Stevie Wonder."

One thing the two do have in common, however, is utilising the small built-in wall cupboard for alcohol storage. "Whatever gave me the most bang for my buck," remembers



#### TWEET OF THE TERM

“Jobs, skills, wages, equality, economics, politics, society, contentment, unrest, conflict and everything else summed up in one paragraph” – Jonny Aldridge (Homerton 2008) on CAM’s take on the future of the economy.

@camalumni



#### IN BRIEF

##### NEW REGISTRARY

The University has appointed its first ever female Registrary. Emma Rampton is the 27th person to the post of principal administrative officer – one of the longest continuously-held offices in UK higher education. Corpus has also made a new appointment: Professor Christopher Kelly, the current President, has been elected the 52nd Master.

##### MORE ONLINE JOURNALS

You can still enjoy free access to online academic resources even if you’re no longer studying at the University. Alumni and former postdocs can access multiple online journals, including provider of digital humanities and social science content Project MUSE, Emerald Insight and HSTalks’ Business and Management Collection. Alumni have free access to the JSTOR digital library of academic journals. Visit: [alumni.cam.ac.uk/accessjournals](http://alumni.cam.ac.uk/accessjournals).

##### A TOP RANKING

Cambridge is second only to Oxford in the *Times Higher Education 2018 World University Rankings*. This year marks the first time in the rankings’ history that two UK universities have held the top spots. Cambridge has risen two places from its position in the 2017 edition. The *Times Higher Education* world rankings are compiled by judging 1,000 universities on their teaching, research, knowledge transfer and international outlook.

Faulks. “Martini, mostly. Red and white.” And they share a taste for eclectic decoration. Waters has plumped for six images of crystallised alcoholic drinks taken using photomicrography. “It’s part art, part science,” he says. Faulks remembers juxtaposing a poster of David Bowie, Lou Reed and Iggy Pop in a New York nightclub with a picture of Princess Anne and Mark Phillips. “I thought that was the height of, well, contrast.”

And although P6 comes complete with a kitchenette, neither of them seem particularly interested in food. “I’m not one for breakfasts,” says Waters. “I wake up, rush off to whatever I’m doing and then think: ‘Oh yes, I should probably eat.’” Faulks lived on rehydrated soup – “and pork pies. The pork pie in the College bar was excellent. I was even thinner than Fraser in those days.”

For Waters, Cambridge is “just a big adventure. I’d never really thought about where I was going in education. Then I got to the sixth form and they throw questions at you like: what do you want to do with your life? And you think: ah, I have no idea. Then someone suggested my grades might be good enough for Cambridge.”

“He’s got it all figured out,” says Faulks. “I do regret not making more of my time here. But Cambridge was quite dour. In an average day, the College bar would be three guys with hair down to their shoulders, smoking and drinking Double Diamond. A few years ago, I was in College for a dinner and about 100 young men and women were in there, nobody smoking, all laughing and having a fantastic time. And that’s a massive change.”

**Sebastian Faulks** (*Emmanuel 1971*) is a novelist, journalist and broadcaster. He was appointed CBE for services to literature in 2002 and his latest book is *Where My Heart Used To Beat* (Hutchinson).

**Fraser Waters** is a third-year mathematician who says that while he isn’t destined for a career in pure maths, he hopes to stay in education doing statistics research.

#### A CAMBRIDGE GUIDE TO...

## The Alumni Travel Programme

Fancy volcano hopping in Indonesia, tracking the Sri Lankan leopard, searching for pink dolphins in the Amazon or following in Darwin’s footsteps with a Galapagos and Quito cruise? Well, the Alumni Travel Programme might be just the thing.

The Alumni Travel Programme is working with three new providers for 2018 tours (AHI, Last Frontiers and Experience Travel), resulting in six completely new and bespoke trips to incredible locations for Cambridge alumni. You’ll travel with like-minded people and expert guides, so if you’d like to discover a new world, please visit the website to find out more.

*To explore our full range of tours, please visit: [alumni.cam.ac.uk/travel](http://alumni.cam.ac.uk/travel).*



“ I am convinced that the challenges the world faces today are more complex than at any time before – and affect all of us more immediately.

One of the greatest difficulties is that we must constantly be prepared to deal with newly emerging questions that we did not know had to be answered.

Our University has responded to the challenges faced by previous generations through the discovery and creation of new and world-changing ideas and technologies.

Now we must ensure that we can continue to respond to the conditions we face today; and that the University of Cambridge remains an unstoppable, unapologetic force for knowledge and understanding, for more inclusive community, and for the betterment of our shared world. ”

**Professor Stephen Toope**  
**Vice-Chancellor**

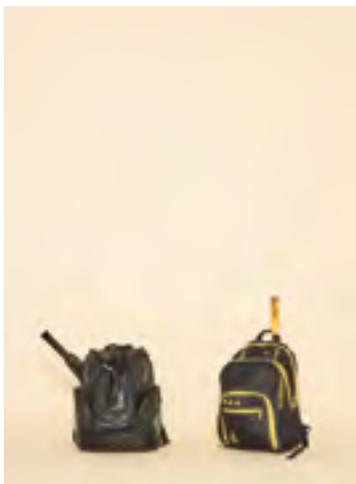
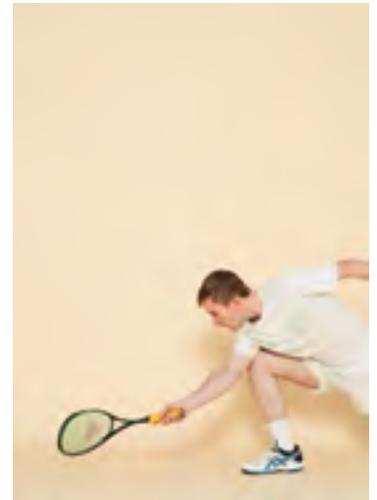
To find out more about how the campaign for the University and Colleges of Cambridge is enabling us to address some of the biggest global challenges, go to [cam.ac.uk/YoursCambridge](http://cam.ac.uk/YoursCambridge)

Every gift, to your College or the University, contributes to the campaign to attract the brightest minds, create the best environment for world-class research and give the freedom to develop more world-changing ideas.

Below, clockwise from top left James Liley (Darwin); Emily Kneebone (Newnham) and James Liley; Sasha Haco (King's), Madeleine Walpert (Murray Edwards) and Tom Mitchell-Williams (Queens'); Tom Mitchell-Williams; Emily Kneebone; Madeleine Walpert.

## Courting success

The Cambridge University Squash Rackets Club blends competitiveness with fun.



**T**wice-weekly training. Weekly fitness sessions. Occasional friendlies against the Army. Being a member of the Cambridge University Squash Rackets Club (CUSRC) requires commitment – especially if you land a coveted team spot.

The upside? Athletic excellence, says Law student Isaac Freckleton (Trinity). “You play people who are very good

and have a high level of fitness, so you can really push yourself.”

This hard work pays off. The men’s Blues and second teams ended the 2016/17 season top of their respective divisions in the Cambridgeshire League, while the women’s Blues snatched victory from Oxford in a nail-biting Varsity final.

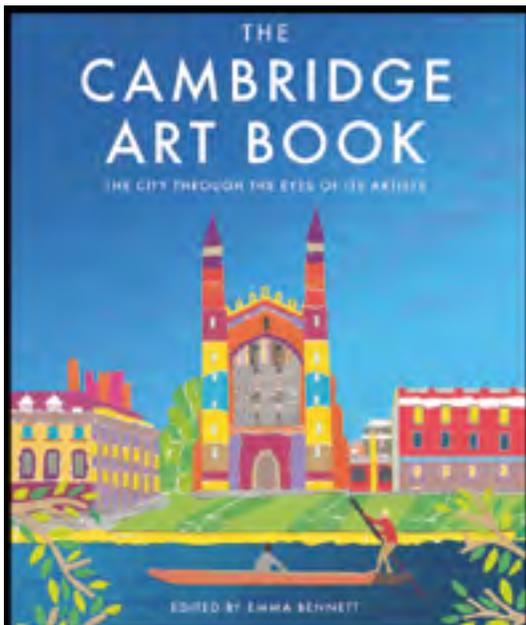
The club also boasts some impressive former members, including Scottish international

Harry Leitch (Fitzwilliam 2003) and Ali Hemingway (Jesus 2011). But there’s more to life than winning, as Freckleton points out. “I’ve made some of my best friends through the club.”

And no wonder. Captain of the men’s second and third teams last year, his unofficial role as social secretary means he helps to organise a couple of dinners a term for all members plus smaller, ad hoc events.

Historically, the different teams have kept to themselves, so Freckleton’s job is to encourage them to mingle. “It’s really nice to train together and then go to drinks or dinner and get to know people better.”

*The CUSRC is planning an alumni dinner for current and former members. To find out more or to be added to the mailing list for future events, please email Isaac: if259@cam.ac.uk.*



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## What should students expect from their college and the University?

*Professor Graham Virgo QC is Pro-Vice-Chancellor for Education.*

Cambridge's mission is to 'contribute to society through the pursuit of education, learning and research at the highest international levels of excellence'. Our excellence in research has been evident throughout our history.

Since 1986, the government has measured the quality of research undertaken by British higher education institutions through a system now known as the Research Excellence Framework (REF). But until this year, our education provision – excellent though it was known to be – had escaped such scrutiny by central government. No more. In June 2017 the results of the Teaching Excellence Framework (the TEF), an attempt by government to recognise high quality teaching and learning, were announced.

It was no surprise that the University was awarded gold – the highest grade. I can imagine alumni may have two reactions to this. The first is to comment that it is no secret that teaching and learning in Cambridge is excellent. And the second may well be to ask why we have not made more of it. Many institutions celebrated publicly and have added their TEF awards to their marketing literature, but our response was deliberately muted.

The reason for this response is – as always with new government initiatives – complex. Cambridge has no fear of scrutiny, and it welcomes anything that can help us improve the quality of education here – or indeed across the UK higher education sector. But the new system is flawed.

Despite its name, the TEF does not actually assess the quality of teaching. What it does is to take six metrics – including student responses to the National Student Survey, student retention and graduate employment – and use these to benchmark the quality of education. It is these benchmarks that are used for the grading – not absolute performance. So, a modern

university expected to score in the 60s and 70s could get a gold if it does better than this, but a top research university with a benchmark in the 90s could miss out if it drops just below its target.

Despite our reservations about the methodology, and we have made our views known to government, its introduction should be welcomed. With students paying high tuition fees, they should have confidence in the quality of their educational experience. At Cambridge, the introduction of the TEF has resulted in a renewed institutional focus on teaching and learning support. There has been a recalibration of priorities, with educational excellence increasingly being treated with the same respect given to research excellence. As a consequence, the Centre for Teaching and Learning has been established to provide an institutional focus to reflect on how teaching and learning should be delivered and how we should examine our students, as well as facilitating the sharing of best teaching practice.

TEF is significant in another respect, since it is further evidence of a radical change in the relationship between students, increasingly characterised as 'consumers', and universities. Tuition fees have been increased to £9,250 for those matriculating in 2017. While the government's intention was for TEF performance to be linked to a university's ability to increase its fees further in the future, the recent decision to freeze tuition fees suggests that the link

between TEF and fees may be permanently broken. Students need to have confidence that they are getting value for their money.

That constitutes a legitimate concern for students at Cambridge too, although the cost of an undergraduate education at Cambridge is twice as much as the tuition fee. The extra cost is absorbed by the collegiate University.

Despite the tuition fee, it is not helpful to characterise students as 'consumers', (for what are they consuming?), or the University simply as a 'provider'. Rather, the relationship between student and the collegiate University is properly characterised as a partnership. All students coming to Cambridge, whether undergraduate or postgraduate, have a right to expect a world-class education, where they can engage with exceptional teachers and researchers. But with this comes responsibility on the part of each student to ensure that they fulfil their potential and take advantage of the academic and extra-curricular opportunities available to them.

So, too, there is a responsibility placed on the collegiate University to ensure that the educational experience is world leading. This requires us to engage with negative experiences, such as responding to sexual misconduct, which we have done through the creation of an innovative and supportive sexual misconduct complaints procedure.

It also places an obligation on the University to ensure that our teaching and learning facilities are modern and competitive, which we are developing through the implementation of a digital education strategy. But this should only complement, and not replace, what has made education at Cambridge exceptional for hundreds of years, namely the personal engagement with world-leading teachers and researchers through the supervision system, which is the jewel in Cambridge's crown, as was explicitly confirmed by the Teaching Excellence Framework.

“  
It is not helpful to characterise students as 'consumers' and the University as the 'provider'  
”





What do you do with a 150-year-old whale skeleton in need of a hip replacement? **CAM** went behind the scenes at the Museum of Zoology – due to reopen in 2018 – to find out.

WORDS **LUCY JOLIN**

PHOTOGRAPHY **NICK BALLON**

# HALL OF WONDERS

On the evening of 13 November 1865, a coastguard noticed something strange in Norman's Bay, Pevensey. A massive fish, 70-foot long, had washed up in front of the Star Inn. Great excitement ensued. The nearby town of Hastings, East Sussex, and the local Customs Office claimed what turned out not to be a fish, but a fin whale, and auctioned it off. Ten local fisherman bought it for £38 and charged 6d to see it. Around 40,000 people flocked to look at it. Demand was so great that a temporary railway station was allegedly built on the beach. The Star Inn ran out of beer.

The fishermen cut the whale up and prepared the bones for exhibition under the guidance of William Henry Flower, conservator of the Museum of the Royal College of Surgeons. The following Easter, 'The Skeleton of the Monster Whale' was exhibited in the Central Cricket Ground at Hastings, before being sold to a new Museum of Zoology, which had just opened the year before, in Cambridge.

One and a half centuries later, the fin whale is still here and its latest incarnation is about to go on show. In the courtyard of the newly-named David Attenborough Building (formerly the Arup Building) sits a huge glass box. Inside hangs the enormous skeleton, curving gracefully from the ceiling. And even though the new Museum isn't open yet, the whale is already working its magic. Stand outside the entrance for a few moments and you'll see family after family, tired from a day's sightseeing or shopping, pause, stare and wonder.

"It's absolutely magnificent," says Professor Paul Brakefield, Director of the Museum. "It's an iconic specimen with a fascinating history. It's brought together a wonderful community, from the zoologists who hung it and the volunteers who cleaned it, to the historians who could tell us about its origins." The story of the whale is also the story of the Museum. The meaning invested ›

**PREVIOUS**

The fin whale in the new Museum entrance.

**OPPOSITE**

A selection of finches collected by Charles Darwin and which influenced his work on natural selection.

**THIS PAGE, TOP**

Conservator Ruth Murgatroyd working on an ostrich skeleton.

**THIS PAGE, BELOW**

Feathers of the extinct moa, a flightless bird native to New Zealand.

in those bones has morphed over the years: anatomical specimen, Cambridge landmark, unique selling point, symbol of the Earth's glorious biodiversity.

“Originally, this was a museum of comparative anatomy,” says Dr Adrian Friday, currently Research Fellow and former Curator of Vertebrates. “It never had the role of a natural history museum. Now, it has to accommodate that and also play a new role.”

Putting the whale on display for the first time took a while, understandably. The fin whale (*Balaenoptera physalus*) weighs around 80 tonnes and is second only to the blue whale in size. According to the Museum's chronicles, the whale was finally articulated in 1896 by Ernest Lane, then Chief Technician.

Whoever tackled it did a fine job, with custom-made ironwork holding the bones together: legend has it that these struts were created in the University's Engineering department. (That same ironwork holds the whale together today.) Photographs of the whale's first mounting – it was supported from underneath by a series of columns – show it arcing over a cabinet of bony curiosities: rows of bristling antlers, two elephant skeletons side by side, a two-tusked narwhal.

Not everyone liked it. Dr Friday tells the story of how legendary physicist, Ernest Rutherford, felt that the Zoology Museum was a waste of space. “He once apparently said, ‘And I don't know why they want that bloody great fish’. As one of the former directors of the Museum said to me: ‘Thereby illustrating exactly why we needed it.’”

Thirty years after Rutherford died, more space finally became available: in 1965, the New Museum of Zoology was demolished to make way for the Arup Building. The entire collection had to be moved. There were, of course, many other specimens: four million of them. But the ants proved far less of a problem than a 70-tonne whale.

The then Chief Assistant (the title formerly given to Collections Managers) RD Norman oversaw the removal, and the whale skeleton encountered perhaps its most unexpected resting place: a lock-up garage just off Mill Road. The skull ended up in a barn in Knapwell, a village just outside Cambridge. Again, it took a while to organise the new hanging: it wasn't until the mid-1990s that it was decided that the whale should be rehung.

By now, Dr Friday was Curator of Vertebrates. He and his team retrieved the bones and washed them in biological washing powder, which contains powerful enzymes that eat up any biological material. Whale bones are tricky to keep clean: eventually, their sticky internal grease works its way through to the surface again, collecting dust and dirt along the way. Dr Friday and his team then dipped them in an invisible PVA solution – the same substance that children use to stick collages in school – to weatherproof them. The whale ›







## OPPOSITE

The skeleton of an African elephant – which will soon be joined by the skeleton of an Asian elephant used in Stanley Kubrick's film, *2001: A Space Odyssey*.

was hung from metal cables attached to a steel beam in the ceiling, all made by local engineering firm, Mackays, in a small factory behind its tool shop on East Road. It finally opened to the public in 1997.

Spotlit and hanging directly outside the Museum amid the concrete of the Arup Building, the whale was intended to draw attention. It worked. “On the final day, the three of us – the then Chief Assistant, Ray Symonds, exhibition technician Mick Ashby and me – were completely exhausted,” remembers Dr Friday. “The sun was shining, it was a lovely day and I was going home.

“For the first time, the whale hanging above the Museum was visible from the road. And I watched an elderly gentleman with his shopping bags on the opposite side of Downing Street. He walked along and glanced sideways. He continued walking and then he suddenly stopped. He came back again and peered under the arch. I thought to myself: ‘Yes, we’ve done it.’”

The whale became a beloved Cambridge landmark. Students tended to respect it, says current Collections Manager, Matt Lowe, but the pigeons were another matter – and by 2013, the skeleton needed some TLC, as, indeed, did the Museum.

“Material Sciences moved out to West Cambridge and that left two-thirds of the building free,” explains Professor Brakefield. “Dr Mike Rands, Executive Director of the Cambridge Conservation Initiative (CCI), led the vision that the whole building could be devoted to biodiversity, with the Museum and CCI – a unique collaboration between the University and leading internationally-focused biodiversity conservation organisations – working in the same building, which we renamed the David Attenborough Building. It was a wonderful opportunity to revitalise, refurbish and reorganise the Museum. We raised money from the University, the Heritage Lottery Fund, which donated £1.8m, other foundations and hundreds of private donors.”

Conservator Nigel Larkin, who has vast experience of dismantling large zoological artefacts, was brought in to oversee the whale’s third hanging. A team of volunteers took the whale apart, unthreading, labelling and photographing each bone. This time, the skull received five-star treatment: a special shed was built for it.

Then the clean-up operation began. The Museum recruited a 50-strong army of volunteers and trained them in the art of whalebone cleaning, this time mostly using toothbrushes dipped in Synperonic, an alcohol solution. The pigeons had left some specimens of their own. “When we took the skeleton down, we found a pigeon skeleton lodged up its nose, as well as many old nests,” remembers Lowe. “The pigeon poo was an inch thick in some of the vertebrae.” The whale’s baleen – which is made from compressed hair – went in the

freezer to avoid pests. After the scrubbing came the detailed repair work. The whale was never complete, says Lowe: the right-hand pelvic bone has always been missing. A 3D printing firm made a copy of the left-hand bone, which was then carefully painted by a specialist volunteer to exactly match its partner. Only then was the whale ready to rehang, a process that took around five weeks. Dr Friday hung the last vertebra, just as he did 20 years earlier.

Of course, the Museum is more than the whale: it’s a unique record of biodiversity on planet Earth for the past 200 years. Here is a trochus shell, collected from New Zealand in 1775 by Captain Cook. Here are some of the finches that inspired Darwin’s theory of natural selection and the feathers of the long-extinct moa. Here is the only dried Tasmanian tiger stomach left anywhere on earth, which Lowe discovered in a wooden box labelled ‘Collection of anatomical specimens, not zoologically important’, under a sink in a storeroom. In a digital age, the importance of actual things can’t be overestimated.

And here is the cleaned-up skeleton of the Asian elephant, which will now take its rightful place, once again, beside the skeleton of its African cousin, after being loaned to Stanley Kubrick during the making of *2001: A Space Odyssey*. (Watch the opening credits and you will see its bones, but, of course, none of the ironwork which held them together. It is thought that at some point the ironwork and bones became separated, and there were no funds to replace it, until now.)

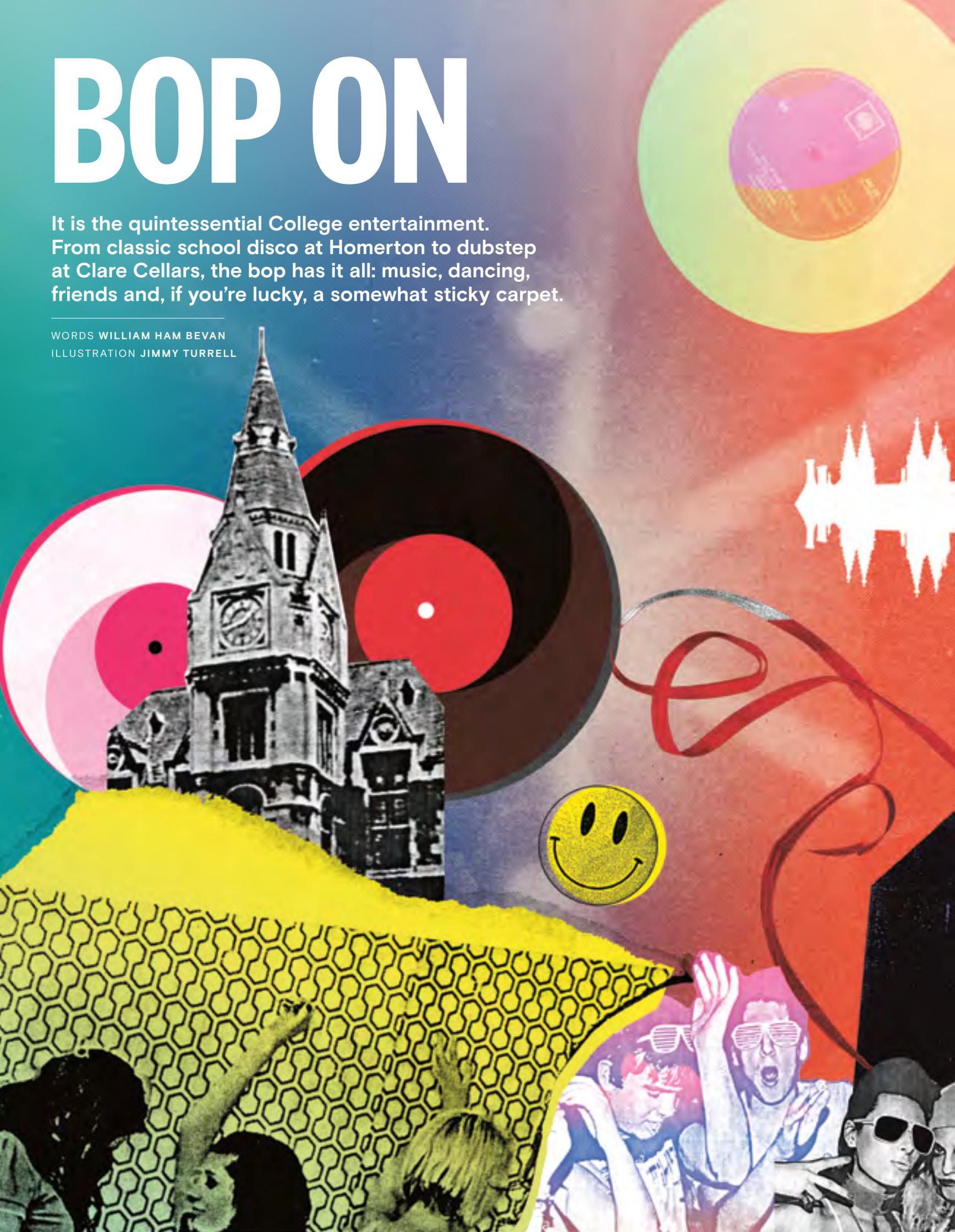
All these extraordinary specimens will take their place in the new Museum, cleaned up, rehung, re-displayed and given new context. It’s hoped that the fin whale will entice in a new generation of zoologists and biologists: come for the whale, stay for an extraordinary insight into the beauty, diversity and fragility of life on Earth, as Sir David Attenborough (Clare 1945) points out. “Zoological museums are the bedrock on which the science of Zoology depends, and our conservation of the natural world depends on us understanding those objects,” he says. “This marvellous museum at Cambridge University has functions both academic and scholarly, but also very importantly, it is a place where the public at large can come to see, study and wonder.”

“As time goes on you think ‘what importance is this collection going to have 200 years from now?’” says Lowe. “Will we still have the rhino? Will we still have tigers? I hope so, but if we don’t, then at least there is physical evidence that they existed. And we have to inspire people. Natural history unites everybody. It crosses all borders, all cultures.” Dr Friday agrees. “These days, historical collections don’t just enable people to see objects. They also have to make the point about what we stand to lose.” ©

# BOP ON

It is the quintessential College entertainment. From classic school disco at Homerton to dubstep at Clare Cellars, the bop has it all: music, dancing, friends and, if you're lucky, a somewhat sticky carpet.

WORDS WILLIAM HAM BEVAN  
ILLUSTRATION JIMMY TURRELL



The weekly College bop has been a mainstay of student life for almost 50 years – but it’s a broad church. Some bops are sophisticated, with a quality of music and style that wouldn’t shame a London promoter. Others are more spartan: perhaps a bottle-only bar and a second-year engineer juggling music requests via her smartphone in the corner of the cellar.

All have one thing in common. They’re organised by a volunteer corps of JCR social secretaries, ents officers and committees, promoters and ad-hoc helpers. It’s a challenging and sometimes thankless role, taking in such tasks as budgeting, health and safety checks and dealing with College authorities. There’s seldom the chance, as on a ball committee, to swan around in a sash and pose for photographs. On the night, there may be spillages to clear up, beer kegs to lug around and gatecrashers to escort out.

One of the first regular bops was Pleasure Machine, which started at Churchill in 1972 and remained a Thursday-night fixture for more than 40 years. Mike Summersgill (Churchill 1972) was involved from the beginning. He says: “Two third-years put a case together for buying disco equipment and doing an event in the pavilion. With JCR funding we bought the gear over the 1972 Christmas vacation and we were quickly up and running.”

The arrival that year of the first women at Churchill made the proto-bop an immediate success. “Everyone wanted to meet the new girls,” he says. “The other hill Colleges, Fitzwilliam and New Hall, were already using our bar to meet the opposite sex. They all came along and there’d always be a busload up from Homerton.

“It was my first year, and I was JCR treasurer. I think I was elected because

they needed someone to look after the football table and the new condom machine. But I’d already had some experience in the music business in my gap year, assisting a DJ in a local club at home.”

Summersgill recalls playing a lot of David Bowie to a boisterous crowd – the pavilion was far enough from residential buildings for noise not to be an issue – and ending the night with Jeff Beck’s *Hi Ho Silver Lining* while jumping about on the table, often sending the needle skating over the record. But students could also expect to hear some less familiar sounds.

“We played some reggae,” he says. “One of the guys at College was Geoff Travis (Churchill 1971), who founded Rough Trade Records, and he advised us that we should. Someone else in Churchill wrote the LP reviews for *Varsity* and got records in that hadn’t yet been released, >





so we had a name for playing stuff that hadn't hit the radio."

The template stamped out by Pleasure Machine was quickly picked up by other Colleges, and has proved very resilient. A history of Cambridge student life published by *Varsity* in 1995 noted that "the atmosphere of the Cambridge 'sweaty' or 'bop' has changed little in 30 years – the principle is, and always has been, to crowd as many people into as confined a space as possible, crank up the music and have a good time".

However, the Nineties turned out to be a watershed for the bop. Dance music had gone mainstream. Many freshers coming up to Cambridge were already au fait with club culture, and had a thirst for events that took their cue from Pacha or the Ministry of Sound rather than a school disco. A few Colleges – notably Trinity Hall, Queens'

and King's – were already gaining a name for putting on big regular events that attracted people from across the University and beyond.

Anu Pillai (King's 1993) says: "People came up from places where dance music was getting really big and found there was a lack of it in Cambridge. In College, there were the King's Mingles and those famous June events, but they'd never book a big DJ. They'd get a band in and there'd be an indie disco or something."

After serving as DJ at various College bops and events, Pillai began to secure outside talent for the weekly events in King's Cellars, building up a good relationship with dance-music promoters in London. He says: "I'd say, 'look, you've got a star DJ over from America and he's not doing anything on a Monday night'.

We'd get them down for a couple of hundred quid. Some would stay in the guest rooms in College and suddenly realise it wasn't like a hotel – there was just a single bed and no TV. They were probably kicked out by a bedder at nine o'clock in the morning!"

The events at King's attracted clubbers from across the University, who would be keen to keep the party going after closing time. "We once had a big-name DJ from Manchester, and convinced him to come back and play in someone's living room out past the Cam until six in the morning. That kind of thing regularly happened."

Starting a new night could be problematic. Funk da Bar, a Wednesday bop at Emmanuel, quickly gained a reputation as one of Cambridge's liveliest nights (and mystified many with its habit of decorating the bar with that day's unsold stock of bananas from the market). But as ents officer Alison Pickup (Emmanuel 1996) recalls, it was only permitted on the basis that it wasn't a bop at all.

She says: "Emma bar had been refurbished with new flooring and banquettes, and the College authorities didn't want them damaged by parties because the refit had been so expensive. That was a challenge for me as an ents officer. So we had the idea of having what we called a 'DJ night'. I persuaded the senior tutor that this was totally different from a bop and therefore OK.

"The other thing that was controversial was having it on Wednesday nights, when people wanted to watch sport in the bar. We weren't very popular with the football fans for a while."

Meanwhile, the ents team at Queens' had the benefit of the newly-built



**Sometimes you'd get a star DJ staying in a College guest room. They'd suddenly realise it wasn't like a hotel – just a single bed and no TV. They were probably kicked out by a bedder at nine o'clock in the morning!**

Fitzpatrick Hall, an auditorium that could accommodate nearly 400 people. Committee member Nick Jankel (Queens' 1993) recalls making the most of it with 'Flava to Sava', a jazz-funk night that aimed for the level of a sophisticated London club rather than a student party.

"We didn't even use the term 'bop'," he says. "That was something from the Eighties, and we were trying to reinvent ourselves. We were inspired by the quality of what was happening in the club and rave scene, so we spent a lot of time on the flyers and paid dancers to come up from London. We wanted to turn it into more than a girls-on-one-side, boys-on-the-other prom night. We had a dress code – 'old-school hipster' – and we tried to change the hall from this gymnasium-like space into something with a bit of atmosphere."

Andrew Turner (Queens' 1993) was part of the same committee, going on to become events officer in his fourth year. He recalls decking Fitzpatrick Hall with camouflage nets and intricate lighting rigs for Progression, the biggest event of term. But in spite of the attempts at professionalism, with external security staff and DJs, there were reminders that this was a College event and not a London club.

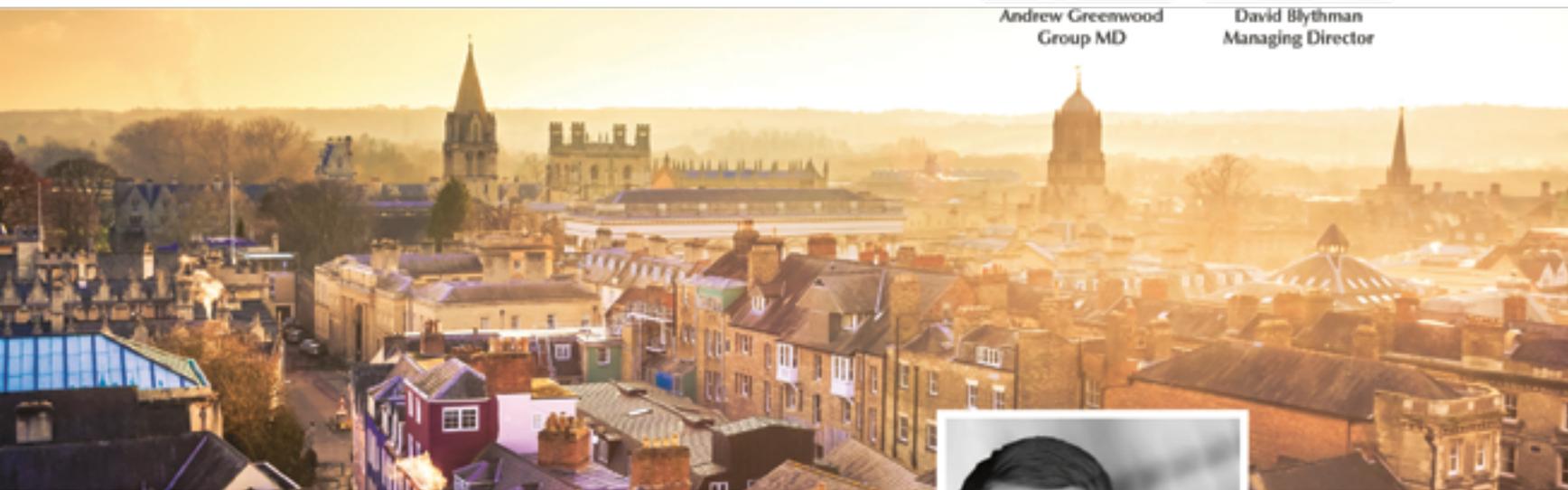
He says: "At the end of one of those nights, I had to go up with a bouncer and get the DJs to stop playing. Everyone started chanting my name in an effort to keep the music going, but we had no choice but to finish on time. The bouncer was keen, as he didn't get overtime! And then there were hours of clearing up to do, but it was always someone's job to go to the Gardenia and get a massive order for everyone helping out." ›



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Mr OM, Japan

## One of our big worries was always the sound in King's main hall. The bass made the stained-glass windows rattle, and there was this fear that we'd destroy a national monument

The biggest success at Queens' was Jingles, a night that harked back to the classic Cambridge bop with chart music and few metropolitan pretensions. By the time Scott Allsop (Emmanuel 1999) arrived, it was attracting queues that snaked around the College two hours before the doors opened. As JCR president, Allsop helped with events at his own College; but under his alter-ego of 'Red Hot Scott', he gained a name for playing cheesy tunes at bops across the University.

"I was resident DJ at Jingles," he says. "I'd play stuff from the Seventies to the Nineties, from Abba through to Wham!. People seem to love stuff from their early teens, so the Spice Girls always went down a storm, plus TV themes like *Grange Hill* and *Inspector Gadget*. It's nostalgia: you don't need to think when you dance to it."

As a peripatetic DJ, he learned that every College bop had its own unwritten rules. He says: "It was important to know what the College anthem was. At Emma it was *Take On Me* by A-ha, and Caius demanded the theme from *Top Gun*. They'd end the night on that song, and you were in big trouble if you didn't have it."

"Then there was the New Hall dome, where they had a sound limiter installed. If you reached a certain volume, it would shut off the electricity for 60 seconds. But the problem with cheesy anthems wasn't the volume of the music, but the people singing along with it. Everyone would launch into the chorus of *Living on a Prayer*, the power would trip and we'd be in silence."

At Robinson – one of the few Colleges with a purpose-built space for JCR parties – the problem was heat, rather than sound. Former ents officer Alex Kennedy (Robinson 2009) says: "We had this basement next to the storm drain, where we'd put on bops each week. It wasn't the Ritz, but it had a bar and dance floor. But it also had a fire detector

that was set off by body heat when it got too sweaty, sending the porters running in."

Although relations with the College were cordial, Kennedy's fellow officer Martyn Statter (Robinson 2009) recalls one matter of contention. "The freshers' bop was originally called 'Corruption'," he says. "The College banned the name, so it was widely known as 'The Event Formerly Known as Corruption'. I looked at the Facebook page for Robinson ents today, and it still is!"

Hollie Berman (Murray Edwards 2016), one of two current ents officers at Murray Edwards, was elected on a platform of bringing back bops to the College's central dome after an enforced hiatus of several years. She says: "I think they stopped because of concerns about the artworks there. But we've promised to have at least one or two 'Dome Life' bops each term and we also put on bands in the bar."

Much of her workload will seem familiar to predecessors at any time during the past 50 years. "It's all the small details of planning an event: leaving enough time, budgeting correctly, doing all the appropriate health and safety checks. You need to have people on hand to deal with ticketing, monitoring the venue and cleaning up. And we want to make sure these events are as inclusive as possible and not just focused on drinking."

In the end, it's a weighty responsibility – to the College, to the JCR or Students' Union and to friends expecting a decent party. And when the particular challenges of throwing a party in historic buildings are factored in, it's a wonder that anyone is willing to carry the can at all. "One of our big worries was always the sound in King's main hall," says Anu Pillai. "The bass would make the stained-glass windows rattle, and there was this fear that we'd destroy a national monument. But as a 20-year-old student, perhaps you don't think too much about consequences." ©

**The new Vice-Chancellor says that he is excited – and ambitious – for Cambridge’s future.**

WORDS PAUL MYLREA

PHOTOGRAPHY CHRIS LOADES

# Stephen Toope, Vice-Chancellor

Professor Stephen Toope had already run one of Canada’s largest universities and was comfortably settled in a role heading up a prestigious school of global affairs. What could possibly tempt him away?

For the University of Cambridge’s new Vice-Chancellor, it was the chance to return to his academic roots. But the offer still came as a shock.

“When I received the call from the vice-chair of the University Council saying that I had been selected, my first reaction was one of incredulity. I simply did not expect that that would be the result,” said Professor Toope, newly installed in the Vice-Chancellor’s office.

That reaction is entirely in keeping with the new Vice-Chancellor’s self-deprecating style. But given his background, there was little doubt in the minds of those selecting a successor for Sir Leszek Borysiewicz that Professor Toope stood out from a global field.

His PhD in Cambridge followed a Harvard undergraduate degree in English history and literature, and two law degrees from McGill, where he went on to become the youngest ever Dean of the law school.

After McGill, Professor Toope headed up Canada’s independent educational charity, the Pierre Elliott

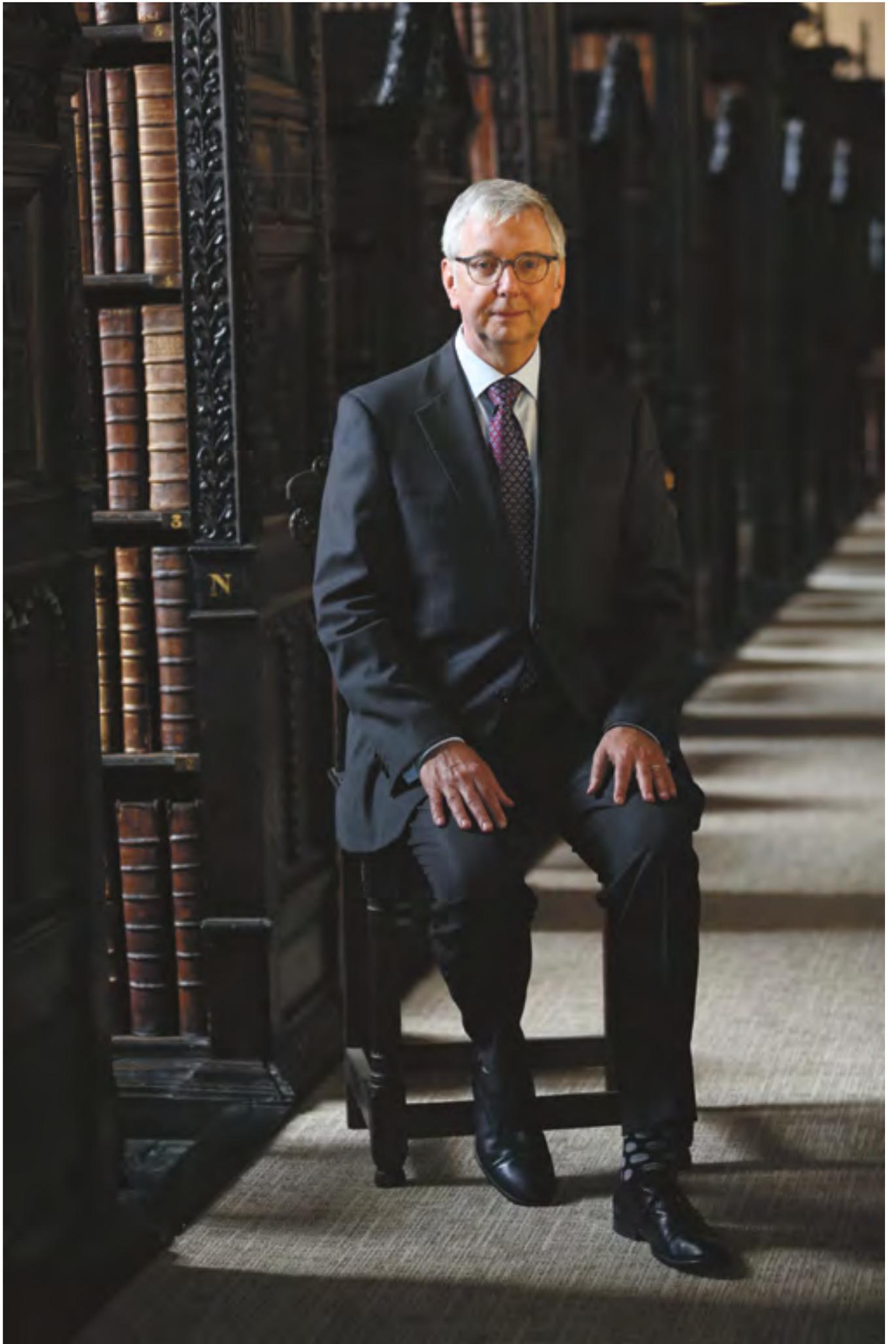
Trudeau Foundation, before taking over as President and Vice-Chancellor of the University of British Columbia.

Even as he carried out his administrative duties, he remained active in international law, through roles including his chairing of the United Nations Working Group on Enforced and Involuntary Disappearances. Indeed, it was a desire to return to a fuller academic engagement with his field that led him to take up the Directorship of the University of Toronto’s Munk School of Global Affairs.

But when a headhunter contacted him about the Cambridge role, it was too much to resist. “I didn’t even know they were looking,” said Professor Toope, but the call took him straight back to his days doing a PhD at Trinity College.

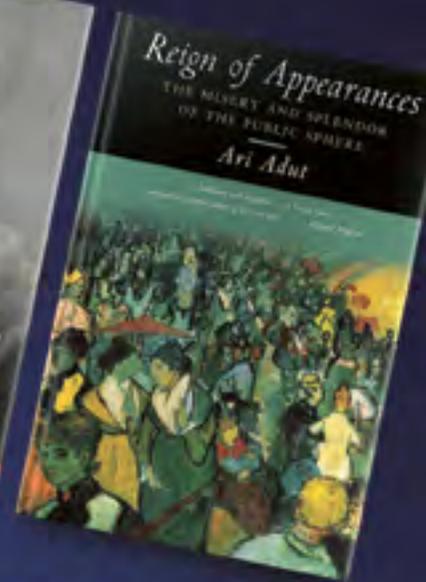
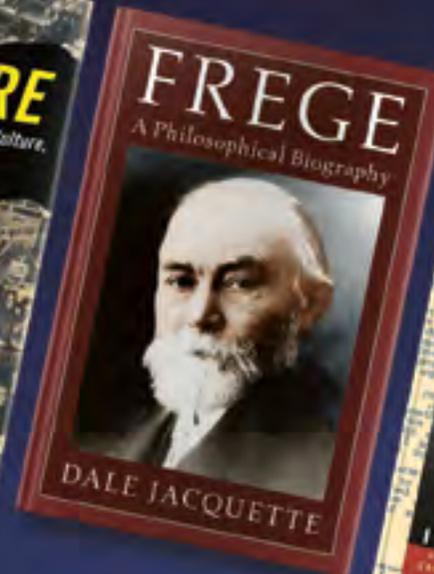
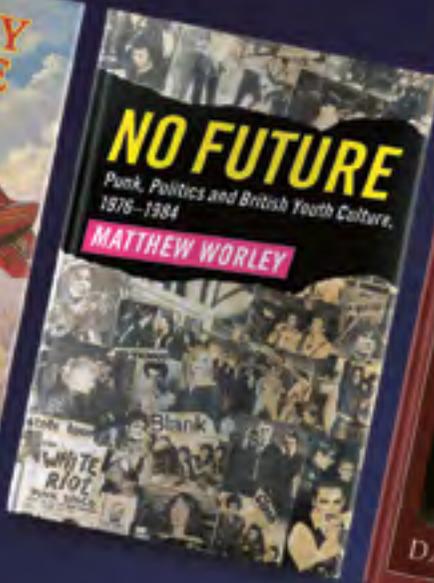
“My PhD was, for me, genuinely a magical experience. It was one of the reasons it was so easy for me to say ‘yes’ when I was first approached about the possibility of becoming Vice-Chancellor.

“I had a fabulous thesis supervisor, Sir Derek Bowett, who was tremendously gifted in his field in international law. I learned so much from him and I ›

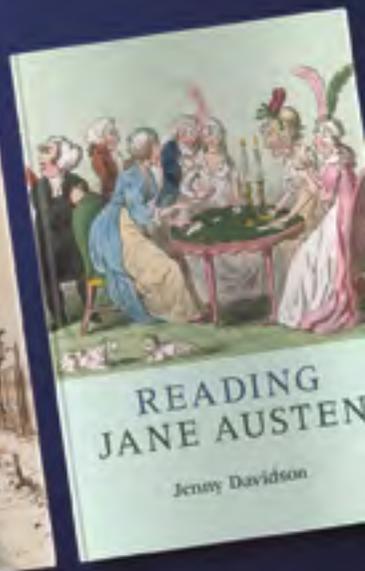
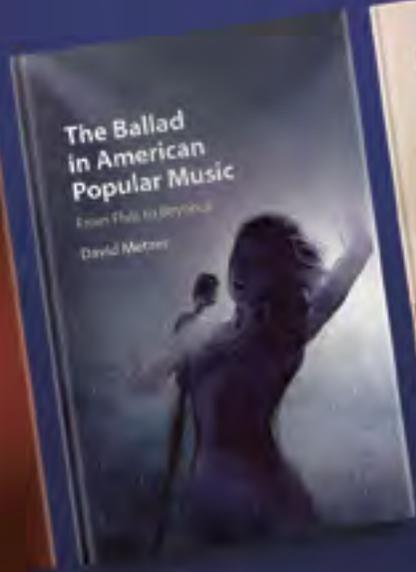
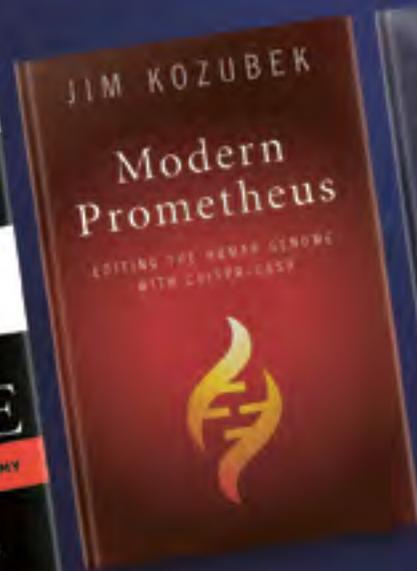
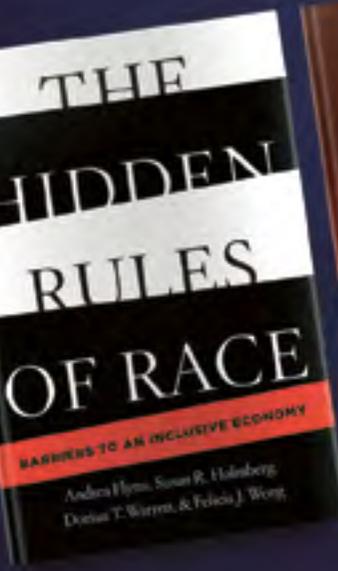




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# Highlights of 2017 from Cambridge



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**I inherited a clear set of principles – an obligation to offer one’s best, a refusal to accept the easy or the expedient path, a duty to truth, even if it is but seen through a glass darkly**

met many friends who remain some of my closest friends to this day.” Indeed, on the day of his installation, Professor Toope hosted a small lunch for his closest friends from those Cambridge days, other PhD students and their spouses. He describes it as “the most surprising, but wonderful, of reunions”.

His family was less surprised by the appointment, his wife, Paula, long ago realising that the quiet professor she thought she had married had turned into a distinguished academic leader.

Professor Toope was formally admitted as Cambridge’s 346th Vice-Chancellor on 2 October in a ceremony where he pledged – in Latin, of course – to perform his duties “well and faithfully”.

His appointment was announced over a year ago. He has used the time since then to meet key figures in and around the University, and to engage with alumni. But he has been careful not to join in public discussions before being installed. “I certainly didn’t want to become one of those people who takes on a job before he arrives. I was in a position of listening and learning.”

That ceremony in Senate House was the first opportunity for people to hear the fruits of that patient study. As well as paying tribute to his predecessors and the rich traditions of the University, Professor Toope was open about not just his own reaction to the role, but also the reaction of close friends.

“The most common response among people who knew me was: ‘Wow!’” he recalls. But these friends also challenged his timing, questioning whether the decision to take the role was wise at a time of unprecedented upheaval in Britain’s political life.

He knows that he faces tough challenges. But his record of steering institutions through challenging times speaks for itself – UBC board chair Bill Levine called his accomplishments as president “truly outstanding”. And despite the challenges, he was upbeat in his address: “I remain resolutely confident in universities’ ability to endure and contribute despite – perhaps even because of – the fast pace of change. Universities – and in particular universities with a global reach, like Cambridge – are uniquely positioned not only to cope with, but indeed to embrace, complexity.”

Professor Toope is in no doubt about the challenges ahead: the implications of Brexit, the debate about student fees – with its potential impact on university income – and the unrelenting pressure to widen access for students from disadvantaged backgrounds.

In keeping with the reputation gained at UBC for focusing on the student experience, Professor Toope is clear about one urgent issue. “We face more and

more complexity in dealing with student issues such as mental health, inclusion and health generally.”

But he believes Cambridge – with its college structure – offers unique advantages in providing the pastoral care to support students and help them achieve their potential. Supporting this and driving wider access, he acknowledges, will require philanthropic support.

“My father was an Anglican priest. We were not wealthy. So my whole academic career was based on scholarships. I couldn’t have gone to any of the universities I went to without that support,” said Professor Toope, who led a successful fundraising campaign at UBC, which surpassed its 1.5bn Canadian dollar (£900m) goal.

That family background provided more than a commitment to scholarships, bursaries and philanthropy. It gave him a deep sense of the need to serve the community.

“I also inherited a clear set of principles – an obligation to offer one’s best, a refusal to accept the easy or the expedient path, a duty to truth, even if it is but seen through a glass darkly,” he said in his inaugural speech.

The apparent earnestness and severity of the statement is belied by the infectious enthusiasm and sense of fun that comes across in every meeting with the University’s new leader.

Professor Toope and his wife, Paula Rosen, a speech pathologist, will live in Cambridge, but their three adult children, and a recently born granddaughter remain in Canada. So the return to Cambridge is exciting for the new Vice-Chancellor, but tinged with a little regret. “Moving away from a gorgeous little one has been hard for me and Paula.”

But right now, the excitement predominates. “Because I was here so long ago, I really had a view of Cambridge that was rooted around the river and the old Colleges. Coming back, I was gobsmacked at the evolution of Cambridge and changes to everything it seemed to embody back then.”

Despite his surprise at the cranes looming over the city, and the dramatic changes the University has seen since he left, there is an underlying familiarity to all alumni coming back.

“It is a wonderful feeling – to come home, in a sense. It closes a circle that has given me friendships, a gift of knowledge and encouragement for my career. This is going to be a wonderful period of learning for me.”

*To read the Vice-Chancellor’s speech in full, visit: [cam.ac.uk/newvc](http://cam.ac.uk/newvc); and to see a special video message to alumni, visit: [alumni.cam.ac.uk/vcmessage](http://alumni.cam.ac.uk/vcmessage).*

# The BEST WORDS in THEIR BEST ORDER

**No set. No music. Just you – and the mic. No wonder spoken word performers are taking the cultural world by storm.**

WORDS VICTORIA JAMES  
LIVE DRAW LUCY JONES

In the small space of the ADC bar, a student poet is standing alone speaking into a mic. As he finishes his poem, the room bursts into applause. This is Speakeasy, an opportunity for everyone, from experienced poets to novices, to try out this electric form: spoken word.

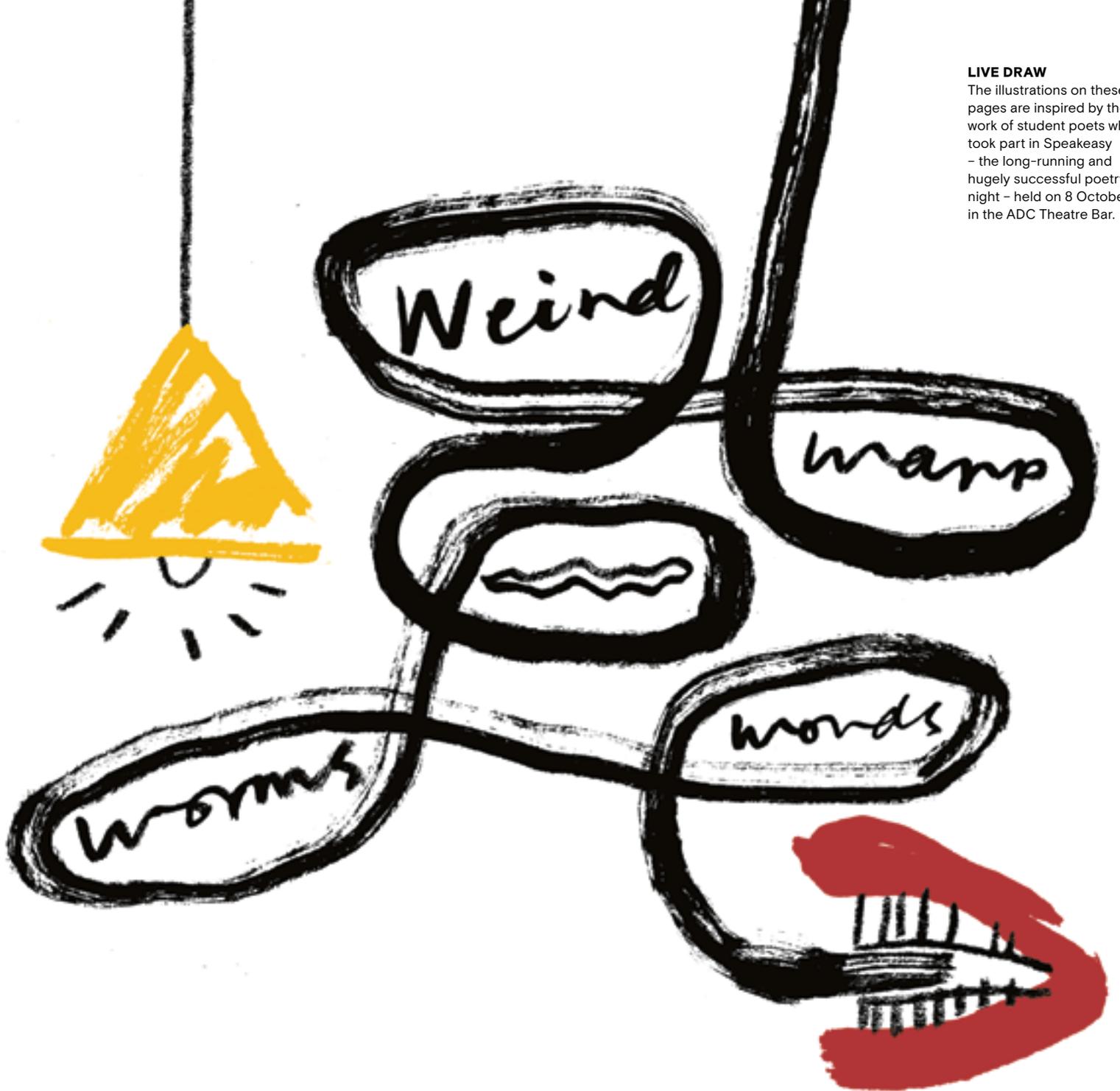
Indeed, from Hollie McNish (King's 2001), whose latest published work, *Nobody Told Me*, has just won the Ted Hughes poetry award, to George Mpanga (King's 2010), better known as George the Poet, who was recently invited to pen a tribute to Sir Mo Farah, Cambridge's spoken word author-performers are ensuring that poetry is hotter than it's been since Byron sold 10,000 copies of *The Corsair* in a single day and became literature's first rock star.

Yet despite the millions of hits on YouTube, packed audiences at hip London venues and invitations to address parliament, this is an art form that frequently tackles resolutely unglamorous subjects, from the demonisation of migrants to breastfeeding babies in grim public loos. And its big ideas are enacted in intimate spaces: small gig venues or even someone's room, via the computer or phone screen. Spoken word is tearing up the rulebook on what poetry is and what it can do.

"It's not quite acting and it's not quite being yourself," says Megan Beech (Newnham 2015). "What people love about spoken word is the idea that it is fleeting. Spontaneous. It has sparked the popular imagination." Beech is a PhD student at

#### LIVE DRAW

The illustrations on these pages are inspired by the work of student poets who took part in Speakeasy – the long-running and hugely successful poetry night – held on 8 October in the ADC Theatre Bar.



Newnham, but she's also a poet, whose collection *When I Grow Up, I Want to be Mary Beard* was one of *The Guardian's* 'Best Books of 2014' – but its poems didn't begin life in print, but in performance.

"I have page fright, not stage fright," says Beech. "I don't like to commit to paper. Poetry should be rowdy. Unexpected."

This is not the poetry of the textbook. Spoken word junks ponderous hexameter in favour of vigorous, supple rhythm (and occasionally rhyme) that has the immediacy of speech. It draws as much on the traditions of hip hop as it does on the Romantics. And it's performed direct to an audience, with nothing more than a microphone as intermediary. At its finest, it's an adrenaline shot to the heart.

"Audiences like a less rehearsed piece," says Suhaimah Manzoor-Khan (Queens' 2013), winner of numerous poetry slams and whose work has been viewed more than a million times on YouTube. "When you hear somebody talking about something they care about, it's just more personal. It's like they're sharing something with you, and it creates an implicit agreement: I will listen to you sharing that personal pain."

Manzoor-Khan's poetry sprang directly from her pain – thanks to the unexpected suggestion of a College welfare officer.

"In my second year as an undergraduate, my mental health was in a bad place, and the welfare adviser said to me: 'What's the thing you've always wanted to do, but never tried?'" That thing was performance

poetry, so when Manzoor-Khan found her way to an open-mic event at the ADC, it was a transformative moment.

"I'd written a lot for myself in the past," she says. "It's always been part of how I process my emotions. But with spoken word you're given this platform where everyone has to listen to you. And that was a platform I didn't feel I'd had before."

This summer, her platform was the national finals of the Last Word Festival poetry slam, held at London's Roundhouse. And her *This is Not a Humanising Poem* was placed second. It's a powerful denunciation of the idea that Muslims need to be made relatable and recognisable, to win acceptance in Western societies. "*This will not be a 'Muslims are like us' poem,*" she >

warns. *“Instead, love us when we are lazy. Love us when we are poor. Love us high as kites, unemployed, joy riding, time wasting, failing at school.”* The lines *“if you need me to prove my humanity, I’m not the one who’s not human”* drew rare, mid-performance applause from the audience. The poem went on to be broadcast on BBC Radio 4’s *The World Tonight*, and now Manzoor-Khan finds herself invited to perform everywhere from music festivals to mosques and youth clubs.

One of Manzoor-Khan’s inspirations is the American poet, civil rights activist and intersectional feminist, Audre Lorde, who famously declared: *“I have come to believe over and over again that what is most important to me must be spoken, made*

verbal and shared, even at the risk of having it bruised or misunderstood”. And the current prominence of spoken word poetry is closely associated with politics, self-expression and the passion of the millennial generation.

Spoken word is “about having a message, it’s definitely politicised,” says Beech. And there’s no mistaking the political alignment of its practitioners. “I don’t see any right-wingers wowing crowds with performances about not letting women have abortions,” she says. But it would be a mistake to see spoken word as the exclusive cultural property of urban millennials. Ely Lyonblum (Hughes Hall 2012) is a performance ethnographer who has worked within the

spoken word community of Halifax, Nova Scotia. Though the cultural identity of the region, as presented to tourists, is “geared toward the Scottish and Irish connections of maritime Canada”, he says the city boasts a vibrant spoken word community associated with historically Black neighbourhoods and LGBTQ+ activism.

“Every night,” Lyonblum explains, “poets were invited to speak their minds, speak truth to power, demonstrate their commitment to social justice, advocacy and to marginalised communities.”

And while personal, lived experience and opinion are the core of spoken word, Lyonblum believes that, collectively, the practice gives voice to an entire community.



“The events served as a place for anyone to express themselves,” he says. “In this way, spoken word operates in a similar way to a protest or a community meeting.”

One thing that spoken word practitioners have in common, from Nova Scotia to Newnham, is the central role of technology. “Spoken word has a huge technological presence,” says Lyonblum. “While spoken word is still meant for a live audience, it has enjoyed tremendous success online and participates in the ‘viral video’ phenomenon.”

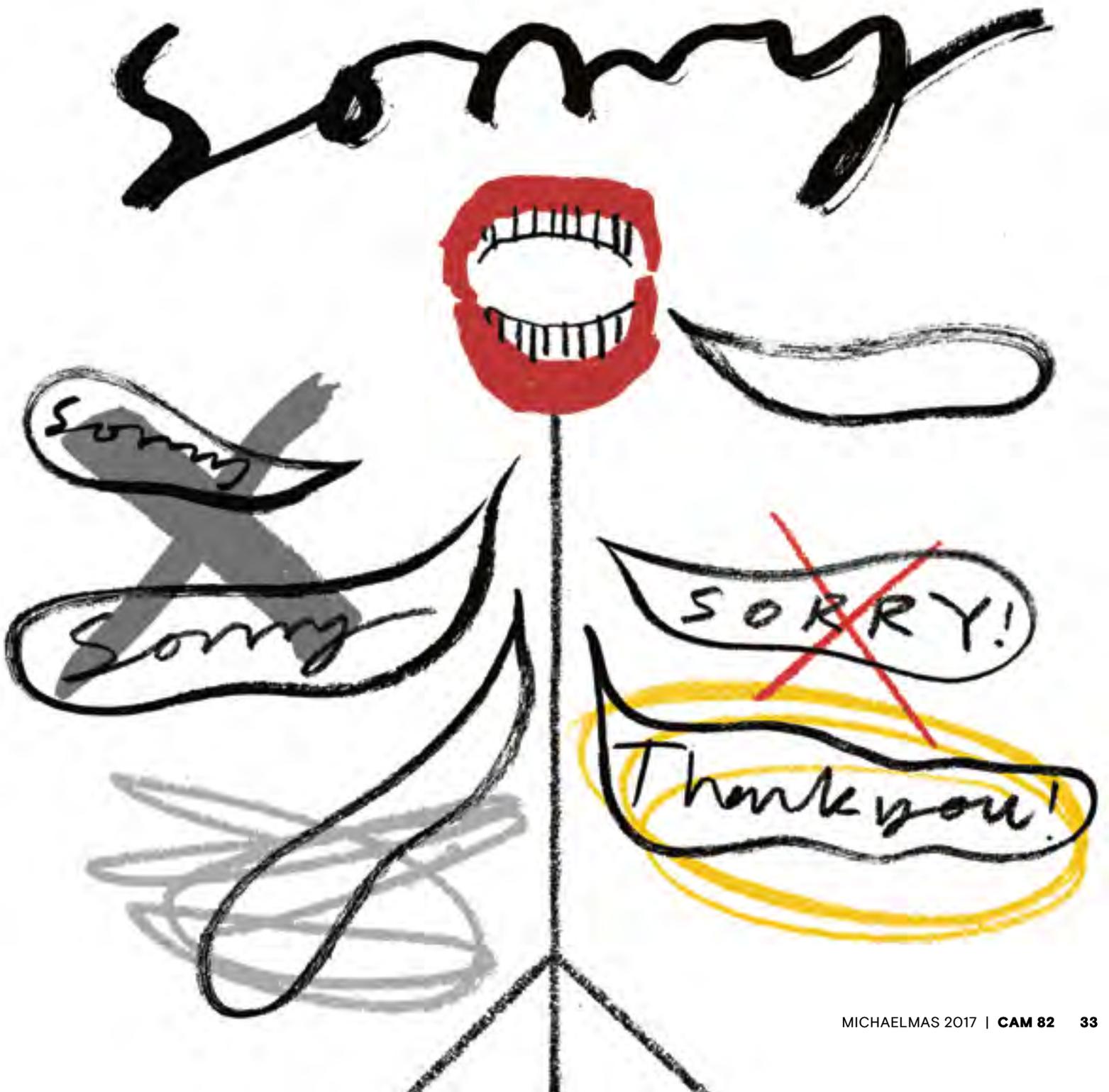
“I think YouTube has a lot to do with it,” agrees Fay Roberts, change manager at Cambridge Assessment and Artistic Director of Spoken Word at the largest

Edinburgh Fringe organisation, PBH’s Free Fringe. Roberts provides platforms for people to perform and be published in Cambridge and nationwide, including the In Other Words Festival and the Cambridge Bard initiative. “Slam poetry has a time limit of three minutes, which is perfect for sharing,” she says. “And it’s intimate, too. Look at Hollie McNish. She’s right up there in the top echelons of spoken word, and the straight-to-computer-monitor performances that she did were so impactful.”

McNish, winner of the 2009 UK poetry Slam Championship, has reached an audience through YouTube that many writers and performers can only dream of. Her poem *Mathematics* (a smart and

passionate unpicking of migration statistics, asserting that “*most times immigrants bring more / Than minuses*”) has been viewed more than two million times. *Embarrassed*, in which McNish rejects the cultural shaming of breastfeeding, reached 1.4 million. “*So no more will I sit on these cold toilet lids / No matter how awkward I feel as she sips / Cos in this country of billboards hoarded with ‘tits’ / I think I should try to get used to this*” it concludes, defiantly.

“I was asked by a teacher at a gig to put my poems on YouTube so that he could use it in class,” says McNish. “So I did! That’s the only reason I started.” For her, the particular gift of video is its accessibility. “Tickets can be expensive and going to venues you’re unsure ›



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of can be intimidating. But YouTube is not intimidating. It's free and can be accessed by a lot of people, as long as you have the internet. So yeah, I think it democratises these media and cultural structures a little."

Making spoken word as accessible as possible is essential, says Fay Roberts, who battles to find venues in a city where obstacles include everything from lack of wheelchair access to anxieties that revising students might be disturbed. "Accessibility isn't just physical, but socio-economic," she says, explaining that spoken word can reach out and touch all parts of society, "the homeless; those recovering from addiction. We'll accept anyone – all art is welcome."

Spoken word poetry's newfound prominence at the heart of contemporary culture is associated chiefly with the

young, urban and politically engaged slam scene. George the Poet, who blends poetry with rap, has collaborated with Nike and Formula One and been shortlisted for the BRIT awards, while also running school workshops in underprivileged communities.

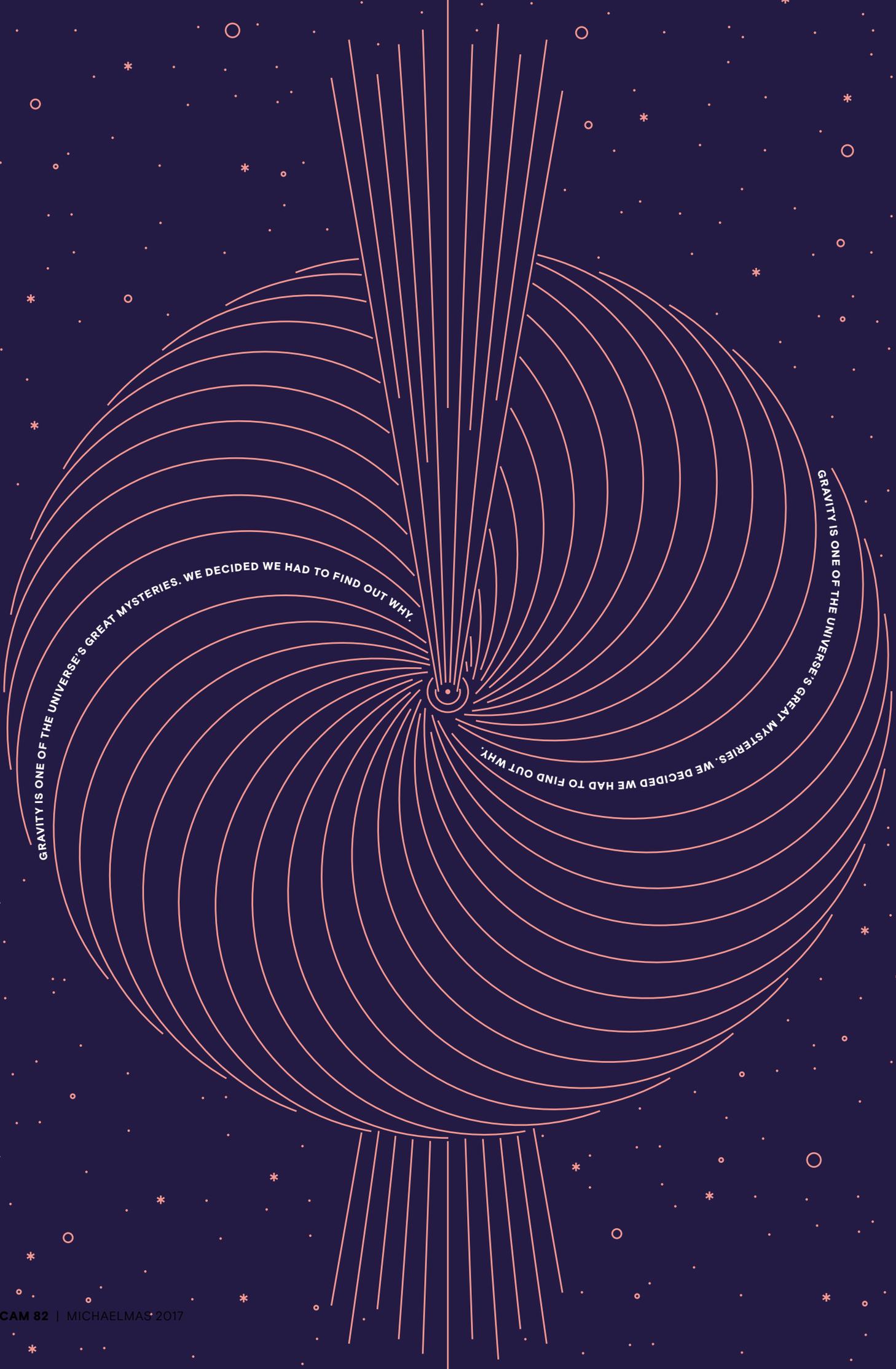
Yet as Roberts has found, the form is as diverse and rich as its traditional counterpart. "For example, there is a huge difference between city and rural. In the fens, you're just 10 miles from Cambridge, but the poetry being produced there is often rural, natural, historical, elegiac – about a single bird feather."

Indeed, drawing distinctions between poetry for page or for stage seems increasingly pointless. As scholar-poet Megan Beech observes, writers have been performing their work for a very long

time indeed. Dickens gave condensed performances of *A Christmas Carol*. "It's about four hours to read, but he got it down to one and a half. He cut out pages from the book, added in dialogue, stage directions."

Each generation of poets finds its own voices and its way to an audience, and it seems a sure bet that the canon studied by future Cambridge students and scholars of poetry will include the work of its current crop of spoken word practitioners.

They will find in its videos and printed pages an experience that Roberts describes as "ephemeral, visceral – you feel it in the moment". "Poetry should make you want to get up off your chair and stomp and shout," says Beech. With spoken word here to stay, the lecture halls and libraries of the future may prove rather noisier than they are now. ©



GRAVITY IS ONE OF THE UNIVERSE'S GREAT MYSTERIES. WE DECIDED WE HAD TO FIND OUT WHY.

GRAVITY IS ONE OF THE UNIVERSE'S GREAT MYSTERIES. WE DECIDED WE HAD TO FIND OUT WHY.

# Think you know what gravity is? Think again. New research is revealing how little we know about this most mysterious of forces.

WORDS PETER TAYLOR WHIFFEN

ILLUSTRATION LA TIGRE

Rumours had been flying round for months. Speculation in tea rooms around the world. And at some point towards the end of 2015, Dr Ulrich Sperhake, Lecturer in Theoretical Physics at the Centre for Theoretical Cosmology, began to realise that if this was just a test, he would have heard. Which meant that the rumours must be true. “It was like seeing my football team winning the FA Cup. For the person on the watching shift when it happened, it must have been like winning the cup and Wimbledon wrapped into one!” he says. “Now, I feel more like: ‘Wow. This is a new era in observational physics. Man, how often does that happen?’”

What was the cause of such once-in-a-lifetime excitement? Simply, an extended chirping sound, lasting less than a second, emitting from a monitor in Louisiana, followed by another, identical chirp, heard seven milliseconds later in rural Washington. Twenty milliseconds of data that enabled scientists around the world, including Cambridge researchers working with the Laser Interferometer Gravitational-Wave Observatory, to listen as two mind-blowingly large black holes, 1.2 billion light years away, circled around each other, accelerated from 30 to 250 times a second and then collided, creating one enormous black hole. The impact caused a ripple in space-time – a gravitational wave.

Their findings – the first-ever detection of a ‘binary’ black hole, the proof that gravitational waves exist along with a ripple in the space-time continuum that was predicted by Einstein back in 1916 – unlock a new door into our understanding of gravity. And that’s

important, because while most of us know about Newton and the apple, gravity remains the great cosmic mystery. Although it was the first force to be described mathematically (by Isaac Newton in 1687), we still do not know how it really works – the best modern description is the general theory of relativity. We know what it does, but not what it is. Which is why Cambridge researchers are working on a number of major projects that aim to find out more about the nature of gravity.

But to start with, here’s what we do know. First, Newton’s law of gravitation tells us that any two objects in the universe exert a force of attraction on each other. The greater the mass of the two objects and the shorter the distance between them, the stronger the pull of the gravitational forces they exert on each other.

We also know that gravity can work in a complex system with several objects. For example, the Sun exerts gravity on all the planets, and each planet also exerts a force of gravity on the Sun (as well as all the other planets). We know that black holes have so much gravity that light can’t escape their pull, and that their gravitational fields are so powerful that they produce gravitational waves when they collide with each other.

This is why, in the Standard Model of the universe, gravity is described as one of the fundamental forces (alongside electromagnetism, weak nuclear force and strong nuclear force). However, Einstein’s theory of relativity tells us that gravity is more than just a force: it is a curvature in the space-time continuum. In other words, space is not nothing but something, meaning that space must curve around the mass of an object.

But as to what gravity actually is – well that’s where the answers end. Which is why Dr Sperhake is so interested in what happens when black holes collide. “Finding [gravitational] waves means we can observe events that were not clearly identifiable by studying electromagnetism, as it doesn’t exist in a black hole. But gravitational waves can give us that information.

“My work involves looking at the data stream to see if this is all compatible with general relativity and our best guess parameters. To do that we must understand gravitational wave systems in other theories of gravity.”

Richard McMahon, Professor of Astronomy, is focused on determining if and how gravity deviates at the far edges of the universe. His team scans the skies for gravitationally-lensed quasars – quasars whose light is amplified and distorted by matter (such as a cluster of galaxies) between the quasar and the observer.

“The mystery of gravity is that it is an attractive force – it’s actually very weak compared to the other three main forces, but while the others can be both positive and negative and cancel each other out, gravity is attractive, and therefore cumulative, with no way to cancel it out. By discovering quasars and measuring relative distances of the background sources, we can learn if the gravitational force changes.”

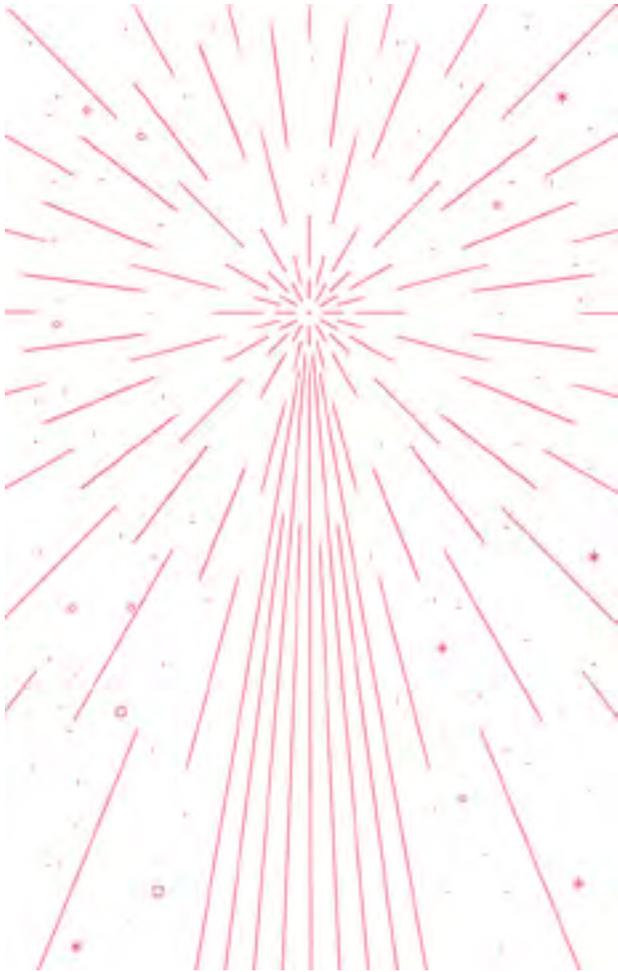
Professor McMahon, one of the team of scientists who made the unexpected discovery, in 1998, that the expansion of the universe was accelerating, says the current challenge is about trying to measure gravitational force over a huge distance. “Newtonian gravity has been measured on small scales, such as that of the solar system. But the discovery that the universe is expanding at a greater rate means the Newtonian model is violated at large distances. That could mean that gravity there is weaker or that this accelerated expansion

## SUPERMASSIVE BLACK HOLES

...are the biggest of the black holes so far discovered – they sit at the centre of almost all currently known massive galaxies. The largest supermassive black hole known to science is at the heart of the supergiant elliptical galaxy NGC 4889 (also known as Coma B) and is 336 million light years away from Earth. It has a mass estimated at 2.1 billion solar masses, about 5,000 times the mass of the black hole at the centre of our galaxy.

### BLACK HOLE WINDS

Black holes feed off material – mostly gas and dust – contained within the ‘accretion disk’ which surrounds them. But when they eat too much, the accretion disk shoots out hot streams of gas. These streams are black hole winds, reaching temperatures of millions of degrees, travelling at a quarter of the speed of light, with enough power to shut down star formation.



### QUASARS

NASA defines a quasar as ‘a very bright object in space that is similar to a star’. Similar, but not the same. Quasars give off more energy than a hundred galaxies, are a trillion times brighter than the Sun, and larger than most solar systems. Sadly, though, they are still not quite bright enough to be seen with the naked eye from Earth.

is caused by extra energy – a dark energy we haven’t yet confirmed or identified. And if this is the case, where does this dark energy come from?”

The answers may be found in quasars. “We look at deep optical and infrared images of the sky,” says Professor McMahon. “We measure distance by looking at multiple images of the brightness of these quasars to see if it’s constant, and [then] measure the length of time [light] takes to get to Earth – we’re measuring delayed time five billion light years away.”

Only a handful of quasars have been found so far, but as more and more are discovered, more data becomes available. “We need to find around 100 quasars to really start to build up a picture,” he says. “But that will happen in the next five to 10 years. We’ll monitor them every day – and that will really open up our understanding.”

Dr Debora Sijacki, Reader in Astrophysics and Cosmology, is interested in the formation and evolution of cosmic structures, including dark energy, dark matter and baryons (a subatomic particle comprising three quarks). Her theoretical modelling has contributed to the international Illustris Project, which merged a state-of-the-art numerical code with a comprehensive physical model to produce the largest, most accurate, highest-definition cosmological simulation thus far of how galaxies were formed.

“One of the goals is to understand the nature of dark matter and dark energy. The more we understand the physics, the closer we are to understanding gravity and what dark energy and dark matter really is,” she says.

## DARK MATTER

Dark matter is a hypothetical type of matter, which does not emit or interact with electromagnetic radiation, such as light, and is therefore invisible to the entire electromagnetic spectrum. Although dark matter has not been directly observed, its existence and properties are inferred from its gravitational effects, such as the motions of visible matter, gravitational lensing, its influence on the universe's large-scale structure, on galaxies, and its effects on the cosmic microwave background.

“In that respect, Illustris is a real breakthrough. Our previous models gave us an idea of how galaxies came about, but their properties did not match reality. Now, thanks to Illustris, we can see the full evolutionary picture of the universe and the emergence of a realistic galaxy population.”

Dr Sijacki adds: “It’s like tuning in a TV – we have a little bit of a fuzzy picture, but it’s a picture that will get clearer. I’m creating novel models which can follow self-consistently the formation and growth of cosmic structures, including dark energy, dark matter and baryons. It is very challenging to model theoretically, and the full complexity of these processes still needs to be unravelled, but ultimately it will allow us to understand the cosmogony of our universe.”

Professor Andy Fabian agrees that black holes may hold the key to understanding gravity. His team at the Institute of Astronomy combines theoretical modelling with access to major space-based observatories – including the European Space Agency’s XMM-Newton and NASA’s Chandra and NuSTAR telescopes – to investigate some of the highest energy processes powered by gravity. His research group have made significant recent discoveries. “Black holes are the most extreme of objects, where gravity shuts off a whole part of the universe,” he says. “It’s curious that we see the most intense radiation and luminosity adjacent to something that is completely black. By measuring the mass and spin of black holes we can see how they affect their environment. Energy released by a supermassive black hole at the centre of a galaxy pushes gas out of the galaxy, even though the central black hole is only one billionth the size of the galaxy. It’s like an orange controlling a volume the size of the Earth.

“Last year we took an extended look through the XMM-Newton at a black hole as it was releasing one of the fastest winds we have ever seen. Black holes feed off the surrounding material and sometimes consume too much gas, which is then released as an ultra-fast wind. Matter flows out at a quarter of the speed of light, and we could track how quickly its speed and composition changed with time.

“It’s a eureka moment when something like that happens. You’re all looking at the different sets of data and someone might notice the outflow initially in the iron line, then someone else says: ‘I can see it in the silicon line.’ It wasn’t the first time we’d seen outflow in



such an object, but the first time it was observed to vary according to its brightness. This is either because the intense radiation had completely ionized the matter, rendering it transparent, or it could be a geometric effect. But this, together with the observed Doppler shifts, gravitational redshifts, time lags and other signatures of strong gravity in the X-ray data (all of which originate from very close to the black hole), gives us a huge information boost that we’ve never had before. With it, we can better understand how matter flowing ›

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### GRAVITATIONAL WAVES

In 1916, Albert Einstein came up with the concept of ripples in space-time, or gravitational waves. His theory was that great big things in space – black holes, for example – create these ripples, like a stone thrown into a pond. For almost half a century, scientists were uncertain whether gravitational waves were physically real or just an unphysical coordinate effect.

Einstein himself went back and forth between the two viewpoints and it was only after his death that the question was settled in favour of gravitational waves being a genuine physical feature. In September 2015, physicists working on the Laser Interferometer Gravitational-Wave Observatory (LIGO) experiment observed gravitational waves for the first time, created by two black holes colliding.

into a black hole releases so much energy, and then how some of that matter powers very fast streams of matter. We have so much new information to work with.”

Anthony Lasenby, Professor of Astrophysics and Cosmology at the Cavendish Laboratory, is observing the cosmic microwave background (CMB) – the residual electromagnetic radiation from the Big Bang, which fills the entire universe – using data generated by Planck, the ESA space-based observatory.

“The data so far revealed by Planck gives us our most precise and quantitative understanding of the cosmos,” Professor Lasenby says. “A main problem in physics is how you reconcile gravity with the fundamental forces of quantum mechanics (electromagnetism and weak and strong nuclear forces). Observation of the CMB helps us to do this by, for example, enabling us to test predictions from modified gravity theories.

“Understanding the amount of dark energy there is the big focus of the CMB’s contribution to understanding gravity,” adds Professor Lasenby. “The data from Planck can tell you how much dark energy there is, but we still don’t know what it is. The combination of Planck data with other cosmological data to constrain whether the properties of dark energy change with time will be vital in tying down its nature.”

That conflict between gravity and quantum mechanics recently hit the headlines when Dutch Professor Erik Verlinde theorised that gravity isn’t a fundamental force at all, but an emergent phenomenon that is merely a byproduct of other quantum forces – and that gravity around black holes attributed to dark matter is actually an effect of dark energy.

The theory would cast serious doubt on Einstein’s theory of relativity – although it has as many detractors as supporters.

Nonetheless, many scientists believe recent discoveries will bring us some answers and a greater understanding of gravity – most likely within the next five to 10 years.

“Gravitational waves and quasars will bring so much data, and we’ll have so much more sensitive equipment, that I’ll eat my hat if we don’t get a major surprise soon,” says Professor McMahon. “Even in the worst case, we’ll have so much more data to confirm what we already know.”

Professor Fabian is not so sure. “Einstein’s theory of general relativity and gravity seems to still fit – which makes it all the more remarkable, 100 years on. It would be wonderful to see something that proves it’s wrong, but all our evidence thus far is that he was correct.”

Dr Sperhake would love to see another seismic breakthrough. “A possibly spectacular milestone would be a smoking gun signal pointing towards the need to modify Einstein’s theory. From a theorist’s point of view, it would be great to see such a signature pointing beyond general relativity – but I don’t think that is so likely.”

And if they do find one? “It still doesn’t necessarily mean Einstein was wrong – like Einstein’s theory didn’t make Newton wrong. The Moon landing was calculated with Newton’s theory,” he points out. “Any new discoveries will simply modify the theory.” And gravity – well, for now, at least, gravity remains a mystery ☹

*To read more, visit [www.astro.phy.cam.ac.uk](http://www.astro.phy.cam.ac.uk) or to find out more about supporting Cambridge research, visit [philanthropy.cam.ac.uk/giving/physics](http://philanthropy.cam.ac.uk/giving/physics)*

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## It leaves you with a feeling – like listening to a snippet of music

*Bridget Kendall* is Master of Peterhouse.



### 2. NOTHING IS TRUE AND EVERYTHING IS POSSIBLE PETER POMERANTSEV

Pomerantsev was brought up in the West but worked as a television producer in Russia in the 2000s. Putin realised that TV was a way to shape people's views and there was a huge demand for new programmes. Pomerantsev saw this heady mix of cynicism, experimentation and manipulation from the inside, understanding that in the postmodern world you don't need to have one truth, you can keep changing it, and as long as you're emphatic enough people will go with you. That's so relevant to what we're looking at today, particularly in the United States.

### 3. SECOND-HAND TIME SVETLANA ALEXIEVICH

Svetlana Alexievich won the Nobel Prize in Literature last year. She's from Belarus and writes about trauma in the Russian-speaking world

in the last half century. She uses polyphonic extracts of hundreds of interviews that she puts together like a patchwork. The book covers the sudden unexpected collapse of the Soviet Union: it's a profound commentary drawn from the words of the people themselves. It leaves you not with a coherent narrative but more of a feeling, like listening to a snippet of music.

### 4. NOTES FROM UNDERGROUND FYODOR DOSTOEVSKY

I first read this novella when I was at university studying Russian. It's not so much a story as a rant from the perspective of an unnamed man who is living underground. It's Dostoevsky's attempt to take on the utilitarians and say rational utopia isn't enough for the human condition. In literature, the anti-utopian challenge is familiar to us from George Orwell's *1984*, but Dostoevsky was there first and I always think how far-sighted he was.

### 1. FIRST PERSON VLADIMIR PUTIN

This book was published in 2000, the year Putin became president. He sat down with three Russian journalists over the course of three days and answered their questions pretty frankly. A lot of it's personal: about his childhood, how he became a spy, and how he was caught on the hop in Germany when the Berlin Wall fell. Of course, this is a self-portrait, but it's still one of the best insights into who he is and where he came from.

### 5. ONE DAY IN THE LIFE OF IVAN DENISOVICH ALEXANDER SOLZHENITSYN

This is Alexander Solzhenitsyn's masterpiece, a story of one day in the life of a prisoner in the Stalin Gulag – the cold, the petty squabbles with other prisoners and how a good day is when you get a bit more bread. Solzhenitsyn paints a vivid picture of the whole system, based on his own experiences. It was published in the Soviet Union in 1962 and was a total sensation. It was also a sensation in the West and a revelation to me when I caught up with it years later.

*Bridget Kendall was previously the BBC's diplomatic correspondent. Her book, The Cold War: A New Oral History of Life between East and West, is published by Penguin.*

PHOTOGRAPHY: REEVE PHOTOGRAPHY



## Applying to Cambridge

Against a background of changing GCSEs and big data, *Dr Sam Lucy, Director of Admissions for the Cambridge Colleges*, explains just exactly what it is like to apply to Cambridge today.

Whether it was last year or last century, everyone remembers their Cambridge interview. The sweaty palms. The curveball question. That slightly giddy feeling you get when you realise that you might, after all, have done, maybe, okay.

But while today's candidates may feel the same, the process for the intake of 2018 will be firmly twenty-first century. So, against a background of changing GCSEs and big data, Dr Sam Lucy, Director of Admissions for the Cambridge Colleges, explains just how it works.

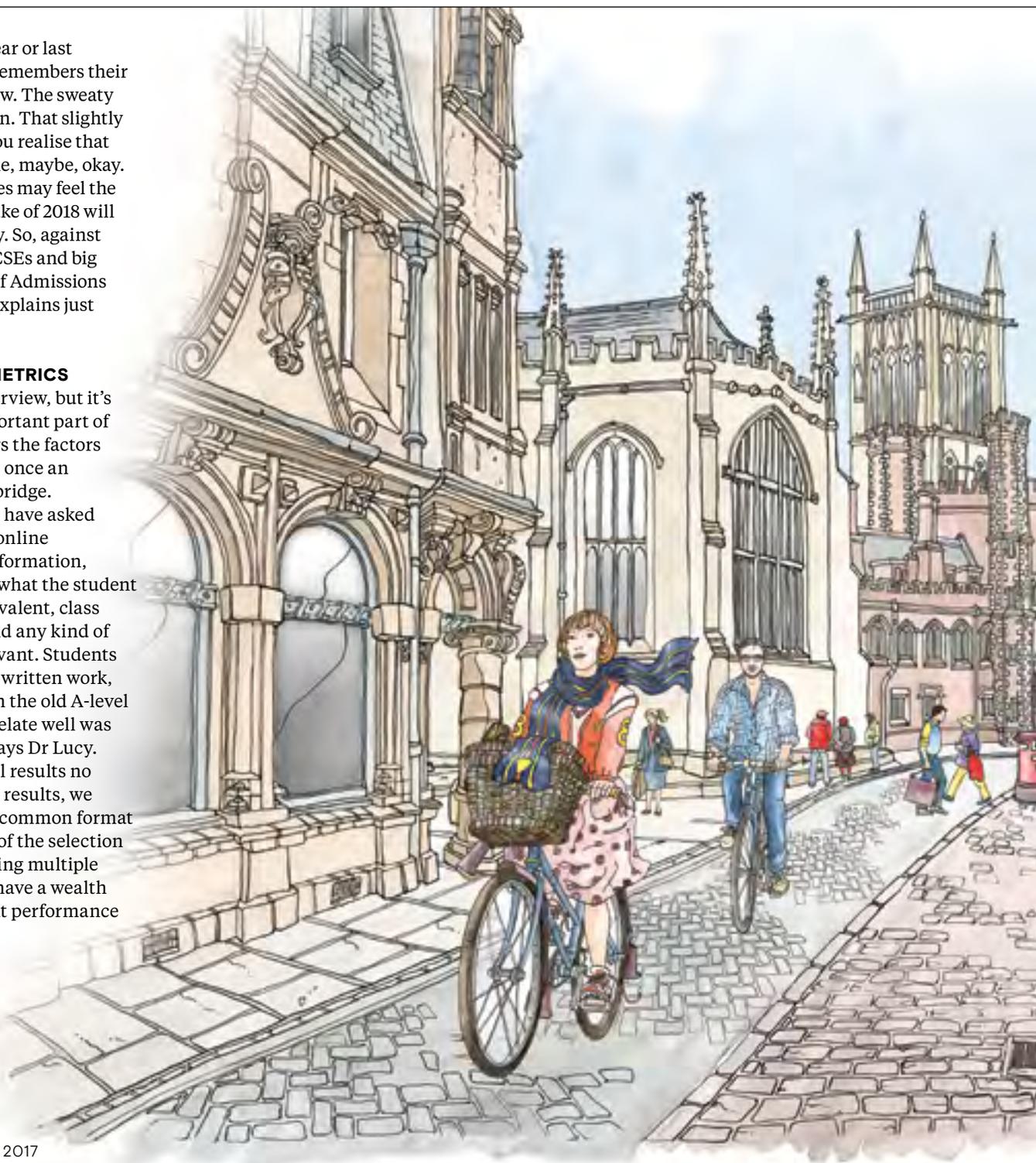
### THE ROLE OF DATA AND METRICS

Data hasn't replaced the interview, but it's become an increasingly important part of the mix, as research uncovers the factors which correlate with success once an applicant is actually at Cambridge.

"For a number of years, we have asked applicants to fill in an extra online questionnaire to get more information, including questions around what the student is studying at A-level or equivalent, class size, teaching difficulties, and any kind of AS level performance, if relevant. Students may also be asked to send in written work, such as school essays. Within the old A-level system, what seemed to correlate well was performance in AS-levels," says Dr Lucy.

"However, as most AS-level results no longer count towards A-level results, we have introduced a system of common format written assessments as part of the selection process. It's all about collecting multiple indicators, so that selectors have a wealth of information to supplement performance in interview."

ILLUSTRATION: EMMA KELLY



“Admissions used to be seen as slightly mysterious – today the University uses everything from blogs to YouTube to ensure applicants have a real sense of what the process entails”

### PUTTING APPLICANTS IN CONTEXT

The University has its own schools database, which holds information about the average GCSE and A-level performance. This enables admissions tutors to see where a candidate sits within their school context. “But we also look at other factors,” says Dr Lucy. “We would always flag if anyone has spent any time in the care system, if they have declared any extenuating circumstances (for which we have a special form), if they are at a low-performing GCSE school, or if their home postcode falls into certain geodemographic groupings or is an area of relatively low aspiration.

“It just ensures that, once again, you have a good sense of the circumstances in which that person has attained that particular educational profile.”

### TRANSPARENCY IS KEY

The admissions process, says Dr Lucy, used to be “slightly mysterious”. These days, the University is taking advantage of the internet and social media, using everything from student blogs to YouTube videos to give applicants a sense of what it’s really like. This means all the information is available to everyone, wherever they study, and strongly discourages the use of commercial companies who profit from selling admissions advice. “We are always reviewing the systems and trying to make sure that it is a transparent process,” says Dr Lucy. “We don’t want people to be deterred because they can’t find the right information. And we don’t want people paying for what is usually bad advice.”

### LIKE FOR LIKE

Most candidates are asked to do a written assessment either before interview or at interview. It’s partly to replace the information that AS level results used to give – academically, all the University has to go on now is GCSE results and A-level predictions. But it’s also a way of comparing like for like at a time when more applications are coming from outside the UK than ever before. “In any one year you are probably dealing with more than a hundred different educational systems and trying to look at the predicted results,” says Dr Lucy. “Having everybody do the same assessment enables you to properly compare applicants.”

### INTO THE POOL

As all prospective students eventually realise, you don’t apply to ‘Cambridge’ but to a College – either a specific one or through an ‘open’ application where one is allocated to you. And as it’s impossible to predict which Colleges might end up with too many great History candidates and not enough physicists, a method is needed to redistribute them.

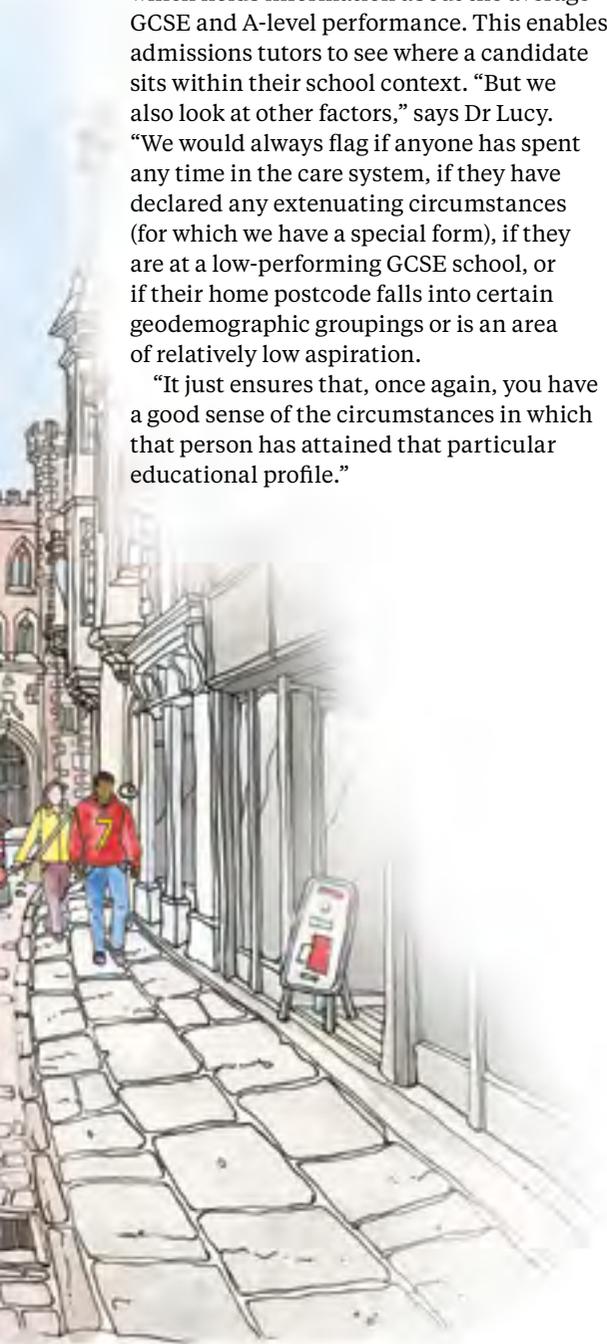
That’s where the Winter Pool comes in. “Each prospective student has a file – which is always blue – containing all your information,” says Dr Lucy. “If the College that interviewed you thinks you’re a good candidate, but doesn’t have any more spaces, it will put you into the Winter Pool, so Colleges who are still looking in that subject can identify students they want to make a bid for. The University wants the students with the most academic ability and potential. So you don’t necessarily prioritise someone who has applied to your College over someone who may be better, but who has applied to another College.”

### HERE TO HELP

Above all, says Dr Lucy, the Admissions community wants to get the right information out there, and they’re always happy to answer any questions.

“We want to make it as meticulous a system as possible to identify those students who are going to come and thrive at Cambridge, and to recognise that those students can come from anywhere.”

*To find out more about admissions at Cambridge please visit:  
[www.undergraduate.study.cam.ac.uk](http://www.undergraduate.study.cam.ac.uk).*





Downing *The North Range*



Pembroke *Pembroke from Trumpington Street*



Peterhouse *Old Court*



St. Catharine's *View from Trumpington Street*



Clare *Entrance to Old Court*



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Queens' *The Mathematical Bridge*



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## An international network

*John Pritchard (Robinson 1983) is Chair of the Alumni Advisory Board.*

When I meet fellow alumni, in the UK and abroad, I invariably hear two comments. One cheers me up; the other infuriates me. The first is a question: “What can we do for Cambridge?” To me, this is graphic evidence of the great untapped enthusiasm of us 240,000 alumni to help our University. The second is more of a complaint, usually said with a sigh of resignation: “American universities are so much better at engaging alumni.”

I can’t stand hearing that second comment because, as the first question suggests, the potential of Cambridge’s alumni network is huge. As the chair of the Alumni Advisory Board – a volunteer group selected to be broadly representative of the alumni community – I’ve discovered that almost wherever you are in the world, from New Zealand to North Yorkshire, you’ll find a Cambridge alumni group working to strengthen the relationships between alumni and between alumni and the University.

In fact, there are an extraordinary 462 active alumni groups – one of the widest-ranging alumni networks of any university in the world – representing all aspects of Cambridge life. For instance, I recently met the Washington DC group who told me about how they hold regular events throughout the year to meet the needs of a constantly changing group of alumni posted to DC for work. The group is far from alone: alumni group leaders from around the world are all working to find similar ways to connect and engage with local alumni, tapping into the strong desire people have to maintain their Cambridge links.

Which, in part, is where the Alumni Advisory Board (AAB) comes in, providing a link between alumni networks and the University. In practice, this ranges from encouraging a greater connection between the different parts of the alumni network to ensuring alumni have the most up-to-date information on how admissions at Cambridge

“There are 462 alumni groups – one of the widest ranging networks in the world – representing all aspects of Cambridge life”

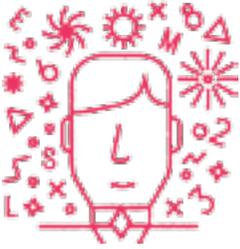
works today – so that when a potential candidate asks you what a Cambridge interview is really like, you have all the facts at your fingertips (look out for our admissions toolkit, shortly to be available via the website). We also draw on graduates’ experience in media and communications to advise on alumni communications and help Colleges and departments engage.

Board members are ambassadors, but also amplifiers of what is going on elsewhere in the network. With that in mind, they are encouraged to drop in on groups when they travel and simply chat about the University and open a two-way channel of advice and ideas. Occasionally we may be able to share best practice – passing on an idea for an event, or a new way of organising a group, that we picked up elsewhere. Sometimes, our role may be as simple as pointing out to a College-based alumni group that a University group exists in the same city and suggesting they may like to get together from time to time and pool resources.

The smallest alumni groups are often just a handful of people who happen to get together for a jar every quarter, perhaps united by a love of their College, or a shared passion for music, or sport, that was fostered while at Cambridge. Others have dozens and dozens of regular members, attending programmes of talks, events and social gatherings.

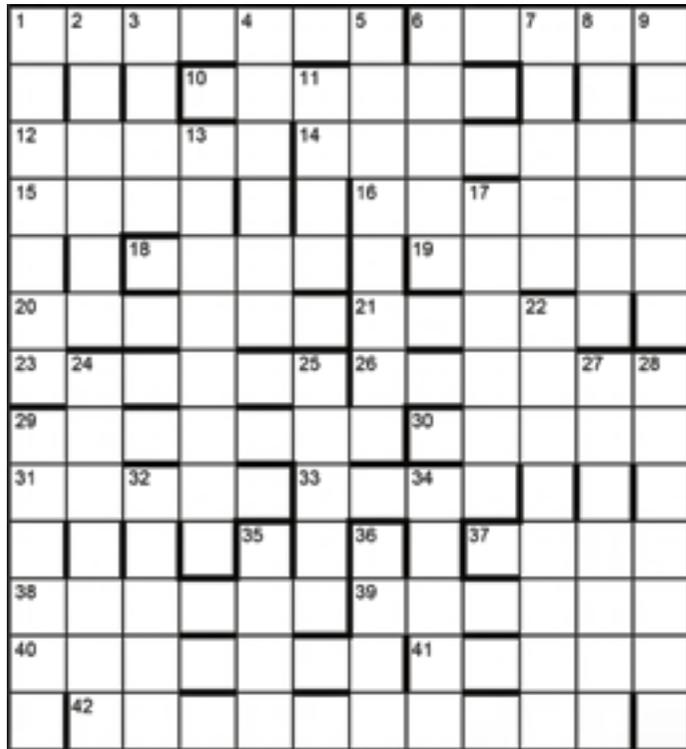
Everywhere I go, as chair of the AAB, there is enormous goodwill towards Cambridge and a desire to further the attachment to the University. But in the context of the institution’s eight centuries of history, we have barely started the process of joining up not just the groups, but the many alumni who are not yet involved but would like to reinforce their connection with the Cambridge community.

*To learn more about the University’s Alumni Advisory Board, visit [alumni.cam.ac.uk/get-involved/the-alumni-advisory-board](http://alumni.cam.ac.uk/get-involved/the-alumni-advisory-board).*



CAM 82 PRIZE CROSSWORD

# Mixed Drink by Schadenfreude



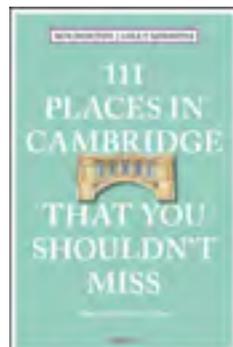
All entries to be received by 26 January 2018. Please send completed crosswords:

- by post to CAM 82 Prize Crossword, University of Cambridge, 1 Quayside, Bridge Street, Cambridge, CB5 8AB
- online at [alumni.cam.ac.uk/crossword](http://alumni.cam.ac.uk/crossword)
- by email to [cameditor@alumni.cam.ac.uk](mailto:cameditor@alumni.cam.ac.uk)

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Solutions and winners will be printed in CAM 83 and online at [alumni.cam.ac.uk/magazine](http://alumni.cam.ac.uk/magazine) on 9 February 2018.



INSTRUCTIONS

When the clue answers have been entered there will be 24 empty cells which solvers must highlight and fill with a three-word name, the cells having a possible shape of the name's abbreviation. Numbers in brackets give the lengths of final grid entries which are all real words or phrases.

ACROSS

- Composition of Catholic festival with time initially extended (7)
- Poisonous gas entering mine loop (5)
- Colourful bird heading for gorse in Scottish course (6)
- King with illness sent back one cold sweet (5)
- Sloven from the east on heroin that's behaving awkwardly (7)
- Doctor has energy for round one (4)
- Trick catching old wily thief (6)
- Stripped living tree (4)
- Can it end without work? (5)
- Maybe repaired footwear flogged outside Spain (6)
- Court old-fashioned woman (5)
- One's removed from facilities for hire (6)
- Deserter backed by seven seamen (6)
- Civil Service covers rising emergencies (7)
- Priest accepted writer's nom de plume (5)
- Pools popular in Lesotho (5)
- Reputation once almost ruined (4)
- Groom from Sicily emptied church (4)
- Reach of water in local river for aquatic plants (6)
- Poisonous substance Newton found in flipping Indian dish (6)
- Each action covered by steamship wartime permit (7, 2 words)
- Leave German overcome by cold drink (5)
- Monument seen on the end of hunting ground (10)

DOWN

- Acorns are gathered by adequate Pole (7, 2 words)
- Learner interrupts prompt before party game (6)
- Tree north of lake is a source of oil (4)
- Worn-out string (6)
- Self-seekers leave island owned by alien society (8)
- Short European activist (5)
- Salmon coloured duck house (5)
- Redundant sailor invested in ordinary bond (6)
- Wary Scots keeping with old infantry division (6)
- Ruler removing navy from Scottish port (4)
- Substitute female sick at work (8)
- Letter section acts as a reminder (6)
- Everyone unknown in government forming a union (8)
- Birds I love seen in borders (7)
- Victor leaves to clean up a delicate structure (5)
- Make fun of Charlie with mature bony frame (7)
- This bird of prey flying round loch could be a kestrel (7)
- The worst part accepted by conservative English actor (6)
- Vessel speed about zero! (5)
- Former obnoxious person lacks power (5)
- William's mother about to stop nurse (4)
- Ancient spear remains (4)

SOLUTION TO CAM 81 CROSSWORD  
TITLES BY SCHADENFREUDE



The SE-NW diagonal contains METAMORPHOSEN and letters in the grid spell out the titles of operas SALOME, DAPHNE and GUNTRAM (shown in red). All are works by RICHARD STRAUSS. JOHANN (starting in 7d) and the possible DIEFLE(D) ERMAUS in the SW-NE diagonal are red herrings.

**Winner:** Jonathan Staples (Corpus 1982)  
**Runners-up:** Daisy Jestico (Fitzwilliam 2001), Trevor Carter (Jesus 1963)





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