



TIME IN EARLY
MODERN ENGLAND

IN CONVERSATION WITH
VIS NAVARATNAM

THE FUTURE OF
CARBON CAPTURE



Pieces

ISSUE 49 • LENT TERM 2026

welcome

FROM THE MASTER



Welcome to Issue 49 of *Pieces*.

After visiting alumni in the US, I returned to the finest sight Cambridge has to offer – the wisteria in full purple bloom on the front of the Master's Lodge. If ever you need your spirits reviving, I recommend a quick trip to Christ's in springtime. This year the flowering wisteria is the finishing touch to a newly

resplendent First Court: work which started before my time has come to a head. The third and final stage of roof replacement is complete, gleaming Collyweston tiles – some new, others renovated – adorn all of the Court. The beautiful Bodley Library, housing our manuscripts and early printed books, has been restored and the book stacks replaced. The refurbished Porters' Lodge looks wonderful; the fragrance of new oak will be fleeting but the shelves, stone floor, parcel room, and upgraded facilities will last for generations. The last piece of the jigsaw is the Chapel, where all the carpentry in the vestry has been replaced. The memorial to Finch and Baines next to the altar is still swathed in scaffolding; the marble will emerge in a few weeks' time, restored, and cleaned. Come and see!

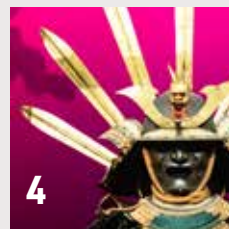
In College, as in life, good news is balanced by... not so good news. Having secured planning permission for our new working library in November 2025, the opponents of our design took Cambridge City Council to a judicial review for alleged shortcomings in the process. The High Court accepted that the Council had a case to answer in February, and after several twists and turns, it seems that – even if everything goes smoothly from here – we are unlikely to be able to start work in 2026. The judge who accepted the request for review reminded us that we've been here for more than 500 years; we are used to occasional adversity, we will cope with delay. But it would have been better for our students (and, frankly, cheaper) if we had been able to demolish the 1970s building this summer.

One motivation for replacing the library is to increase study space for students. Among the learnings from the pandemic is that young people do not thrive when they study in isolation; they learn better and are happier when they study with others. Until the new library is built, temporary study space is available in the Y Building, Lloyd Room and Plumb Auditorium; to that we now add... the existing library, months after it was closed for demolition. The structure is safe, clean, and vacant; we might as well use it. Members of Christ's are known for their resilience, flexibility, and imagination. In the library saga, we are drawing on all our virtues!

Last, one of this issue's interviewees is Vis Navaratnam. Thanks to the generosity of alumna Sukanya Rajaratnam, a portrait of Vis by Rosie Phillips will soon join the new portrait of Margaret Stanley on the walls of the College. Portraits of Susan Bayly and Theresa Marteau will follow.

McDonald of Salford

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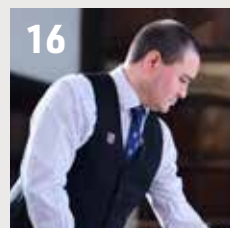
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TAKING SILK



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Back in March, 96 barristers were formally bestowed the title of King's Counsel (KC) at a ceremony at Westminster Hall. Of the 96 'taking silk' that day, four happened also to be Christ's alumni – **Richard Mott** (m. 2000), **Anna Pope** (m. 2001), **David Lowe** (m. 2003) and **Gareth Weetman** (m. 1995) – congratulations to all.

NOBEL NUMBER FIVE



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In December, alumnus and Honorary Fellow **John Clarke** (m. 1961) received the 2025 Nobel Prize in Physics alongside Michel Devoret and John Martinis, in recognition of "the discovery of macroscopic quantum mechanical tunnelling and energy quantisation in an electric circuit". John studied Natural Sciences at Christ's before undertaking much of his PhD research at the Royal Society Mond Laboratory on Free School Lane. Although born in Cambridge, since 1968 he has been based at the University of California, Berkeley.

John is the fifth Nobel laureate with a connection to Christ's, following in the footsteps of Alexander Todd (Fellow and Master), who was awarded the Nobel Prize in Chemistry in 1957; James Meade (Fellow), awarded the Nobel Prize in Economics in 1977; Martin Evans (m. 1960), awarded the Nobel Prize in Medicine in 2007; and most recently Duncan Haldane (m. 1970), who also received the Nobel Prize for Physics, in 2016.

ATRIPLE CENTURY!

Since our last edition of *Pieces*, three Christ's alumni have celebrated reaching the age of 100! **David Ashburner** and **John Jervois**, who both joined the College in 1948, reached their centuries on 21st April. They share their birthday with the late Queen Elizabeth II, who would also have turned 100 this year. To mark the occasion, John attended a reception at Buckingham Palace where he was presented with a card from King Charles and met with other members of the royal family, including Catherine, Princess of Wales.

Beating them to the milestone was **Gabriel Roth** (m. 1950), who turned 100 in February and to the best of our knowledge is our oldest living alumnus!

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Thanks to the generosity of curator **Rosina Buckland** (m. 1992), we were able to offer three guided tours of the British Museum's *Samurai* exhibition across March and April. Rosina expertly took alumni through the exhibition's displays, ranging from the battlefields of medieval Japan to the global pop culture of today. The tours provided fascinating insights into how the samurai evolved from a warrior class into a social order that comprised both men and women, and how the samurai took on a new mythology after their dissolution in the nineteenth century. Thank you to Rosina!



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ROWING SUCCESS

Christ's was once again represented in April's boat races between Oxford and Cambridge, with two students contributing to a successful year for CUBC on the River Thames. MPhil student **Mathilda Kitzmann** rowed in *Blondie* in the Women's Reserve Boat Race, finishing nine lengths ahead of the Oxford *Osiris* boat. Earlier in the week, undergraduate **William Woodard** rowed in the Lightweight Men's Spare Pair race, also claiming a victory. Well done to both!



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TAKE IT TO THE BRIDGE

In March, five-piece jazz group Pulsar – featuring Christ's alumnus **Asbjørn Thede Lorenzen** (m. 2024) on guitar – were crowned winners of the 2026 *Take it to the Bridge* competition. The band has been part of the University's Advanced Popular Performance Scheme, supporting students to develop their skills and giving them experience of performing live. As competition winners, they will have the chance to record two tracks in a professional studio and receive advice from industry experts.

DARKNESS VISIBLE



To mark 400 years since John Milton's arrival at Christ's, Research Fellow **Katie Mennis** (m. 2018) has spearheaded a project to relaunch the College's *Darkness*

Visible website, first created in 2008. The website offers a wide-ranging resource for scholars and teachers alike to explore Milton's texts and support the further study of his most renowned text, *Paradise Lost*. The site can be found at: darknessvisible.christs.cam.ac.uk



BEYOND BOUNDARIES

After her first book on the *Dissolution of the Monasteries* was nominated for the Whitfield Prize, historian **Harriet Lyon** is now embarking on a new project on the topic of time in early modern England, investigating how people in the period navigated the rise of clock technology, and why we might reconsider where we set our historical limits.

"The label 'early modern' hints at the sense of a hinge moment between modernity and some sort of pre-modern world. It's a period in which so many different transformations happened at the same time, from the rise of printing technology to urbanisation, religious upheaval, the emergence of nascent colonialism, expansion of trade networks, and the growth of mercantile industry.

"The period is also a precursor to precise, accelerated time and reveals the casting off of a much more cyclical, slow, sacred version of time from the medieval period. At the beginning of the period around 1500 there were clocks, but really they were elite objects. Sundials and church bells were the much more prevalent way of knowing what time it was. By the end of the seventeenth century, however, goods that had once only existed in a very opulent form were available in cheaper models, so clock technology became more accessible to a wider range of people. That was driven by

fashion as much as necessity; many of the pocket clocks are very beautiful and clearly also status symbols.

“There was, though, an increasing need for precision as the colonial enterprise got underway and trading became more common and expansive. Although there wasn't yet a concept of time zones, there was an understanding that long voyages across the sea could affect a sailor's ability to measure time by the cycles of day and night. You need to know when and where your ships are turning up in order not to miss the boat, so to speak.”

Although the scientific advances during the period are well-documented, Harriet's book will take a different approach: “My research is focused less on how people measured time than on how they felt it, and how technological changes might have coexisted with other ways of experiencing time. The needs of the agricultural year, for instance, don't change just because more people have clocks, so it's not as if people's understanding of time was completely eclipsed by new modes of measurement.

“The calendar did undergo significant changes, though. The Gregorian calendar, which is used in much of the world today, had been introduced in the 1580s in Catholic countries, but because it was a papal reform, Protestant countries kept the Julian calendar. Even though England retained the Julian calendar until 1752, the Church aggressively pruned the Catholic festal calendar, which was crammed full of holy days and saints' days, in line with the Protestant idea that it's only right to worship God and not to worship saints. The festivals associated with the life of Christ were kept, but Protestants were much less comfortable with other

festivities, including some of the agricultural holidays, like Plough Sunday. It's interesting, though, that several of the early modern monarchs instituted new festivities combining a sense of Protestant triumph with a sort of nascent nationalist identity in order to reinforce a festal calendar that was diminished at the Reformation. The failure of the Spanish Armada in 1588 was celebrated annually, for instance, and of course we still celebrate the 5th of November for the failure of the Gunpowder Plot.”

One aspect of how people experienced time to which Harriet is particularly attentive is nostalgia, a subject of an edited volume that she has published with her doctoral supervisor, Alex Walsham. “Many scholars have argued that nostalgia, meaning longing for a lost time, is a fundamentally modern emotion, and the reason that it's modern is that technological change has made our sense of the passing of time more acute. The word nostalgia actually comes from the early modern period, coined in 1688 by a medical student called Johannes Hofer, who'd noticed that soldiers sent from the Alpine regions into the flat lowlands started expressing a longing for home. He used nostalgia as a kind of clinical diagnosis; *nostos* being to do with return or homecoming, and *algos* to mean pain or suffering. So initially the word referred to a longing for a lost place, rather than for a lost time.

“In England, after the Dissolution of the Monasteries many ordinary people felt like life was worse than when the monasteries had stood, and were nostalgic for an age of plenty, of charity, and of hospitality. At the same time, Protestant reformers who were in favour of the Dissolution were also in a way fundamentally nostalgic, but for something they didn't remember at all: a pristine version of the Church that they were semi-imagining existed before the monasteries ever did. A lot of the theoretical writing on nostalgia thinks of it as essentially generational, but I think people are often nostalgic for things they've never known at all – for a time and a place so far back that they have no experience of it. In some ways that actually heightens their nostalgia because the loss is felt all the greater.”

In an age when illusory retrospective visions are being forcefully utilised by reactionary demagogues across the globe, what can we learn from the early modern period about the role of nostalgia in political enterprises? “Often a longing for the past isn't just an exercise in reflecting on how good something used to be. It takes one step further and projects possible new worlds into the future. If we take the ruins that were left on the landscape after the Dissolution, that provides a useful paradigm. Some observers looked at the ruins and didn't simply reflect on what had been lost; they projected upwards from these fragments to imagine a new kind of landscape that wasn't necessarily a restoration of Catholic monasticism, but did reflect an idea that the world could still be better. I think there's always, inherent in nostalgia, a critique of the present, and that's what makes it so politically powerful because it offers a vocabulary for criticising the now by saying how good the past was, then projecting how that past can be resurrected in the future. So whether it's the sixteenth century or the twenty-first century, I think that nostalgia is extremely rhetorically powerful.”

The monastic ruins that still today litter the landscape of England stand as testament to what remains, nearly 500 years later, an ambiguous and contested episode. Harriet explains how she became interested in the subject: “I remember being struck by the fact that people almost always talked about the Dissolution of the Monasteries as the end of a story about the medieval period: specifically the decline of medieval monasticism, but also the ending of a period of “merrie” England, in which charity and hospitality had been widely available, and goods were cheap. And I wondered whether there was scope for treating the Dissolution as the beginning of a different kind of historical narrative, rather than as the coda to a story of decline.

“MY RESEARCH IS FOCUSED LESS ON HOW PEOPLE MEASURED TIME THAN ON HOW THEY FELT IT, AND HOW TECHNOLOGICAL CHANGES MIGHT HAVE COEXISTED WITH OTHER WAYS OF EXPERIENCING TIME.”

“If you treat it as the beginning of the story, you see that for a large number of people in the sixteenth century, it was the beginning of their family's journey towards greater prosperity. About a third of all the land in England changed hands at the Dissolution, much of it channelled not into the Church of England, but into private hands: essentially into the coffers of the Crown, and then used by Henry's government for patronage building. The release of all that land into private hands meant that existing landholders were enriched, but also that people lower down the social scale might, for the first time, own a little bit of their own land. Partly as a result, by the seventeenth century, there's a much more stratified social hierarchy.

“As early as the 1540s, really committed reformers were writing about the Dissolution and saying that – although supportive of the idea in principle – they weren't very happy with how it was playing out. It's the transfer of wealth away from the Church with which Protestants initially have the most trouble. But for all the reformers whinging about how the wealth of the monastery should have gone back into the Church, there were plenty of people who had profited from the Dissolution – including, it has to be said, a number of Catholic families. When Mary I briefly tried to restore Catholicism in the 1550s, she found that even these staunchly loyal Catholics were very unwilling to give up the new stately homes they had acquired.”

A century or so later, new worries – about the destructive quality of the Dissolution and the idea that sacred spaces had been desecrated – were to emerge. To what extent did the visibility of the ruined abbeys play on public consciousness in that period? “When we talk about the ruins of the Dissolution, we're talking about strikingly static structures whose melancholy emotive quality has persisted across centuries. At the time of the Dissolution, I think they were intended to stand as symbols of the triumph of the Henrician regime. But of course, the risk of leaving those remnants behind is that their meaning was always determined in the

eye of the beholder. So those people who wanted to mourn the passing of the Catholic golden age could look at ruins and do so. And even people whose religious preferences were Protestant, or who at least adhered to the Church of England, could feel – like Shakespeare – nostalgic for these “Bare ruin'd choirs, where late the sweet birds sang”. There's an awful lot of that kind of melancholy reflection on ruins from the sixteenth century onwards, and later with the Gothic revival ruins start to become more like the heritage icons of the present day. But yes, I think the key problem for the government with ruins was that they could never really control the narratives that people spun around them. They wanted to project Protestant triumph, but they made a lot of people feel very uneasy.”

In her first book, Harriet posits the idea that the Dissolution could be viewed as the beginning of the early modern period. Why does she feel that historians are drawn to this kind of periodisation?

“One answer is that it's a necessity of working on a subject so capacious. There are some historians who trace a particular theme across a very long time period; in fact, I'm currently working with a colleague, Matthew Champion, to edit a volume on the cultural history of time that will sit in a six-volume set stretching from antiquity to modernity. So some efforts can be made to collapse the need for periodisation. But a fundamental way in which historians are trained is to become period specialists; it's a way of managing the material.

“More significantly, I do think we should be conscious of the fact that where we lay the boundaries will affect the kind of history we write, and actually does imply something quite important about what we think was happening in a particular historical moment, especially when we're using words that are ideologically loaded, like Renaissance, Enlightenment, or even early modern. At the end of my first book, I make the suggestion that if we were paying attention to when people thought there had been a rupture in time, at least in Britain, that the Dissolution might not be a bad moment for marking that beginning. People in that period didn't consider themselves “early modern”, as being on the precipice of modernity, but I think that they did understand the significance of the transformations happening around them.

“I've often quoted an early-seventeenth-century chronicler called Edmund Howes, who built an incredibly interesting model of time wherein roughly every 500 years there was some kind of major upheaval. One of these upheavals was the Norman Conquest in 1066; the next, he thought, was not the Reformation in general, but specifically the Dissolution of the Monasteries. So I'd also make a case for the early modern period beginning with the Dissolution, but I would accept alternatives!”

Harriet Lyon has been a Fellow at Christ's since 2017. The College Teaching Fellowship in History has recently been secured through exceptional philanthropy from Leda and Hendrik Nelis, and Ian Strachan (m. 1962).



IN CONVERSATION WITH... VIS NAVARATNAM

Before his retirement from teaching in 2000, Vis Navaratnam taught generations of medical students across the University and helped launch the careers of hundreds of doctors as Director of Studies at Christ's. Now in his 93rd year, Vis remains a regular and active presence in the College, and sat down with us to discuss his life and work, from his beginnings as the eighth of eight children growing up in colonial Ceylon, in the days before it became an independent Sri Lanka.

"I was born and educated entirely in Colombo, split from the Tamil roots, which are mainly in the north of the country. My father was a colonial civil servant who had graduated with a Physics degree from London. He was proud of his Tamil heritage and was fluent in both English and Tamil, as well as speaking Sinhala, as required for his duties. As a person, though, he was remote and hot-tempered, and alienated many, so the family was largely dependent on our less well-educated, but highly intelligent and resourceful mother. My first school was actually the Ladies' College in Colombo, run by the Christian Missionary Society. I think my mother sent me there because four of my sisters were already attending, and the fifth child was apparently free! Being the youngest I was probably a very demanding child and I'm not sure that my sisters – though protective – were too pleased to see me in the same school!

"At the age of ten I moved to a boys' school, Royal College, where my two brothers, Tom and Summa, had studied. Royal was a secular, state-run school run along the lines of a grammar school, but as a teaching institution I found that it was less effective than Ladies'. However, there were some brilliant individual teachers, and I was able to hold my own academically, as well as learning how to become more self-reliant. In contrast to Summa, who was an outstanding sportsman and later represented the country as both a sprinter and rugby player, my own sporting record was somewhat indifferent!"

From school, Vis embarked on a career in medicine that had precedent in his family: "My maternal grandfather was a provincial surgeon and an influential figure; two of my sisters were already at medical school. So I repeatedly said I was going to be a doctor, not having any real idea what it meant. On leaving Royal I joined the University of Ceylon's medical faculty in Colombo in 1951. There I enjoyed much of the pre-clinical curriculum, but I noticed there were definite schisms among the students, and even tensions among the teaching staff, as the country became increasingly divided.

"In 1956 an Official Language Act was proposed by Parliament, with the aim of replacing English as the country's official language with Sinhala – to the exclusion of Tamil. Although the proposal failed on that occasion, I knew that it would bring problems in the future. Still, I finished my medical course and qualified in 1957, completing my house jobs afterwards. But I hadn't enjoyed the last few years of clinical training: the conditions were poor and the death rate high, particularly in the paediatric wards. So I had to make a decision. I wasn't happy with the clinical training, and I was concerned about the path the country was taking. The medical school in Colombo was affiliated with the British General Medical Council, so I registered myself in Britain as well as Ceylon, keeping both channels open."

Fully qualified and in his mid-twenties, Vis decided to steer a path towards anatomical research: "Specialising in anatomy was not my first intention; I previously wanted to practise medicine like my grandfather. At one point the Royal College of Surgeons of England came out to conduct examinations in Colombo, and although I passed, I didn't enjoy cutting and suturing, and couldn't imagine surgery as my career. I was, though, interested in the processes of development, and wanted to pursue something that I might intrinsically enjoy. I became fascinated that something from a single cell could become as complex as a human being, and with how cells grow and interact with each other.

One of my pre-clinical teachers, Professor Kanagasuntheram, had worked in the Cambridge Department of Anatomy with Professor Dixon Boyd, and thought I might be intellectually stimulated by doing further research. He helped and encouraged me to apply for a PhD."



Vis’ application was accepted by Boyd, and in 1961 he arrived in Cambridge with his wife Sundari and their first daughter. Like his supervisor, Vis was attached to Clare College, and, for a while, research came second – to cricket and contract bridge, May Balls and Boat Races, and the small matter of a newborn baby. What were his first impressions of Cambridge? “The colleges were nothing like they are now: they seemed to be more like finishing schools than serious academic institutions. At that time there were only two colleges admitting women, and no graduate colleges, though individual colleges admitted a sprinkling of research students. Unlike students today, I was offered no help with accommodation, nor given any kind of provision to attend conferences and symposia. Nevertheless, what I did enjoy was the ability to interact across disciplines, and converse with students on other courses. That’s an interest I’ve maintained to this day; I especially enjoy conversing with the new Fellows at Christ’s who bring fresh knowledge into the College.”

At the Department, Vis found himself more at home, but his work there was not without its challenges: “Boyd agreed to see me on a fortnightly basis, but he was busy as Head of Department, very eminent in his field, and early on made it clear that I shouldn’t expect much assistance from him in producing my papers. However, when I took my first observations of interest to him, he was very encouraging and – gifted wordsmith that he was – helped me to edit the draft. That paper, published in the *Journal of Anatomy*, would be the first of about fifty papers of mine that appeared in scientific journals, some of which were cited in standard textbooks such as *Gray’s Anatomy*.

“My interest was in the very early development of mammalian hearts, especially the human heart. The human heart starts beating – and maintains a regular circulation – about 19-20 days into gestation, at which point it remains a straight tube: without valves, chambers or a nerve supply. It still fascinates me how this straight tube coils on itself and partitions to become a four-chambered heart, as we know it. Gradually I became particularly engrossed by trying to identify cardiac stem cells and their potential to regenerate within the human myocardium – discoveries which are still proving elusive to researchers today.”

Vis finished his thesis and graduated with his doctorate in 1964, but contractual obligations required him to return to Colombo. “When I returned, the divisions had deepened, and I just couldn’t settle down. However, after a couple of years, I had a letter from Boyd telling me that a faculty post had fallen vacant, and if I liked, I could make an application. I was now 33, with two daughters. Sundari hadn’t entirely enjoyed her first stay in England – least of all the ‘Big Freeze’ of 1962 – and was reluctant to return. But we could see the civil war approaching, so we emigrated again back to Cambridge.

“Unfortunately, Boyd’s physical condition was becoming increasingly frail, and not long after I arrived back, he died at the age of 60. I’d been enjoying my teaching but it had been difficult to establish my research – I’d only just arrived back, wasn’t eligible for government or research body grants, and without Boyd’s support I didn’t know what was in store. In

1969, I got a summons from the new Head of the Anatomy Department, Richard Harrison, and wasn’t sure what to expect. To my surprise he told me that he wanted me to take responsibility for organising the third year – i.e. the Part II Anatomy course in the Natural Sciences Tripos. It was more of a command than a request, and I didn’t feel like I had a choice. Almost the same week, I received an offer from Lord Todd of a Fellowship at Christ’s, with the expectation that, if accepted, I would take on the job of Director of Studies in Medical Sciences. It looked like there would be very busy times ahead!

“That year felt like a turning point not only for my career but also for Medicine at Christ’s, for two principal reasons: firstly that the Senior Tutor, Gorley Putt – who had adopted a policy of personally interviewing everyone who applied – agreed that we could increase the intake of medical students from five to twelve each year, plus two veterinary students. The second was the debate around a new clinical school. King Henry VIII had endowed a Regius Chair of Physic at Cambridge University in 1540, but more than 400 years later there was still no sign of a clinical school! Cambridge students mostly went to London, or to Oxford, for their clinical studies. But in 1968, the so-called Todd Report had been published, recommending – among other things – an increase in medical student numbers and the establishment of three new clinical schools in England, including one in Cambridge. Todd was a very powerful figure – not just in the College, but nationally and internationally – and he cautioned that if Cambridge didn’t start a clinical school, he’d set one up in Norwich instead, carrying the resources of Addenbrooke’s Hospital with it. So the decision was taken in 1969 and, although it took another seven years to establish, the Cambridge Clinical School opened in 1976. It now embodies probably the finest biomedical campus in the world.”

Alongside his many institutional commitments, Vis published two books on the human heart – *The Human Heart and Circulation* and *Heart Muscle: Ultrastructural Studies* – as well as editing three volumes of the *Progress in Anatomy* series. In recognition of his body of work, he was awarded a Fellowship of the Anatomical Society in 2012, but Vis appears to have found equal satisfaction in supporting others: “There are many other things that I’m proud of, and one that stands out at Christ’s came about in 1983, when Kelvin Bowkett was Senior Tutor. Civil war had broken out in Sri Lanka. I had just visited the country and narrowly avoided being caught up in the conflict, and when I came back Kelvin asked me whether there was any mileage in offering help to Sri Lankan students whose university education had been disrupted, or who were unable to take up their places. I thought this would be a great idea and felt I could contribute by interviewing, getting references, and selecting candidates. Over the next decade we offered full scholarships to eight Sri Lankan refugee students, paying their University and College fees as well as accommodation and travel costs. Of this cohort of eight, seven got Firsts, including one who was later appointed Vice-Chancellor of the University of Leicester and has just been knighted!

“I was also pleased to be associated with the College’s Medical Alumni Association (CCMAA), for which I acted

as inaugural President – although I owe thanks to my colleague Martin Johnson for doing a lot of the spadework in establishing it. The Association is now regarded as an exemplar for other colleges, with regular meetings and conferences providing inspiration and valuable support to our medical students, many of whom – I’m pleased to say – have remained in contact long after they’ve graduated.”

Having been Tutor, Praelector and a longstanding member of Council, Vis has taken his fair share of College roles, but one of the more mysterious involvements he’s had has been with the Marguerites, a society for sportsmen who have earned a Blue, or have especially distinguished themselves in College sport. Vis explains how he thinks this came about: “Well, I’ve always been interested in sports, especially cricket, but I’m not a great sportsman myself. I think there was actually a bit of a mistake there. One of my medical students was Phil Williams, now sadly deceased, whose brother was the Welsh rugby star JPR Williams. My brother Summa had been captain of the Sri Lankan rugby team, and the name may have filtered through JPR to Phil. Probably a misunderstanding about my sporting prowess happened along the way, and I received an official invitation to become a Marguerite!”

However it came about, Vis remains Honorary President of the Marguerites almost sixty years later, and is well-placed to give a long view of the evolution of the College over that time. What does he think has been the biggest change? “It’s a different world. When I arrived at Christ’s there were probably 25 graduate students – now we have over 350. It’s these postgraduates who are going to receive the academic accolades and make the College famous; we already have five Nobel laureates associated with Christ’s.

“The other major shift was the admission of women in the late seventies. Not everyone knows the story that – although the first cohort of female undergraduates was due to arrive in 1979 – there was actually one female undergraduate who leapfrogged the procedure and was admitted a year ahead of the scheduled intake. For some strange paradoxical reason the JCR was a bit miffed about it, and assumed that her early arrival had been an administrative error on the part of the Clerk, Mr Kirkup. To express their dissatisfaction, an article was written in the student magazine that described the situation as being the result not of Kirkup, but a cock-up!”

Vis Navaratnam was elected a Fellow of Christ’s in 1969 and has been an Emeritus Fellow since 2000.



FRONT ROW

Head Coach and Boathouse Manager Kate Hurst joined Christ's in September 2013, joining a list of boatmen and women recently commemorated with a new plaque in the College boathouse. We caught up with Kate, and her dog Sammy, to hear about life on and off the water.



HOW DID YOU FIRST GET INVOLVED WITH ROWING?

Boats have always been my thing, really. When I was a kid, my dad had a steam tug called *Turmoil* on the River Cam, and my brother sailed dinghies in North Norfolk: we were just always in and out of the river. I was the first in my family to try rowing; I'd seen everyone paddling around on the Cam and always wanted to do it. When I went to university in London I did a novice programme, then joined a club called Vesta, rowing on the Tideway.

After my degree I got a bartending job in the Cayman Islands, and one day a super maxi yacht regatta was racing up and down Seven Mile Beach. I thought that looked super cool so found the captains in the bar and asked for a job. After that I started sailing around the Caribbean, eventually going on to race in Europe and the UK. Once I was back in England, though, I went straight back to rowing and joined an elite squad in Nottingham. Some of those I was rowing with were on a path to international rowing, whereas I was 28 by then and just wanted to learn how to do it properly.

SOON AFTER YOU JOINED CHRIST'S, THE W1 CREW ACHIEVED THE STATUS OF HEAD OF THE RIVER IN THE LENT BUMPS OF 2015. HOW DID THAT COME ABOUT?

It was a number of things. Much of the work had already been done by previous coaches, particularly by Kat Astley and Nick Acock, who had led the crew into the top division and within sight of the Headship. Then we had a new boat donated – Spirit of '84 – a Filippi custom-built for the Cam, which gave the crew a huge boost of confidence. When we came into the new season in 2014, they trained really hard – I made them do each race twice, first in Division One, then in Division Two. They quickly made the technical improvements that were needed, and they just got faster and faster. Those things are cumulative; it's the magic that can happen when you have a crew who are all totally committed. By the third night of Bumps we were Head of the River, and rowed over on the fourth day – it was wonderful.

WHAT DOES AN AVERAGE DAY FOR THE BOATHOUSE MANAGER LOOK LIKE?

It's very seasonal, but there's always something to do. The students can't row in the dark, and can only row in twilight for fifteen minutes with lights on, so we have to push off just before sunrise. In January that means we might be out on the water at 7am, but by the time Lent Bumps comes around we'll be pushing off at 6am. Once we're back from the river, I'm onto general maintenance and fixes – from small snags to replacing the keel, a process which can take a week or so. Luckily, rowing boats are pretty simple bits of kit: they're nuts and bolts, and a gel coat – the trick is understanding how all those things come together to create the right angles for the rowers.

MOST STUDENTS COME TO CAMBRIDGE HAVING NEVER ROWED; HOW DO YOU HELP THEM BECOME PART OF THE BOAT CLUB?

We aim to open it up for everyone to have a go, but there's a realistic limit of three crews for both men and women, so 48 rowers in total. We take the novices out in pairs for "tubbing" sessions in an older, more stable wooden boat,

"EACH CREW IS DIFFERENT; THE MOST COMPLEX PART OF THE JOB IS BUILDING A TEAM THAT EVERYONE WANTS TO BE A PART OF, AND MAKING SURE THAT EVERYONE'S GETTING THE BEST OUT OF EACH OTHER."

and the captains report back about which novices could be introduced into the senior boats. That's a tried and tested method which works – we don't mess about with it too much. In January we take the novices on a week-long training camp before the start of term, with the idea that they can be competitive for Lent Bumps. It's a huge learning curve; by the end of that week we have to select the crews that are going to race the Bumps. Just like the academic programme – you get them in, you get them on and get them going as fast as you can.

ONCE A MEMBER OF THE CHRIST'S COLLEGE BOAT CLUB, ALWAYS A MEMBER! HOW CAN ALUMNI STAY INVOLVED?

We have a few alumni crews who regularly come back for races in Cambridge, and we'd love to have more! The highlights of the year for alumni are the Fairbairn Cup, at the end of Michaelmas Term, and the Head of the Cam, usually at the end of April. At the Head of the Cam this year we had six alumni eights competing – both men's and women's crews, of all different ages – followed by a wonderful dinner in a packed-out Hall.

WHAT ARE THE MOST SIGNIFICANT CHALLENGES YOU FACE AS COACH?

Each crew is different; the most complex part of the job is building a team that everyone wants to be a part of, and making sure that everyone's getting the best out of each other. Yes, you've got to be a good technical coach, but you need to work out what makes people tick, and interact with them in a way that's both encouraging and purposeful. It's also about getting the balance right between creating a fun and friendly environment, and ensuring that standards are as high as they can be. If people aren't having a good time, they won't come back, but if they're not performing well they'll soon get miserable. So you need to draw those two things together – the performance and the enjoyment – and it's amazing how much those feed off one another.

WHAT'S BEEN THE BIGGEST CHANGE TO THE CLUB DURING YOUR TIME AT CHRIST'S?

The new Boathouse in 2017 has made a tremendous difference. With the river more congested, and the academic pressure that students are under, it's much more difficult to get eight people out on the water together as often as might have been the case in decades gone by. So we do a lot more high intensity training on land – strength and conditioning training, thinking about physiology, and so on. Having one of the best gyms on the river means we can do that very effectively. In fundamental terms, though, I wouldn't say that a great deal does change – and that's the beauty of college rowing.



EMISSION CONTROL

Originally from County Kildare, Cerys Walsh completed an integrated Master's degree in Chemistry at the University of Edinburgh before coming to Cambridge for her doctorate. Now in the second year of her PhD, here Cerys explains her research into new methods of capturing carbon dioxide.

The scientific consensus is that levels of CO₂ in the atmosphere have risen year-on-year since the Industrial Revolution, and that this accumulation of atmospheric CO₂ is directly contributing to climate change. The best way to reduce CO₂ emissions is obviously through preventative measures – burning fewer fossil fuels and pivoting towards renewable energy – but inevitably there are some industries that are difficult to decarbonise, such as construction and steel production. Regardless of how much we can reduce our emissions, pretty much all the calculations have come to the conclusion that some kind of carbon capture is a necessary tool in mitigating catastrophic climate effects.

Carbon capture involves the selective removal of CO₂ from a mixture of gases by way of filtration. There are two main contexts for this: point-source capture and direct air capture. In point-source capture, we're generally working with industrial processes which involve chemical reactions that create a high concentration of CO₂ in some sort of effluent gas; whereas in direct air capture, where we're taking CO₂ directly out of the atmosphere, that concentration is much lower, and consequently it's much harder to filter the CO₂ out.

The most widely-used technique for point-source carbon capture is called amine scrubbing, whereby the waste gas is bubbled through a tank of liquid containing amines – chemical compounds that react reversibly with the CO₂ to form an adduct. By heating the liquid, or applying pressure, you can release the CO₂ and re-form the original amine. This is a relatively simple and cheap process, but it does have some inherent energy inefficiencies – you have to use a huge amount of energy to heat a large quantity of solvent, and there are energy and heat losses along the way.

What I'm working on is an electrochemical technique called supercapacitive swing adsorption (SSA). Like conventional capacitors, supercapacitors were originally developed to store energy, much like a battery. They have a positive and negative electrode separated by a dielectric medium, and when a potential is applied between the two electrodes, charge builds up. In supercapacitors, the electrodes are made of materials with extremely large surface areas – in my case, porous carbons – which result in a much higher capacitance. The reason we're investigating supercapacitors is that a research group in the US found in 2014 that, when charged, they would selectively uptake CO₂ from mixed gas streams, making them potentially useful for carbon capture. Part of my research is trying to understand this phenomenon, alongside testing the adsorption properties of different capacitors that I've made in lab-scale coin cells.

One of the benefits of SSA is that – unlike amine scrubbing – there's no chemical reaction involved. When you charge a supercapacitor, a charge builds up at the surface of the electrode, and ions move around the electrolyte, but don't chemically transform. As such it has a very high Coulombic efficiency – i.e. the energy losses are very low each time the supercapacitor is charged and discharged. Another plus is that we can make the supercapacitors out of very benign materials. I mostly work with activated carbons. These materials are similar to charcoal, and can be made out of organic materials

such as coconut shells and corn husks. The ideal supply chain would be to use activated waste carbons from industry, which would make it a very sustainable method.

The challenge at the moment is that SSA doesn't have comparable adsorption capacities to amines: on a gram-for-gram basis, amines can capture much more CO₂. Over the last few years, however, that's improved dramatically and the adsorption capacities we've been able to obtain with SSA have increased tenfold. Since it's not a particularly mature technology, the hope is that SSA will become more competitive with conventional capture materials over time, but at the moment it's not on the same order of magnitude.

“ONE OF THE BENEFITS OF SSA IS THAT – UNLIKE AMINE SCRUBBING – THERE'S NO CHEMICAL REACTION INVOLVED. WHEN YOU CHARGE A SUPERCAPACITOR, A CHARGE BUILDS UP AT THE SURFACE OF THE ELECTRODE, AND IONS MOVE AROUND THE ELECTROLYTE, BUT DON'T CHEMICALLY TRANSFORM.”

One thing that I've found really interesting is looking at the effect of changing the electrolyte in the supercapacitors. The electrolyte is basically the liquid and salt that sits in the capacitor and allows it to be conductive. In the past, most SSA cells used aqueous electrolytes. Quite a lot of the hypothesised mechanisms for the underlying processes of selective capture were therefore based on the fact that CO₂ – when dissolved in water – forms carbonic acid, which in turn forms charged ions.

I've been looking instead at SSA in non-aqueous electrolytes such as a solvent called acetonitrile. Unlike in water, CO₂ doesn't form any ions in acetonitrile, so when it dissolves, it's neutral and not charged. But what I've found is that some of these non-aqueous electrolytes perform better than the aqueous ones, implying that the selective capture of CO₂ in these systems is not necessarily to do with ions.

Another thing I'm excited about investigating is the effect of the pH of the electrolyte. In aqueous systems, the pH of the system changes significantly during the charging and discharging of the supercapacitor, and we think this may explain some of the CO₂ capture properties that we see.

The next step is taking the methods we're developing and applying them to direct air capture, where the concentration of CO₂ is only a few hundred parts per million. The technique I'm working on seems to have decent potential in that area, so that's an exciting prospect. By the end of the PhD I'd also like to – at least partially – have answered the question of why supercapacitors selectively capture CO₂, and why they don't capture nitrogen and other gases. But we've got some good leads and we're already getting closer to figuring out what's going on!

Cerys Walsh is a PhD student in the Forse Lab at the Department of Chemistry, supported by the EQ Foundation.

Stay connected

DATES FOR YOUR DIARY

2026	20 JUNE May Bumps Picnic	20 JUNE Law Society Garden Party	23 JUNE Christ's College Soirée	25 JUNE Lifesciences Network	27 JUNE Family Day	4 JULY Old Members Reunion Lunch for 1968–70 and 1977–79 matriculants
	4 JULY Association Dinner (open to all alumni and guests)	5 JULY Fisher Society Lunch	5 SEPTEMBER Reunion Dinner for all matriculation years up to and including 1966, and 1976	18–20 SEPTEMBER Cambridge Alumni Festival	19 SEPTEMBER Reunion Dinner for 1980–1984 matriculants	26 SEPTEMBER CCMAA Conference

2025–2028		JULY REUNION	FIRST SEPTEMBER REUNION	SECOND SEPTEMBER REUNION
	2026	1968–70 and 1977–79	Up to and including 1966, and 1976	1980–84
	2027	1985–89	Up to and including 1967, and 1977	1990–94
	2028	1995–99	Up to and including 1968, and 1978	2000–05



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