Humans. Chimps. Crows. Robots. This is the space of possible minds.

The art of summity: when meetings change the world.

Matthew Parris argues that hypocrisy can be a virtue.
Chris Beetles is the world’s leading gallery for cartoons and illustrations, with the largest stock of British watercolours from the last two centuries.

We are the agent for the illustrator, Sir Quentin Blake, and the cartoonists, Matt of the Telegraph and Peter Brookes of The Times. We also represent the Royal Academicians, painter Anthony Green, and sculptors James Butler and the late Sydney Harpley.

You are most welcome to visit our aladdin’s cave of a gallery in St James’s and our comprehensive website. We publish an extensive range of books and catalogues (also available on our website, p&p free for CAM readers).

We have a programme of varied and frequent exhibitions. Forthcoming shows include: Edward Ardizzone RA; The Illustrators: the British Art of Illustration; John Burningham; Anthony Green RA and Peter Coker RA.
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Welcome to the Michaelmas edition of CAM. What do robots dream about? Do chimps worry about death? And when the western scrub-jay imagines the future, what does he see? These may seem unlikely questions, but it turns out that human minds are only one example of mental perception on earth. We investigate the space of these possible minds on page 14.

Meetings have a bad reputation. They go on too long. They appear to achieve little. But their popularity remains undiminished – and, as Professor David Reynolds explains, meetings can sometimes change the world. CAM explores the art of summitry on page 36.

Elsewhere, on page 26, political commentator Matthew Parris (Clare 1969) argues that there is much to recommend hypocrisy. On page 32, Professor Richard Gilbertson discusses his mission to reduce childhood brain cancer.

There is a select group of retailers so much part of the student experience they seem almost an extension of the University. Fitzbillies. Andy’s Records. The Gardenia and – of course – Heffers Bookshop, which this year celebrates its 140th anniversary. On page 20, we relate the history of this iconic Cambridge bookshop. On this, and all other matters, I look forward to your thoughts.

Mira Katbamna (Caius 1995)
so sudden that it made me realise how deeply involved I had become in the atmosphere of Aeschylus’s poetic drama. When the performance was over, I apologised for my involuntary exit from the stage. “Don’t worry about it, dear boy,” George said. “Last time, someone walked across the stage stark naked.”

**Philip Pendered**  
(Caius 1952)

**University matters**  
I am very aware that Cambridge admits “applicants from all backgrounds” (CAM 78). When I matriculated in 1971, I was a 27-year-old dustman, who had left school at 15, and had been brought up in an orphanage!

**Michael Kennedy**  
(Selwyn 1971)

**Sport at Cambridge**  
Nick Brooking’s article (CAM 77) advocating the role of sport in the development of friendships struck a chord. Twenty years ago, a group of former members of the Cambridge University Cycling Club met in a restaurant on Parker’s Piece. The Cuccolds, as we unselfconsciously called ourselves, have cycled together every year since, at venues from Britannia to Bute, and Lincolnshire to the Limousin, enjoying each other’s company and that of wives and partners.

We count ourselves lucky to have retained our health and a degree of fitness 60 years on – a tribute perhaps to the friendships and habits that sport, whether competitive or purely social, can bring.

**Robin Bullows**  
(Clare 1956)

I was delighted to read Nick Brooking’s fine piece hailing sport as ‘an essential part of student life’. At last. Forty years on, here is validation of my three years’ desperately earnest endeavours at full back or wide left for Selwyn Third Football XI. I have nothing left to achieve.

**Nigel Roberts**  
(Selwyn 1975)

**Folk story**

I am not surprised that Keith Sidwell (CAM 77) never came across Nick Drake. He seems to have kept himself to himself. I was introduced to him by a mutual friend who thought we might like to jam together. So we met on a summer’s afternoon on the lawn of Bodley’s Court, where Roger Drage (King’s 1966) and I treated him to our extended version of Light my Fire (yes, really). He listened politely and then played us an exquisite guitar solo that seemed to involve the use of at least two extra hands. Roger and I sat quietly in awe. We all chatted a bit and then went our ways, I think each recognising that, musically, we were not really on the same planet.

It was only later that I learned of his success – and I still guard my copy of Five Leaves Left as a reminder of that afternoon.

**Howard Gannaway**  
(King’s 1966)

**The Astronomer and the Witch**

Thank you for the interesting article on the trial of Kepler’s mother on a charge of witchcraft. This episode, which was both embarrassing and dangerous for Kepler’s family, explains why the Somnium, Kepler’s entertaining science fiction story of a journey to the moon, was published only after his death.

The story tells of an Icelandic boy who is transported to the moon by demons summoned up by his mother, who is a witch. Since the demons can only inhabit shadows, the four-hour journey must take place during a total solar eclipse. Only thin human beings can make the journey, (“and therefore Germans are not suitable”).

The story was written before Galileo turned his telescope on the moon, and explanatory notes were added after Kepler had studied Galileo’s account of his observations. It is a short and good read, and can be downloaded via the internet.

**Michael Bourke**  
(Corpus 1960)

**From the Editor; You may be interested to know that Professor Rublack discusses this issue in The Astronomer and The Witch.**

**Praise**

I greatly appreciate and heartily applaud CAM’s redesign. We readers benefit greatly from a format that skilfully combines contemporary graphics and layout with seriousness of purpose and content.

**John McClenahen**  
(Wolfson 1986)

**MORE FROM THE CAM MAILBAG**

The UL tower does not contain pornography. Chloe Gallagher (Darwin 2004) joined a chorus of disappointment, tweeting: “More iconoclasm in the latest CAM, shattering the student body’s cherished urban legend” while Rebecca Rose (Emmanuel 1998) was rather taken with what is in the tower, observing that What to Wear magazine (1934) represents a “bargain at ninepence”!

Responding to Jon Beard’s piece about Cambridge interviews, many of you, such as Ziad Hafiz Razak (Magdalene 1997), tweeted the story. Richard Holroyd (St John’s 1968) thought it a shame that some “see (Oxbridge) as the reason for the failings of some sections of society”. However, Harry Galbraith (King’s 1972) said the piece prompted happy memories of what he believes is one of the shortest interviews ever (and you can read the whole tale at alumni.cam.ac.uk/magazine).

Finally, Noel Osborne (Jesus 1959) recalled the 1962 production of Aristophanes’ The Clouds, observing that it was “probably the first production, by distinguished opera director Dennis Arundell, to break the mould of tedious choruses clad in horsehair and cardboard” – and indeed, Osborne goes on to say that the chorus was noted less for its singing than for “its choreographic skill with brightly coloured parasols”.

Write to us

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Please mark your letter ‘for publication’. You can read more CAM letters at alumni.cam.ac.uk/cam. Letters may be edited for length.

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OLD SCHOOLS

V–C appointed

International law scholar and university leader, Professor Stephen Toope, has been appointed as the next Vice-Chancellor of the University. He will take over from the current Vice-Chancellor, Professor Sir Leszek Borysiewicz, on 1 October 2017.

Professor Toope has extensive experience in university governance. He is director of the University of Toronto’s Munk School of Global Affairs and formerly served as president and vice-chancellor of the University of British Columbia.

He specialises in human rights, international dispute resolution, international environmental law and the use of force, and international legal theory. Professor Toope is an alumnus of Trinity College Cambridge, where he completed his PhD in 1987.

Vice-Chancellor Professor Sir Leszek Borysiewicz said: “We are delighted to be welcoming a distinguished leader with such an outstanding record as a scholar and educator to lead Cambridge.”

Professor Toope said: “I am thrilled to be returning to this great university. I look forward to working with staff and students in the pursuit of academic excellence and tremendous international engagement – the very mark of Cambridge.”

CAMPAIGN

£210m this year

The University and Colleges have had their most successful fundraising year ever, raising an exceptional £210m in philanthropic gifts.

These included the biggest-ever single donation to a College – £35m – from the estate of sound engineer Ray Dolby to Pembroke. Other notable gifts included $27m to the Faculty of Economics from Bill and Wesley Janeway, a $25m gift from Jamie Walters El-Erian and campaign co-chair Mohamed A El-Erian to support the work of Queens’ College and the Faculty of Economics, and £5m from Cantab Capital Partners to create the Cantab Capital Institute for Mathematics of Information in Cambridge.

Vice-Chancellor Professor Sir Leszek Borysiewicz said in his 1 October address: “Philanthropy is the catalyst for discovery – and it ensures that discoveries continue, even at a time of unparalleled financial challenges.”

The ‘Dear World, Yours Cambridge’ campaign for the University and Colleges, launched last October, aims to raise £2bn for research, posts and facilities, with the total to date standing at £745m.

OLYMPIC GOLDS FOR CANTABRIGIANS

Rowers George Nash (St Catharine’s 2008) and Tom Ransley (Hughes Hall 2007) won gold medals in the 2016 Rio Olympics, bringing the since-records-began Cambridge Gold Olympic medal total to 86.

alumni.cam.ac.uk/news/gold-for-cambridge-alumni
A Cambridge Christmas

For the Cantabrigian who has everything, our new range of clothing and accessories is now available to buy online. alumni.cam.ac.uk/shop

Joy Division

Wear Cambridge discoveries on your chest with this exclusive series of cotton t-shirts.

Practica di prospettiva

Did you know that mathematicians such as Galileo used geometric shapes to understand craters on the moon? And that the UL has a copy of a textbook that they used to learn about perspective? Thought not.

Est. 1209

Celebrate Cambridge’s history with this smart tote bag, made from 100 per cent organic cotton. All cotton items are made in an ethically-accredited, wind-powered factory.

Light Blue Diary

ON THE PITCH AND IN THE WATER

Cheer on the Light Blues for the Varsity Rugby Match at Twickenham on 8 December. As well as watching some thrilling rugby, tickets are available for the Women’s Networking Breakfast and a Celebration of Sport Lunch. For more information visit thevarsitymatch.com. Early next year, Light Blue supporters will assemble to support Cambridge rowers on the Tideway – the Boat Race will be on 2 April 2017. For more, visit theboatraces.org.

TWO-MINUTE TRIPOS

SUBJECT

TO WHAT EXTENT DOES GUT-FEELING INFLUENCE THE SUCCESS OF FINANCIAL TRADERS? DISCUS.

Buy pork bellies! Sell muscovado sugar! Sell pork bellies!

Are we having pulled pork this Sunday, then?


But you don’t know anything about pork bellies or muscovado sugar. That doesn’t matter. I’m trading with my gut.

That sounds deeply worrying. Are you ill? You’re sweating and panting, your heart is pounding…

Of course it is. I’m using interoceptive sensations which carry information to my brain from body tissues including the heart and lung, as well as the gut. Listening to these so-called ‘gut feelings’ can actually enable financial traders to make high-risk, split-second, important decisions, according to a new study funded by the Economic and Social Research Council and conducted jointly by researchers from the Universities of Cambridge and Sussex in the UK and Queensland University of Technology in Australia.

But what if your gut is really just… hungry?

Nonsense. Financial traders in particular are really good at this gut feelings stuff, according to the research. Much better than the general public. And the more they do it, the better they get – even though they’re barely aware that the process is happening.

Wow. Fair enough. Can you give me a hot tip for when the markets open tomorrow?

Not right now. I really fancy a sandwich.

Interoceptive Ability Predicts Survival on a London Trading Floor is published in Scientific Reports. Authors include Dr John Coates (Judge Business School) and Dr Mark Gurnell (Department of Medicine).
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--- Iceland ---

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4 nights from £995
Staying in Reykjavik and the Selfoss area, tour the Golden Circle and visit Vik and ‘the volcano area’, Skógafoss waterfall, Gullfoss, Geysir, Thingvellir National Park and the Blue Lagoon. VJV Special Event. Reykjavik Card, 3 dinners and entrance to the Blue Lagoon included.

--- India ---

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--- Russia ---

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Michaelmas is a maelstrom of meetings, events and freshers

Trinity Hall’s Admissions Tutor Dr Andrew Murray is a Senior University Lecturer and a specialist in high-altitude physiology.

Michaelmas begins with a maelstrom of meetings, induction events and the occasional panic about whether I have contacted enough supervisors over the summer to cope with an eleventh-hour switch in options from an indecisive second-year. Matriculation Dinner on the first Friday of term is always an immensely enjoyable occasion. As an Admissions Tutor, I take great pride in watching our new students take in their surroundings and meet the Fellows they will be working with over the next few years. At times during dinner, I wonder if we are all trying just a little too hard to convince them that we are not the terrifying monsters they remember from the interviews last December, but I also know that in just a few short weeks they will be the ones grilling us in their weekly supervisions.

At Trinity Hall, we invite the new first-year Natural Scientists to participate in a few introductory days before term begins. This is very much the calm before the storm, giving students time to ask questions about the course and choose options before the intensity of freshers’ week engulfs everything. Each Fellow gives short talks on our subjects and our areas of research – and I take them through my work on high-altitude physiology with the Xtreme Everest group. The students seem interested enough, but I momentarily lose my train of thought as I stumble onto a slide showing two of my PhD students at Everest Base Camp on the Xtreme Everest 2 expedition.

On the day in question, the students had donated biopsies of their own leg muscle and were in the process of measuring how efficient their mitochondria were at using the diminished supply of oxygen available to them after a few months living at 5,300m above sea level. Perhaps surprisingly, given their recent surgery, both are smiling broadly for the camera (though that may be a result of the local anaesthetic). The expedition in question, Xtreme Everest 2, sought to compare the response to altitude of lowlanders, such as ourselves, with the adaptations acquired by the Sherpa people over 25,000 years. Recent work has suggested a genetic basis to Sherpa adaptation, and we aimed to understand the underlying physiology.

Our ultimate goal at Xtreme Everest is to use an understanding of these mechanisms to improve the treatment of patients experiencing low oxygen levels in the clinic. My work with the group began in 2007. As a junior researcher, I was given an unmissable opportunity to lead studies into the effects of hypoxia (low oxygen levels) on heart and muscle metabolism in climbers returning from the summit. I also volunteered myself as a subject for many studies, including tests of exercise capacity, cognition, lung capacity, blood composition, heart function and even my ability to taste and smell at altitude. With the expedition’s 10th anniversary approaching, plans are afoot to return to Nepal next Easter to share our results with local doctors and thank them for their support of our work. I will return with great excitement at seeing dear friends and places that have fond memories for me, but also a good deal of trepidation at encountering the aftermath of last year’s earthquakes.

As I catch my thoughts and recalibrate my surroundings, I find I am still standing in the Trinity Hall lecture theatre with a roomful of attentive freshers. I gesture towards a photograph of one of my PhD students, James Horscroft – in need of a haircut, shave and hot bath, but focused intently on the experiment he is running. I reflect that just five years before this photograph was taken, James was himself an undergraduate fresher, sat exactly where these students are now. “Cambridge will give you many opportunities,” I tell the students. “Don’t let them pass you by.” pdn.cam.ac.uk
Room E2A, Old Court, Pembroke

Peter Bradshaw (Pembroke 1981) and first-year mathematician Tim Colpus talk matriculation dinner, books and grand designs.

We lay on the roof gazing up at the stars. I wouldn’t do that today. I’d be too scared of falling


Tim Colpus, the current inhabitant of E2A, Old Court at Pembroke College, Bradshaw’s old room, looks around and furrows his brow. “What did I bring? Not much, really. My parents gave me some homemade marmalade. Apart from that, everything I need is just on my tablet.”

Colpus has been in Cambridge for just five days – a whirl of new faces, matriculation rituals, and Freshers’ Fair sign-ups. “It’s surreal,” he says. “I’ve signed the book in the library with the old-style pen, which they fill for you so you don’t mess it up. My first name was a bit shaky but I think the surname looked OK. Being aware of the history of the place and the people who have studied here before you is just incredible. The matriculation dinner, with gowns and candlelight, was amazing – you expect the candles to start floating. It was like Hogwarts.”

Bradshaw’s first week, back in 1981, was much the same, bar the immediate Potter connection, of course. “Though when I saw the first Harry Potter movie, I thought: this is like my first matriculation dinner. Matriculation has probably been the same since the dawn of time,” he points out. “I remember unloading the car with my parents, amid much grumpiness and arguing. Then my mum and dad took me for tea at The Copper Kettle, just round the corner. Then there was a special tea for new matriculants, hosted by the Dean.

“But I remember a strange feeling, almost like a falling sensation. That realisation that mum and dad were going to say goodbye and I would be on my own. I had to physically suppress this feeling of climbing panic. I remember thinking: ‘Peter, keep it together, man! You’re a grown-up!’ And then they were gone. In those days, when people were gone, they were gone.”

“I Skyped my parents yesterday,” says Colpus. “I found a note that they’d left me, as well. Just telling me to enjoy my time.”

In Bradshaw’s era, the college was all-male, and was, he says, almost like joining the army. Notes in the third person were commonplace: ‘Gentlemen are requested to call on their tutors...’ He chose Pembroke because his teacher at school recommended it. “He said: it’s all male, but don’t worry. You’ll be doing lots of drama and your social life will happen outside the College, which turned out to be true.” Colpus admits to not making a particularly scientific choice of college, either. “I came up with my dad and walked around, and Pembroke was one
IN BRIEF

NOBEL PRIZE
Four Cambridge alumni have won Nobel Prizes. David Thouless (Trinity Hall 1952), Duncan Haldane (Christ’s 1970) and Michael Kosterlitz (Caius 1962) were awarded the Physics prize for their pioneering work in the field of condensed matter physics and Oliver Hart (King’s 1966) was awarded the economics Nobel prize for his work on contracts.

CLASS LISTS
Debate continues to rage over whether or not class lists – exam results – should continue to be published on the boards outside Senate House. A campaign last year, Our Grade, Our Choice, was widely believed to have swung the argument for the abolition of the public display of class lists, but many claim that the group does not represent student sentiment. The issue will be subject to a vote of Regent House this term.

EXECUTIVE DISCOUNT
Reckon your leadership skills could do with a polish? Cambridge Judge Business School Executive Education is offering a 20 per cent discount to all Cambridge alumni on more than 20 business-focused open programmes. alumni.cam.ac.uk/exced

TWEET OF THE TERM
“Finally dug into my @camalumni magazine. From what I can tell, you ease awkwardness by making it awkward #camlit” Cydney Stasiulis (Newnham 2011) reflects on the contents of the UL’s tower (CAM 78). @camalumni

Peter Bradshaw (Pembroke 1981) is an author and journalist. He is The Guardian’s film critic and has written three novels.

Tim Colpus is a fresher and has wasted no time in ensuring he’ll be on time and in the right place for his lectures. “We’ve already set up a Facebook group, so we can meet up and at least have other people to get lost with.”

ILLUSTRATIONS: MICHAEL KIRKHAM

A CAMBRIDGE GUIDE TO...
The Winton Centre

Data and statistical reasoning are essential for good decision making. Indeed, without good data, clearly presented in a balanced way, making good decisions is difficult – yet for most of us, collecting, reading and analysing data remains very challenging. That is why Winton Philanthropies is establishing a new Centre for Risk and Evidence Communication. The Centre’s aim is to ensure the balanced communication of risk, statistics and evidence to the public. With Winton Professor Sir David Spiegelhalter as its Chairman, and Dr Alex Freeman as its Executive Director, the Centre will research best methods of communicating evidence, and then implement those – working with the media, and undertaking specific projects with bodies such as the NHS.

Its website will build on Professor Spiegelhalter’s highly successful Understanding Uncertainty site to become the first port of call for commentary on and reviews of the communication of evidence.

For more information please contact: wintoncentre@maths.cam.ac.uk

of the few that we were allowed to come in and see. I just thought it was absolutely beautiful and so far it has very much lived up to expectations. That male atmosphere just isn’t there any more.”

Bradshaw stayed on at Cambridge to do a PhD and ended up as president of Footlights. Yet he never had a plan, he says. “There were some people who wanted to be President of the Union, be an MP in seven years, be in cabinet by 15 years, and so on. And if you wanted to be in Mrs Thatcher’s cabinet, then that was exactly what you should be doing. But that wasn’t me. I knew I wanted to write and I knew I wanted to act. But I just went with the flow.”

Colpus says he doesn’t have a grand design either. “I just want to be a mathematician and see how it goes,” he says. “It’s so exciting. I can see that there are so many people who are better than me, and of course the faculty who are so, so much better than me. There’s so much to learn.”

And E2A is a good place to do that. Quiet and dim, the room is virtually unchanged since Bradshaw’s day – although, he says, now minus the grime and smell of cigarettes, something Bradshaw recalls clearly. But nonetheless, the memories, he says, looking around, are intense.

“I had a party here once,” he remembers. “We climbed out of the window, me and a young woman. We had a few drinks. We lay on the roof with my head on her shoulder, smoking, and gazing up at the stars. I wouldn’t do that today. I’d be too scared of falling.”

Peter Bradshaw (Pembroke 1981) is an author and journalist. He is The Guardian’s film critic and has written three novels.

Tim Colpus is a fresher and has wasted no time in ensuring he’ll be on time and in the right place for his lectures. “We’ve already set up a Facebook group, so we can meet up and at least have other people to get lost with.”
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STUDIES  BEDROOMS  LOUNGES  LIBRARIES  SOFAS
Wimps need not apply.

But it might be a good idea to work on your toughness and speed, as the Cambridge University Women’s Lacrosse Club explain.

As one of the University’s most successful sports clubs, the Women’s Lacrosse team value toughness – and speed.

Former club captain Sophie Morrill (Sidney Sussex 2013), who now plays for England, says that Cambridge’s elite squad of 31 female lacrosse players are not exactly shrinking violets. “We’re not afraid of much. We play an aggressive sport and everyone’s very self-confident!”

The club’s high competitive standard means almost all its players have already mastered the game before coming up. “Although people still sometimes say ‘What is it?’, lacrosse is growing massively,” says Sophie. “You need fitness, endurance and speed, not least because we don’t play with wooden sticks any more – these days they are all made with carbon fibre.”

But although most members have played lacrosse before, the squad is looking to introduce the game to a new audience, and learning the game as a fresher can be hugely rewarding. “Two girls who’d never picked up a lacrosse stick before they came to Cambridge are now firmly embedded in our squad,” says club president and third year geographer, Emily Birch. “Our ultimate goal is to get enough funding to train more people from scratch.”

To re-connect with CUWLC, please email president@cuwlc.com with your name, matriculation year and College for a termly newsletter and invitation to the supporters event for the Varsity 2017 cuwlc.com
Buy original artworks by Darwin’s granddaughter, renowned Cambridge artist Gwen Raverat.

Gwen Raverat (1885-1957) was one of Britain’s most celebrated and accomplished wood engravers and author of Cambridge classic ‘Period Piece’. The Raverat Archive hold an extensive archive of her work which includes limited original prints; as well as bespoke, high quality reproductions of all her engravings for only £30. With over 800 images to choose from, there is something to suit every taste.

Visit: www.raverat.com to browse our gallery buy prints and other merchandise. Enter code WINTER16 at checkout for a 10% discount.
Brexit means Brexit. This is how the University will meet the challenges.

Vice-Chancellor Professor Sir Leszek Borysiewicz

It has been four months since we woke up to the news that a majority of the British electorate had voted in favour of the United Kingdom leaving the European Union. Although we are still not entirely sure what “Brexit means Brexit” actually means, we are beginning to get a clearer sense of the impact this event is likely to have on the University when it happens.

There is a much at stake. Cambridge has been successful at attracting funding from the EU through competitive grants. As much as 17 per cent of the University’s research income currently comes from the EU. This funding has allowed our researchers to work on subjects ranging from machine learning to the prevention of pandemics.

We have welcomed the government’s statement that European funding awarded to projects before Brexit will be underwritten by the Treasury – even when such projects extend beyond the UK’s departure from the EU.

In the meantime, University researchers have continued to apply for – and win – large European grants. Cambridge applications for major European awards are being made in record numbers.

European funding will underpin a major Cambridge-led trial of innovative ways of managing diabetes in children. The EU has confirmed that Cambridge will again be co-ordinating joint research activity carried out by a consortium of astronomy institutes around Europe.

Our excellence in research remains undiminished. More worrying than the loss of research revenue, however, is the damage to the networks of collaboration on which world-class science depends today.

More worrying than the loss of revenue is the damage to the networks of collaboration on which world-class science depends today.

Our commitment to Europe runs deeper than our access to research funding, or even the fundamental issue of student and staff mobility. It is a commitment to a shared cultural and intellectual heritage, of which Cambridge is a pillar. On this issue, the University has a duty of leadership that it will not forsake.

Even as the UK prepares to leave the EU, Cambridge cannot afford to cut itself off from the global community of scholars of which we are an inextricable part. As members of that global community comprising students, staff and alumni, it is our responsibility to ensure that Cambridge continues to thrive in spite of the UK’s departure from the EU.

We will seek the opportunities that arise from Brexit – not least the opportunity to emphasise our vocation as an outward looking institution, engaging more widely and more intensively with the world.

One important lesson from the June referendum concerns the widespread sense that the goals of institutions like ours no longer reflect society’s aspirations. This impression is wrong. When the communities we serve no longer believe that we have their interests at heart, it is our responsibility to engage and communicate to them the impact of the University’s work.

In the months ahead, we will continue to work with the UK government as it negotiates the terms of the UK’s exit. We will also continue to make a contribution, by means of open and free discussions, to a wider understanding of how we reached this juncture, and what the future may hold.

As we set down the uncharted path towards the UK’s exit from the EU, we need to make a stronger case than ever for our role as an institution that contributes to the public good. In this endeavour, we rely more than ever on our global network of alumni – in the UK, in Europe, and around the world.

Welcome to the space of possible minds

It is often talked about as the ultimate prize of artificial intelligence: a machine that can think like a human. But human minds are only one example of the kinds of minds on earth. So what are those other minds like? How do they work and how can we understand them? Suppose we do create human level cognition in artificial intelligence (AI), does that widen the ‘space of possible minds’ to include AI alongside humans and animals?

Dr Kathelijne Koops (St John’s 2006) is not a chimpanzee, but she says that, sometimes, she thinks like one. That’s because when she’s not in her office in Zurich, she is in Guinea’s Nimba Mountains where for the past 13 years she has studied chimpanzees.

“When you spend lots of time with them, you begin to think a bit like a chimpanzee,” she says. “You start to pay attention to which trees are fruiting, and when they start travelling in a particular direction you remember the amazing fig tree they’re heading for.”

This meeting of minds comes in handy when wildlife camera crews wanting to find chimps call on Koops. More importantly, it has helped her investigate what drove humans to become such supreme tool users: “We can’t go back in time to study our ancestors, so another way of doing this is to study our closest living relatives.”

Studying animals in the wild is challenging – but essential. “You have to study the forest too, because if you don’t understand the forest, you will never understand chimpanzees. You need a good knowledge of the ecology to interpret their behaviour, and you can’t study tool use if you don’t understand how their resources are distributed.”

Her research has revealed that ecology is an important influence on tool use, and that for chimpanzees, opportunity – not necessity – is the mother of invention. Food shortages had no effect on chimps’ tool use, she found, whereas the more often they encountered ants or nuts, the more likely they were to invent tools to exploit them.

More recently, Koops has compared chimps’ tool use with that of bonobos, which – despite being closely related and living in the same forests – use almost no tools. By watching youngsters at play, she discovered striking differences between intrinsic motivation of the two species. “At all ages, chimpanzees manipulate objects more – they are just more busy with objects – than bonobos,” she says.

Given the limitations of using our own mind to study the minds of other species, a less anthropocentric view of the ‘space of possible minds’ is vital, Koops believes: “Defining intelligence or culture in a way that is restricted to humans makes no sense in the grander scheme of evolution. Once we widen...
Corvids – crows, magpies, rooks and ravens – are extremely flexible: they really can imagine the future and act accordingly.

These definitions to include other animals, we find culture in other primates, tool use, and incredible intelligence in corvids.

That we know so much about corvids – birds such as crows, magpies, rooks and ravens – is largely down to Nicola Clayton, Professor of Comparative Cognition in the Department of Psychology, who after many years working with these so-called ‘feathered apes’ firmly believes there is more to intelligence than how a human mind thinks about the world.

“If you want to understand how a computer works, you need to know how a Mac – as well as a PC – works. They seem to do the same thing and produce similar products, yet they use different operating systems,” she says. “Similarly, if we limit ourselves to the human mind, it’s difficult for us to know how it works, and what is exceptional.”

Fascinated by cognition in corvids – in particular memory and mental time travel – she sets the scene for her research by talking about digger wasps. The female wasp digs a burrow, collects caterpillars to provision the nest, and finally lays her eggs. “It’s clearly future-orientated behaviour, but is it planning ahead?” says Clayton. “Is the wasp envisaging a future, imagining various scenarios and then opting for the one she thinks most appropriate?”

It turns out that like a washing machine moving through its cycle, the digger wasp is pre-programmed, and if you intervene experimentally to remove the caterpillars, for example, the wasp cannot adapt its behaviour. Corvids on the other hand are extremely flexible: they really can imagine the future and act accordingly.

To learn more about the mental mechanisms at work in one species of corvid, the western scrub-jay, Clayton devised an experiment called ‘planning for breakfast’. For six days, the birds live in three interconnected rooms, and each evening were locked in one of the two end rooms. On waking each morning, they find that in one room breakfast is served, but in the other it’s not. For the remains of the day powdered food is freely available in all the rooms. On the final evening, after spending three nights in the breakfast room and three in the hungry room, the birds are given seeds which they can cache in trays in either of the end rooms.

“We find they spontaneously hide food in the hungry room. They don’t know which room they will sleep in, but plan ahead for the eventuality that if they end up in the hungry room, they won’t go hungry,” she explains. “It’s a huge step up from learning by trial and error – like the difference between making a mark on paper and writing Shakespeare.”

Her work has overturned previous assumptions that animals are stuck in the present, unable to remember the past (aside from experiential learning) or plan for the future. “That’s important because it suggests that intelligence evolved independently in very distantly-related animals with very different brains,” she says. “We shared a common ancestor over 300 million years ago, and whereas our brains are layered, crows’ brains are nuclear – they both contain neurones but have a different architecture.” Hence the original analogy between a Mac and a PC.

Clayton is one of several biologists involved in the new Leverhulme Centre for the Future of Intelligence. Its academic director, Bertrand Russell Professor of Philosophy, Huw Price, thinks that as well as considering animals within the space of possible minds, we should be less biocentric.

“There is no reason to think that what we are trying to categorise is one type of thing,” he says. “It seems multidimensional, so it is more helpful to think of intelligence in terms of skills or capabilities – and that includes those of machines.”

Both Dr Fumiya Iida, of the Department of Engineering, and Dr Sean Holden, from the Computer Laboratory, are doing just that. An expert in AI, Holden is developing machine
PUPPY
Puppy is a running robot dog developed by Dr Fumiya Iida’s team in the Department of Engineering.
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This dog robot created by Sony is being used by Dr Fumiya Iida’s team in the Department of Engineering.

learning algorithms for automated theorem proving and to help biochemists make better predictions from their protein databases, which are vital for drug discovery.

Despite the fact that AI is often represented fictionally and in the media in human form, most machine learning research does not use biology as its starting point, says Holden. Artificial neural networks and human brains both have neurones, but for the most part, the former are massively simpler than ours.

Partly as a result, today’s AI is brilliant at very narrow competencies, whereas humans are good at pretty much everything, as Holden explains. “Most AI researchers don’t try to solve the whole problem because it’s too hard. They take some specific problem and do it better,” he says.

“That’s not to say that the way humans think isn’t useful to AI, but working out how brains do things is hard. And there’s a difference in scale. Brains are doing things that are in some senses quite different from what AI researchers are currently attacking – I’d be ecstatic, for example, if I could build a robot that could put on a duvet cover.”

In the Department of Engineering’s Biologically Inspired Robotics Laboratory, researchers are widening still further the space of possible minds by questioning not just anthropocentrism and biocentrism, but challenging the prevailing brain-centric view of intelligence.

“In the Middle Ages, people thought intelligence was in the blood. Today, we think it’s in the brain, but who knows if that’s the end of the story,” says Iida. “As roboticists, our standpoint is that it comes from the body – what we call ‘embodied intelligence’.”

By viewing intelligence as connected with behaviour and motion, Iida rejects the notion of the body as being simply a slave to the brain. There are many ways in which the brain is controlled by the body, he argues, and good reasons why this should be the case. “We have hundreds of thousands of muscles in our body, so how can the brain control this? A computer can’t,” he says. “Every fraction of a second you have to co-ordinate hundreds of muscles just to grab a cup, for example.”

To explain this, developmental robotics focuses on the fact that brains and bodies develop together, figuring out first how to accomplish simple tasks such as focusing the eye, before beginning to tackle more tricky tasks such walking.

“That’s the starting point for our robotic research,” Iida explains. “We do a lot of work on leg locomotion, because it’s the interface between the brain and the real world. Walking is very difficult. If you miss a step, you fall, so it’s critical. And every step is different, it’s not like conventional robotics because robots are meant to do the same thing fast and efficiently – that’s why leg robots are very difficult to build.”

But while they may be difficult to build, there is also a huge amount to be gained in the attempt, because not only is it helping roboticists to build better robots, it’s also helping them understand the fundamental principles of what makes systems autonomous, intelligent and adaptive.

“We are trying to take robots and build them to the level that we can treat them as another species – the ‘life as it could be’,” he concludes. “Because even though robots are not the direct outcome of the evolutionary process, we could think about them as a new species – with a new mind.”

To find out more, please visit: lcfi.ac.uk.
For the love of books

As Heffers celebrates its 140th anniversary, CAM tells the story of its evolution from humble stationer to University institution.

WORDS WILLIAM HAM BEVAN PHOTOGRAPHY LYDIA GOLDBLATT
Previous page: Second year natural scientist, Gaelan Komen (Girton), by the Cam. Below, clockwise from left: Third year natural scientist, Fergus Powell (Sidney Sussex), on the steps of the Fitzwilliam and second year psychologist Jess Grimmel (Newnham) in the Botanic Gardens.
There is a select club of businesses that are so much part of the Cambridge experience, they seem almost to be honorary departments of the University. Depending on vintage, some alumni would include Fitzbillies, Andy’s Records or The Gardenia in their list; others might cite any number of public houses. But few have enjoyed the longevity of Heffers bookstore, which this year celebrates its 140th anniversary.

“The classics department of Heffers has been a friend of mine since 1973,” says Mary Beard (Newnham 1973), a Fellow of the College and Professor of Classics. “I’ve got the most wonderful memories of great help from them, particularly when I was a young lecturer with two very small kids. Sometimes at weekends I’d be stuck at home with the children. My husband would be away and I’d be just desperate for a book.

“A very nice man – who’s just died – called Mr Catchpole was head of the classics department. He was a wonderful, slightly faux-grumpy man with a heart of absolute gold. My house was on his way home, so I’d ring up Heffers, Mr Catchpole would find the book and put it on my account, and he’d drop it off on his way home. I’ll always be grateful to him.”

While an undergraduate, Darien Graham-Smith (Trinity 1994), lived so close to the bookstore on Trinity Street that he says he treated it as a front room. However, his relationship with Heffers began even before matriculation. “I’d come up on a school trip to look at Colleges, and for some reason Heffers was the first place I set foot in.

“It was during term and it had a very bustling atmosphere; it was full of very serious and important-looking people, and it didn’t seem like a shop where you’d find people looking for chick-lit to read on the beach. I think it coloured my experience of Cambridge and encouraged me to feel excited about applying. For me, it became a symbol or icon of what Cambridge was all about.”

Having grown up in Cambridge, author Catherine Banner (Fitzwilliam 2008) was also a Heffers customer before she began at the University. She recalls leafing through picture books in the children’s department, then making trips to buy the latest Harry
“It’s a special place for me,” she says. “A lot of bookshops have come and gone in Cambridge in my lifetime, but Heffers has always been there. When I go inside, I immediately feel like a reader, not a writer. I’ve discovered so many of my favourite writers from going to that shop, finding books I didn’t expect to read hidden away on a shelf somewhere. So to see my own books there meant so much to me.”

Although famous for printed books, W Heffer & Sons began life as a stationery business. Dr Julie Bounford, associate tutor at UEA, has written a history of the firm, This Book is about Heffers: The Bookshop That Is Known All Over the World. She says: “The firm started in 1876, and that was 20 years before the first bookshop opened in Petty Cury. One of the breakthroughs for William Heffer was selling stationery and filing boxes to University clients. He used to walk through the Colleges with bundles and became known as a character. When he died in 1928, the then Vice-Chancellor attended his funeral.”

The company, based at 104 Fitzroy Street, soon branched into printed matter. Bibles, hymnals and academic volumes proved to be big sellers, leading William Heffer – who came from a Suffolk family of farm labourers – to open a shop devoted to books in 1896. Its address at 3-4 Petty Cury, heavily featured on advertisements and bookmarks, became familiar to generations of new undergraduates ticking off their reading lists on arrival at Cambridge.

A family business
The business was very much a family concern (and remained so until 1999, when it was sold to Blackwell’s – the academic bookseller and publisher that many considered to be Heffers’ Oxford twin.) Several of William’s children became involved in the firm, with his sixth son, Ernest William, eventually taking the reins. His son Reuben and grandson Nicholas would also go on to serve as chairmen.

Other premises were added around Cambridge over the 20th century, including a larger stationery store on Sidney Street, a shop devoted to Penguin paperbacks on Trumpington Street and a children’s bookstore on Trinity Street. All have since closed. What remains is the purpose-built flagship store on Trinity Street, hailed as one of the best examples of modern shopfitting on its opening in 1970.

This store was one of the three most frequented by Waterstones managing director James Daunt (Pembroke 1982), along with Blackwell’s and the original Dillon’s in Gower Street, London (now itself a Waterstones). Just a few years after leaving Cambridge, he set up Daunt Books, now a chain of nine stores and a publishing imprint. “Heffers and the other two were great stockholding bookshops,” he says, “and I think it will be desperately sad if there are not good, academically focused bookshops in university towns.”

“Of course, the Heffers that I remember was different from that of today. It was effectively the only major bookshop in Cambridge in the wonderful days when you went to university with a nice solid grant, which allowed you to spend taxpayers’ money on beer and books.”

Trade with the University was vital from very early in the firm’s history. From around 1900, every freshman received the latest catalogue of academic books. Later on, Heffers began to print and distribute the branded diaries that many undergraduates will remember.

Turning each new intake into loyal customers became a well-planned operation. Bounford says: “Students were very important. The start of the academic year was absolutely crucial. Space in the front shop and the windows was cleared, academic books took precedence and publishers’ reps were not allowed to call for the first couple of weeks of term.”
Student loyalty was also fostered through offering credit. Mary Beard says: “When I came up, one of the things my mum said was, 'You must have a Heffers account'. I think these are thin on the ground nowadays, when you can pay by credit card; but back then, you had an account, bought all your books there and got to know the people in your specialist department.”

Fiscal responsibility was encouraged. “At the end of every term, Heffers would send a list to College tutors of every student who owed more than £20,” says Bounford. “It was a requirement of the University that they settled their bills, but Heffers made sure!”

Credit is no longer offered to students, and this is not the only aspect of Heffers’ relationship with the University to have altered. For just short of 60 years, the company produced The Cambridge Review – A Journal of University Life and Thought – before it ceased publication in 1998.

Another lucrative sideline for Heffers died out many years earlier, as Bounford explains. “In the 1930s, almost every undergraduate coming up would have a visiting card, which Heffers produced. By the 1950s, this aspect of the trade had totally disappeared.”

Heffers continued to move with the times, opening a small café around the turn of the millennium. Paul Hyland (Trinity 2009) recalls this refuge on the ground floor – now replaced by the children’s department – with fondness. “One of the things I always tried to do as an undergraduate was to find time to read for pleasure,” he says. “I’d get lost among the bookcases and pick something up that I liked the look of, then go to the coffee shop and enjoy it.

“When Heffers had that social space, it became something of an escape from academic work. It had a really lovely ambience, and it’s a shame that it’s now gone. It was somewhere I could seclude myself from the stress of my own work, and the stress of everyone else’s, too.”

Festivals, readings and speaker events
For all the shop’s relocations, renovations and reinventions, its continued presence at the heart of Cambridge is a comfort to alumni who revisit the city. “The fact that it’s still there provides a note of continuity,” says Darien Graham-Smith. “It’s silly to worry about that, perhaps, when you were at a College that was established in 1546, made out of another one that was founded in 1317. But it’s part of my Cambridge. It’s good to know it’s there and I hope it will remain for a long time to come.”

Today, the greatest challenge to bricks-and-mortar bookshops is from online retailers such as Amazon – a leviathan that accounts for around a third of book sales in the UK. This has prompted local booksellers to become far more imaginative in how they use their premises, turning them into spaces where readers can engage more fully with literature and those who write it. The traditional queue for a signed copy has been replaced by a roster of festivals, readings and speaker events. James Daunt thinks this makes sense. “I’ve always done it in my own bookshops. A bookshop is part of its community, and it should be part of the intellectual life of that community.”

Professor Beard believes that Heffers has been particularly successful. “When I first came up in ’73, that sort of thing wasn’t on the horizon,” she says. “But now, Heffers is very much part of our outreach community. It puts on great classics festivals, and of course these sell our books. Certainly, speaking for my part of the University, we’re a great team. Heffers has done huge amounts to publicise its classics stock.”

But it is sales that matter, as they did when William Heffer opened his Petty Cury store in 1896. And on this, Professor Beard offers a warning. “We all use Amazon, but a bookshop like Heffers is something quite different. It’s a wonderful thing to have, but if we don’t use it, we will lose it – and then we will be very, very sad.”

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Leading political commentator, Matthew Parris (Clare 1969), says that there is much to recommend hypocrisy.
Where am I, or what? From what causes do I derive my existence, and to what condition shall I return?”

Thus writes David Hume in *An Enquiry Concerning Human Understanding*, but not on this occasion in order to essay an answer.

Hume qua philosopher goes on: “I am confounded with all these questions, and begin to fancy myself in the most deplorable condition imaginable, environed with the deepest darkness, and utterly deprived of the use of every member and faculty.”

And who would not sympathise? Which of us, in the small hours, has not tormented ourselves, like the great eighteenth century Scottish philosopher, with the biggest questions? What do I really believe? Who and what am I? Does anything matter? Can we burn the midnight oil in the vain pursuit of a reason to draw our next breath of air, then rise next morning to fret about the quality of the Weetabix?

Well, what’s the answer? Hume (now qua Edinburgh gentleman) continues, “Most fortunately it happens, that since Reason is incapable of dispensing these clouds, Nature herself suffices to that purpose, and cures me of this philosophical melancholy and delirium, either by relaxing this bent of mind, or by some avocation, and lively impression of my senses, which obliterate all these chimeras.

“I dine, I play a game of backgammon, I converse, and am merry with my friends. And when, after three or four hours’ amusement, I would return to these speculations, they appear so cold, and strained, and ridiculous, that I cannot find in my heart to enter into them any farther.”

But of course he did find it in his heart. He spent much of his life entering into these “cold and strained and ridiculous” speculations; and we, and Western thought, are the richer for it. Hume is not really saying here that philosophy is ridiculous, he’s saying something more subtle: that it’s necessary to make an effective separation between how we think and act in the course of daily life, and where our minds may take us when we give ourselves over to philosophical contemplation. Implicitly he urges that we must separate thought from action. We must erect a Chinese wall.

Of course another word for that is hypocrisy. Down the centuries hypocrisy has not had a good press, and it might seem unfair to accuse Hume, that most unsparring honest of intellects, of the same sin as the politician who at night takes to bed a prostitute, and next morning composes a stirring speech in favour of family values. But Hume’s failure to carry through the consequences of intellectual despair into the conduct of an Edinburgh gentleman’s social life is hypocrisy, even if of a dryer, less scandalous kind than the private sin of a public finger-wagger. Both are failing to practise what they preach.

And now I shall make a limited defence of both, and of hypocrisy itself. We should hesitate before demanding that people match their actions too tightly to their speculative reasoning.

A certain separation can liberate thought, as it did for Hume. Allow our moral or philosophical reasoning to float above the way we feel we should actually live our lives, and you release the mind and moral imagination. Chain our interior lives down to our external behaviour and you may find that instead of freeing daily life, you have constricted the life of the mind and spirit. Demand consistency between thought and action, and you may break the wings of thought.

It is not uncommon in political history for statesmen to lead secretly selfish, greedy or venal lives, to betray friends and neglect family – yet in the public sphere to prove great, even noble, reformers and improvers of mankind. As a journalist I’m far from saying that that’s fine, that it doesn’t matter, or that my readers have no good reason to feel indignant about it. But I do observe that the type of politician whose own life is conducted with careful and meticulous attention to propriety and personal probity, has a habit of proving rather unimaginative – of thinking small.

When François de la Rochefoucauld said that hypocrisy is the homage that vice pays to virtue, he was celebrating neither hypocrisy nor virtue, but pointing to an important truth: they are not unconnected. Where human waywardness, curiosity or adventure pull one way, but conventionality pulls the other.
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other, there must be a tension. The same deep honesty as tormented Hume torments us all when we’re being inconsistent, and it isn’t just the fear of being found out. That tension, that acknowledgement that an uncomfortable gap has opened between our interior and exterior lives, is a creative thing. It leads us to question one, or the other, or both. It also leads to the embarrassment that drives hypocrisy. And it is, I think, an impulse to search restlessly for a way of reconciling the inner with the outer life.

This is a healthy thing but it calls for a measure of discomfort short of total subordination. Kites need some flexible and long tether to fly; minds, too, may float away uselessly if the string to the humdrum is severed. Kites will flop pointlessly to earth if wound right back to their anchor; minds and spirits, too, that are reined in too tightly to conformity with the conventional, grow cramped and stunted.

David Hume went too far in the remark I quote. He knew he must bring his speculations back to earth sometimes, yet he knew that his unwillingness to shackle thought to practice was an intellectually important freedom. As he refilled his glass with claret, arranged the backgammon checkers and shook the dice, he would have smiled (because a playful sense of humour was seldom far from his speculations) at that master of the comedy sketch, the late Peter Cook, and his angle on essentially the same question: “As I looked out into the night sky, across all those infinite stars, it made me realise how unimportant they are.”

The uncomfortable gap between our interior and exterior lives is a creative thing, leading us to question one, or the other, or both.
Thirty years ago, Professor Richard Gilbertson pledged to implement a 15 per cent reduction in mortality from children’s brain cancer. This is the story of what happened next.

INTERVIEW LUCY JOLIN PHOTOGRAPHY CAROL SACHS

On the children’s ward at Newcastle General Hospital in 1986, medical student Richard Gilbertson got his first taste of life as a paediatric oncologist. He looked around the ward and saw a child in a bed, in a dark corner. “She has a medulloblastoma that has returned,” the consultant said. “What can we do for her?” asked Gilbertson, who had been fascinated by medulloblastomas – one of the commonest malignant brain tumours in children – since his first year of medicine, when he was randomly assigned to do a project on them. “Nothing,” the consultant replied. “The only thing we can do is let her die in peace.”

“I got so angry,” remembers Gilbertson – now Professor – sitting in his airy office on the first floor of the vast glass-and-steel Cancer Research UK Cambridge Institute (CRUK CI) at the Li Ka Shing Centre. “It was the 1980s and there was nothing we could do for a child with a brain tumour. That was completely unacceptable to me. And I know it sounds contrived, but I made up my mind from that moment that I was going to do something.”

That ‘something’ was initially a number dreamed up in a Newcastle pub: relaxing with a beer after a long week, Gilbertson and his fellow medical students decided that by the time they retired, they should take personal responsibility for implementing a 15 per cent reduction in mortality, from whatever disease they chose.

Gilbertson never forgot that pledge and, 30 years later, you could argue that he’s fulfilled it. As a result of his insights into how children’s brain tumours behave, more children than ever before are surviving them. However this, he argues, is because of better patient care and understanding of the condition, not more effective treatments, earlier detection or prevention. These are the things, he says, that will fulfil his latest ambition: a world without cancer.

When Gilbertson began studying brain tumours, they were all regarded as the same disease, and needing the same treatment. He proved that the main types of tumour not only behaved differently from each other but are also totally different diseases.

“All tumours generate cells, and these cells speak different languages – express different genes – in the same way that we all speak with an accent,” he explains. “So say we had a French person, an Irish person, and a Chinese person who all spoke English, we could identify their country of origin from their accent. We thought: if we can first identify the ‘accent’ that normal cells in the brain speak with and compare them with the ‘accent’ of the tumour cells, we can trace the origin of those cells back – just like we hear a Cockney speak and we know he’s from London.”

When Gilbertson and his team studied cancer ‘accents’ in brain tumours, they fell very clearly into four different categories – four different diseases arising from four different cell types. One tumour has blood vessels like sieves, for example. It’s an achilles heel that doctors can exploit – chemotherapy drugs in the bloodstream can permeate the tumour far more efficiently.

The World Health Organisation (WHO) has now adopted Gilbertson’s classification, and children around the world now receive treatment matched to their category of tumour.

All this was achieved while Gilbertson was Cancer Centre and Scientific Director at St Jude Children’s Research Hospital, Memphis, one of the world’s leading children’s cancer hospitals, where he worked for 15 years. Yet his research seemed to be taking him more and more...
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in the direction of not just paediatric cancer but the entirety of cancer. "Of course, they are different diseases. But I firmly believe that cancer needs to be thought of as a continuum. What you’re looking at is how development goes wrong, whether you’re seven or 70.”

In 2015, Gilbertson was appointed as Li Ka Shing Chair of Oncology in Cambridge and Director of the Cambridge Cancer Centre, with access to both child and adult cancers and, he says, “the best minds in the world”. These minds – physicists, engineers, chemists – are, right now, working out how Gilbertson’s dream of a cancer-free world can become reality.

There are big ideas to be worked on. “One of the things that’s always puzzled me as a paediatric oncologist is: why don’t children get cancer more?” Gilbertson says. “After all, as children grow, they experience massive cell proliferation. Cancer happens when a cell’s DNA goes wrong. Think of them as accelerators that make cells divide too much, with no brakes. Yet paediatric cancers are quite rare – much more so than adult cancer. People say it’s because children don’t smoke or live for 70 years or do those things which cause mistakes in a cell’s DNA. I don’t buy that. I think it’s partly true. But there must be something that protects children in the design of their cells from actually getting cancer.”

Gilbertson and his team have just completed a seven-year study identifying the cells that make cancers in children and adults. When his researchers challenged healthy cells with the mutations that drive cancer, they found that children’s stem cells appeared to be intrinsically resistant.

There was something about them that stopped them making cancer – unlike the adult cells, which weren’t resistant. “That’s terribly exciting, because if I can look into a child’s cells and work out the biology that is protecting that child’s cells from cancer, then maybe we could reproduce that in an adult cell with a drug. And if you do that, you’ve got a preventative for cancer. We are working on that right now, and it’s something I will be pursuing.”

All possibilities are explored. Gilbertson’s lab is currently screening around 1.2 million compounds, found everywhere from the depths of the Amazonian rainforest to the bottom of the ocean. Out of these, four have possibilities as potential treatments and are being developed. Then there are the drugs that already exist, that have been shown to be effective against other cancers: these are being screened as well. Taking a chemical compound from a tree, crushing it up and putting it on cancerous cells is one avenue of exploration, to be sure. But making that compound into a drug that a patient can actually take is a very long process. It’s far quicker to take a drug that already exists and give it to that child with the brain tumour. “It’s a bit like when your roof is leaking and you put a saucepan on the floor,” says Gilbertson. “The saucepan wasn’t designed to do that. It was designed to catch water in.”

Innovations around early diagnosis are also being examined. Just 25 per cent of people who are diagnosed with one of the eight most common cancers in the late stages will be alive 10 years later. Diagnose the same cancers just a few months earlier, when the disease is in its early stages, and 80 per cent of those patients will be alive in 10 years. The earlier you diagnose, the better chance of a cure. And here, again, it’s all about understanding the tumour, working out its strengths and its weaknesses, finding the things it does that can be turned against it.

Gilbertson points to the work of Professor Rebecca Fitzgerald at the MRC Cancer Unit, a partner of the Cancer Centre, as a perfect example. She developed the cytosponge – the equivalent of a cervical smear for the oesophagus, a notoriously hard area in which to spot pre-cancerous changes. It’s a tiny pill containing an even tinier sponge on a ‘fishing line’. The patient swallows it, the pill hits the stomach and dissolves, leaving the sponge behind. The line is then pulled up, with the sponge scraping a cell sample from the oesophagus on the way up. “What we will see increasingly in cancer is a push towards diagnosing early, and people becoming increasingly used to going through their GPs,” he says. “If you asked my dad’s generation if they had their blood pressure checked regularly, they would say no. Those kind of early diagnostics didn’t exist then but now they do, and are common practice. I think you will see that in cancer.”

Yesterday, Gilbertson mentions, he was meeting with the inventor of a breath tester to detect lung cancer. Tumour cells have a different way of consuming food than normal cells, he explains, so they produce slightly different waste products. Some of these are volatile, and these tell-tale compounds will appear in the breath – so they can be detected. The team are also developing tests for circulating tumour DNA. It’s now known that DNA isn’t present just in cells: it floats around the bloodstream. Tumours are caused by mutations in that DNA: if you create a blood test sensitive enough to detect those mistakes, you could identify that tumour before the person even starts to show symptoms.

Imagine, he says, the conversations around cancer in the future. "If people never get cancer as we know it, they’ll be saying: ‘Oh, I’ve been diagnosed with gastric cancer but the doctor’s just fixed it.’ Imagine a world where well-person clinics test accurately for the earliest cancers every year, rather than patients walking around with tumours inside them for years on end – and only when they get ill do we do something about it. Imagine a child going into a clinic for a five-year checkup, and having a blood test which reveals she has cancer. You intervene with a relatively non-toxic treatment – even minor surgery – and that’s it.” A world without cancer, where the dark corners of the ward are banished to the history books. It’s a pledge worth pursuing.

www.cruk.cam.ac.uk
Meetings get a bad press. They last too long. They achieve too little. But what about that ultimate meeting, the summit? Professor David Reynolds and Dr Kristina Spohr explain why, sometimes, meetings can change the world.
In the spring of 2014, Russia annexed the Crimea – and the German chancellor Angela Merkel took to the air. She jetted some 20,000 kilometres around the globe, visiting nine cities in seven days – from Washington to Moscow, and from Paris to Kiev – holding one meeting after another with key world leaders in the hope of brokering a peace deal. Haunted by the centenary of 1914, Merkel saw summity as the only way to stop Europe from ‘sleepwalking’ into another great war.

Face to-face encounters at the highest level clearly still matter, even in our age of email and Skype, mobile phones and videoconferencing. The urge to look another leader in the eye, to “get a smell of each other,” as the West German Chancellor Willy Brandt pungently put it in 1970, remains compelling. And skilful summity is essential when international relations are fractious and fraught – something that will undoubtedly be the case over the next few years, as the Brexit negotiations commence.

The word ‘summit’ was originally coined by Winston Churchill. In 1950, he called for another “parley at the summit” to help defuse the Cold War. But it seems to us that the desire of leaders to meet is almost innate. Having made it to the top of their own political system, they yearn to compete on the world stage. Summit meetings are especially alluring to alpha types who relish new challenges: having tired of the dank foothills of domestic politics, they set their sights on the peaks of global affairs where the air seems clear and heady. The attractions must certainly have seemed seductive for Tony Blair when dealing with George Bush after 9/11: summity enabled him to bond with the leader of the world’s sole superpower. But, as the Chilcot report revealed, the agreement forged behind the back of his own Parliament and European allies led them both into a disastrously ill-planned intervention in Iraq.

Clearly, parleying at the summit is a high-risk business – with sometimes far-reaching consequences. What makes for success? There are no simple answers. Our research on the last half-century shows that much depends on circumstances, timing and the personalities involved – but that a number of general principles apply.

Symbols can be as significant as treaties
Sometimes success is largely symbolic – bridging the gap between two antagonistic powers and often wholly foreign cultures. A striking example is Richard Nixon’s visit to the People’s Republic of China in February 1972, 20 years after the two countries had fought each other in Korea. The briefing book of Nixon’s advance man Henry Kissinger was entitled Polo – evoking the Venetian traveller Marco Polo and his legendary voyage of discovery to China in the late 13th century.

Little of substance was achieved when the President finally visited the Forbidden City (formal diplomatic relations did not commence until seven years later) but in fundamental ways contemporary journalists were right to dub this ‘the week that changed the world’. Pictures beamed around the globe of the handshake between Nixon, a famed commie-basher, and Mao Zedong, the supreme ideologue of the Middle Kingdom, signalled the entry of ‘Red China’ into the international community and with it the advent of a new ‘tripolarity’ in the global Cold War.
Here summit diplomacy was not so much a matter of policy or deals; it was a journey of reconnaissance and stood out as a ‘performatif act’ in cross-cultural relations. Ideological foes often seem like alien forces but summitry can help in what we call ‘de-othering’ the ‘other’ and thereby initiating a process of rapprochement. Indeed, Kissinger’s solo diplomatic missions to Beijing in 1971-72 were indispensable in preparing what was a spectacular U-turn for both governments.

**Keeping open the channels of communications**

Once governments are talking, summity is important to keep open channels of communication, especially in times of tension. The German chancellor Helmut Schmidt was a great practitioner of what he called Dialogpolitik. He argued that a leader must always try to put himself in the other guy’s shoes in order to understand their perspective on the world and to construct compromises that were viable. Schmidt favoured informal summit meetings as a way to exchange views privately and candidly, rather than feeding the insatiable media craving to spill secrets and trumpet achievements. He orchestrated the ‘beach-hut’ summit at Guadeloupe in 1979 with the leaders of the USA, Britain and France to thrash out fraught issues of NATO’s nuclear strategy. And during the ‘New Cold War’ of the early 1980s when superpower relations were stuck in a deep freeze, he conducted shuttle diplomacy as the self-styled ‘double-interpreter’ between Washington and Moscow.

On other occasions, however, a summit meeting comes as the culmination of a long period of diplomatic negotiations. This was certainly true of Nixon’s trip to Moscow in May 1972. During that week he signed...
Why did that handshake have such an electric effect? Partly because of the personal chemistry between the two leaders.

10 carefully planned agreements, notably on strategic arms limitation but also covering trade, technology and cultural relations, all of which were underpinned by a statement of ‘Basic Principles’ for Soviet-American relations. In this case, symbolism was backed up by substance. When Nixon clinked champagne glasses with Leonid Brezhnev in St Vladimir’s Hall – the first time an American president had penetrated the grim walls of the Kremlin – they were toasting real achievements in anticipation of a new era of détente. Moscow was intended as the beginning of a series of summits, alternating between the USA and Russia, but in the event the whole process collapsed with Watergate and the demise of Nixon’s presidency in 1974. It was not until the 1980s that Cold War summitry generated a chain-reaction with truly transformative consequences for Europe and the world. The unlikely partners were Ronald Reagan, who in 1983 had denounced the USSR as an ‘evil empire’, and Mikhail Gorbachev, who had risen through the Soviet system and saw reform as a way to reinvigorate its global competitiveness. Yet each was also a closet radical, convinced that in an ideal world nuclear weapons should be abolished. Circumstances were by now propitious, with the Soviet system stagnating, their military over-extended in Afghanistan, and both sides shocked at coming to the brink of nuclear war over NATO’s ‘Able Archer’ NATO exercise in 1983. So the time was ripe to talk.

The four Reagan-Gorbachev summits in 1985-88 generated a remarkable synergy that allowed the two men to speak the unspeakable and then do the unprecedented, by scrapping a whole category of nuclear weapons in the Intermediate Nuclear Forces treaty of 1987. The catalytic moment occurred at the end of the first day of their talks in Geneva in November 1985. After frank but often stormy sessions, that evening they parted company in the car park with a handshake that Gorbachev called “a spark of electric mutual trust”. Afterwards Reagan muttered to his chief of staff, “you could almost get to like the guy.”

Why did that handshake have such an electric effect? Partly because of the personal chemistry between two leaders who were ready to talk with each other and not at each other. But it was also made possible by the quiet work of their advisers behind the scenes. The key figures here were the foreign ministers, Eduard Shevardnadze and George Shultz, who met more than 40 times before and between the summits. They developed their own personal ties and also managed to anchor the intense but sporadic encounters of their volatile bosses within formal bureaucratic processes. This exemplifies a larger point: diplomats and aides, when acting in tandem with political leaders, are the ‘sherpas’ who make possible success at the summit.

The meetings between Reagan and Gorbachev are one example of what we call ‘transformative summitry’. The two leaders grasped a historic opportunity to defuse the Cold War. In 1990 Gorbachev and Helmut Kohl, the German chancellor, glimpsed a similar ‘moment of decision’ and used summitry to settle the ‘German Question’.

Of course, the fall of the Berlin Wall, together with revolutionary changes across Eastern Europe in 1989, had made the East German state untenable – but German unity might have come slowly or violently or not at all.
Summitry enabled the Federal Republic to absorb East Germany peacefully and smoothly through international agreement. At their tête-à-tête in the Caucasus mountains in July 1990 Kohl – operating in a slick ‘good-cop, bad-cop’ double act with his Foreign Minister, Hans-Dietrich Genscher – used cheque-book diplomacy to secure the Red Army’s withdrawal from German territory and agreement on unified Germany remaining in NATO. This was not just a climbdown by Gorbachev, bought by a massive German bribe. It reflected a shared desire to move into the post-Cold War era in a spirit of entente, founded on common ‘democratic’ and ‘universal’ values, as Gorbachev and US President George H.W. Bush put it when they met in Malta in December 1989.

This may all seem a far cry from today’s confrontations of the West with Putin’s Russia. How we got from 1990 to 2016 is too complicated to relate here. We can, however, affirm that while summitry remains as pertinent as ever, there are no pre-packed ‘lessons from the past’. At stake in moments of international crisis is how to strike the right balance between the politics of deterrence and the diplomacy of dialogue – or in other words, making up your mind when to stand firm and when to reach out.

This is a nerve-racking judgement call for leaders, involving calculations about opportunity, timing and the personality of one’s opposite number. Sometimes politicians get it disastrously wrong. Chamberlain going to Munich is the classic example of readiness to talk being seen as appeasement. Blair’s secret deals with Bush in pursuit of regime change in Iraq brought down the house of cards that had passed for stability in the Middle East. In both cases the pursuit of peace ended in war. Yet the creative summitry between Reagan, Gorbachev, Kohl and Bush shows that major transformations of the international order can be managed by consent and co-operation.

Ultimately what is crucial is to create a framework of predictability within which each dares to trust the other. This remains the one key perennial challenge for those statesmen and stateswomen who have the vision, skill and nerve to ‘parley at the summit’. 

David Reynolds, Professor of International History and a Fellow of Christ’s, and Kristina Spohr, Associate Professor at the LSE and formerly Research Fellow at Christ’s, are co-editors of Transcending the Cold War: Summits, Statecraft, and the Dissolution of Bipolarity in Europe, 1970-1990 (Oxford University Press).
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‘It was intensive but I wouldn’t have missed a single item. It was excellent that we saw so much.’

‘A lovely week packed with information and sensory overload’

From recent participants on MRT tours.

Image: Parma, theatre in the Ducal Palace, lithograph 1822.
When I was 13 growing up in Hong Kong, my music teacher said: “You play the piano – why not try the organ?” I’d never heard of it but gave it a try – and it fascinated me.

As one of Jesus’s two organ scholars, I work with our choir and choristers, spending at least two hours a day either in the College chapel or the Song School – and when we start rehearsals before term begins, it can be whole days. It is a big commitment; sometimes I wish I could go to the bar instead. But at the chapel, with the choir, I feel at home.

Bach never disappoints, especially on the organ in Jesus Chapel. Our organ is versatile – you can make it sound very clean in texture; it can sound full yet not tiring. But it’s not my organ playing that makes the chapel my reality checkpoint. It’s the friendly people brought together – students, fellows, tourists, musicians – and the atmosphere. It’s the oldest chapel in Cambridge, it’s big, and when I first saw it, it felt daunting. But now I know it’s not as scary as it looks or sounds. Every time I go in, I’m taken by how beautiful it is.

As vibrant as it can be when you have a full choir singing and acoustics swirling around, the chapel can be very peaceful. I confess I do like it when it’s quiet and I play the organ in the darkness. Sometimes when I finish practising, I can’t help but walk around and just feel the place. It is magical.
My wake-up call was realising I didn’t recognise myself any more

CAM browses the bookshelves of Dr Suchitra Sebastian, University Lecturer in the Department of Physics.

The more unknowns there are, the more exciting I find it

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CONCLUDING UNSCIENTIFIC POSTSCRIPT

SØREN KIERKEGAARD

I came across this book in my teens and was immediately drawn to its larger questions about existence and the purpose of life. It argues that logic cannot explain existence because existence itself is outside a logical framework. I agree. In fact, I was recently part of a panel discussion at the World Economic Forum called Will Science Save Us? and while all the other scientists there said, ‘Yes, of course it will,’ I argued that there are big questions it just can’t answer, such as ‘Why are we here?’ Physics is an extremely cut-throat, competitive world and the fable you are sold is that it is the whole point of everything. But I think it would be a very monochrome world, without a lot of hope, if that were the case.

A WILD SHEEP CHASE

HARUKI MURAKAMI

Conventionally, science is done with a specific goal in mind. You have a hypothesis that you try to prove and it’s all about the ‘knowing’ and the ‘controlling’ of something. But for me, it’s the ‘not knowing’ and the exploring that’s exciting. In fact, the more unknowns, the more exciting I find it. So this book – which is part mystery and part magical realism – resonates with me because you’re on this quest where you’re not quite sure where you are going or what you will discover. It’s a book that takes you off balance and out of your comfort zone.
I saw it at the cinema, the place to go to escape your studies

Leslie Bricusse (Caius 1951), writer, composer and lyricist

**WATT**

**SAMUEL BECKETT**

With science, you make observations, then try to give them meaning. But oftentimes, what you find doesn’t fit into the framework you expected it to. That doesn’t mean that what you found lacks meaning, but scientists find this disconcerting. I, however, will happily say, “I’ve made this discovery and although it doesn’t fit into an existing framework, that’s the exciting bit because it means we need a whole new framework!” This book explores the very concept of finding meaning, with Watt feeling he’s going mad because he can’t find explanations for things and can’t place them into context. The book plays with you, so one minute you think you’ve grasped it, but then it’s gone, leaving you wondering whether you grasped it at all – it’s brilliant.

**AN AMERICAN IN PARIS**

**GEORGE GERSHWIN**

This orchestral composition inspired the film *An American in Paris*, which won the Oscar for best film in 1951. I saw it at the Rex Cinema, the place to go to escape your studies. We all went mad over the film, and I must have seen it 10 times in a week. I recently put lyrics to all Gershwin’s orchestral pieces in a concert evening, *A Few Words with George*.

**FUGUE FOR TINHORNS**

**FRANK LOESSER**

The opening song of *Guys and Dolls* was the biggest musical hit of the early 1950s. It’s literally a fugue as it has several New York gangsters singing different things at the same time. It’s an incredibly clever and complicated piece of music. Loesser was one of my heroes as he was one of the few people, along with Cole Porter, who could write both music and lyrics.

**MIDDLEMARCH**

**GEORGE ELIOT**

I love how the protagonist’s fierce intellect, combined with her extreme passion, make for such a compelling and nuanced character. Novels – as Virginia Woolf pointed out – enable women to be empowered and multi-faceted, even if the real lives of Victorian women were relatively restricted. I think this also translates to academic science, where there is still very little space for women to be themselves. For starters, there aren’t many of us, and many of the men conform to an idea that scientists are all about logic and being narrowly focused. For a while, I found myself subconsciously trying to fit the stereotype. My wake-up call was realising I didn’t even recognise myself any more. I didn’t laugh; I wasn’t light-hearted. So I gave myself an ultimatum – either walk away from physics or bring my whole self to science, and today I’m much happier, and a better physicist, for it.

**THE NUTCRACKER SUITE**

**TCHAIKOVSKY**

As a schoolboy, I fell in love with Tchaikovsky’s music. The main themes of the Nutcracker Suite screamed to be sung. At Cambridge, I made my first clumsy attempt to put lyrics to the *Dance of the Sugar Plum Fairy*. Now, 60 years later, there are 10 Tchaikovsky-Bricusse songs in my current animated movie, *The Great Music Chase*.

**ALWAYS TRUE TO YOU IN MY FASHION, KISS ME KATE**

**COLE PORTER**

During my third year, the musical *Kiss Me, Kate* was on in London – and I’d realised that writing for musical theatre and movies was what I wanted to do with my life. Oscar and Grammy winner Leslie Bricusse’s new musical, *Sammy*, about the life of Sammy Davis Jr, opens in London in 2017.

**ATT SAMUEL BECKETT**

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Email: to-mike@hotmail.co.uk Web: www.tuscanycestello.com
The hope for achieving understanding, let alone peace, in Middle Eastern politics has long been shadowed by feelings that run so high, they can risk basic academic principles going out of the window. However, thanks to my position as the John Harvard Professor at Cambridge, I find myself with the opportunity to create a fresh sort of debate. Three times a year – and for five years – I can convene in Cambridge a small group of academics and policy makers, who cannot meet in the Middle East for a host of political reasons, to discuss issues of real importance over two days of private, intense and focused discussion. I decided from the beginning that peace would not be the subject: the light at the end of the tunnel tends to dazzle everyone. I also decided that this would be about the whole region not just Israel/Palestine, which is only one part of the region’s difficulties, as subsequent events in Syria and Egypt have grimly confirmed.

So our first subject is civic infrastructure – how does the construction of the space of cities contribute to social upheaval or social integration? Second, we investigate water as a boundary – smuggling, rivers, the sea and offshore power. Third, we look at what democracy in the region might mean. The debates are riveting – and properly collaborative. A young female colleague who grew up in Jenin was holding forth about how the United Nations’ plan to widen the streets in the camp was seen as a plot to bring in tanks. Another participant interrupted: “You had better blame me, then”, he said, “I drew up those laws. But that wasn’t their idea...”. The Palestinian instead of holding forth had to speak to the actual person who wrote the regulations – and the regulator had to face the recipient of his rules on the ground. Both learned from the exchange. Both had to recalibrate. The hope is that slowly such exchanges will eventually produce material that will change other people’s minds, too.

The hope is that slowly such exchanges will eventually produce material that will change other people’s minds, too. That sums up politics!

“...”

I also heard the best image for the region’s problems. A hydrologist explained that before modern systems, hundreds of tons of sewage were dumped into the aquifer. “We know it is down there. We don’t know where it is. We know it will come up, we just don’t know where or when”. That sums up Middle Eastern politics! The hope is that our sort of collaboration – from the ground up – might just create a bit of decent understanding, which is currently so missing, and so hard to share.

JOHN HARVARD PROFESSORSHIP
Simon Goldhill holds the John Harvard Visiting Professorship, which was established in 2013 following a benefaction from Robert C. ‘Peter’ Milton, Lionel de Jersey Harvard Scholar at Emmanuel (1956), alumnus of Harvard and cox of the winning Cambridge crew in the 1957 Boat Race.

The professorship is for five years and alternates between the Schools of Arts & Humanities and Humanities & Social Sciences. It focuses on the Arts, Humanities and Social Sciences and enables the post holder to conduct interdisciplinary research into a problem of pressing modern relevance. It builds on the strong longstanding relationship between the Universities of Cambridge and Harvard, including the Harvard-Cambridge scholarships at Emmanuel, Trinity, Jesus and Pembroke, student exchanges, and the academic posts and studentships endowed by the late Dr Herchel Smith.

The professorship takes its name from John Harvard (Emmanuel 1627), the first benefactor of the new university in Massachusetts.
EXTRACURRICULAR CROSSWORD

CAM 79 PRIZE CROSSWORD

Missing
by Schadenfreude

All entries to be received by 27 January 2017. Please send completed crosswords:

- by post to CAM 79 Prize Crossword, University of Cambridge, 1 Quayside, Bridge Street, Cambridge, CB5 8AB
- online at alumni.cam.ac.uk/crossword
- by email to cameditor@alumni.cam.ac.uk

The first correct entry drawn will receive £75 of vouchers to spend on Cambridge University Press publications and a copy of Colour: The Art and Science of Illuminated Manuscripts [Paperback, Harvey Miller, £30]. Edited by Stella Panayotova, this beautifully illustrated catalogue accompanies the Fitzwilliam Museum’s bicentenary exhibition, which runs until 2 January 2017.

Two runners-up will also receive £50 to spend on CUP publications.

Solutions and winners will be printed in CAM 80 and posted online at alumni.cam.ac.uk/magazine on 10 February 2017.

INSTRUCTIONS

When the answers have been entered there will be some empty cells. Solvers must fill these with a missing name and alter the contents of 10 other cells to reveal two locations. The altered letters spell an associated name. Numbers in brackets give the lengths of final grid entries which are all real words or phrases.

ACROSS
1 Genuinely reduced increase for William (3)
3 Find fault with swimmer (5)
7 Silly prince lives in Australian hotel (5)
11 Weighty American coin (8)
12 Crooner’s pocketing soft Sheila’s redundancy pay (5)
14 Balanced measure? Not quite (4)
16 Canals join it in places (7)
17 Workers’ association conservative quits political alliance (5)
18 Alarm off outside base (4)
19 Note penned by educated American football player (4)
21 Arab probing for a source of edible rootstock (4)
22 Goddess bolstering prince is violent (5)
24 “Son” remains a form of address in New York (4)
25 Run round eastern coastline feature of the Northern Isles (3)
26 Half of moth’s inverted part of wing (4)
27 Centrepiece is removed from green hub (5)
29 Poor poet’s mother appears after noon (4)
31 Second-class unopened letter from abroad (3)
33 Block up river in the morning (4)
35 Holiday accommodation poorly situated in west facing avenue (5)
36 Prepared payment demand for the auditor (4)
37 Veronica may be greeted by this heartless cardinal (4)
39 Heartless cardinal received as a visitor (4)
40 Mike and Charlie together act as host (5)
41 Strengthen nigh on perfect member’s capacity (7)
44 A tree metres away from stable (4)

DOWN
1 Money taken away from mean unpaid worker (4)
2 Short instrument attached to a length of transparent membrane (7)
3 Section removed from unusual crease in grey matter (7)
4 Worship god with difficulty at the front (9)
5 Country game supported by keen enthusiast out of college (7)
6 Poseurs expected to be rampant in steamer after end of trip (8)
7 It advanced after about 100 minutes (4)
8 Sullen local bits making passes in East London (6)
9 Ball son originally put in this place (6)
10 Husband definitely not returning love? (3)
13 Inactivity shown by male victim of Sikes (9)
15 Coach departed from one side of the platform (9, 2 words)
20 Capital that is invested in potential unit (4)
23 Winged insect is evidently dropping dead crossing France (8)
28 Canopies are left abandoned in Roman road (7)
29 Girl missing Sweden and ship’s officer make an unsuitable couple (7)
30 A ground rule applied to component of some seeds (7)
32 Primitive instrument for mobile sex worker (6)
33 Midshipman’s left for female highland dancer (6)
34 They symbolise test conditions (6)
38 Fine English strain (5)
42 Secure German or Austrian province (4)
43 One verse primarily aimed at all Scots (3)

SOLUTION TO CAM 78 CROSSWORD

JUMBLES BY SCHADENFREUDE

Winner: Trevor Speak (St Catharine’s 1968). Runners-up: John Reardon (St John’s 1969) and Tony Marshall (St Catharine’s 1961).

Solutions to across clues are: BAROCK, SHAMAN, MACLE, ELEVATOR, ELIMINANT, AIRSIGN, WHEES, FELON, ERRATIC, SINCERE, CURER, STERN, MISDONE, STAMINATE, TALENTED, EMEND, DAYBED, STEELE.

Instruction from added letters is CHANCE AND SHADE ONE LETTER IN ACROSS ENTRIES.

The new letters give MY SPELLING IS WOBBLY from Winnie-the Pooh. All final grid entries are real words or phrases.

Do you revel in the complexities of our crossword or are they one cryptic clue too far?
After eight cryptic years, we’d love to hear your thoughts on the crossword. Write to us at: cameditor@alumni.cam.ac.uk
Welcome to your Club

For nearly 200 years alumni have chosen to take up membership of a spacious and elegant private club in the heart of the West End. The Oxford and Cambridge Club in Pall Mall is the perfect place to meet for a drink, entertain friends and colleagues in magnificent surroundings, play squash, take a break, host a party or just find a quiet corner to prepare for a meeting. A thriving social scene, sports facilities, a lively calendar of events including talks, tastings, dinners and balls, an exceptionally well-stocked library, extensive wine cellars and more than 40 bedrooms mean our members use their club for recreation, relaxation and business - and now you can too.

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