

EMMANUEL 2019 REVIEW



I HAVE SET AN *Acorn*, WHICH
WHEN IT BECOMES AN *Oake*,
GOD ALONE KNOWS WHAT WILL BE
THE FRUIT THEREOF • SIR WALTER MILDMA

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As we plan our new building at Emma, the cover shows some of the materials that make up the fabric of the college
Photograph: Marcus Ginns

Acknowledgements

Emmanuel College would like to thank all those who have assisted in the production of the Review, including:

Museum of Archaeology and Anthropology,
University of Cambridge p.4
Clinical Skills Unit, Cambridge Veterinary School,
University of Cambridge p.11

Published by

The Development Office,
Emmanuel College, Cambridge CB2 3AP

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Photography by

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Design and production by
H2 Associates, Cambridge

VIEW FROM THE LODGE



© Mike Morgan Photography

It was very special to visit Emma members in Washington at cherry blossom time

This has been such an exciting year. We're in the midst of intense preparations for the new site we've acquired from the University, and with the help of our excellent architects Stanton Williams can now see just how much it will transform our college; we are in the 'quiet' (but for that don't read anything but busy!) phase of fundraising. At the same time we're living through what must be one of the most uncertain periods in modern history, with huge questions about our future relationship with the EU and the wider world, and about funding and policy for higher education.

Yet some things never change. Term's ended, and another generation of brilliant, motivated and hard-working undergraduates has set off into the world. A hot summer's day saw this year's cohort assembling in Front Court to walk to the Senate House, just as you did, where I was waiting to confer on them their hard-won degrees. I feel so proud as I do this; so optimistic that they will make the world a better place; and so glad that they will carry the experience of being at Emma and all that's brought, with them for the rest of their lives.

But we have to work harder than ever to make this possible. Funding worries loom, expectations of teaching and learning grow, and we cannot assume our students will get good, rewarding jobs when they graduate.

That's why we are so passionate about the opportunity presented by our new project. It's genuinely transformational, offering us the chance both to extend our intellectual ambitions and also to build an ever stronger sense of community. When it's finished we'll have a range of new, welcoming spaces: a café/bar 'hub', new teaching and seminar rooms, new facilities for the MCR, a new bar and party room, and on-site residential accommodation for another 50 undergraduates (before very long now, all undergraduates will be able to live on site for three years), enabling our community to thrive and work more closely together. There will be new green spaces and the whole scheme will be environmentally friendly. We'll be programming events designed to share intellectual ideas and develop our community's skills, equipping them for their future lives. We'll be attracting an ever more diverse intake, and offering more support for those in need, whether as a result of financial circumstances or because of family, mental health or other problems. Together, we'll ensure we maintain our passion for excellence while offering support for our whole community, which will be expanded to include up to 100 early career post-doctoral researchers.

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The vision is exciting and the opportunity immense. Already we've had support from Emma members all over the world, and we're in deep discussions with many others who are excited about particular aspects of our project. As we travel – and this year we've been in Hong Kong, Singapore, New Zealand, Australia, India and to the east and west coasts of the USA – we're finding a warm response to our ideas and a keenness to help. We're both grateful for and excited by this: thank you.

We've also welcomed hundreds of Emma members here: some to dine, some to attend parties and many to come to events run by our wonderful and energetic Emmanuel Society. I love seeing you all, and catching up with your lives, experiences, and ideas: remember, there's always a warm welcome for you here, so please do come.

If the last year has been exciting, hold your hats for next. Once the Governing Body has approved our plans, we'll be applying for planning permission and scoping out our construction timetable. There'll be a public launch of our project and lots of opportunities to engage with us as we move forward. And maybe – just maybe – we'll have a clearer picture of the landscape for higher education.

But whatever happens, we know we have a bright future. We're good at what we do but we don't rest on our laurels. We'll offer both the best education and the best preparation for life, in the most beautiful environment, and among passionate and brilliant people. And the fact that we can do so rests on the very firm foundations you and every single other member of Emma have planted. Thank you.

Fiona Reynolds
Master

ANCIENT TOWNS ON THE NILE

KATE SPENCE, FELLOW



The past shapes our lives in so many ways. Identities, habits and responses are forged in relation to it, no matter how much we think our eyes are on the future. I am interested in the influence of landscape, built environment and material culture on past and present experience, and in the potential of settings to mediate and shape encounters and interaction. We experience this on a daily basis in the grounds, buildings and traditions of Emmanuel, and we feel the weight of responsibility to future college members as we work with architects to transform the college with new buildings and social spaces.

We hope that by encouraging positive engagement with past heritage, locals will better recognise the site's importance

My research considers such themes, focusing on the Nile Valley in Egypt and Sudan in the second millennium BC. Sometime around 1350 BC an Egyptian king called Akhenaten decided to change radically traditional religion by focusing state religious practice on the visible sun disk. He built a new centre for his sun cult, government and court at a site in Middle Egypt we now call Amarna, and removed the images and names of the majority of traditional Egyptian gods from temples throughout the land. The archaeology of Amarna allows investigation of the role of building in effecting change: Akhenaten's officials worked experimentally, creating ever-larger temples and palaces decorated in a distinctive and novel artistic style, building settings for encounters between the king, his family, courtiers and people. But the site also preserves the remains of hundreds of houses, from those of the richest officials to the poorest of society: this provides a fascinating data set for investigating the lives and interactions of ordinary people living over 3000 years ago.

The remains of Akhenaten's city at Amarna spread over a vast desert bay east of the Nile, but the site also has a vibrant and rapidly expanding modern population that needs land for housing, agriculture and cemeteries. This creates local tension over the archaeological remains and causes significant issues for the Ministry of Antiquities, faced with the monumental task of managing Egypt's heritage. Working with the Ministry and the Amarna Project, with funding from the British Council and the Egyptian Science, Development & Technology Fund, we are developing a Site Management Plan for Amarna

along with educational and outreach resources in Arabic and English designed for use in the Amarna Visitor Centre and in schools in Egypt, the UK and beyond. We hope that by encouraging positive engagement with past heritage, locals will better recognise the site's importance.

Right at the beginning of Akhenaten's reign, a few years before work started on Amarna, a walled town was built by the Egyptian state in Nubia (modern Sudan). Sesebi, as the site is now known, was first investigated in the 1930s but many questions about its nature and role remained. Working with the National Corporation of Antiquities and Museums of Sudan, we have worked at Sesebi since 2008, focusing on the





history, architecture and regional setting of the site, as well as its relationship with Amarna.

We have established that the focus of activity at Sesebi was gold mining. Gold was widely used in royal and elite contexts in Egypt, and contemporary diplomatic correspondence shows clearly that gold was central to Egyptian international prestige and gift-exchange with other rulers in the East Mediterranean and Near East. Accessible gold reserves in Egypt had been largely worked out by this time, and Egyptian expansion into Nubia to the south allowed access to far more productive mining areas. Sesebi was a key centre for this activity and remained in use for around a century, supplying the royal

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coffers and furnishing burials in the Valley of the Kings including that of Tutankhamun (most likely the son of Akhenaten). Sesebi also provides fascinating parallels with Amarna and the opportunity to compare built environment and life at a royal centre with that at a contemporary colonial outpost. Although skeletal remains suggest that life was harsh for ordinary people at both sites, the housing for workers at Sesebi

seems surprisingly generous in comparison to that at Amarna. Trying to work out why will keep me very busy over the summer...

Kate Spence (2015), Director of Studies in archaeology and a Tutor, read architecture, has a PhD in Egyptology and is Senior Lecturer in Archaeology. She is a member of the working party liaising with Stanton Williams about our building plans.



A PROMISE OF HUMAN RIGHTS

EMMA MACKINNON, FELLOW

Human rights are something we all have simply by virtue of our existence. Natural and universal, they are timeless. But as a growing literature in the field demonstrates, 'human rights' also have a history, and our ability to think of ourselves as having rights is partly a product of this. Correspondingly, their purported universality and naturalness is at once both self-evident and also in need of establishment.

When I began my current research as a doctoral student at the University of Chicago, I was interested in understanding the politics of the idea of human rights. I was studying political theory; in that field, there was a common conception of 'human rights' as a language that enabled a wide array of claims, from both 'above' and 'below'. While the idea might be used hypocritically, to provide ideological cover for various unsavoury practices, it could also be used to contest those practices. But was it infinitely malleable? What distinguished claims from 'above' from those from 'below': was it just a matter of the position of the person making the claim, or something about the claim itself? As I saw it, this was not only a philosophical question, or even simply an empirical one, but one that required understanding the concept's relation to its own history.

I decided to focus on the ways eighteenth-century French and American declarations of rights – one supposed starting point for ideas of human rights – were used in mid-twentieth century debates in France and the United States. The period I chose was one when ideas of human rights were becoming more widespread, but before what historians describe as their 'breakthrough' into popular conscience in the 1970s. In the decades before that moment, how were political actors theorising human rights? And how were they connecting their claims to those earlier eighteenth-century ideas?

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I wanted to understand not only what counted as a human right, but also how earlier commitments could be mobilised to contest, and to justify, forms of exclusion: disputes over bringing practices into line with ideals. I chose to look at the rhetoric of human rights in the US and France from the 1940s to the 1960s, focusing on its place in demands for racial equality in the US and in the politics of decolonisation in France.

My project starts from the drafting of the 1948 Universal Declaration of Human Rights. This was presented as an inheritor of those eighteenth-century declarations, carrying forward and articulating what Eleanor Roosevelt described as 'the promise of human rights'. She and the French delegate to the drafting committee, René Cassin, explained human rights as something into which people were being gradually educated, coming to see themselves as possessing, as well as something that nations were becoming more capable of providing.

That view of a promise to be gradually fulfilled, as people learned to regard themselves as having rights, fits closely with many historical accounts. But here, that story was being used politically: in the US, it was compatible with claims that segregation and racism were a domestic problem, one to be addressed through gradual persuasion; in France, it was used by Cassin to justify French colonial violence in Algeria. Treating rights as a 'promise' implied certain claims about who promised what to whom, and how that promise might be fulfilled over time.

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To see how that idea of a 'promise' of rights had itself been contested, I look at how others had used claims about human rights. I focus on Ferhat Abbas, one of the leaders of the Algerian resistance, and on Malcolm X, both of whom were particularly drawn to the language of human rights. I use archival work to track how they each made use of those earlier eighteenth-century declarations, not simply to claim inclusion in that past promise, but also to critique how that promise was caught up with forms of exclusion, and to challenge what it might mean to fulfil it.

Since arriving at Emmanuel, I've been expanding and revising the manuscript of a book on the subject, as well as developing some side projects touching on history, international law and political theory. Most generally, I'm interested in how big concepts, seemingly universal and abstract, can be used politically, and how their history itself becomes an object of contest; in my next project, I'm hoping to explore similar questions through a consideration of the politics of conscience. And in January, I'll take up a post as a lecturer in the history faculty here at Cambridge, teaching the history of political thought since 1900.

Each year we elect three or four fully funded Research Fellows, to join the Fellowship at Emmanuel for three years and embark on post-doctoral studies. Emma Mackinnon joined us in October 2017, and we are delighted that we've been able to appoint her as an Official Fellow from January 2020 in association with her appointment to a University post.

COMPUTER SCIENCE AND MUSIC

AIDA MIRALAEI
PHD STUDENT

My first acquaintance with computer science was during my first year in high school, where I participated in the RoboCup Olympiad. I found it a perfect match for my enthusiasm for solving maths problems. Since then, I have followed my passion through university and into the computing industry.

After completing my undergraduate degree and a Masters in computer engineering in Tehran (Iran), I started working on Big Data projects in a company called Digikala, an online retailer in Iran. Working there for two years convinced me that applying machine-learning algorithms such as convolutional neural networks to large datasets is a powerful way of finding a solution to some challenging questions such as image recognition, speech recognition and natural language processing. However, to achieve accuracy, these methods require significant computational and memory resources, which can make them unsuitable for mobile and Internet of Things (IoT) end-node devices.

In October 2017, with generous help from my funders, including Emma, I came to Cambridge to start working on my PhD, which is an attempt to target this challenge, to make binary convolutional neural networks (BCNNs) more energy-efficient with the help of in-memory processing. Moving computations out of the processor into the main memory allows us to run BCNNs with significant efficiency as it skips a major energy bottleneck of data movement between the main memory and the processor.

Over the last two years, besides the purely research part of my PhD, I have enjoyed giving supervisions to undergraduates, going on photography walks in early mornings, helping with scheduling and organising inter-college events as a member of the MCR's committee and participating as an active member of the 'women@CL' society in my department, of which I am deputy chair and treasurer. The 'women@CL' society is a network for women working in computing research and has



One of the most exciting parts of my college life is taking piano lessons under the kind supervision of John Bryden, an Emma member

a particular focus on encouraging them to undertake interdisciplinary research, and have positions of leadership.

Last but not least, one of the most exciting parts of my college life is taking piano lessons under the kind supervision of John Bryden, an Emma member, with help from the college's Burnaby Fund. Back in Iran, music lessons are unfortunately not a part of our school schedules and despite the growing passion I had for music,

I didn't manage to have private classes until I came to Cambridge. Now, I find it a blessing to have during the ups and downs of my PhD life.

Cambridge was and always will be my dream university, but when it comes to the colleges, to me Emmanuel is home. Here, I have got to know many amazing people from all around the world, made valuable friendships and had the great opportunity of experiencing the college life that my beloved late sister, Negar, lived and loved.



Emmanuel has a partnership with the social mobility charity Villiers Park Educational Trust, as part of our commitment to enabling bright but less advantaged students to fulfil their academic potential. When he was at school, one of our graduate students, Lewis Todd, went on Villiers Park's Scholars Programme under another arrangement, between the trust and Hastings, and then studied English at Queen Mary, University of London. Emmanuel's Gordon Glasgow studentship has enabled him to study for an MPhil, and he's now won a prestigious funding award to stay on for a PhD.

I joined Emmanuel in October 2018 in order to research and write about the relationship between geology and the philosophy of language in the early nineteenth century. A generous scholarship from the college has allowed me to write not only on this subject during the course of my MPhil, but also – and relatedly – on violence, weather and the question of history in Daniel Defoe, as well as the issue of how language partakes in and transfigures landscape in later

modernist poetics. Though I wasn't necessarily aware of it at the beginning of the year, all these areas of enquiry are more-or-less driven by two sets of historical concerns from different periods that resonate with each other in productive and unsettling ways.

The first of these has its roots in the nineteenth century, and is to do with what Samuel Taylor Coleridge called the 'second scientific revolution', a phrase that refers to sciences – such as meteorology or geology – whose objects are dynamic and often unpredictable systems rather than fixed experimental outcomes. Systems such as these dwarf scales of individual human observation, and lead to a need for new philosophical and representational approaches. The second set of concerns is of our own time: how climate science is produced and represented, particularly with respect to the effect it has on our thinking about time, space and scale.

It is from the interrelation of these two sets of concerns that my PhD project has emerged. Working at the intersection of natural philosophy,

technological development, industrial production and natural-historical inquiry during the nineteenth century, I aim to track the emergence of our current ways of thinking about scale, and to consider their (in)sufficiencies in light of our current ecological and climatic predicaments.

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LEARNING IN PRISONS

GENEVIEVE HOLL-ALLEN
WILLIAM HOLY-HASTED
UNDERGRADUATES

The Learning Together programme, run by Dr Amy Ludlow and Dr Ruth Armstrong at the Department of Criminology, has brought together prison inmates and Cambridge students every year since 2015, all united by a desire to learn, and to share academic and personal experience. Different courses, such as French literature and film (Genevieve), or philosophy and the good life (Will), are organised by Cambridge academics, and taught inside a prison to both Cambridge students and inmates. Both our courses took place at HMP Whitemoor, a maximum-security male prison near March, with weekly sessions throughout Lent term.

We did not sign up for the programme simply to impart our knowledge to others, but also because we felt that the courses would show us – Cambridge students – something of life outside the Cambridge bubble and teach us content beyond a university degree or exam syllabus. The Learning Together programme made us realise that there are many different ways of learning. The contrast between our everyday Cambridge lives and what we were doing in the prison was stark. Rather than studying, reading and writing independently, as we are used to doing in Cambridge, the emphasis at Whitemoor was on group discussion and in-depth conversation. We were encouraged to use our own life as a resource, rather than books and journal articles, and to express our own personal thoughts and emotions, whether it be on the novels of Balzac or Aristotle's virtue ethics.

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By talking and getting to know each other, we learned as much from the Whitemoor students as they did from us. Whilst our learning was based upon academic ideas, texts and works of literature, it always led to discussing big questions such as how we look at ourselves and how we perceive others in society. We were struck by the continual enthusiasm and intellectual curiosity of those at Whitemoor, which always matched (if it did not exceed) our own. When prisoners, Cambridge students and academics from every course came together at the end-of-course celebration in April, it was clear that

everyone had been profoundly moved by the experience of learning together and creating both intellectual and personal friendships with one another. The conversations that we had held and the emotions that we had shared over eight weeks, had caused two groups of people, prison inmates and university students, initially separated by their perceived differences, to come together through education and learning. It has been a privilege to be a part of Learning Together, which has left us feeling as though we have truly changed for the better: a sign that one has truly learned something.

A HONG KONG VETERINARY ADVENTURE!

SAMANTHA FRANCIS
CLINICAL VETERINARY STUDENT



Courtesy of Hong Kong SPCA

When clinical vet students (years four to six) are not in lectures or on rotation around the hospital, they are completing 26 weeks of extra-mural studies (EMS). This means going out and learning from vets in practice about real-life cases.

In my fourth year, I attended a talk by an Emmanuel member, Dr Adam West (1994) from the Hong Kong SPCA (Society for the Prevention of Cruelty to Animals). I was especially interested in an EMS placement in Hong Kong as it is my birthplace, and I was excited to see how vet practice abroad differs from that in the UK.

During the weekdays I experienced a small neutering centre for stray dogs, a first opinion clinic, and a large hospital. I found consultations with clients tricky to follow as they were mostly in Cantonese; luckily several vets conducted them in English with a nurse translating. I stayed with my godparents, so weekends involved visiting tourist sites such as the Tian Tan Buddha, taking the ferry to Macao for a day trip, and of course eating delicious local food including dim sum!



Sam with Dude, the Vet School's greyhound, in the Clinical Skills Centre

I am incredibly grateful to Dr West and the college for making this placement possible, and I encourage Emma members and students to connect with each other

This placement was unique as I had one dedicated mentor, who gave continuous advice. As Dr West had completed the veterinary course at Cambridge, he was able to stretch me out of my comfort zone whilst never pushing me beyond my capabilities.

I learned so much from this trip and had a fantastic time! I am incredibly grateful to Dr West and the college for making this placement possible, and I encourage Emma members and students to connect with each other for similar experiences, which can be so worthwhile.

MESSENGERS OF HEALTH

DENNIS LO
HONORARY FELLOW

DNA molecules released by tissues deep within our bodies allow doctors to take a non-invasive glimpse into our health. This technology holds promise for early and safer detection of disorders, even from before birth, and throughout life.

When I was in secondary school in Hong Kong, I read a biology textbook that had photographs of famous scientists, including James Watson and Francis Crick, co-discoverers of the DNA double helix, standing in front of King's College Chapel. This inspired me to apply to Cambridge to read medicine and I was fortunate to be admitted to Emmanuel. Richard Barnes was my Director of Studies, and he instilled into me the importance of going back to original experimental evidence. I first had the opportunity to do a research project using DNA-based technologies in my third year.

For my clinical studies, I moved to Oxford, where I was eager to try out my newly learned DNA-related skills. As I studied obstetrics, I learned about concerns about foetal health. The most accurate method to test foetal DNA or chromosomes was amniocentesis, which exposed both the foetus and mother to a small but definite risk of complications. I wondered whether it might be possible to develop a test based on taking a blood sample just from the mother as the foetus might release nucleated cells into the mother's blood and if the foetus was male, then I might be able to detect male cells. I persuaded one of my clinical teachers to let me try this out in the laboratory and the data suggested that this was possible. I then tried to develop this test, but unfortunately the number of foetal cells in the mother's blood was exceedingly small. I tried different approaches over the following eight years but could never achieve the robustness that would be necessary for a clinical test.

In 1997, I decided to return to Hong Kong. I knew I would need to start a new research direction and wondered whether foetal DNA might be present in another component of blood: plasma. I boiled

some, and to my surprise was able to detect foetal DNA in a very crude preparation. Even more unexpectedly, I found that as much as five to ten per cent of the DNA in the mother's plasma came from a tiny foetus: the number of foetal cells in the mother's blood can be one in a million, or lower.

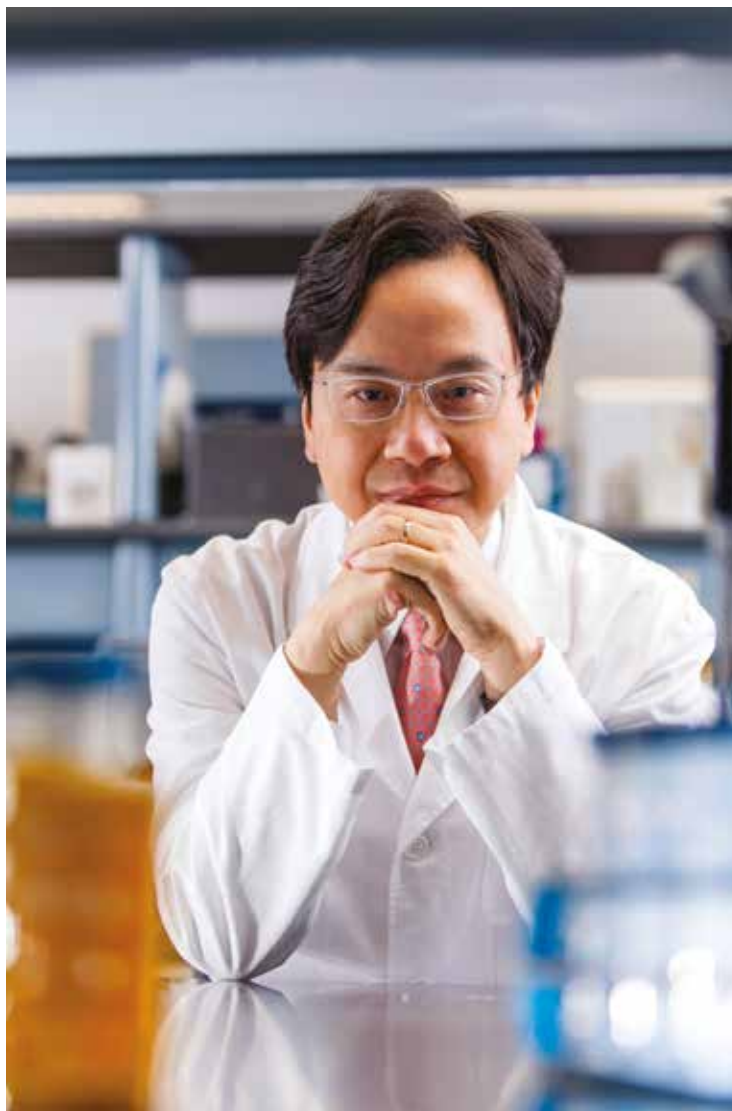
I spent the next 14 years developing this into a non-invasive prenatal test for foetal chromosomal disorders, which for certain cases turned out to be extremely accurate. Launched in 2011, non-invasive prenatal testing (NIPT) is now available in some 90 countries around the world, and is used by millions of pregnant women every year.

I realised that this technology could also allow DNA molecules released from other body tissues to be detected, such as from a cancer, a diseased organ (for example from the brain following a stroke), or a transplanted organ during rejection. These

floating DNA molecules in blood make it possible to monitor the health status of the patient. This field is referred to as 'liquid biopsy' because through the sampling of a liquid (such as blood), one can obtain information that could only previously have been obtained through an invasive biopsy.

I have been very fortunate to have the opportunity of working in this exciting field over the last two decades. Through a modest donation to Emmanuel, I am hoping that the creation of a post-doctoral position will give a helping hand to young Emmanuel scientists as they embark on their research journeys, so that they too can enjoy the thrill of discovery.

We are grateful to Dennis for generously endowing the Dennis Lo post-doc in biomedical sciences.



Courtesy of and © The Chinese University of Hong Kong

HARVARD AND SOUTH ASIA

ALINA KHAKOO
RECENT GRADUATE

A generous benefaction from the late Dr Herchel Smith enables us to send a few recent graduates to Harvard as Special Students each year, and Alina, one of 2018–19's scholars, writes below about how the scholarship has helped her. In addition, around five current undergraduates take part each year in Harvard's Summer Program for Research in Science and Engineering.

I graduated from Emmanuel with a French and Italian undergraduate degree in 2017, with an interest in visual culture that I cultivated during a Masters in the history of art at the Courtauld Institute in London. After moving back into my family home in the British Asian quarter of north-west London, I realised that I had been neglecting the aesthetic traditions of my own community. The legacy of empire that pervades the British education system had led me to believe that European languages and cultures are worthier academic subjects than their South Asian equivalents. Hoping to overturn this scholarly prejudice, I applied for Emmanuel's Herchel Smith Scholarship to study South Asian art history and postcolonial theory at Harvard University.

The interdisciplinary privilege of the Herchel Smith Scholarship enabled me to enrol in a variety of courses from several departments, and to study South Asian visual culture from several different perspectives. I studied works from the early modern Mughal period up to the present day, and was taught by art historians, historians and film scholars. I had the extraordinary chance to look at material first-hand at the Harvard Art Museums and Houghton Library, and to see rare moving-image works at the Harvard Film Archive, projected in textural 16mm or 35mm rather than in synthetic digital renderings. Moreover, I took an intensive Hindi and Urdu language course, and am delighted that I am now able to read, write and speak these in addition to the regional Indian languages I speak at home.



I am looking forward to indulging further my curiosity for South Asian visual culture, and its entanglement with colonial politics, when I return to Cambridge in October for my PhD

Perhaps the only term I can use to describe the year at Harvard is luxurious. I feel entirely spoiled that Emmanuel funded me to work so closely with the university's collection of rare books, art and film; to be taught by leading scholars and write papers under their generous supervision; to submit work for Harvard publications; and to encounter other students who are infectiously enthusiastic about their

area of interest. I am looking forward to indulging further my curiosity for South Asian visual culture, and its entanglement with colonial politics, when I return to Cambridge in October for my PhD. My proposed project expands on research I undertook at the Harvard Botany Libraries and Herbaria, exploring eighteenth- and nineteenth-century British colonial compendia of Indian botany.

EMMA RESEARCH

BARRY WINDEATT VICE-MASTER

Research is fundamental to the purposes of Emmanuel. Our Teaching Fellows, as part of their University posts, pursue research at the highest level, and our undergraduates benefit from Fellows' research-led teaching. Emmanuel's graduate students come to Cambridge to work with research-leaders, and our post-docs belong to a globally significant Cambridge community of advanced researchers. Emmanuel supports Fellows' and students' research through grants and expenses, facilitating events where research findings are shared. Crucially, Emmanuel funds three Open Research Fellowships annually, each for three years – a vital career opportunity for young researchers – and appoints to five named Research Fellowships, generously endowed by benefactors.

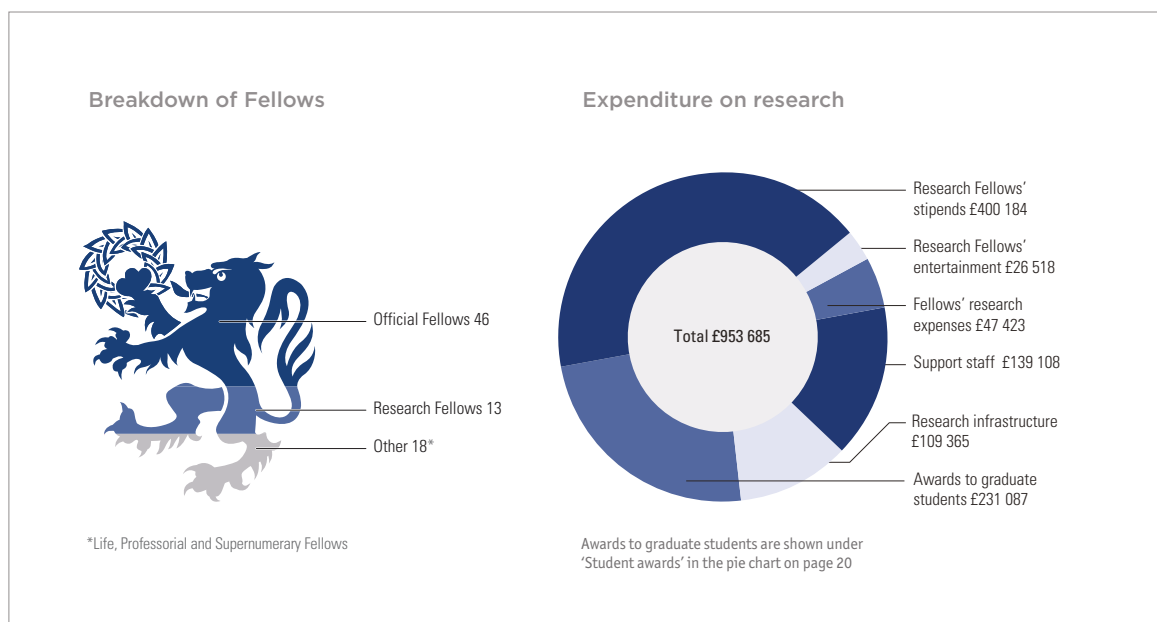
OPEN RESEARCH FELLOWSHIPS

Charlotte Bentley researches global interconnections in nineteenth-century opera, especially the operatic networks between North and South America and Europe, with a special focus on New Orleans within an emerging transatlantic system of opera production and a new project on opera in nineteenth-century Cuba.

Koji Hirata is a historian of nineteenth- and twentieth-century China's relations with Japan and Russia. His first book studied the rise and fall of China's largest steel-making enterprise, and his new project focuses on the Eurasian borderlands of the Russian and Chinese empires, 1792–1912.

Simone Kotva is a theologian researching nineteenth-century natural philosophy and vitalism alongside modern field-writing, environmental criticism and environmental observation, especially exploring the nascent spiritual idioms in the styles adopted by such contemporary writing.

Matthew Leisinger is researching the still-unpublished five manuscripts of writings on free will by Ralph Cudworth (1617–88) – elected Fellow



of Emmanuel in 1639 and one of the Cambridge Platonists – in which Cudworth develops an entirely new theory about human psychology.

Emma Mackinnon researches the contested legacies of the American Declaration of Independence and the French Declaration of the Rights of Man and Citizen in mid-twentieth-century debates about France's engagement in Algeria and over racial justice in the USA.

Vinesh Maguire-Rajpaul works on mathematical and statistical tools for identifying smaller exoplanets (planets around other stars) than is currently possible. Nearly 4000 exoplanets have been discovered orbiting almost 3000 stars close to the Sun, but the search is on for more Earth-like exoplanets orbiting Sun-like stars.

Scott Melville works in 'effective field theory' in theoretical physics; his research builds connections between large-scale macroscopic measurements and the underlying microscopic structures at work, improving phenomenological models so as to understand better the fundamental laws that govern our universe.

Emma Yates Sukdao is an organic chemist researching highly sensitive measurements by combining synergistically tools from synthetic chemistry with fluid physics, to study interactions between proteins so as ultimately to enable their therapeutic control in diseases such as Parkinson's and Alzheimer's.

MEAD FELLOW IN ECONOMICS

Daniele Cassese researches how connectivity influences dynamic processes, in particular trade, epidemic-spreading and natural selection, and is currently working on models of dynamics on higher-order structures.

MEGGITT FELLOW IN MATHEMATICS

Stacey Law is an algebraist who researches the combinatorial aspects of the representation theory of finite groups and especially symmetric groups.

SIR ALAN WILSON FELLOW

Peace Atakpa works on calcium signalling and uses live-cell imaging at high spatial resolution with the employment of targeted fluorescent probes to further understanding of how intracellular calcium function is regulated.

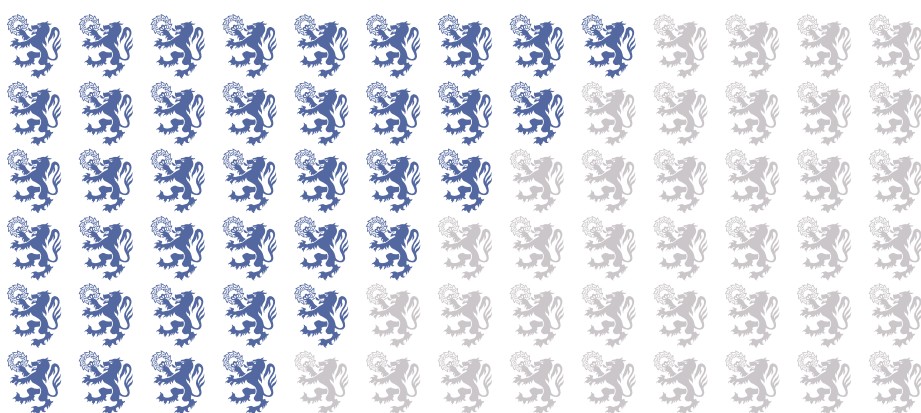
JOHN HENRY COATES FELLOW

Pallavi Singh is a plant scientist researching how to increase yields in rice, by studying the more efficient photosynthetic mechanism observable in certain rice plants that show improved efficiency in use of water and nitrogen.

ROGER EKINS FELLOW

Jorge Rene-Espinosa is researching how the spatial organisation of the genome influences its function; he studies, through modelling and other techniques, the interactions between nucleic acids and proteins in the cellular environment.

Division between sciences and arts



Emma has equal numbers of Official Fellows in the sciences and in the humanities and social sciences, who supervise and direct studies in college as well as pursuing their research and teaching in University departments.

All Professorial Fellows are researching and teaching in their fields, and many Life Fellows are also research-active. Invaluable college support for research includes grants and expenses for field work, visits to archives and libraries, costs of images for study and publication, conference attendance, and for workshops and conferences organised by Fellows in Cambridge.

FELLOWS' TALKS

Fellows' Talks are given twice a term, when a Fellow talks informally about his or her research to an audience of the Fellows, guests and members of the Emmanuel community. During this academic year:

Caroline Egan spoke about her research on texts written in and about Amerindian Languages from the late fifteenth to the early seventeenth centuries and the lingering effects of these encounters on the literatures of colonial Latin America. By studying early grammars, doctrines and histories in comparison with poetry and drama, Caroline demonstrated how linguistic difference in the Americas became a touchstone for many authors.

Emma Yates Sukdao spoke about how understanding protein behaviour is central to studying human health, especially in protein aggregation diseases, like Alzheimer's and Parkinson's. A difficulty in researching pathological interactions between proteins, such as those observed in Alzheimer's, is that these interactions are extremely transient and hence hard to measure with established tools. Emma researches new experimental and computational tools for studying, non-disruptively, interactions between proteins, so as ultimately to enable their therapeutic control.

Bill Broadhurst spoke about how many modern medicines are derived from natural products that are produced by soil bacteria, focusing on the polyketides that include the antibiotic Erythromycin, statins for treating heart disease, and enediyne anti-cancer drugs. Bacteria construct polyketide molecules by linking together a series of simple chemical building blocks into complex chains, using 'gigantic' factory enzymes known as polyketide synthases. Bill spoke about how these factory enzymes might be reprogrammed to produce libraries of custom-designed small molecules that could be screened for bioactive effects.

Susan Rankin showed how systems of musical notation invented in the early Middle Ages form a basis for later western notations: the line from these to the twenty-first century is unbroken (unlike the notations of Greek antiquity, or the more recent notations of other cultures). How the makers of those early notations heard musical sound, into what separate elements they chose to break it down, and which of these elements were then recorded in writing are all questions of interest to anyone concerned with ways in which ideas can be communicated in writing. Susan illustrated how she has puzzled out the nature of the earliest medieval notations, some of which were quite unsuspected.

DEREK BREWER VISITING FELLOWSHIPS

These Visiting Fellowships enable researchers from elsewhere to pursue their work in Cambridge for a term, often in collaboration with a Fellow of Emmanuel. Three came in 2018–19:

Andrew Christie (Professor of Intellectual Property, Melbourne Law School) researches how to modify the patent system to improve access to medicines in low-income countries, utilising pre-existing features of the patent system to incentivise research and development concerning neglected diseases through a transferable market exclusivity period.

Sir Stephen O'Brien (Under-Secretary-General for Humanitarian Affairs and Emergency Relief Coordinator, United Nations, 2015–17) researches the politics and organisational dynamics of collective international response to delivery of humanitarian relief, especially the problems in areas of protracted conflict.

Charles Fernyhough (Professor of Psychology, Durham University), who was here to work with Jon Simons, explores how psychological and cognitive neuroscientific understandings of the subjective experience of memory, and ways of understanding memory through literature and the arts, can gain from mutual engagement.

DESIGNING BUILDINGS

THE STANTON WILLIAMS APPROACH

GAVIN HENDERSON
DIRECTOR, STANTON WILLIAMS

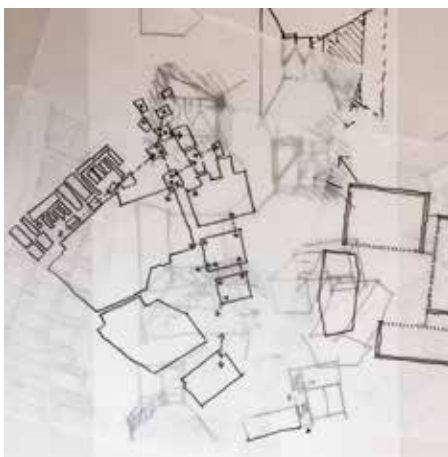


Gavin and his colleague Kaori discuss design of Emma's building

This has not been about starting with a pre-conceived architectural concept and presenting it to the college: it's been about working together to establish the direction for the shared journey we're undertaking

Designing and delivering a project is a journey, usually lasting years, which involves clients, future occupants, designers and, eventually, craftspeople and builders. The route, the deviations from it and the people you travel with are often as important as the place reached: the quality of the journey informs the experience and appreciation of the destination.

Since July 2018 we have been working closely with Emmanuel on the design of the new college court south-east of South Court. This has not been about starting with a pre-conceived architectural concept and presenting it to the college: it's been about working together to establish the direction for the shared journey we're undertaking. The focus has first been on taking time to understand the particular community that exists at Emma and how the proposed new spaces will support the life of the college. In parallel, we've sought to understand the unique character and spirit of place created by the college's existing courts, buildings and landscape, looking at ways in which the scale and character of a new court, and the new social hub we are creating, can contribute to this rich network of spaces. The process is iterative, exploring ideas, the character of spaces and aspirations for new buildings in response to the existing context, through regular meetings with a college working party and through discussions with wider groups of Fellows, staff, students and members.



Courtesy of Stanton Williams



Architecture is a collaborative art. Ideas are borne out of dialogue, with a constant questioning of strategies and testing of concepts. Within our studio this takes place in 'design sessions', where team members table exploratory ideas for discussion, without preconceptions, but with a shared ethos and collective energy. We have a hands-on approach to these discussions, often basing them around altering and adapting rough, physical working models, sometimes held together with pins and tape to enable a quick, fluid and intuitive exploration of the design. The model workshop plays a central role within the studio and we often describe it as being the 'engine room' of our practice.

It is a truism in architecture that great buildings are not just the result of having good designers: they rely on great clients who have a single-minded vision. We feel enormously privileged to be part of Emmanuel College's vision for the future

Our discussions with the college are also often based around the physical models we are making of Emmanuel and the emerging proposals: these have been especially important because the character of the college environment is dependent on the scale, readily grasped in models, of courts and open spaces. Physical models allow us to share these spatial explorations with consultants and members of the college, allowing everyone to understand and engage with the design of spaces and to contribute to the creative process.

The delivery of the project will require a much broader collaboration: a cast of hundreds on site and in the workshops of manufacturers. The attitude of everyone in the process leaves a direct imprint on the quality of the work produced. Our most successful projects have been those where everyone involved, from the most to the least skilled, has understood the client's vision and taken enjoyment and pride in their work. It is a truism in architecture that great buildings are not just the result of having good designers: they rely on great clients who have a single-minded vision. We feel enormously privileged to be part of Emmanuel College's vision for the future, part of the most significant transformation since the construction of North Court in 1914, and to play a small part of the college's continuing history and evolution.

ACCESS, APPLICATIONS, ADMISSIONS

ROBERT HENDERSON
SENIOR TUTOR

Since the middle of 2016 I have occasionally heard people complain that the government is distracted by a single issue, at the cost of other matters to which it would normally be paying more attention. Whether or not that is the case, it certainly does not apply to higher education and more particularly to access to it, a topic that was fervently seized upon in late 2015 and remains one of major, even increasing, interest. This would have been a surprise to anyone who had been asleep for 20 or so years, because in the past policies concerning universities seldom seemed to make much impact on governments' strategic thinking.

All started to change with the introduction of the £1000 undergraduate tuition fee in England in 1999, together with the replacement of maintenance grants by loans. The increase of the fee to £3000 in 2004 and the subsequent jump in 2012 to £9000 turbo-charged higher education (and not just its funding) as a hot political topic. To cut a long story short, the Office for Students (OfS) came into existence in January 2018 as a regulatory body established by the Higher Education and Research Act 2017, and merging the roles that had previously been the responsibility of the Higher Education Funding Council for England and the Office for Fair Access. While the OfS's portfolio is broad, a prime concern is access to higher education: each university has recently been required to produce an 'Access and Participation Plan' (APP) to set and meet various targets to increase access to higher education over the next five to 15 years. While institutions set their own targets, they do so with clear advice from the OfS, which is significant because if a university's proposed APP is not accepted by the OfS, that institution's funding from government becomes vulnerable.

It may be worth explaining where we are now. Since 2012 and the increase in tuition fees, Cambridge has seen a year-on-year increase in the number of applicants for undergraduate places.



Since 2012 and the increase in tuition fees, Cambridge has seen a year-on-year increase in the number of applicants for undergraduate places

Two years ago we entered into a partnership with Villiers Park, located just outside Cambridge in Foxton, who provide programmes for high-ability students aged 14–19 from less advantaged backgrounds around the country. They have a good record of raising academic achievement by developing personal, academic and employability skills, and we have just renewed our involvement with them for another two years

We are now entering a period when there will be a surge in the proportion of 18-year-olds in the population, so we expect a further increase in applications over the next years. For entry in 2018, 71 per cent of ‘home’ (broadly speaking, UK-domiciled) applicants to the university came from maintained schools and the remaining 29 per cent from independent schools. For Emmanuel, the figures were 70 per cent and 30 per cent respectively. When offers were made, 68 per cent of those overall went to students from maintained schools and 32 per cent from independent schools. For Emmanuel, the percentages were 71 and 29. So the educational origins of the proportions of home students admitted reflected the proportions who applied.

Besides these ‘home’ students, about 31 per cent of the university’s applicants for undergraduate places come from the EU or overseas. About 20 per cent of the university’s offers are made to these applicants, with a final figure of about 13 per cent being admitted. At Emmanuel, for entry in 2018 we received 12.4 per cent of our applicants from the EU (non-UK) and 16.1 per cent from overseas (EU and UK students have the same fee status). Of our offers, 7.2 per cent went to students from the EU and 6.5 per cent to those from overseas. These success rates may seem comparatively small, but applicants from overseas can often not realise the competitive nature of admission to Cambridge.

So far, so good. There are applicants from the UK, who may come from the maintained or independent sectors, and there are applicants from overseas. However, looking at things in a rather more detailed way produces some peculiarities. Of the university’s ‘home’ applicants for undergraduate entry in 2018, 59 per cent came from London, the South East and East of England, and 60 per cent of ‘home’ offers went to those from these regions. For the East and West Midlands, the North West and Yorkshire and Humberside, the percentages are 26 for applicants and 25 for offers. Offers by Emmanuel to applicants from these areas followed the same pattern.

Why compare these two groups of regions?

Because they have roughly equal populations of around 22 million each. Was it always like this? No. In 1974, 47 per cent of ‘home’ admissions to Emmanuel were from the south-eastern areas and 35 per cent from the Midlands and the North. By 1999 the figures had changed to 51 per cent and 29 per cent respectively. A lot has changed in society since 1999 and even more so since 1974, but whatever the reasons, this shift to the South East looks odd.

Since 2000, the Cambridge colleges have run an ‘Area Links Scheme’, where each college assumes responsibility for outreach activities in two or

more parts of the country (Emmanuel’s are Sheffield and Essex, and our Schools Liaison Officer spends much of her time with schools in these regions), but the time might now have arrived for a re-think of this strategy.

Perhaps surprisingly, regional variations and the ratio of admissions to applicants from different types of schools are not in the OfS’s targets. They apply many others, however. They are keen to increase participation in higher education by, for example, individuals who live in areas (largely defined by postcode data) that have traditionally sent few to university, and participation from Black, Asian and Minority Ethnic (BAME) individuals requires attention. These are complex issues. For instance, the average educational attainment of those who live in areas where few attend university tends to fall below the levels we have traditionally required for admission for an undergraduate course in Cambridge. Equally, while some categories of BAME students are over-represented in Cambridge compared with proportions in the general population, others are significantly under-represented.

The OfS also requires institutions to produce targets to raise attainment in schools, which some find surprising. We are already addressing this to some extent. Readers of the *Emmanuel Review* will know that two years ago we entered into a partnership with Villiers Park, located just outside Cambridge in Foxton, who provide programmes for high-ability students aged 14–19 from less advantaged backgrounds around the country. They have a good record of raising academic achievement by developing personal, academic and employability skills, and we have just renewed our involvement with them for another two years.

Identifying individuals who can be offered places and thrive at Cambridge is therefore complex, and Cambridge and other universities have rather exacting measures to meet.

THANKING DONORS

Support from our members means a great deal to the college and we say thank you in various ways:

All benefactors

- ✦ are listed in the *Emmanuel Review*
- ✦ receive invitations to occasional events in college, including garden parties for donors
- ✦ are invited to an annual party in London for all donors in the previous year

All who pledge legacies to Emmanuel

- ✦ receive invitations to occasional events in college, including garden parties for donors

Master's Circle

£10 000 or more received

- ✦ are offered membership of the Master's Circle and invited to an annual dinner in college
- £50 000 or more received*
- ✦ are offered membership of the Master's Circle and invited to an annual dinner in college
- ✦ are invited to the annual Gomes lecture and dinner
- £100 000 or more received*
- ✦ are offered membership of the Master's Circle and invited to an annual dinner in college
- ✦ are invited to the annual Gomes lecture and dinner
- ✦ are invited to a Fellows' Guest Night in May or December

Benefactor Bye-Fellows

£250 000 or more received

- ✦ receive invitations to a number of college events
- ✦ are able to dine at High Table on a number of occasions each year
- ✦ are listed in the *College Magazine* and the *Cambridge University Reporter*
- ✦ are admitted at a ceremony in the Parlour
- ✦ have their names recorded on a board in the Old Library

Benefactor Fellows

£1 000 000 or more received

- ✦ receive invitations to many college events
- ✦ are able to dine at High Table on several occasions each year
- ✦ are listed in the *College Magazine* and the *Cambridge University Reporter*
- ✦ are admitted at a ceremony in the Parlour
- ✦ have their names recorded on a board in the Old Library

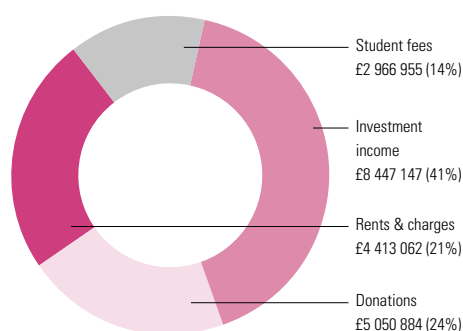
COLLEGE FINANCES 2017-18

We give below an overview of Emmanuel's financial position as at 31 July 2018.

The figures are taken from the annual accounts, which are available at www.emma.cam.ac.uk/about/documents

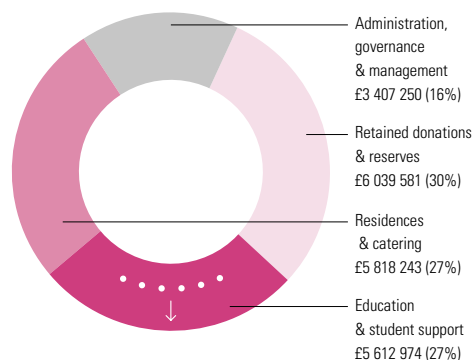
Income 2017-18

Our income of c. £21m p.a. is from four main sources:

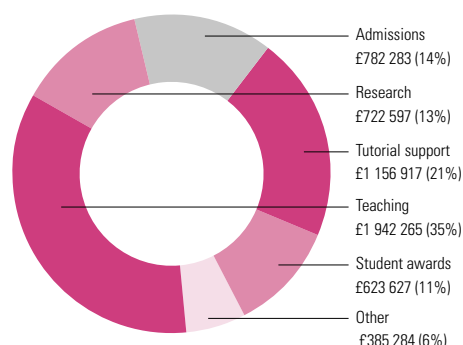


Expenditure 2017-18

Our operating costs are c. £20.8m p.a.



Breakdown of our costs of education and student support 2017-18



LATE EIGHTIES FUND UPDATE

The Late Eighties Fund was established in 2011 by Emma members who matriculated between 1984 and 1990, to help students suffering from financial hardship. In 2018-19 £35 000 has been disbursed as follows:

£12 500 towards the college's annual payment to Villiers Park for 19 students to take part in Inspire2INVOLVE (see *Emmanuel Review* 2018)

£6030 towards the college's share of Cambridge bursaries for 47 students eligible for the maximum bursary of £3500/year

£5220 to ten students suffering from financial hardship because of family circumstances or health problems

£5000 towards the funding of an MPhil in English for an Emmanuel graduate

£5000 towards the funding for a PhD student in English, who is working with Dr Robert Macfarlane

£900 to a student who needed a particular laptop to meet course requirements

£350 to a student who needed to stay in college over the Easter vacation because there were no suitable living and working conditions at home

Securing Emmanuel's Future



LEGACIES

There are several ways to include Emmanuel in your Will. Please ask the Development Office for a brochure giving suggested wordings and explaining about different types of bequest, and for information about how a legacy could reduce inheritance tax liability. We also suggest you consult your solicitor. We are very grateful to those who have already remembered the college in this way.

I HAVE SET AN *Acorn*, WHICH WHEN IT BECOMES AN *Oake*, GOD ALONE KNOWS WHAT WILL BE THE FRUIT THEREOF · SIR WALTER MILD MAY

FUNDS RAISED Donations 1 June 2018 to 31 May 2019

Donations received and receivable	£6 460 843
Gifts in kind ¹	£103 500
Legacies pledged	£2 557 360

¹ Fees not charged for managing part of the College's investment portfolio and for consultancy regarding fundraising

HARDSHIP FUNDS & RENT BURSARIES 2017-18

173 grants
£199 818 awarded
£36 429 from hardship funds, balance from endowment
£41 to £10 000 is the range of grant per person

GRADUATE FUNDING 2017-18

£365 379 to enable 15 graduate students to come to Emmanuel

FUNDS RECEIVED 1 June 2018 to 31 May 2019

Buildings, facilities & grounds	£12 202
College future development	£1 634 365
Library ¹	£6 566
Student activities ²	£31 842
Student support, hardship & access ³	£588 033
Studentships & scholarships ⁴	£73 636
Teaching & research	£9 194
Total	£2 355 838

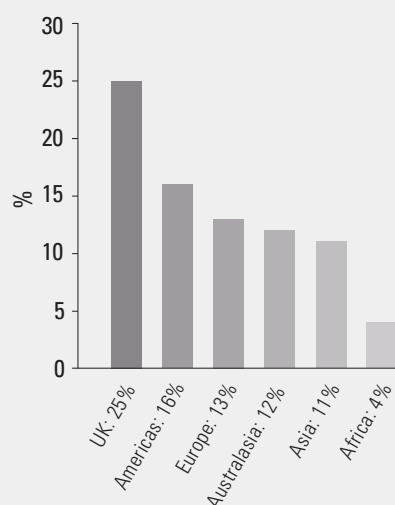
¹ Includes a donation for preservation boxes for rare books and manuscripts

² Includes donations towards the Emmanuel College Boat Club Association

³ Includes donations to support students with disabilities or experiencing mental health issues

⁴ Includes Odgers Funds to support the study of law at Emmanuel

PARTICIPATION RATE BY REGION



NUMBER OF GIFTS RECEIVED (average donation for gifts under £10 000 is £364)

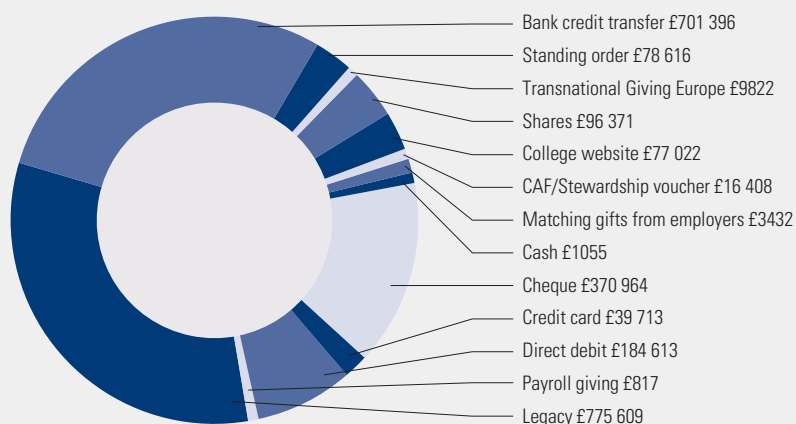
Up to £99	402
£100–£249	686
£250–£499	285
£500–£999	108
£1 000–£4 999	95
£5 000–£9 999	18
£10 000–£49 999	16
£50 000–£99 999	6
£100 000–£499 999	5

TAX

Emmanuel College is a registered charity, number 1137456

The Development Office can advise on tax-deductible giving through, for example, Gift Aid, charity cheques, gifts of shares, payroll giving, legacies and charity beneficiaries on death from 'alternatively secured pensions'

SOURCES OF FUNDS RECEIVED 1 JUNE 2018 TO 31 MAY 2019



SUMMARY FIGURES 2018-19

- 22%** of Emma members asked made a gift to the college
- 85%** of gifts were under £500
- 59%** of donors asked the college to allocate their gift to wherever the need is greatest
- 70%** of Emma members spoken to in the telephone campaign made a gift
- 29%** of living members have made a donation to Emmanuel in the last ten years
- 34%** of living members have made a donation to Emmanuel

TELEPHONE FUNDRAISING 2019

over £342 100 raised

EMMANUEL SOCIETY

Every member of Emmanuel is also a member of the Emmanuel Society, which joins up the community: students, Fellows and the wider membership. The Society (which does not aim to make a profit) organises a wide range of events in the UK and overseas, which are aimed to meet the interests of as many members as possible. It also helps current students with advice about careers and job applications.

The Society's programme is publicised in the *Emmanuel Newsletter*, which is published three times a year, in a monthly e-news and other occasional emails, and is listed on the website www.emma.cam.ac.uk/members/events. Please come to whatever interests you and let us have any suggestions for other events. Offers to help are very welcome.

The Society has visited two buildings by the architects of the college's new development in the past year: here members, led by the Society's President Andrew Fane, are being shown the new archive for the Britten-Pears Foundation in Aldeburgh. Another visit was around the Royal Opera House: the party went backstage and was then shown the front-of-house project by Stanton Williams. Other highlights of the year have included a dinner in Glasgow; an exploration of Dickens's London; several meetings of the book group; drinks in London, Chicago and Brussels; and a screening of *Letters from Baghdad*.



The Emmanuel Society and Development Offices share staff and rooms on D staircase, Front Court: email emmanuel-society@emma.cam.ac.uk tel 0044 1223 762792






VISIT EMMA

- ♦ Dine at High Table (matric 2012 and earlier): www.emma.cam.ac.uk/dining or 0044 1223 762792 (free for members, payment for a guest)
- ♦ Student guest rooms with shared facilities: www.emma.cam.ac.uk/guestrooms or 0044 1223 334255
- ♦ Private meetings, meals and conferences: conferences@emma.cam.ac.uk or 0044 1223 331978

EMMA ONLINE

We send a monthly e-news (we need your email address)

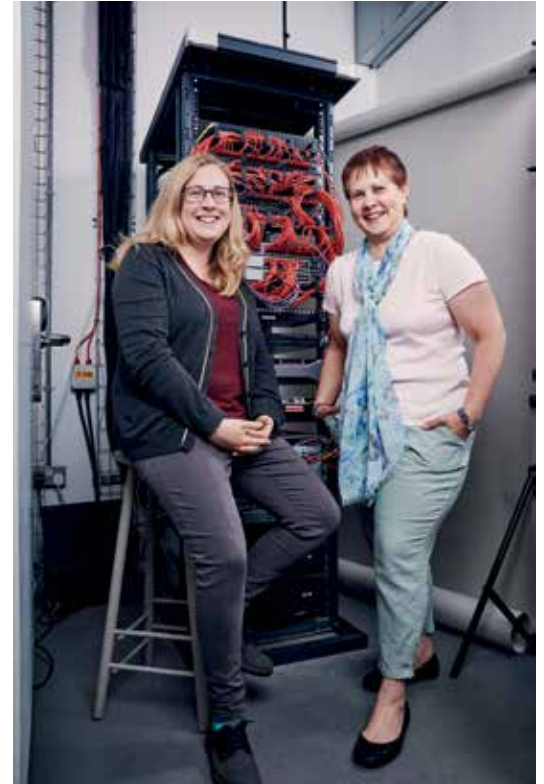
-  Emmanuel College Members (private group): www.facebook.com/groups/554901871328458
-  Emmanuel in America: www.facebook.com/groups/emmausa
-  Alumni of Emmanuel College
-  Follow EmmaCambridge
-  Follow EmmanuelCambridge

DEVELOPMENT OFFICE

As part of the ‘intense preparations’ referred to by the Master in her article in this year’s *Emmanuel Review*, the staffing of the Development Office has expanded to nine. Sarah, the Development Director, is joined by Emma as executive assistant, and we recently welcomed Emily as our new Deputy Development Director and Holly, who runs our regular giving programme. Samantha processes gifts and looks after relationships with donors. Linda, who is the longest-serving of us (she’s been at Emma for 21 years!), continues to keep our database up-to-date, with Lizzie coordinating our research and systems. Mary organises our communications and events, and works alongside Dan. He supports our activities and is regularly in touch with many Emma members about visiting and dining.



SARAH EMMA



LIZZIE LINDA



HOLLY EMILY SAMANTHA



DAN MARY

Since last year, the staffing of the Development Office has expanded to nine



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