



Alchemy

UNDERSTANDING SCIENCE

Welcome to Alchemy

STS is booming. No doubt about it. This year we've seen glorious graduations for students in all our degrees. We've seen staff promotions, internationally important awards, and publications stacked high. (You should read them. Many are open access - free to download via UCL Discovery). Our public engagement continues to thrill and empower. We're on television, on radio, in the news, and broadcasting across all sorts of digital channels. STS graduates (and students!) are working in great jobs around the world, too. Others are producing mind-bending research. "We're going to need a bigger building," I'm told on a regular basis.



Professor Joe Cain Image: Celine West

In 2017, STS students used the National Student Survey to report 100% overall satisfaction with our programme. Hurrah! This is the third time in five years we received that accolade. STS's scores on the survey were the highest in UCL, too. Though delighted, we're not complacent. We know every year is a new challenge. STS academics, our professional services team, and fellow students all pitch in to make the department what it continues to be: fabulous. This is hard work, but it produces something we all can be intensively proud about.

Consider the power of our brand across UCL. Our Dean regularly asks for more STS carrier bags. The Provost (occasionally) carries a tin of STS mints. The new STS pen is a must-have accessory around campus. At a recent recruiting fair in the medical school, someone rushed up to us as soon as the doors opened. "I want to be in STS," they declared, "Nothing else will do."

We know the feeling.

Prof. Joe Cain - Head of Department, January 2018

Alchemy - Issue 2 (Spring 2018)

Editors: Malcolm Chalmers & Dr Carina Fearnley

Head of Department: Prof. Joe Cain

Alchemy is published annually and is freely available in electronic format at www.ucl.ac.uk/sts/about_sts

Articles in this issue of Alchemy reflect the opinions of the authors, not of UCL.

Department of Science and Technology Studies
Gower Street, London
WC1E 6BT | United Kingdom

www.ucl.ac.uk/sts

Twitter - @stsucL

Facebook - STSUCL

Instagram - ucl_sts

All text by Malcolm Chalmers, unless otherwise credited.

[Alchemy is available as a PDF via the STS website.](#)

In the PDF version, underlined words provide links to the relevant paper or page.

Highlights

Undergraduate

- 03 Why STS? From Finishing First-year to Interning in New York.
- 04 Undergrad News
- 05 Lunar Soc Reborn

Masters

- 05 STS Student Awards 2017
- 06 Working among the Birds

Alumni

- 07 Super-NOVA
- 07 Alumni Podcasts
- 08 Alumni News
- 09 Future-proof Careers

PhD

- 10 Jeremy Bentham's DNA
- 12 How to Complete a PhD
- 14 STS at Tate Modern
- 15 PhD News
- 16 Early Career Perspectives

Staff

- 17 Staff News
- 18 Edit to the Nation
- 19 Prof. Agar Wins Medal
- 20 Chemistry in EU
- 20 Teaching Fellows
- 21 Science, Art and Politics?
- 22 Trump and Tesla
- 24 New Staff
- 25 STS on TV

Department

- 26 Farewells and Awards
- 27 History of Science Events
- 27 Carina in New Zealand
- 28 EBM+ Research
- 29 STS Module Fair / OneBook
- 30 The Bookshelf
- 31 STS Department Seminars

What does STS have to offer?

BSc HPS student Dylan Kawende has just completed his first year at STS. Here, he gives his opinion of the course, and some of the opportunities study has provided for him:

WHY STS?

What attracted me most to STS is the cross-disciplinary nature of the degree. As a former IB Diploma student, I have for a long time enjoyed interdisciplinary learning. I imagined that combining subjects like history, philosophy and science at university level would make for an enriching and intellectually stimulating experience, and it certainly has. One aspect of my degree that I found fascinating was discovering that during the Renaissance, new ideas in art like realism, and principles of proportion, informed anatomical studies and other branches of science in a radical break from Aristotelian and scholastic tradition. People don't generally think art and science are compatible but being part of STS has enabled me to see otherwise, which is great because I love them both!

Traditionally, science is held as the ultimate source of knowledge and completely divorced of subjectivity – thanks to the propensity among scientists to espouse to Whiggish history, this notion of unquestionable acceptance of science as the golden discipline capable of answering all of our fundamental questions about nature spills over into the public sphere. But here at STS we investigate the history of science from antiquity till the modern era with a critical eye, and we find a far less idealised version of science proposed by the likes of Robert Merton, an American sociologist of science and scientists themselves.

WOULD STS BE RIGHT FOR ME?

If you have broad range interests surrounding science and you'd like the opportunity to explore then STS is for you. I really like the fact that I can choose modules outside of the department as this gives me the opportunity to create even broader connections with other disciplines. The STS department is incredibly supportive and encourage you to be as creative you wish with electives. I'm so excited to take modules in moral and political philosophy and I hope to focus my dissertation on the notion of scientific proof and how that concept gets applied in a court of law since I intend to read law after.

I also keep busy outside of class. UCL is renown for its wealth of societies – some of those I've joined include Law for All, Debating, African and Caribbean



Dylan delivers his presentation in New York

Society, Leadership and Management and Basketball. This year I was elected as the Events Officer of Law for All, which is one of two law societies at UCL. Law for All aims to open up the legal profession to all students regardless of their academic focus and I've really benefited from it. For example, I received a competitive scholarship with Freshfields, which is a leading law firm and I interned at Linklaters this summer for a month in their New York Offices as part of my scholarship with the Amos Bursary.

The Amos Bursary is a charity that was set up by Baroness Valerie Amos and her sister Colleen Amos to inspire and develop young men like me, academically-able British students of African and Caribbean descent who have excelled in state schools and grammar schools across London. Every year they select 10 scholars to intern at one of their sponsor firms in New York and I was among the privileged few to be chosen. Spending a month in New York was truly life changing. I developed both professionally and culturally and spending the summer at Linklaters has left a lasting

"ONE LAWYER IN PARTICULAR LEFT AN IMPRESSION ON ME. HE RECOMMENDED A LIST OF BOOKS THAT HAVE INFLUENCED HIM GREATLY AND WE HAD A PROFOUND CONVERSATION ABOUT OUR SHARED VISION OF SOCIAL JUSTICE."

impact on my aspirations as a lawyer. Interning at Linklaters was incredible. The people were very friendly and took a genuine interest in my personal history and future ambitions. I learnt a great deal about the strategies that Linklaters has employed to mitigate the risks posed by the rise of artificial intelligence and Brexit and I gained a useful insight into capital markets and derivatives, which are two extremely technical areas of the law.

One lawyer in particular left an impression on me. He recommended a list of books that have influenced him greatly and we had a profound conversation about our shared vision of social justice. He advised that if I truly wish to enter law to help redress the structural imbalances and abject inequalities that permeate throughout my society, it is essential I do not allow the lure of the commercial world to corrupt this ambition. I was awestruck by his transparency and inspired by his conviction.

CULTURE

Meeting Colin Warner was an historic moment. He was wrongfully convicted of murder and his best friend, Carl King, devoted his life to proving Colin's innocence – it took 21 years but King's efforts were not in vain. We had the opportunity to watch the premiere of the movie depicting this poignant but inspiring tale, Crown Heights and participated in a panel discussion where Colin Warner recounted his experience. The film highlighted the gross miscarriages of justice that are taken on a daily basis both in the U.S. and U.K. contexts and cemented my motivations for going into law.

Further, I thoroughly enjoyed the Underground Railroad tour delivered by Ludie Rminaya, which can be categorised as follows: (1) starve for power (2) divide and conquer and (3) rule of fear. According to Ludie, these were the tools used to systematically oppress anyone with a 'drop' of African blood. Her tour focused on the Underground Railroad but she made historical points about the overlaps between classism and racism, the complex relationship between indentured servants and African slaves and best of all, how African-Americans were able to draw sympathy for their cause and reclaim our humanity. The tour helped me gain a better understanding of the African-American lineage and our shared cultural heritage.

*Words and photo - Dylan Kawende
(2nd year BSc History and Philosophy of Science)*

Undergraduate News

Science in action: introduction to museum curation

As part of the HPSC3003 Communication of Scientific Ideas module, students were given a chance to create a display for the Grant Museum. Biosciences student Robyn Webb, part of the group who put the display together, explained their thinking.

"Our first objective was to decide on a topic. After appraising several possibilities, we decided to do the project on 'Sexual Selection', for we knew we could be informative yet very visual with this topic. Next, we decided on the structure of the display, and the content. The structure was constructed using the 'inverted pyramid' method, by which the eye is drawn to key information, and the detailed information is read after the key information.

We then decided on the objects we could use to best display the theme. We also made sure the content aligned with the objectives of the museum - interesting and informative. Finally, we formatted our labels using the museum templates, in accordance with museum guidelines. For example, our small specimen labels contained a maximum of 23 words."

For the module as a whole, Robyn was enthusiastic. "I chose this module because I wanted to learn about potential careers involving science, but which are not lab-based. I've always been interested in journalism and communications, but I've never had the opportunity to learn about them, or practice that sort of writing.

I would fully recommend this module to other students. It's very distinct from other science modules, and is a great opportunity for you to hone your written skills. Being able to choose what you write about is really exciting, and sets this module apart from others. Additionally, the teaching is excellent - the staff are engaging, encouraging and enthusiastic. They also provide great (and prompt) feedback on your assignments!"



Grant Museum display - Image: M. Chalmers



At the UCL NSS ceremony - (l-r) Dr Simon Werrett, Lori Coletti Campbell, UCL Provost Sir Michael Arthur and STS Student Rep Jaspreet Jagdev. Image: Joe Cain

STS receives 100% NSS Satisfaction rating - again!

For the third time in four years, STS has received a perfect score on the National Student Survey, receiving 100% overall satisfaction from students completing their degree in 2017. This is the highest result in the Faculty and one of the highest results across the whole of UCL. While the response rate may be too low to interpret results with confidence, this survey is used in the Higher Education sector as a general performance indicator.

Professor Joe Cain, STS Head of Department, is full of praise for his colleagues. "I think STS has some of the strongest teaching and learning underway at UCL. There is a special kind of energy and enthusiasm here that fires up students. They come alive, and they find deep and lasting value in what we do together. Top scores like this are a pat-on-the-back for our teaching community - both academics and administrators. These people put huge amounts of effort into their work, and it shows."

STS has one of the top results for UCL in 2017. However, Professor Cain is not complacent. "The data also highlights areas where we have more work to do. Each year, STS analyses the NSS data and considers solutions to issues raised. We have a lot of improvements ongoing. We always look for more. Surveys like NSS are one way we gather information on these lines".

"We have many others, including simply talking with students and listening to their concerns, day after day, term after term. There's no trick here: we listen; we use

our experience to diagnose; we problem solve. In the end, everybody remembers a great teacher. We want everyone coming to UCL to remember STS."

UCL held a ceremony on November 22nd to congratulate various departments on their results in the NSS and PTES (Postgraduate Taught Experience Survey). STS took pride of place, with the highest results for student satisfaction in the entire university. UCL Provost Sir Michael Arthur singled out STS for praise, calling the department 'outstanding', and noting that the set the bar high for colleagues across the sector.

Full details on the NSS, including its methodology and the chance to submit your scores for 2018, can be found on the website at www.thestudentsurvey.com



Sir Michael Arthur - Image: Joe Cain.

Lunar Soc returns

STS's student society 'Lunar Soc' has a lengthy history, but ran aground in 2014 to the disappointment of many. The new intake of students, encouraged by the undergraduate tutors, decided to restart the society. This year, Lunar Soc was reborn.

Second year students Dylan Kawende and Flossie Boyd were nominated as the initial Lunar Soc chair and vice-chair.

The rest of the committee includes Andrew Taylor as Treasurer, James Dyson as Executive Administrator, and Jamie Stephens, Ricky Ruiyang Tu, Vaish Mohan and Sam Cutler handling Events,

Celebrations began with the traditional student social event that is the Pub Quiz. Further events are already in place, with a Lunar Soc Pub Crawl on January 30th, and a celebratory ball planned for the summer. We're glad to see Lunar Soc return, Phoenix-like, and hope it returns to former glories.

You can join Lunar Soc at the STS Lunar Society Facebook Page, or in person at any of the events.

Here's Dylan's recap of the first event.



Some of the new Lunar Soc Committee - I-r Dylan, Flossie, Andrew, Jamie and Ricky
Image: Dylan Kawende

"We ate. We drank. We laughed. But most importantly, we engaged in a whimsical quiz cooked up by our very own Flossie Boyd, who is Vice Chair.

The event was a fantastic opportunity for the committee to meet with students across the STS community.

The first year cohort, in particular, came in their droves and displayed an admirable level of enthusiasm.

The winning team - Temporarily Nameless - were very impressive. They truly epitomised the scholarly power of an STS education and the banality of

creating cheesy team names!

Our vision is to instil a permanent sense of community within STS that will perpetuate through the years to come. Help us bring this vision into fruition by offering your suggestions and attending the many events we have lined up for you.

The time has arrived for us to employ our talents and pursue a new course. Let's seize this opportunity together!

Words - Dylan Kawende
UCL STS Lunar Society - Chair

STS Student Awards 2017



Each year, STS awards prizes to students who have achieved outstanding work. In 2017, the following students were the ones we felt most deserving.

The Kathleen Lonsdale Prize is awarded for overall academic performance in an STS MSc course – this year, the prize was split between Lauren Collee (STS) and Ian Goodman (HPS), both of whom excelled across the taught and research components of the course. The department were happy to present the award to two deserving students.

Likewise, the award for best dissertation was split between two students, with the following dissertations all considered worthy of receiving the accolade:

Joseph Shuttleworth (HPS) - Can machines believe?

Lauren Collee (STS) - 'A deeply weird place': fragile stories and disobedient bodies on the St Kilda archipelago (You can read a summary of Lauren's work on page 6)

Amongst our undergraduates, prizes are available covering the whole range

of courses within the department. The Peter Medawar prize for top overall final result in any STS undergraduate degree went to Hanruo Feng, while Hanruo also shared the Best BSc Dissertation prize with Oscar Price.

The Joan Beauchamp Proctor prize for top overall second year performance went to Rebecca Hodges, while the Wang Zhenyi prize for first year performance was shared by Flossie Boyd and Giulia Galli. The Gertrude Falk prize for overall performance on the iBSc was awarded to Isabel Norris, who also received the iBSc Best Research Project prize.

Finally, Georgia Haire and Saskia Little (both HPS) were awarded the STS Alumni prize for their outstanding contributions to the academic life of the STS department at MSc level, with Kate Balding and Dylan Kawende receiving the equivalent award for BSc students. This award goes to the student (or students) who provided the most assistance to the department throughout the year, and made 22 Gordon Square a happier place to be.

A whole-hearted congratulations to all of the above.

Conversations with Seabirds

MSc student Lauren Collee spent a week on the isolated island of St Kilda as part of her dissertation research, which studied interactions between people and seabirds. She tells her story below.



In fairy tales, things often come in threes, and it's usually the third who has the monopoly on the tale's magic. The remote archipelago of St Kilda has three appointed guardians: the warden, the archaeologist, and the seabird ranger. In the weeks before my research trip, I sit in the British library reading all the ranger's seabird reports and typing up careful lists of questions. I track down her email address and send an overenthusiastic interview request. After a week she replies, thanking me for my email and warning me that she won't be very available.

I whinge to my housemate about it: 'What if there's no one else there?' She says: 'You'll just have to talk to yourself. And to the seabirds.' I imagine myself approaching a kittiwake with a research participant consent form: Seabird 1, do you like it here? Are you concerned about rising sea temperatures? What does this place look like from up there? Have you chosen not to breed this year, or have you just not bred this year? Why can't you talk? (This would all be a whole lot easier if you could talk).

Geertz says: the basis of a meaningful encounter is neither to understand, nor to be understood. To converse is enough. In mid-June, I take a train, then a bus, then a plane, another bus, and finally a boat. It's a clear day, but after the Isle of Harris disappears behind us, it's a long while before anything else appears on the horizon.

Eventually I start noticing small white bodies skimming across the water, headed for the great mass of rock that is coming slowly into view. I sit up front with the skippers and they debate whether the island of Boreray looks more like a sleeping dragon or a cow, from this angle. They drop me off on the pier, a shivering bundle of Gore-tex with a bag full of survival gear: 'See you in a week'.

For the first four days, there is no sign of the seabird warden. Every time I ask where she is, I get the same answer: 'Ach, probably up a cliff somewhere'. It seems I'm not the only one to have mythologized

her a little. 'She's like the mysterious bird lady of St Kilda', says the chef.

This far North, it's light until midnight. I lie in my tent listening to the rain on the nylon, and thinking: 'how does she spend so much time with these creatures? They're so different.' When I find my first clue, it is entirely by accident. I am up a cliff in the rain, walking along a ridge that is dotted with cleits.

The St Kildans used to hunt seabirds in the thousands and store their catch in these old stone structures over the winter. When I peer into their dark mouths, I see boxes connected to piping nestled in amongst the lichen and animal bones, their lids weighed down by heavy stones from the beach.

'You know she took all that up there herself in a wheelbarrow?' someone says when I get back down to the bay. 'In a snowstorm, too'.

Vinciane Despret says: It is not possible to have control over anything, but it is possible to have influence. The seabird and marine ranger plants nesting boxes all over St. Kilda to try and influence the Leach's Storm Petrels to lay their eggs. Some remain untouched; in others she finds a few droppings and some feathers but no egg. She wants to ask them: what is it about these boxes? What do you want? Words speak louder than actions, says Lacan. Actions speak louder than words, says everyone else. The seabirds can only communicate with the seabird warden through their behaviour; she finds she must do the same.

She contacts the Men's Shed group in Inverness and asks them to build her some new boxes: much smaller, this time. Then she takes them up the cliff; all forty seven of them, with a wheelbarrow, in a snowstorm. This is no small feat. The cliffs that surround the natural bowl of village bay slope upwards very rapidly, and then drop off at perfect right angles. To get up high, you have to walk very close to the edge, where the sheep paths are. These sheep are wild and fearless: They hang right over the drop to get at the grass –

or maybe the flowers - and I have never seen one fall, although I'm sure it happens. There are no human paths. Only sheep paths.

After days of getting used to this precariousness I decide to make my way up to the highest peak. The sun is out, but the wind is up. Unexpectedly, I stumble across an old plane wreckage. I'd heard about it from a hostel owner in Leverburgh, about the twelve men who didn't expect to come across a giant rock in the middle of the Atlantic Ocean and who died in the night.

A rusted propeller is protruding from the grassy slope. The bodies have long since sunk into the ground. I feel very faint all of the sudden and have to sit down against a rock. I remember that one of the staff had to rescue a volunteer some time ago who got cragfast: he was struck with vertigo and simply couldn't move. I try to wriggle my toes but that's just about all I can manage. I start to panic.

From this spot, I can see a single, grey-white fulmar riding an air current, doing huge circles. Its wings remain perfectly taut. I am several metres away from the lower arc of its flight-path: it swerves and is carried up and off again by the momentum of its dive. For a minute I think it hasn't noticed me. Then it rounds and comes back again in a smaller circle. And again. It catches my eye four, five, six times and I take a deep breath with each round. Then it is gone. I regain feeling in my legs, push myself back up onto my feet, and carry on up the hill. 'Thanks', I catch myself saying out loud.

Later, when I finally track down the seabird warden and we are sitting together in the old Manse with cups of tea, she talks about 'favourable conditions', 'indicator species', 'breeding success', 'off-duty birds'. But there's something much more enigmatic in there, too; something that makes me think of witches, fairies, ghosts. It's the conviction that we live in a world that is always looking back.

Words and photos - Lauren Collee

NOVA on the Horizon



NOVA © PBS



Horizon © BBC



After interviewing the Editor of Horizon, MSc graduate and 2017 prize-winner Brian Kantor explains how he used this experience to move into working for NOVA in the US:

The closest I had been to the BBC was in Minneapolis, Minnesota, driving home from work whilst the speakers in my car pushed the sounds of the BBC World Service into my ears. But within months of beginning an MSc in science technology and society at UCL, I would pass through the security checkpoint at the BBC's headquarters in London and interview Steve Crabtree, the series editor of the BBC's flagship science documentary programme, Horizon.

It was the first step towards the next phase of my professional life: science documentary film-making. In science communication, as in all creative and intellectual endeavors, theory and practice form a dipole – a stabilizing pair. On one hand, theory is nothing without its object of analysis – the practice of communication itself. Conversely, without theory, science communicators lack the structure and method required to engage audiences in the meaning of their message. The STS department trained me in both.

Coursework at UCL taught me to question facile narratives of science that we encounter every day – that the outcome of science is always greater certainty, or that the locus of knowledge production is a discrete place like the laboratory or observatory. As I learned to see scientific knowledge and authority less as a static entity and more as a process of performing historically specific practices, I also learned to tell stories about science that reflect these political and cultural dimensions by producing a radio story and writing blogs and feature articles.

Thanks to this training, my encounter with Steve Crabtree was not my last. During the following months, I conducted

interviews with him and his producers, directors, and researchers in order to write my master's dissertation about the Horizon unit's culture of knowledge production. With this access, I glimpsed how the unit's producers employ the visual language of science fiction films in their own programmes. I learned that, by doing so, they reinforce the impression that their programmes are cutting edge and that they have privileged access to scientific knowledge.

Not a week after submitting my dissertation, I went on to join the Horizon unit again – this time as a colleague. During a month-long work experience, I was fortunate to participate in every step of producing a Horizon film – from combing news headlines for relevant science stories and securing props for shoots, to assisting the cameraman on set and featuring as an extra in a Horizon film. Equipped with my STS training, I knew that as film producers, we were contributing to the institution of science by shaping how audiences access and perceive scientific knowledge in their daily lives.

A year later, I've moved back to the U.S., but I've kept the theory and practice of science communication close at hand. As a researcher for NOVA, the American science documentary programme inspired by Horizon, I research episode ideas, produce short videos, and shape the science stories viewed by millions of Americans on a weekly basis. Though the job keeps me busy, in the quieter moments I fondly recall the day I sat down with my personal tutor at UCL. With an impish yet understated expression on his face, he said, "I know the series editor of Horizon. Would you like to interview him?"

Words - Brian Kantor

STS Alumni Podcasts

The STS Alumni Podcast series continues with a series of fascinating conversations, with more to follow. As well as recent MSc graduate Brian Kantor's discussion with Jean-Baptiste Gouyon about his work with the BBC and PBS (see left). Camilla Tetley told Malcolm Chalmers about her work with the Royal Society, and how the skills from her STS degree helped to develop a career path.

From a completely different angle, Andrew Gregory and Chiara Ambrosio held a fascinating chat with Minna Orvokki Nygren, a musician and former MSc graduate, who had written a piano piece based on the fluctuations in the orbits of Pluto and Charon - a fantastic combination of science and art. Lt. Rubin Nash took a very different approach. He found that the problem-solving and analytical skills of an STS degree helped him hugely when entering a career in the Royal Navy. He also spoke to Andrew Gregory about his work since completing his studies.

All of these can be listened to via the [STSUCL Careers soundcloud](#) or STS Website, along with earlier interviews from civil servants, museum curators, BBC broadcasters and many more.

If you're an STS alumni and you would like to join us for a podcast, contact us at sts@ucl.ac.uk

Alumni News

UCL Marrow Hero

UCL Marrow, a new student branch of Anthony Nolan (formerly The Anthony Nolan Trust) is aiming to increase the number of students registered to donate Bone Marrow.

As part of their work, the group ran a campaign featuring their 'Hero of the Day' - and their first Hero was STS's Charlie Norell.

Charlie described his experience of being told he was a potential donor.

"After providing blood samples, I was found to be a match and got booked into the London Clinic for a full clinical examination - this was basically like a free MOT and all the staff were so friendly!"

"I was also able to meet two people literally donating via Peripheral Blood Stem Cells (PBSC) in the same room. The whole process is really straightforward and accommodating for you. Someone from Anthony Nolan is assigned to you

and provides consistent support during the whole process".

Despite this, Charlie wasn't able to donate on that occasion. *"In my case, the first person asked to donate initially couldn't complete their medical assessment (at which point I was called) but later passed and was able to donate as originally planned. This is quite common and just ensures that the patient receives the closest match as soon as reasonably possible".*

"I feel very lucky in being able to experience how Anthony Nolan operates and see the amazing work they do- I even received a handwritten thank you card from them!"

Would you like to see if you can save a life? You can find more information on UCL Marrow at their Twitter and Instagram accounts, or going straight to the Anthony Nolan website at <https://www.anthonynolan.org/>



STS graduation ceremony - August 2017. Image - Joe Cain

STS's new Alumni officers - Dr Emma Tobin and Dr Simon Lock - are providing new services to help alumni stay in touch.

In addition to [UCL's existing Alumni Community](#), STS has finally introduced a [Facebook Group for alumni](#) to maintain their connections with the department and each other. The group reached 100 members within 3 days, and looks to be a useful source for alumni in the years to come.

Similarly, STS now has an [Instagram account](#) at [ucl_sts](#). This will be used to show a more informal insight into the life

of the department - in future, we aim to show clips of lectures, seminars, and other departmental events. Follow the account for more information.

All of this is in addition to our existing Twitter and Facebook accounts, and of course, the STS website at ucl.ac.uk/sts. We also operate an STS mailing list to keep alumni and interested parties informed of upcoming events, such as STS seminars, JBS Haldane lectures and new editions of Alchemy. To sign up for this or any of our other accounts, visit 'Follow STS' at www.ucl.ac.uk/sts/about_sts/follow_sts

On the subject of connections, UCL are developing what they have called the 'Connected Curriculum' project. An important part of this is involving alumni in learning and research at all stages of Undergraduate, MSc and PhD study, to try to improve upon our already high standards.

Initially, UCL are looking for opportunities for current students to interact with alumni, moving forward to the possibility of alumni mentoring current students. The goal is that students engage with diverse alumni in research and learning activities. While this is something STS has done for some time, we understand the importance of this process to the wider UCL community, and hope some of you will be willing to assist.

Alumni are actively encouraged to contribute to mentoring schemes and to work with departments to enhance their educational provision. If you are interested in being part of this in any way as an STS alumnus, or more directly with the department, please contact Dr Tobin or Dr Lock, via the department at sts@ucl.ac.uk

Words - Dr Emma Tobin

Future-proof careers

STS are proud to see our alumni succeed after graduation. UCL Careers Consultant Raj Sidhu talked to us about the career-building opportunities on offer at UCL, and gives us two case studies of recent successes.

STS graduates are well known for the breadth of careers they choose to embark upon... from becoming barristers, launching consultancy start-ups to acting as public engagement officers and scientific communicators; breadth which has obvious parallels with STS's curriculum and philosophy of Flexible Futures as well as my own personal interactions with STS students during 1-1 careers consultations* throughout the year.

If I would recommend just one thing for you this year (beyond booking for a chat about your career thinking), it would be to attend Themed Week talks that appeal most to you.

What are Themed Weeks? They are a series of employer-led talks, Q&A and networking sessions designed for small groups of students to have meaningful

interactions with. A wide range of roles & employers feature – including curators from the V&A and Museum of London as part of last year's Museums and Cultural Heritage week, the Wellcome Trust and Greenpeace as part of Charities & NGO week and the Green Alliance and Geographic Information Systems as part of Environment week, to name a select few.

So far in Term 1, we've had weeks on Government & Policy, Museums & Cultural Heritage, and Media.

During Term 2, we offer:

Charities & NGOs – w/c 29th January
Environment – w/c 5th February
Health & Life Sciences – w/c 5th March

We also have a week on International Development – Spring 2018, date TBC

WHAT WILL YOU GET FROM IT?

Hear from industry professionals about how they got into the sector – and what they'd recommend for current students. Gain a chance to interact and ask questions that are relevant to you – sessions are restricted in numbers which makes for a more intimate setting compared with larger careers fairs.

Speakers are selected for their range of professional experiences, so it's a great chance to learn about professions you may never have considered or possibly even been aware of. Often panellists will be happy to network towards the end of sessions – meaning 1-1 conversations are possible – and a great thing to mention if you ever end up applying to them!

Receive personalised email alerts for our Themed Weeks and lots of other things going on at UCL Careers that interest you by signing up to email alerts through your MyUCL Careers account <https://uclcareers.targetconnect.net/home.html>

*book online here you Careers 1-1 appointment at UCL ... <https://uclcareers.targetconnect.net/home.html>

Case Studies - two different experiences:

Name: Jake Soper
Studied: BSc History and Philosophy of Science
First job: Civil Service Fast Stream

Jake works as part of the Child Poverty Unit – stretching across 3 departments: the Treasury, the Department for Work and Pensions and the Department of Education. Jake carries out analysis of policy ideas and briefs ministers on recommendations – explaining how they might be able to achieve goals they wish to achieve.

Jake joined the Civil Service Fast Stream after his time at STS. The recruitment process consisted of a Maths and English exercise, followed by an e-tray exercise analysing his email responses in a modelled scenario. The Fast Stream assessment day then followed – consisting of role plays, interviews, group exercises and policy appraisals. The critical thinking elements of an STS degree were very useful.

After successfully gaining a place on the Civil Fast Stream, Jake was posted into policy appraisal and given an intensive training programme of rotations between roles, enhancing skills relating to supporting ministers in parliament, critically analysing information and understanding policy appraisal.

Name: Charlotte Connelly
Studied: BSc History and Philosophy of Science
First job: Science Museum Curator

Charlotte found work as an Assistant Curator of Computing and Communications at the Science Museum – developing content for exhibitions, answering public queries, acquiring objects for collections and much more. She's now working on a PhD with the Museum - details on her blog page at blog.sciencemuseum.org.uk/author/charlotte-connelly/

Charlotte decided on a career in museums in her third year, volunteering at two museums in the North West of England following graduation – including at National Museums Liverpool; documenting algae specimens. Charlotte maintained a blog throughout her museum experience.

Charlotte recommends staying in touch with all your contacts from university – as opportunities can often arise in this way, as well as getting volunteer experience whilst at university for whatever you might be interested in – or simply to test out different career areas.

TAKING ANCIENT DNA FROM JEREMY BENTHAM'S DEAD HEAD

Jeremy Bentham is one of UCL's intellectual icons. Luckily for UCL, he left his body and his head to the university. One goal of this exhibition was to try to sequence Bentham's genome using cutting-edge technology and a small sample of DNA taken from his nearly 200-year-old head. DNA, short for deoxyribonucleic acid, is the molecule that carries the genetic information and growth instructions for humans and nearly every other organism. The objects in this case are intended to explore and explain the process of sampling, extracting, sequencing, and analysing genetic information from dead organisms, a practice recognized worldwide as 'Ancient DNA Research'.

This research, funded by a UCL Grand Challenges Grant and a UCL Octagon Gallery Grant, was an entirely collaborative effort involving multiple individuals from various institutions across London. It involved different departments at this university from UCL Culture and UCL Petrie Museum to the Department of Genetics, Evolution and Environment and the Department of Science and Technology Studies. It also involved critical collaborations with the Natural History Museum and Royal College of Surgeons. The expertise employed to ethically and successfully study Bentham's DNA included curators, geneticists, and social scientists. Overall, science is about partnership and this research is an excellent example of collaboration in action.

But how - and why - would such a piece of research be carried out? We asked lead project organiser and STS PhD Elizabeth Jones to answer some questions about this first ever attempt to extract and sequence Jeremy Bentham's DNA

WHY IS JEREMY BENTHAM IMPORTANT AS A UCL INTELLECTUAL ICON?

Jeremy Bentham is a famous philosopher and social scientist of the 1700s and 1800s. He is most remembered for his doctrine of Utilitarianism, which is the principle that political or social decisions should be based on what promotes the greatest happiness for the greatest number of people. Myth has it that Bentham was one of the UCL's founding fathers. This is not entirely true, but it is true that his vision for an open and secular education system influenced the people who did found UCL in 1828.

WHY DOES UCL HAVE HIS BODY AND HIS HEAD?

Bentham wrote his will on 30 May 1832. In it, he requested to have his skeleton preserved, his head mummified, and both put on display. He wanted it to be called the 'Auto Icon.' He died shortly afterwards on the 6 June 1832. His body was dissected in front of friends, and his skeleton placed in his clothes and set in his chair. They also removed his brain from his skull and curators think they suspended his head over sulphuric acid to draw out the moisture, then dry out the soft tissue, leaving only the skin remaining. Curators also think that an oil or leather treatment might have

been applied to his face because it has a waxy finish. Unfortunately, his head ended up looking rather alarming, so a fake head was placed on his skeleton instead of his real head. The real head is kept in a secret storage space here at UCL.

WHY DO YOU WANT TO SEQUENCE HIS GENOME?

Well, there are two rather simple reasons for why we wanted to sequence Bentham's genome: one, we had the technology to do it and two, we were curious to see if it could be done. But aside from these reasons, what hypothesis might we be testing by trying to recover Bentham's DNA? Well, if we can recover enough information to reconstruct the genome, then we could potentially reveal basic information like hair colour, eye colour, and perhaps genetic ancestry. However, if we recover a high quality genome then we might be able to test another hypothesis.

Approximately ten years ago, two researchers from the UCL Bentham Project published an article that proposed a hypothesis. In this paper, they made a sort of retrospective diagnosis based on Bentham's biography that he may have had Asperger's Syndrome, a mild form of Autism on the Autism Spectrum. Now, even if he did have a form of Autism, it would not be easy or perhaps possible for scientists to give a straight-forward 'yes' or 'no' answer to this hypothesis. However, with that in mind, we began the process.



Jeremy Bentham's heads - both real and wax
Image: Malcolm Chalmers

HOW DID YOU START THE STUDY?

First, we had to address the issue of ethics. We had permission from curators and the university to take a sample from Bentham's head, but we had to ask representatives of the Human Tissue Act, too. Fortunately, Bentham's head is nearly 200 years old and falls outside of the Human Tissue Act regulations that would have required us to obtain further permission from a relative or another institution, so we were free to go ahead with the project.

HOW DID YOU TAKE A SAMPLE FROM HIS HEAD?

When drilling into something special like Bentham's head, it is crucial that we minimize destruction and optimize the chances of getting a quality sample of DNA. Initially, we wanted to take a sample of the petrous bone - which is the inner ear and there is evidence that suggests it is a rich reservoir for molecular preservation because of its density which protects then preserves the DNA. So, we turned Bentham's head upside down to have a look but found that accessing

the petrous bone would be difficult and likely lead to damage. Instead, we went for one of his teeth because teeth have also been shown to be a rich resource for endogenous DNA. With a teeny tiny drill, our colleagues drilled into his molar and took away two samples of bone powder from his tooth. This left a microscopic hole.

HOW DID YOU TRY TO EXTRACT DNA FROM THIS SMALL SAMPLE OF BONE POWDER?

After we drilled into Bentham's tooth, the bone powder from the tooth was transferred to a tube, sealed, labelled, and sent to the 'Ancient DNA Lab' at the Natural History Museum for the extraction process. Extracting the DNA from the sample meant isolating the DNA by dissolving the cell membranes, then destroying the proteins and lipids in the sample, so that nothing is left but the DNA. This involved several hours of mixing chemicals and several days of waiting for those chemicals to do their work.

Once the DNA was isolated, we prepared it to be sequenced. We did this by creating a DNA library, a way of indexing all the DNA fragments so they can be identified and isolated later depending on which DNA fragments are under investigation. After extraction, the next step was to send the DNA for sequencing.

SO, WHAT WERE THE RESEARCH RESULTS?

As always with ancient DNA studies like this one, there is good news and bad news. Here's the good news. The good news is that we got some DNA! The bad news is that we only got a little bit of DNA, and only a teeny tiny bit of it was human DNA!

HOW CAN YOU INTERPRET THESE RESULTS?

To explain the research results, I want you to imagine a nice roll of toilet tissue. Let's imagine that this roll of toilet tissue contains about 300 sheets of toilet paper. Now, let's imagine that this roll of toilet tissue roughly represents the length of the human genome which contains about 3 billion base pairs of DNA (base pairs meaning the letters As, Gs, Ts, and Cs). If you were to sequence your genome, then it would contain approximately 3 billion base pairs of DNA.

Ancient DNA is not like modern DNA. Ancient DNA can be characterized as DNA that is hundreds to thousands of years old, and it exhibits particular damage patterns in the DNA due to decay over time. Bentham's DNA, for example, is nearly 200 years old. Ancient DNA, if preserved in the organism in the first place, is likely degraded and damaged, making it more difficult to sequence, analyse, and interpret. Therefore, an ancient genome, such as Bentham's genome, is going to be more difficult to produce than a modern genome, such as your genome.

For this project, researchers extracted and sequenced DNA from Bentham's tooth. We sequenced just over 1 million base pairs of DNA. This sounds like a lot of sequences, but there is a catch. Of those 1 million base pairs, 99% (90,000 base pairs) of those base pairs belong to bacteria. In other words, almost all of the data from Bentham's tooth is bacteria from Bentham's mouth!

However, many of these sequences are also likely attributed to modern contamination that occurred over time. Nonetheless, the amount of bacterial DNA is represented by this small section of toilet paper.

Of those 1 million base pairs, only 1% (10,000 base pairs) belong to Bentham. This amount is roughly represented by this even smaller section of toilet paper. Clearly, 10,000 base pairs of DNA is far from 3 billion base pairs of DNA characteristic of the human genome.

However, there is good news! Researchers are confident that this 1% of DNA is actually authentic to Bentham, meaning this DNA is his DNA and not a result of contamination from the curators or the external environment. Researchers are confident in this conclusion because the DNA is damaged and has specific signatures that tell us the DNA is old. These signatures suggest that this is ancient DNA, not contamination in the form of modern DNA.

WHAT'S THE NEXT STEP?

I don't want you left with the feeling that this is, or will be, a dead end project. It is not. It simply spotlights the fact that ancient DNA studies are difficult because we're trying to recover DNA from an organism that in some situations has been dead for a really, really, really long time. It can be hard to know how hard it will be to get the DNA or if it is even there at all. To complicate matters more, the age of an organism does not necessarily correlate to the quantity or quality of DNA preserved. The conditions in which the organism was buried then preserved is incredibly important.

In some situations, the recovery of DNA from ancient and extinct species that are hundreds of thousands of years old is possible. Indeed, some studies using ancient DNA material has really revolutionized our understanding of the past and life today. The Neanderthal Genome is an excellent example of this. The next step of this particular project is to take another sample from Bentham's head, or even his skeleton, with the hope of recovering a better quantity and quality of genetic information.

That's why we're doing this project, how we're doing it, and here's to hoping we get a higher quantity and quality of DNA in the future so we can have a better look at what it was like to be Jeremy Bentham nearly 200 years ago! For a detailed description of this research in its historical, ethical, and scientific context take a look at the [UCL Octagon Gallery Exhibition](#) 'What it Means to be Human: Curating Heads at UCL'.

*Words - Dr Elizabeth Dobson-Jones,
Honorary Research Associate, STS.*



Dr Jones giving a talk in front of Jeremy Bentham's Auto-Icon. Images: Malcolm Chalmers

TAKE IT FROM SOMEONE WHO'S DONE IT

A PhD is understood to be a considerable academic achievement - but what does a PhD in STS actually entail? Having completed her doctorate this year, Dr Raquel Velho gives her perspective.

For the past five years, I have called STS my academic home. It is here that I have learned the ropes of our profession as science and technology studies scholars, first as a Master's student and then as a doctoral candidate. In the past half-decade, I've acquired the tools to search for information in the right places, collate a literature review, conduct field work, analyse the data, and write a thesis on a single topic of research. It's often lonely work, but when undertaken in a community such as our department, it is made a bit easier.

I wanted to take the opportunity to reach out to other STS students via the *Alchemy* newsletter and tell you a bit about the process of a PhD degree in our department. Coming into it in 2013, I realised how little I knew of what I was going to face, so I hope this is informative to you, whether you've just begun your undergraduate experience, have recently joined us as an MSc student, or are spreading your

wings as a doctoral candidate. It may even motivate you to apply for a degree yourself in the future, or motivate you to keep going if you're already one of us.

This little piece is being purposefully kept rather informal and biographical, for two reasons. Firstly, chats about doctoral degrees are often burdened by arduous undertones of 'sacrifice' and 'dedication'. I wanted to keep our tone light, because while the PhD isn't an easy process by any stretch of the imagination, it is also an opportunity for a lot of joyful occasions.

I also need to speak of my own experience because PhDs are, inevitably, very personal. Each person's trajectory and decision to join a doctoral program is specific, and that is reflected in the process itself. Our field, in particular, brings together a diversity of backgrounds (in my cohort alone we were historians, physicists, chemists, sociologists and philosophers, to name just a few), and this

will mean different learning curves during the doctoral process.

Nevertheless, there are benchmarks and milestones that we all go through in the process. Using my own research topic, I'd like to tell you a bit about what to expect from a doctoral experience, starting from where mine began, the MSc, until the final stages, the viva.

USING THE MSc AS A SPRINGBOARD

It was 2012 when I joined the department as an MSc student, having recently completed my undergraduate degree in Sociology. There was a steep learning curve to learning the basic concepts of science and technology studies, but having come from a social studies background was very helpful as the basics of writing an essay in this format had become second-nature. Students from natural or physical sciences might find the first months a bit more difficult, but it's nothing that reaching out for help from tutors, and even your own peers, will not overcome.

The decision to apply for the PhD came early. indeed, I had already considered doing a doctoral degree during my undergraduate degree. The most challenging part of the application process was to write a 'research proposal', particularly when the deadline for submission was early February (check current deadlines!), and I had not even begun to think about my Master's dissertation (never mind an entire thesis).

Writing the proposal in tandem with course work was also demanding, but it was an useful exercise. The result was a decent proposal, including a literature review, that served an important role for my MSc project. It is not necessarily the case, but an MSc can serve as the ideal springboard for testing a research project, and mine was the test site for the doctoral work. I still refer to my MSc as a pilot project, that enabled me to try out some frameworks that were then discarded or adopted in the full doctoral project.

THE FIRST YEAR AND THE UPGRADE

Having been accepted into the doctoral programme (I won't detail funding issues, as it's a complicated topic, deserving of its own article), and completed the MSc, you're looking down the barrel of 3-4 years of work. It seems like a long path, but you'll be surprised by how quickly time goes.

The first year, more often than not, is the point in which you'll be unsure as what you are meant to be doing. And that's part of the process. Most of it is dedicated to



Dr Velho (right in blue) after her PhD viva, alongside supervisor Prof. Brian Balmer and examiners Dr Emily Dawson, and Dr Angharad Beckett. Image: Raquel Velho

The Thesis - *Fixing The Gap*

Dr Velho's thesis can be read online in full via her website. Below, we provide a very brief summary.

Public transport in London is a massive infrastructure, with over 400 kilometers of underground tracks, a fleet of 9000 buses and a rich, 153-year history that has turned it into a symbol of the English capital. Despite its size, accessibility in this infrastructure has been a source of concern for wheelchair users in London. Based on an analysis of thirty-four interviews with wheelchair users and policy-makers, observations at accessibility events, and documentary data on London transport, this research asks, "How do wheelchair users use public transport in London?"

As an example, of 270 stations on the Underground network, 71 are defined as "step-free" access. Of 112 Overground stations, 57 are step-free. While it may be tempting to limit ourselves to 'facts and figures' when discussing transport infrastructure, this gives us little idea of how wheelchair users experience public transport in the English capital.

This thesis sits at the academic intersection of science and technology studies (STS) and disability studies, and has two main arguments. The first argues that the barriers faced by wheelchair users in transport are the result of transport network having stabilized in a particular period of social segregation of disabled people (1850s-1950s). This is discussed by intersecting the history of transport in London, with that of disabled people in British society, followed by interviewees' accounts of the barriers they encounter in the infrastructure to this day.

The second argument holds that, despite segregation, wheelchair users have taken an active role in the process of shaping transport in London. In this role, they have developed inclusion mechanisms on both micro- and macroscales, through (amongst other techniques) individual problem-solving and collective political activism.



Wheelchair user boarding a bus. Image: Dr Raquel Velho

The thesis used a rich array of past research as inspiration - ideas such as stabilizing infrastructures through standards, theories of exclusion in sociology, and the importance of disability studies were covered. The research itself included a total of thirty-four interviews, three observations, and documentary collection (both of official Government records and commercial media accounts).

What, then, would be the response to this thesis' initial question, "How do wheelchair users use public transport in London?" The answer is, appropriately, two-fold. Firstly, they use the public transport system with some difficulty. This is the result of infrastructural stabilization during a period of social segregation, paired with the paradox of malleability and temporality of infrastructures over time. Secondly, however, in order to use the public transport system in London, wheelchair users have developed a series of inclusion mechanisms to counter the nefarious effects of historical barriers and infrastructural lethargy. These mechanisms include ad-hoc problem-solving tactics as well as engaged political work. Through these mechanisms, these excluded users have found ways of affirming their agency within the system, and taken an active role in the shaping of infrastructure.

To find out more, you can read a both the full thesis, and a 15 page summary, at Dr Velho's website www.raquelvelho.com

chasing down literature that will help you build your literature review, and it will often feel like you meet dead ends. Don't fret if that is the case: you're testing new ideas, and it'll help you find useful paths.

The end result of this hard work is the upgrade document, which provides evidence that you've accomplished a feasible draft of your work, due 12-18 months from when you began your degree. This document can take many shapes; more often than not it is a draft of a chapter.

As a sociologist, I used this is an opportunity to draft my literature review, and detail the methods I would use for data collection (there are other documents required, which your supervisor will talk you through).

The documents are then given to an internal examiner, who will evaluate your work and the feasibility of your project. The upgrade can seem harrowing, as if

it were a 'pass-or-fail' situation. Yes, it is an important phase of the process, but it is not there to wean out the weak: it is in place to help you scope out your project, identify areas where you might require a brush-up of topics (or methods), and to help you in the next phase.

THE FIELDWORK/RESEARCH

You've upgraded! Congratulations. Never forget to celebrate these milestones and ensure that you give yourself a break. The PhD is a marathon, and you need to pace yourself. Successfully upgrading means you deserve a treat, so perhaps book a little holiday. And then you're back to business. The next months are not going to be easy, and a lot of self-doubt might surface. Make sure you speak to colleagues, and try not to isolate yourself.

The fieldwork, again, takes many different shapes specially in a department as diverse as ours. You'll see some colleagues hiding

in archives, others hoarding datasets online, and others running in and out of the department for interviews all over town (or the world). Remember what your project is, and that each project demands its own methods and its own pace.

My project demanded interviews, and they were concentrated in the late months of my second year/early months of my third year, followed by a period of social isolation to transcribe all of my data. It also required documentary collection from websites and blogs, as well as observations. Yours may well be different, but your second to third years will, in essence, consist of data collection and slowly gearing into analysis and writing up your thesis.

Cont. page 14

WRITING UP

We've entered the territory of years 3-4. This is another phase that might feel lonely, and again, I would tell you that the key is to keep in contact with colleagues. The process of writing up is very personal: some people spend a long time structuring each chapter before writing full sentences; others prefer to put every thought down on paper and then edit it down. Finding your own way of writing, and your own voice, is going to take time, and that's okay. Perhaps thinking of 'writing' as a muscle, that requires daily practice and upkeep, might help. Create small goals, try and keep to them, and always communicate with your supervisor about your personal deadlines.

SUBMISSION AND THE VIVA

You've written two (or perhaps more) versions of each chapter, discussed each chapter with your supervisor, and have put them together in a single Word document. Wow. That is absolutely monumental, and you should be proud at this point, but we're not done. You're going through it again, and now you've still got an introduction and conclusion to write (and the formatting, and the appendices...).

This is the final stage, and it's going to feel endless. It all feels endless when you're going through it, but there should be a tiny speck of light (it'll be really tiny, but it will be there nevertheless). After revising the 'final' version of the entire thesis a couple of times, it's time to let it go. It won't be easy, but there comes a time when no amount of reading it will make a difference: typos will not be spotted anymore, and you won't know how to rephrase it. So send it off to the printers, and book yourself a little holiday. You'll inevitably have to come

back to defend the thesis, and that's called viva. It is faced with dread by most of us, but remember, it is an opportunity like no other. Two examiners (one internal, one external) are being brought in to discuss your work, with you. They are not there to see you fail, they are there to have a collegial conversation about the thesis you have produced. It is a rare academic opportunity, to know that the two people sat in front of you have spent the time to read your work, think about it in depth, and talk about it. They are not evaluating your body of work on a pass-fail basis either: the aim of the viva is to assess whether you have produced a thesis at the level expected from a peer, and whether you are capable of conducting a research project.

THINKING ABOUT THE FUTURE

Somewhere along the way, in this entire process, you're also expected to think about the future. What will you do with the three letters you'll be allowed to put after your name? We often hear how difficult it is to find a job in academia, and it can be hard for some of us to imagine alternatives. If you're thinking of staying on the academic track, keeping an eye out for job opportunities starting from the third year of your PhD is likely a good idea (application cycles often start around October for jobs starting in the following school year). It is a stressful addition, and might feel like wasted time when you might be adding other things to your CV (writing articles, running reading groups, etc.). But don't forget that any documents produced for a job application once can likely be up-cycled for other applications!

The PhD degree is a significant chunk of your life: making the decision to apply for one should take some deliberation,

YOU'LL SEE SOME COLLEAGUES HIDING IN ARCHIVES, OTHERS HOARDING DATASETS ONLINE, AND OTHERS RUNNING IN AND OUT OF THE DEPARTMENT FOR INTERVIEWS ALL OVER TOWN (OR THE WORLD).

precisely because it requires effort and, that dreaded word, 'dedication'. It also requires motivation and discipline. And many of these words are intimidating. Having come out the other end of it, I truly understand why so many hesitate at the thought: there were gruelling moments (I took approximately seven weeks to write Chapter 8, and it included more crying that I care to admit).

Nevertheless, in the process, I had a supervisor to help me along the way, and developed close bonds with colleagues who were going through similar pains. If you're considering applying to the program, reach out to your tutor to discuss the process and expectations, and ask about being put in touch with doctoral students themselves to ask about their experiences (they'll likely have their own version of events). To end on a soppy note, were you to ask me whether I would do it again, I would reply, "Yes. But not anywhere else."

*Words and images - Dr. Raquel Velho -
Honorary Research Associate, STS*

As part of her PhD research, Em O'Sullivan has taken part in an exhibition at Tate Modern. Their PhD is researching diversity and the Maker community, which has involved significant fieldwork. Photos and audio from this fieldwork is now part of the '[Shared Machine Shops](#)' mini exhibition, part of the Tate Exchange program [Art:Work](#).

This exhibition looks at the open workshop sites throughout the world, where people can learn to make things with mentors, tools and equipment. Various called 'makerspaces', 'hackerspaces' and 'FabLabs', these shared machine shops can be found around the world from Japan to Ghana, and from the Norwegian Arctic Circle to UCL's own Institute of Making. Some groups are using the collaborative possibilities of these sites to envision

STS PhD at Tate Modern

an entirely new kind of peer-to-peer economy. In bringing the means of production to the people, this approach promises a less exploitative, more autonomous, and more environmentally sustainable future built in the "occupied factories of peer production theory!"

This is just one of several examples of Em's public engagement. Others include holding a psychogeographic tour of Brighton, and a series of profiles of Makerspaces throughout the world. You can find out more about Em's research on their website, or by listening to their [podcast](#), both of which can be found at [freakatoms.co.uk](#)



Image: Kat Braybrooke

PhD News in brief

STS continues to have a thriving PhD community that are active in all aspects of life within the department, and active globally conducting research or presenting at academic conferences. Here's what some of them got up to in 2017.

NEW BLOOD

Since the last issue, a number of new PhDs have joined the department. We hope they make their homes here as many have before them. These include:

Paul Ranford: George Gabriel Stokes – Kelvin's "great authority".

Benjamin Weil: 'Investigating the role of stigma in policy-making through the men who have sex with men (MSM) blood donor controversy'.

Robert Johnstone: Seeing the light? Research into the export trade in window glass and associated technology from Britain to the British Atlantic colonies in the 18th and 19th Centuries.

Santiago Guzman Gamez: "Imaging/imagining Colombia": Ecology, botany, nation, and the case of Enrique Pérez Arbeláez 1929-1971.

Jonathan Griffiths: The world's destruction in ancient (Greek) philosophy: Plato's Timaeus and its Hellenistic Reception.

EXPERIMENTAL PSYCHOLOGY

Claudia Cristalli recently published a paper in the *European Journal of Pragmatism and American Philosophy*, entitled "Experimental Psychology and the practice of Logic: Charles S. Peirce and the Charge of Psychologism, 1869.1885". The paper is open source and available to read on the EJPAP website at <http://ejpap.revues.org/1006#text>.

CONGRATULATIONS, STS DOCTORS!

An incredible number of STS PhD's have submitted their theses in 2017, and the department wish to congratulate each of them.

Including Dr Raquel Velho (see page 12), we also have:

Dr Erman Sözüdoğru: "Pluralism, values and context: understanding the boundaries of plurality in scientific practices in the case of neglected tropical diseases".

Dr Oliver Marsh: "Nah, musing is fine. You don't have to be 'doing science'": emotional and descriptive meaning-making in online non-professional conversations about science.

Dr Harry Quinn Schone: What do we talk about when we talk about disease?

Dr Toby Friend: A Humean account of laws and causation.

Dr Jennifer Wilson: Crystallographer and Campaigner: The life and work of Dame Kathleen Lonsdale FRS (1903-1971).

Dr Elizabeth Dobson-Jones: The Search for Ancient DNA in the Media Spotlight: A Case Study of Celebrity Science.

Dr Samantha Vanderslott: Open Innovation Approaches to Neglected Disease Research.

Dr Thomas O'Donnell: The Affect of Fostering in Medieval Ireland.

Dr Christopher Campbell: The chemistry of relations: the periodic table examined through the lens of C.S. Peirce's philosophy.

We're sad to see them go, but look forward to seeing their future achievements!

WORKS IN PROGRESS

Alongside this work, our current PhDs have continued to give Work-In-Progress (WIP) seminars to demonstrate their research. Since the series began in October, Edd Bankes has organised regular WIPs from PhDs in and around the department.

The term one schedule was as follows:

Eleanor Armstrong: 'Exploring Collaborations between Artists and Scientists'.

Hugh McKenzie: "Is Plato's Affinity argument for the soul weak?".

Em O'Sullivan : Excellence in the Maker Movement.



New decorations within the department, from Rachel Ignatofsky's book 'Women in Science'. Image: Malcolm Chalmers

Jono Spring: STS and Cybersecurity.

Virginia Ghiara: Mixed Methods Research, the compatibility thesis and the role of research paradigms.

katherine cecil: "He makes a point of collecting girls in his lab that he thinks have promise" - Is all resistance revolution?

Further WIPs will take place in Term 2. While the final dates are still to be confirmed, Edd himself will be giving his talk on science in comedy, along with several other STS PhDs11.

Full details can be found on the STS Calendar, or by contacting PhD student reps or checking the noticeboards in the department. Details are also available via the STS PhD Moodle page.

Perspectives from an early career researcher



The aim of the workshop was twofold: to explore how advice from the social sciences can best inform policy-making and address current societal challenges, and to discuss the principles underlying scientific advice, in itself a social phenomenon involving people, ideas, and institutions, that is ripe for social scientific analysis. As a gathering of scholars and practitioners sharing a broad common understanding of the issues, discussion moved quickly from the more general points to some of the more difficult and fundamental questions. One particularly interesting point that soon emerged is that the concept of social scientific advice as a unitary entity is far from unproblematic.

With the label 'social science' encompassing everything from econometrics to cultural anthropology, it is hard to see how social scientists could present a united voice to policymakers. Different disciplines approach social phenomena from different methodological and epistemic premises, looking at different levels of analysis and explanation, and providing what might appear as sometimes divergent accounts of the same phenomenon.

While such a rich and nuanced picture of the social world is important given the complexity of the phenomena under analysis, the diversity of perspectives could lead policymakers to wonder whether such advice is worth listening to, or even to pick and choose whatever perspective best support some preconceived position.

What are the current challenges and opportunities for social science advice to policy in Europe? These questions were addressed by attendees at a recent workshop organised by the International Network for Government Science Advice (INGSA). STS Ph.D. Alessandro Allegra wrote this report.

The lack of a common approach therefore risks creating a vacuum in the understanding of social challenges, which is filled by those disciplines that best manage to present what appears to be a convincingly coherent picture of the world.

The risk with this is that the framing of a complex and multi-faced social issue is monopolised by the lenses of a single discipline, so that for example everything becomes a market failure or an engineering challenge requiring a technological solution.

To address this, a closer link needs to be forged between the different social science disciplines, as well as with other scientific disciplines and the practice of policy itself. A closer understanding of both the plurality of 'ways of knowing', and the uses of such knowledge to address societal challenges, would contribute to an appreciation of the need for a pluralistic approach.

QUESTIONS RAISED

As an early career researcher, this realisation leads me to ask many questions. While multidisciplinary agglomerations are clearly one way to bring to bear diverse and experts perspectives on problems, these groups themselves can become internally siloed or remain at an abstract level of discourse if there is not skill and willingness to cross disciplines among members. What sort of professionals could fulfil this and other emerging synthesis roles?

If policy considerations, robust disciplinary expertise, a broad understanding of the methods and content of other research fields are all necessary to effectively engage with today's challenges, what sort of professional figure could fulfil such role? How can such a multifaceted professional figure emerge from a world where career structures are still largely built around traditional disciplinary and institutional affiliations? What sort of educational and development pathways exist to foster such broader approaches?

PORTFOLIO CAREERS

An overhaul of the labour market for intellectual work would be needed to address this. If the silos between different forms of theoretical and practical expertise are to be brought down, suitable professional pathways will have to emerge to allow people to build careers spanning multiple fields of research and practice. Current incentive and reward structures make it hard for people to transition between different domains of theory and practice, making it particularly unappealing for those at the early stages of their careers.

The idea of 'portfolio careers' has become established in some fields, where workers combine a number of part-time, temporary, freelance, and entrepreneurial roles instead of having a single job. Could such an approach work for someone trying to span academia, industry and policy? Could, and should, the intellectual labour market head in the direction taken by other industries?

While more career flexibility might appear desirable, consideration should also be given to the risks of short termism and insecurity, as currently seen in the academic sector where widespread casual employment and short term grants are increasingly taking the toll among early career researchers. The jokingly proposed "Uber for scientific advisors" might not eventually prove the right model to address the need for more intellectually mobile professionals, able to move across disciplines and sectors, but neither will the current system of academic employment.

The community at large, including researchers and research users, will need to think critically about what it needs from, and can offer to, the next generation of researchers and advisors. This itself will prove a challenge that will require input from all involved, and multiple intellectual perspectives.

Words - Alessandro Allegra

Staff News

A night at the (improvised) Opera

Impropera are the world's only improvised Opera company, creating new works from audience suggestions. Their new experimental show 'Muso' has been touring museums around London, with STS's Dr Chiara Ambrosio taking centre stage.

The show involves Dr Ambrosio introducing exhibits from the museum in question to the audience. Visitors are then invited to seek out hidden artefacts, share their responses, and then watch as a completely improvised musical show is created from their ideas and suggestions.

MUSO started life as a research and development project supported by Arts Council England in 2015 with the Grant Museum of Zoology. Following up a year later, UCL Museums and Collections hosted the Theatrically Re-imagining Collections conference, which brought



Dr Ambrosio (far left) with the rest of the Impropera Company. Image: Impropera

over 130 practitioners together to discuss ideas and practice around collaborations between performance companies and museums. Performance companies such as Sherman Cymru, Frantic Assembly, Trinity Laban and the Nottingham Playhouse were also in attendance along with representatives from Wellcome.

MUSO has already held events at the British Museum and Grant Museum with the following dates taking place in 2018:

Weds 31st January - Science Museum
Friday 13th April - Wallace Collection
Thurs 8th March and 16th May - Grant Museum of Zoology.

This is in addition to many previous events in London's West End, the Edinburgh Festival, and throughout Europe.

You can find more information, including profiles of the company members and upcoming dates, on the Impropera website at www.impropera.co.uk

Inaugural lectures are an opportunity for recently promoted professors to demonstrate their intellectual activity and research to both the UCL community and the wider public. On February 13th 2017, STS's Andrew Gregory held his inaugural lecture on 'The Study of Ancient Science'.

The lecture examined some new perspectives in how we study ancient science, including the application of new historiographies of the relation of science and religion, science and art, and science and magic, which have been developed in recent years. These make a significant difference to how we understand what the ancients were doing. Students who have attended Prof. Gregory's lectures will be familiar with his work in the field, and it was a delight to see a considerable audience in attendance.

Prof. Gregory is one of several STS staff to receive a promotion in recent years, with 2017 also bringing a promotion to Senior Lecturer for Dr Chiara Ambrosio and Dr Phyllis Illari.



Prof. Gregory Inaugural Lecture



(left) The audience at Prof. Gregory's lecture - (right) Prof. Gregory mid-lecture. Images: Joe Cain.

Edit to the nations

STS's Dr. Phyllis Illari was recently made co-editor of the *European Journal of Philosophy of Science*. She gives us an insight into the process of putting together the first issue under her charge

 Springer

Editors-in-Chief Phyllis Illari and Federica Russo

This October saw the publication of the first issue of the *European Journal of Philosophy of Science* which has the names Phyllis Illari and Federica Russo on the front. Federica and I took over the journal officially in July, although we began helping to handle papers with the outgoing editors, Mauro Dorato and Carl Hoefer, from about April.

An academic journal is a bizarre creation, and being Editor-in-Chief gives you a front seat view on the whole of the peer review process, a view that you don't get from being an author or a reviewer.

Peer review is in many ways the linchpin of academia, and this is what happens: Authors submit their papers to the online system managed by the publisher. Then you as the editor read their papers, and set about trying to find expert reviewers to read the papers and write reports on what is good, and what is less good, about the paper. Reviewers often make recommendations for revision. The authors and the reviewers do not know who each other are, as the process is anonymised. Two reviewers accept. (Eventually!) And, usually after some prodding, two reports are written, and the editor then uses the reports to try to make the best decision they can.

Papers are almost never just accepted; instead revisions are asked for. So the best outcome is usually the 'revise and resubmit' that academics at all career stages can be heard muttering about in university corridors all over the world.

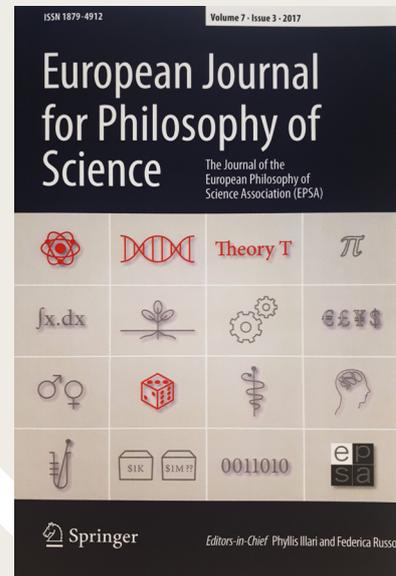
Federica and I could not do this alone. The most fun job in beginning work on the journal has been in building an amazing team of Associate Editors. Editors-in-Chief can assign the handling of papers to associate editors, which means that the subject expertise of the editorial

team is much broader than just Federica and I have. Also, this is necessary to allow Federica and I to work on more strategic issues, like trying to encourage more submissions from areas of philosophy of science that aren't well represented in the journal. Good Associate Editors can make a world of difference to the job. (Annamaria, David, Dunja, Marcin, Mathias, Melinda, thank you!) They have already shown how wonderful they are in handling papers, and always being willing to come in and discuss papers and help with difficult decisions. Ties and Lucy, supporting the journal for the publisher, Springer, have been committed and always insightful sounding boards for our ideas. So building that team has been an absolute joy.

In this whole process, reviewers are also vital. Many reviewers are like gold. They are the hidden stars of academic collegiality. Frequently, reliably, they give their time and energy to enter into the spirit of a paper, understand what the author

THE EXPERIENCE OF STEPPING UP TO THE ROLE OF EDITOR-IN-CHIEF OF A JOURNAL HAS BEEN THE EXPERIENCE OF SHOULDERING A RESPONSIBILITY THAT GOES SIGNIFICANTLY BEYOND EVEN OTHER EDITORIAL ROLES. WITH JOURNAL PUBLICATIONS STILL REGARDED AS THE PINNACLE OF ACADEMIC PUBLICATION, WE ARE AWARE THAT JOBS, CAREERS, AND PROMOTIONS ARE AT STAKE.

is trying to do, and offer – completely unpaid and forever anonymously – the most startling insights that lead to vastly improved papers. Perhaps one of the greatest privileges of being an editor is to see this important but almost completely invisible work.



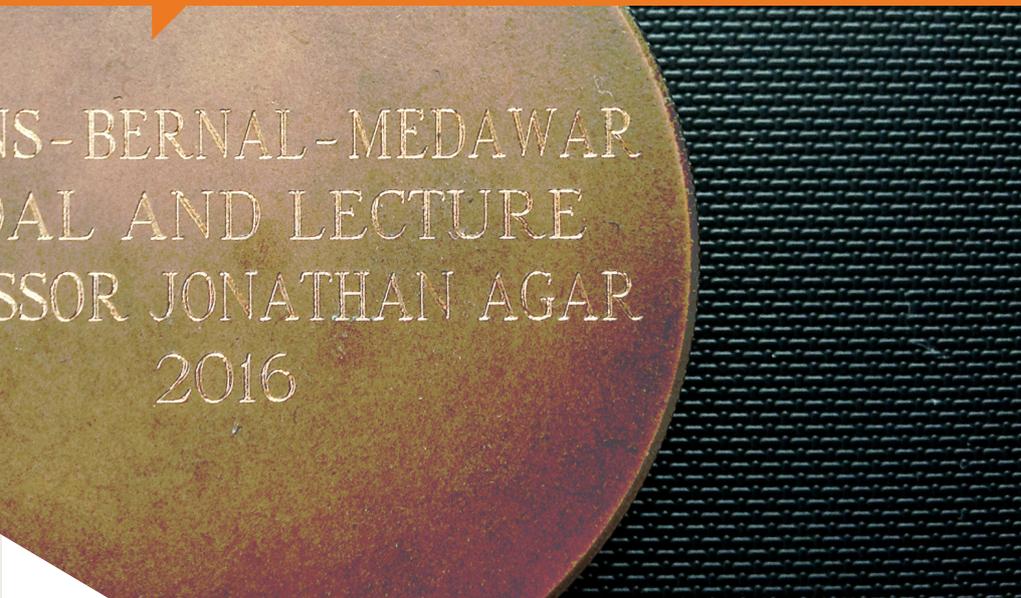
In other ways, the experience of stepping up to the role of Editor-in-Chief of a journal has been the experience of shouldering a responsibility that goes significantly beyond even other editorial roles. With journal publications still regarded as the pinnacle of academic publication, we are aware that jobs, careers, and promotions are at stake.

Only 10-20% of papers are eventually accepted in most philosophy journals, so it's a tough gig to be an academic author. Reviewers often don't agree, and good editorial work is a craft skill that continues to develop over time. So far no decision has been quite the same as any previous decision. It might be said that anonymous peer review, like democracy, is the worst system apart from all the others. All we can do is do our best.

In that we are deeply grateful to the hundreds and hundreds of people who help: associate editors, reviewers, authors, and the editorial board who are willing to be called on for urgent help. You are all unpaid, and only some of you are publicly acknowledged. But you give your time because you believe in the value of the academic process, and you help to make it work.

Even after all that work, it is strange seeing your name on the front of a journal. I confess to goosebumps.

Words - Dr Phyllis Illari



Award Winning

In the last issue, we announced that Prof. Jon Agar had been awarded the Royal Society Wilkins-Bernal-Medawar Medal 2016, the third STS-related academic to win in recent years. Prof. Agar gives us his insight into the award below.

In 2016 I was delighted – and considerably surprised – to be awarded the Royal Society’s Wilkins-Bernal-Medawar prize, which is given by the UK’s science academy for ‘excellence in a subject relating to the history of science, philosophy of science or the social function of science’. The name of the prize commemorates three fellows of the Society that made contributions to these areas. John Wilkins was one of founding members of the Society in the seventeenth century. He was a polymath who preached political tolerance.

John Desmond Bernal and Peter Medawar, on the other hand, contributed mightily to mid-twentieth century public discussion of the place of science in society. The socialist Bernal was an x-ray crystallographer who wrote two very influential books that are still read in STS today: *The Social Function of Science* (1939), which argued that science should be planned and applied to human welfare, and the multi-volume, pioneering *Science in History* (1954). The biologist Medawar was regarded as one of

the most accomplished stylists in science writing. It was quite something to be linked to such illustrious figures.

The Wilkins-Bernal-Medawar is twofold: a medal and the invitation to give a public lecture at the Royal Society’s headquarters at Carlton House Terrace in London. I had a good topic in mind. I have always thought that ‘curiosity’ has a curious place in the history of science. In the early modern period, curiosity was a doubled-edged: it was both a virtue, the spring for a “love of truth”, but also the source of human error and even personal corruption. In the twentieth century, curiosity had become an apparently uncomplicated motivation. Successful scientists, for example Nobel Prize winners in their lectures and biographies, frequently attributed their first steps into science to a fundamental curiosity, an irrepressible desire to ask the question ‘why?’. The aside made by Albert Einstein in private correspondence in 1952 – “I have no special talents. I am only passionately curious” – has now become a meme.

Yet in the twentieth century, science was shaped by many forces, and the practical utility of science in the real, messy problematic worlds of its formation seem far removed from the seeming innocence of curiosity-driven research. So in the lecture I asked why scientists say they ask ‘why?’, and traced the curious history of the idea of curiosity-driven science.



I was presented with the medal at a separate event, hosted by the President of the Royal Society, Sir Venki Ramakrishnan. The medal is a silver-gilt disc, quite heavy, with a design on one side and an inscription on the other. It will be a treasured possession.

Our broader STS family has had quite a run of success with the Wilkins-Bernal-Medawar medal, showing that our department does indeed excel in the subjects of history of science, philosophy of science and the social function of science. Our previous colleagues Hasok Chang (now at Cambridge) was awarded the prize in 2015, and Michela Massimi (now at Edinburgh) will present her lecture in 2018.



Prof. Agar’s Royal Society lecture can be viewed on the RS website at <https://royalsociety.org/science-events-and-lectures/2017/04/wilkins-bernal-medawar-prize-lecture/>

Words and images: Prof Jon Agar

Chemistry in Europe



Towards the end of September 2017, Simon Werrett organized the autumn meeting of the Society for the History of Alchemy and Chemistry on the theme of “Chemistry in Europe”, which took place at the Maison Française, Oxford. Conscious of current political circumstances, the meeting participants discussed the history of European transnational collaborations and competition in the history of chemistry.

Papers revealed the trans-European infrastructures of early modern science, particularly through religious institutions (Marie Thébaut-Sorger) and diverse interactions between scientific, political, and commercial interests, for example in the Alum industry in eighteenth-century Rome and Yorkshire (John Christie). Transnational collaboration was supported by multilingual scholars (Karoliina Pulkkinen) and a steadily improving transport infrastructure. Standardization enabled knowledge to travel, but social, cultural, and political diversity was equally important in making chemistry flourish in Europe, so much so that European chemistry enjoyed a high reputation in North America by the early nineteenth century (Chris Campbell).

Sometimes conflicting ideologies of internationalism supported exchange and integration, but also led to anxieties and competition among nation-states. Events such as commemorations of eminent scientists could serve both national and international agendas (Robert Fox) and might shape chemical research and disciplinary identities (Marianne Noel). Chemists also faced, and contributed to, trans-European pollution and environmental crises, which recent EU regulation has been designed to mitigate on the basis of the “precautionary principle” but this is not without its problems (Jean-Pierre Llored).

The meeting raised many interesting questions: what should be understood by a “European” chemistry, if there is such a thing? How has a European chemistry emerged in relation to e.g. ‘American’ or ‘Soviet’ chemistry? How can current efforts to integrate European chemistry benefit or learn from the history of transnational research in Europe?

Words - Dr Simon Werrett

New Teaching Fellows for 2017/18



From left to right: Dr Agnes Arnold-Forster, Dr Louise Bezuidenhout, Dr Rony Armon, Dr Erman Sözüdoğru and Dr Betül Khalil.

Five new Teaching Fellows will be joining the department during 2017/18. We hope they feel welcome, and provide the level of teaching that STS is famed for.

Dr Erman Sözüdoğru recently completed his PhD in the department. His research combines HPS and STS approaches to understand how scientific practices are organised to achieve particular aims. Erman has been teaching as a PGTA in the department since 2013, and in 2017/18 will be running the HPSC2003 Philosophy of Science 2, HPSC2029 Medicine and Society, and HPSC3028 Philosophy of Medicine modules.

Dr Agnes Arnold-Forster is a medical and cultural historian of modern Britain. Currently a Postdoc Research Fellow at the University of Roehampton, she recently completed her PhD at King's College London. She is also a Visiting Research Fellow at the Max Planck Centre for the History of Emotions, and an editor for the blog 'Notches: Remarks on the History of Sexuality'. Agnes will be teaching the HPSC3041 Disease in History module.

Dr Louise Bezuidenhout currently works on the Changing Ecologies of Knowledge and Action (CEKA) project at Oxford University. Her interests are broadly centred on data sharing issues within the life sciences - in particular, how the data produced during scientific experiments enters into circulation, and how it is valued by potential downstream users. Louise holds a PhD in Cardiothoracic Surgery from the University of Cape Town and a PhD in Sociology from the University of Exeter. She has previously worked as a research fellow at the University of Exeter and the University of Notre Dame and remains an honorary lecturer at the Steve Biko Centre for Bioethics at the University of the Witwatersrand. Louise will be teaching the STS component of the BASC1002 module

Dr Rony Armon has joined the department to teach the Term 1 HPSC2002 module Science in Popular Culture. His research applies social interaction methodologies to the study of science and health communication in news interviews. In a project conducted as Marie Curie Fellow in the Centre for Language Discourse and Communication at King's College London, he explored the use of storytelling and metaphor by scientific experts. His current research examines interview programmes and current affair documentaries with both experts and lay participants for their roles in advising the public about health risks and reporting about obesity.

Dr Betül Khalil will be joining us for the second term to teach HPSC1007 Investigating Science and Society. Dr Khalil has a PhD in Languages and Applied Linguistics, and has lectured at the University of Buckingham and Kingston University. Her research focus is on Teacher and Learner autonomy, on which she wrote a paper for the ATEE 40th Annual conference in 2015.

What have Science, Art and Politics got to do with each other? This was the central question posed by Professor Brian Balmer and Dr Chiara Ambrosio of the UCL STS Department at a workshop held at the University of La Laguna in Tenerife, Spain. Around 30 staff and students attended the workshop, *Science, Art and Politics: An Exploration of Boundaries*, which ran on 6 November 2017.

Professor Amparo Gómez, the workshop organiser from the University of La Laguna, told us: “The workshop was a great success. The participants were very interested. This workshop consolidates the on-going cooperation between the Department of Science & Technology Studies at UCL and the Department of History and Philosophy of Science, Education and Language of the University of La Laguna.”

Over the course of the morning and early afternoon, Chiara and Brian delivered a joint-introductory lecture providing a basic introduction to how philosophers and sociologists of science have approached the problems of demarcation and boundary-work. Indeed, many past and present students from the STS department would have recognized a few of the powerpoint slides from their own lectures on these topics.

Brian then spoke about the relationship between science and politics. Traditionally, many scientists and policy-makers have argued that politics and science are – and should be – different domains. In this respect, the notion that science ‘speaks truth to power’ became a common phrase from the 1960s onwards.

Work in the sociology of science has increasingly challenged this view because scientific controversies – such

Science, Art and Politics in Spain



Prof. Amparo Gómez, Prof. Balmer and Dr Ambrosio - Image: Brian Balmer

as climate change, the BSE crisis in the UK in the 1990s, pesticide safety and arms control – all involve a complex relationship between science and politics. More recently, the rise of terms such as ‘post truth’ and ‘alternative facts’ have forced us to re-think how expertise relates to politics. His talk explored these developments and discussed how sociology of science has approached the science-politics boundary. Brian used examples from his own recent research on the history of tear gas to illustrate the complex interaction of science and politics.

Next, Chiara addressed questions about the relationship between art and science. She spoke about how, in a time of interdisciplinary collaborations, the idea that art and science should be working side by side is considered as the ultimate form of ‘cutting edge’ research. But art and science have been probing each other’s boundaries for a

long time, so – she asked – what makes this contemporary trend particularly desirable, and what does research gain from it? In her talk she explored the present of art and science with an eye to the past, and reflected on the practices, methods, and the distinctive kinds of knowledge that can emerge from the collaboration of artists and scientists. She re-visited her earlier work on Picasso’s *Guernica* to demonstrate how representation in art and science can be re-conceived in terms of representational practices.

Afterwards we spoke to PhD students who were in the audience. Maria José Tacoronte, who is working on feminist epistemology, told us: “It has been an excellent workshop, I learnt a lot from the talks. I would never have thought that science and art were related, I was fascinated by Chiara Ambrosio’s analysis showing the opposite. I will never see *Guernica* with the same eyes again.” Yasmina Alvarez, whose PhD research is on the history of education, commented that: “The workshop was really interesting. Brian Balmer’s analysis of the boundaries of science and how science and politics meet has made me reflect on my certainties about science”. This event took place within the framework of an Excellence Research Project entitled *The boundary between science and politics: science at the boundary*, which is funded by Spanish Ministry of Economy and Competitiveness.

Words - Prof. Brian Balmer



Dr Ambrosio posits the important questions - Image: Brian Balmer

SHOULD INNOVATION DRIVE ITSELF? FROM DONALD TRUMP TO SILICON VALLEY

Dr Jack Stilgoe spent his sabbatical year in Boulder, Colorado. During his time there, the 2016 elections caused shock throughout the world. How did it feel for a visitor during that time?

July, 2016: In an aircraft museum in Denver, against a backdrop of cast-offs from the apparatus of nuclear war, Donald Trump arrived, late, to a lukewarm reception. I had no trouble getting an easy view of the man who was, at that time, a mere curiosity. His audience seemed unthreatening, unlike at some of the rallies I had seen on TV. A few people were clearly angry and hungry for change, but their exchanges with the Clinton supporters protesting outside were civilised.

During Trump's speech, I heard only incoherent nonsense: crime; war; his TV ratings; China; a poem about a snake; The Wall. At one point, he asked the crowd, "Do you guys want to do the 'Lock Her Up' thing". They did, but they lacked gusto. I went away thinking that we had little to fear from this circus. As would become clear when he won the election four months later, I wasn't attuned to his dog whistles.

The Trump rally marked the start of my year in the US, based at the University of Colorado, Boulder. In the Presidential election, Colorado was supposed to be a swing state, blending Republican and Democrat sensibilities. Boulder, however, is one of the most reliably Democrat-leaning places in the country (one family from outside what Coloradans call the 'Boulder Bubble' told me that the town was '20 square miles surrounded by reality'). It is a prosperous, liberal college town. And it was a fantastic standpoint from which to watch the great American experiment produce a true anomaly.

When Trump was elected, Boulder was, along with much of liberal America, in shock. More than 80% of the city voted for Clinton. As for many Americans, there was a sense among the population that they no longer knew their own country. For social scientists like me, it was a wake up call – another surprise to add to the Brexit vote earlier in 2016. For some academics, Trump's success was a sure sign of 'post-truth' politics. I was more interested in

whether it was an expression of those left behind by recent American progress.

My aim was not to study elections but to study technology. I wanted to observe American cultures of innovation. I was particularly interested in self-driving cars – a technology replete with world-changing promise, surrounded by questions about risk, ethics and regulation.

Along with other digital technologies, the explosion of interest in self-driving cars seemed to mark a shift in American corporate power, away from the manufacturing heartlands of the mid-West towards Silicon Valley.



Rally, Denver air and space museum.

California, like Colorado, is a place built on promise. During the Gold Rush, people were propelled West by stories of untold riches and unfettered freedoms. Some struck lucky, but the people making the real money were those, like Levi Strauss and Leland Stanford (who went on to found Stanford university), who were selling clothes, equipment and transport to the wide-eyed miners. Since then, for rich Americans, the Wild West has become the Mild West – its hardships replaced by comforts, many of which are technological. If tech is the new gold rush, its promise is not just that some will get rich quick; supposedly we will all benefit.

America is a highly unequal place, at times cruelly so. Technology, left to its own devices, risks exacerbating such inequalities, because those with power and money are the people most able to take



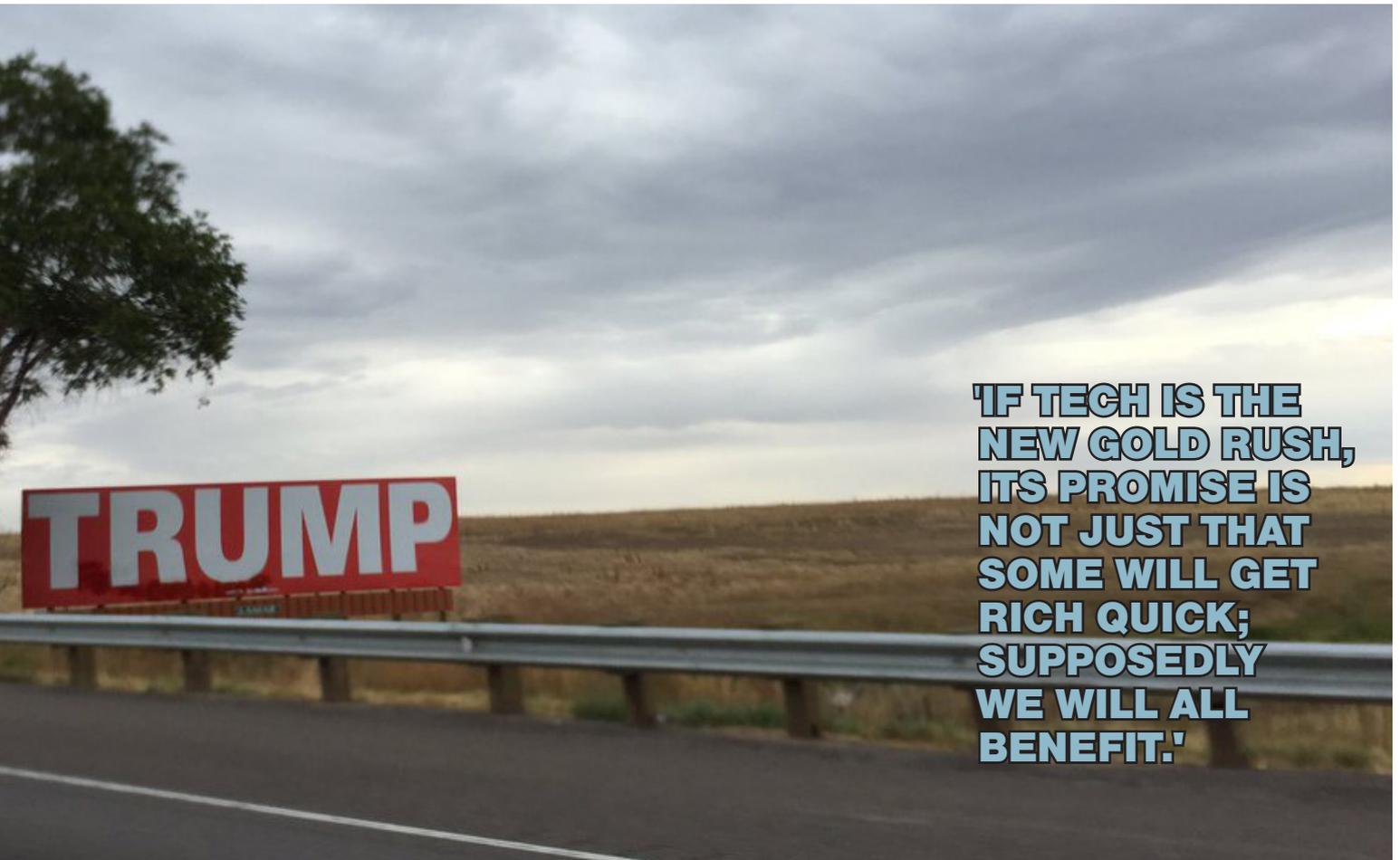
advantage of technology's benefits. An August 2016 editorial in *Nature* by science policy scholar Dan Sarewitz¹ drew a direct connection between the rise of Trump and the unevenness of technological progress – a nationwide expression of trouble that had already surfaced around San Francisco as tech companies priced out their poorer neighbours. Sarewitz took issue with the laissez-faire attitude of US policymakers towards science and innovation; the assumption is that trickle-down innovation will float everyone's boats.

SELF-DRIVING INNOVATION

Twenty years ago, British sociologists Richard Barbrook and Andy Cameron identified what they called 'Californian ideology'. This cocktail of hippy countercultural libertarianism seems to have only got stronger. When hippies were making computers in garages, this is inconsequential. When they became the new masters of the universe, their ideology started to matter. As with conventional conservatism, the risk with those who think government is bad is that they produce bad governments.

Much of Silicon Valley's innovation has

¹ Donald Trump's appeal should be a call to arms, <http://www.nature.com/news/donald-trump-s-appeal-should-be-a-call-to-arms-1.20356>



'IF TECH IS THE NEW GOLD RUSH, ITS PROMISE IS NOT JUST THAT SOME WILL GET RICH QUICK; SUPPOSEDLY WE WILL ALL BENEFIT.'

Trump voting signs by the freeway, Colorado 2016. This and all images: Dr Jack Stilgoe

been in software. As Amazon, Facebook, Apple and Google have become the world's largest companies, we are starting to see that their influence has effects in the material world too. While in the US, I developed a particular interest in Tesla, another Silicon Valley company that is now leading the development of towards self-driving cars.

In a shopping mall in Denver, I turned up at a Tesla showroom hoping for a test-drive in a Tesla Model S. I particularly wanted to try out a feature – Autopilot – that promised to relieve drivers of some of their tedious responsibilities.

A few months earlier, a man had died in a crash while his Tesla was in Autopilot. Evidence from videos posted to YouTube suggested that plenty of other drivers were similarly involved in a dangerous, chaotic experiment with autonomous driving.

After the crash, Tesla were careful to tell people that they should keep their hands on the wheel, but my Tesla co-pilot told me that I would be fine going hands-free. An initially terrifying experience – allowing a machine to control a car travelling at 70mph – quickly became normal.



A Tesla showroom, Denver, Colorado.

The American experiment with self-driving cars seemed to be prioritising freedom over public safety. (One could argue that the American experiment with the automobile in the 20th Century did the same. The US death rate per mile is more than three times worse than in the UK or Sweden). My question was whether there could be a more responsible alternative.

Outside the big cities, US transport tends to privilege the privately-owned car. In Europe, where we think about transport differently, there are surely alternative versions of a self-driving future. Re-imagining a self-driving future means being sceptical of Silicon Valley promises of technological enchantment. We often seem unwilling to do this.

As leading sociologist of science Bruno Latour concluded in a *Los Angeles Review of Books* piece published in the wake of Trump's victory, "what a pleasure it is to be misled".

Words and images - Dr Jack Stilgoe

New Arrivals

Dr. Sarah Edwards joined STS in 2017 as a Senior Lecturer in Research Ethics and Governance. Malcolm Chalmers asked her to introduce her work.

Sarah joined STS from the Division of Medicine, is funded by the UCL/UCLH Biomedical Research Centre (BRC). She's also a collaborative member of the Centre for Philosophy, Justice and Health. I spoke to her about her varied work and research projects, beginning with her role with Evidence-based work in Ecology and Ebola.

"We're looking at how you can make robust causal inferences from data other than that from RCTs (Randomised Control Trials). In the position that we're now in with Ebola specifically, a number of trials have been done using various designs without having an overall coordinated whole. The question now is - what do we do with the evidence that we've got, and how can we gather more evidence of the kind we need, before the next outbreak occurs. The aim is to help us make more sensible decisions when that time comes."

In addition, she's worked with the Cochrane Equity Group. "I've got long-standing collaborative links with a number of Canadian colleagues - Charles Weijer in particular. We did a lot of work a few years ago on the ethics of cluster trials. That was a very successful project which has now been followed by the study on pragmatic trials".

"Pragmatic trials are much more to do with what happens in the real world, as opposed to analytic trials which are designed to demonstrate particular causal relationships. In the case of Ebola, pragmatic trials are of great interest. The CEG is another link with the Cochrane collaboration, a well known international group who initially worked on systematic reviews, who are now branching out into working parties. They're producing guidelines for publishers, called the Consort statement. Editors are now requiring that researchers include certain details about the trials that they are publishing. Increasingly they're wanting to show what equity concerns there might be in different trials, and to make sure that they're published alongside standard ethical requirements such as committee approval, informed consent and the like."

Alongside this, she's working on Ethics in pragmatic trials with the National Institute of Health in Canada. "I'm leading the work stream which has already done some work on issues of ethics and evidence within the context of Ebola and what we currently have, and will need before the next outbreak. We're revising a paper for the American Journal of Bioethics - that's a joint paper including myself, Phyllis Illari, Brendan Clarke and Charlie Norell from the department, Carolyn Neuhaus from the Hastings Centre in the US. We're very pleased we've had the chance to review their comments."



Dr Sarah Edwards - Image: Mary Hinkley

Her various speaking engagements give her an opportunity to experience different viewpoints, but she finds a lot of agreement. "It's interesting how quickly some of the same things are being picked up by people right across the globe. In the case of Ebola we've now got people across Europe and in the States coming to the same conclusions. The question of how you design trials in the desperate challenging situation of the appearance a new pathogen, or the re-emergence of an old pathogen with an unknown treatment. Some of the difficulty we saw in the last outbreak involved exactly that. The tension is between randomising individual patients to receive a new treatment or a best standard of care - which may not be a great deal other than hydration - or doing single-armed observation studies. There remains the question of what inferences we can make from those types of data, which is where Philosophy of Science comes in remarkably handy."

However, her work covers more than just Ebola. Her next talk was due to be at the UCL Neuroscience society later that month. The topic was the planned human head transplant in Italy. "That could raise all sorts of interesting questions. The technology designed to regenerate spinal cord injuries has advanced to such an extent that, technically, it seems possible at least."

She recently submitted a paper, jointly authored with STS PhD Benjamin Weil, whose work began as an STS summer studentship. The paper, on Reuse of Human Organs, was submitted to the BMJ, and Sarah was keen to emphasise his input. "He wrote it up into a very pleasing paper - jointly authored. It's gone through the peer review process with the BMJ, which has an impact factor of 20."

She's also part of the University of Manchester Psychiatry Research Centre training in Pakistan and India. "That's part of some research work undertaken through the Global Mental Health unit in Manchester. They're trying to develop a worldwide training program for Psychiatrists. We're teaming up with Professor Nusrat Hussein to develop some training in research ethics, integrity and governance, and also in research methods - which methods are appropriate when, and for what reason?"

This led us on to a conversation about recent changes in medicine and technology, and how they're viewed by society.

"It is fascinating to see how regulation and state control of different technologies has changed over the years. If you look back to the 1950's - the first household conveniences were being introduced. Lots of people died when trying out, say, new white goods, in a way that we wouldn't tolerate today. The regulation of new drugs in particular directly followed the problems with Thalidomide across Europe, and it's now going full circle with the Expanded Access programs, and the recent announcement by the Department of Health to accelerate drug development in certain cases."

Sarah also holds a number of other positions. She's Editor-in Chief of *Research Ethics*, acts as an advisor for the Ethics Advisory Journal, and is the Chair of the Ethics board for the IMI Ebola program. "That's the European

Commission's big effort to evaluate vaccines ready for the next outbreak. There are a variety of different work streams and projects. Not only clinical trials of vaccines, but also a concerted effort to include anthropological work and ethics so that the research can respond to the values and views of those living through such a horrific state of affairs."

With all of this, she somehow still finds time to teach. "A large chunk of my work is running the Continuing Professional Development (CPD) courses for UCL Partners - which includes UCLH, Great Ormond Street, Moorfields, the Royal Free and so on. I've been running that as far back as 2005. Obviously the material has changed slightly since then!"

As far as teaching at UCL, in 2017, Sarah ran the Ethics and Regulation of Research MSc module, organised through the Division of Medicine. Lectures covered topics such as ethics and animal experimentation, medical imaging, genomics in the developing world, and quantitative methods. On top of that, she's supervised MSc students in the department, and took part in a PhD viva.

It was hard to keep track. I asked how she kept up such a busy schedule, being pulled in so many directions at once.

"You can feel like you're on a treadmill, chasing the next grant; the next piece of paper. But you're only as good as your last paper."

Interview - Malcolm Chalmers

...and as well as Sarah...

Two of our former Teaching Fellows are now permanent Lecturers within the department. Dr Jean-Baptiste Gouyon will be both teaching the HPSC3003 Science Journalism module and acting as MSc admissions tutor. Alongside him, Dr Melanie Smallman will be teaching HPSC2025 Science within Government and HPSC3032 Investigating Contemporary Science. They are both based at 22 Gordon Square



Dr Jean-Baptiste Gouyon and Dr Melanie Smallman

Following the departure of Kayt Newman, who left to take up a post at the University of Essex, Randalle Roberts has joined the department as our new Teaching Administrator. She joins us from the UCL Institute for Material Discovery, and is responsible for all teaching related enquiries. She has already become a vital part of the professional services team since joining the department in October. You can find her in the reception in G2.



Randalle Roberts

The RCUK INGRAINED project, part of the RRI work carried out in the department, will be working in the department during early 2018, with Dr Lucy Natarajan and Ms Gillian Goodall joining us as Research Associate and Research Assistant respectively. They will work alongside Jack Stilgoe, Melanie Smallman and Simon Lock during the early part of 2018.



Dr Lucy Natarajan and Ms Gillian Goodall

JODRELL UNESCO NOMINATION

STS Academics were able to demonstrate their expertise to the nation twice in quick succession this year. Firstly, the nomination of the famed British observatory at Jodrell Bank as the UK candidate for UNESCO status was covered on ITV news, with Prof. Jon Agar (pictured) explaining the importance of the site for scientific history since its founding in 1945.



STS ON TV NEWS

Prof Agar (l) and Dr Fearnley (r)

VOLCANIC ERUPTION

The eruption of Mount Agung in Bali began in November, continuing over a considerable period and leaving locals and tourists concerned. Channel 4 News asked Dr Carina Fearnley to explain the science behind both the eruption, and the technology used to predict such events. Other broadcasters also recorded pieces with Dr Fearnley, although these fell out of use due to the Royal wedding announcement.

Departmental news

Departures: Thanks to Dr Karen Bultitude

The department are saddened to announce the departure of Dr. Karen Bultitude. Karen joined the department in 2011 after 8 years at the University of Bristol, having completed her DPhil at Oxford University. In 2012 she was appointed Director of Research within the department, and led on the development of a new series of training programmes for graduate students across the institution.

A specialist in science communication and public engagement, Karen holds various advisory roles within the Research Councils, including being appointed one of nine national EPSRC Public Engagement Mentors, a member of the STFC's Advisory Panel for Public Engagement, and part of the judging panel for the ESRC's Celebrating Impact prizes.

Sadly, Karen has decided to move with her family back to her beloved Australia. She will continue to work closely with STS through her projects, and will always be welcome in the department. We wish her the best of luck in future endeavours.



Other Absences:

This year, Dr Brendan Clarke And Dr Chiara Ambrosio are taking an annual sabbatical from teaching, returning in September 2018. Dr Tiago Mata will also be on parental leave for term 2.

We wish them all a pleasant break, and look forward to their return!

STS - continuous awards Awards for teaching, tolerance and sustainability received

STS has continued to receive awards for a range of achievements, including another 100% student satisfaction rating in the NSS (see page 4).

As well as high ratings for the department, a number of staff members were nominated for individual awards. The UCL Student Choice Awards are a chance for UCL students to nominate staff for their outstanding Teaching, Support and Supervision. This year, four members of STS teaching staff received five nominations between them, with Dr Phyllis Illari being nominated twice. The full list of STS nominees was as follows:

Outstanding Teaching:

Jean-Baptiste Gouyon
Oliver Marsh
Phyllis Illari

Outstanding Personal Support:

Jon Agar
Phyllis Illari



Dr Illari with her Student Choice Nomination

UCLU announced their 'Zero Tolerance to Sexual Harassment' campaign in 2016, to which STS signed up. In 2017 the department received certification confirming that STS completed all requirements of the 2016/17 pledge.

Issues around sexual harassment are taken very seriously by STS (and UCL more widely), and we were pleased to be able to demonstrate this fact. STS was an early and strong signatory to the UCLU 'Zero Tolerance to Sexual Harassment' campaign, and we're pleased to see it continue. Visit the [UCLU campaign page](#) for more information.



Our Sustainability Award.

SUSTAINABILITY

Finally, STS took part in the UCL Green Impact audit for the first time. Having never entered before, the department hoped to receive a minor award, but were given a Platinum grade. This is the second highest possible (below 'Excellence') and puts us on a level with the Office of the Vice-Provost (Education & Student Affairs) and above a large number of larger departments with committed teams.

The UCL Green Champions - Lori Coletti Campbell and Malcolm Chalmers - were overjoyed with the result, and are already working with student Green Champions to improve on the result for next year.

Departmental news

INTERNATIONAL EVENTS AT STS

STS will be collaborating in a number of events throughout 2018, with two notable events in History of Science being organised in conjunction with the department.

Firstly, Prof. Andrew Gregory will be hosting the 12th annual London Ancient Science Conference from the 12th to the 15th of February. The conference is sponsored by STS and the Institute of Classical Studies.

The conference is free and requires no pre-booking, and attendees can drop into any session they wish. Full details of the conference, including the conference programme, can be found on the [STS website](#).



Secondly, The European Society for the History of Science will hold its Biennial Conference 2018 from the 14th -17th September, in conjunction with BSHS and the department. The conference will, rather fittingly, focus on the theme of Unity and Disunity.

While submissions for sessions are closed, individual papers can be submitted up until the end of February, with the draft programme published on 1st May 2018 when registration opens. The final programme will be published on the 15th August 2018 – further information can be found on the ESHS website at <http://eshs2018.uk>.



Living it up Down Under

Dr Carina Fearnley spent summer 2017 teaching in New Zealand. For a volcano expert, what better place to be?

Over summer 2017 I was invited to spend a teaching fellowship at the University of Canterbury in Christchurch, New Zealand, which was in fact, their winter. The Erskine Programme that sponsored my visit provides fantastic opportunities to share and exchange teaching practices and pedagogy, which I did at the Department of Geological Sciences. I taught on the first year Geohazards module (unsurprisingly on volcanoes), and the Masters of Disaster Risk and Resilience Programme, where I contributed to a simulation exercise on a tsunami generated in Chile impacting Christchurch.

The department and hazard team has an extraordinary reputation for running highly successful workshops and real-world simulation exercises, both as an educational tool, but also in a professional and research capacity. I had the wonderful opportunity to partake in a simulation exercise with Selwyn Council focused on an Alpine Fault earthquake, seeing disaster preparedness in the making. My two and half month visit also provided opportunities to foster new relationships with Masters, PhD, and staff within the Department, alongside the wonderful additional benefit of developing new research opportunities with staff both across and outside the university. During my visit I presented my recent art/



science research project titled 'Walking the Sound: Beside the Ocean of Time' to the Department of Geography, and my latest paper 'Why are advanced tsunami mitigation systems more prone to malfunction?' to the Geological Sciences Department, and I was invited to give a talk at the Ministry of Civil Defence Emergency Management Group at Canterbury titled 'Shake, rattle and roll: communicating lethal risks'.

The range and diversity of experiences made the fellowship so rewarding and much fun, and I have my host Associate Professor Tom Wilson to thank for my amazing time at the University of Canterbury. Such initiatives are vital to continue the sharing of good teaching practices, knowledge, and research collaborations. I always enjoy visiting the beautiful landscape and people of New Zealand and it has been great to see and learn more about the recovery of Christchurch since 2010 and the enormous progress made since my last visit in 2013. Foremost though, the Erskine Programme reminded me of the value of thinking global, and understanding and sharing the challenges and solutions we need to deal with our complex world.

Words and images: Dr Carina Fearnley

Research projects



Dr Brendan Clarke and Charlie Norell at the Health Volunteering Fair at UCL

Evaluating Evidence in Medicine

Established in 2015 and funded by the AHRC, EBM+ are well into their final year of the 'Evaluating Evidence in Medicine' (EEiM) project. So, what have they been up to recently? These are just some of their events and outputs worth knowing about:

In July, the team hosted a 'Mechanisms in Medicine' conference at the University of Kent attended by a several of high-profile philosophers, clinical researchers and policy experts, and featuring keynote speakers including Raffaella Campaner (Bologna), Jeffrey Aronson (Oxford) John Worrall (LSE) and many others. Full details are available on the University of Kent website at blogs.kent.ac.uk/ionw/mechanisms-in-medicine/.

They have been busy working on a 'Handbook for Practitioners' – an introductory text aiming to help doctors make sense of complex clinical decisions that might involve particularly messy evidence bases. The latest version of the handbook can be found on the EBM+ website at <http://ebmplus.org/handbook-updates/>.

Over the summer, the UCL branch of EBM+ (Brendan Clarke, Phyllis Illari and Charlie Norell) ran a video studentship, involving students from STS, Human Sciences and Medicine. Supervised by acclaimed

film-maker Bex Coates, these students produced a series of videos mapping the development of evidence based medicine (EBM). These videos have been released via the EBM+ twitter account, and hosted on a variety of websites. You can check them out now on the [EBM+ YouTube channel](https://www.youtube.com/channel/UC...) or via twitter.com/ebmplus.

In January 2018 for a second year, EBM+ will launch their school volunteering programme, 'Your Health, Your Evidence' (YHYE), which is only getting bigger and better. YHYE engages AS/A-level students with EBM and clinical practice, exploring how medical evidence can impact a young persons' health choices. EBM+ believes

EBM+ BELIEVES TEEN HEALTH AND ADOLESCENT MEDICINE ARE SORELY UNADDRESSED AND UNDERPRIVILEGED, LEAVING YOUNG PEOPLE UNDER-CONFIDENT AND LESS INFORMED WHEN FACED WITH MAKING THEIR OWN MEDICAL DECISIONS FOR THE FIRST TIME IN THEIR LIVES.

teen health and adolescent medicine are sorely unaddressed and underprivileged, leaving young people under-confident and less informed when faced with making their own medical decisions for the first time in their lives.

In 2017 EBM+ recruited 6 partner schools, 16 volunteers and approximately 60 school students. In 2018 they hope to more than double that number to over 200 school students. You can find out more on the YHYE website at <http://www.volunteering.ebmplus.org/>.

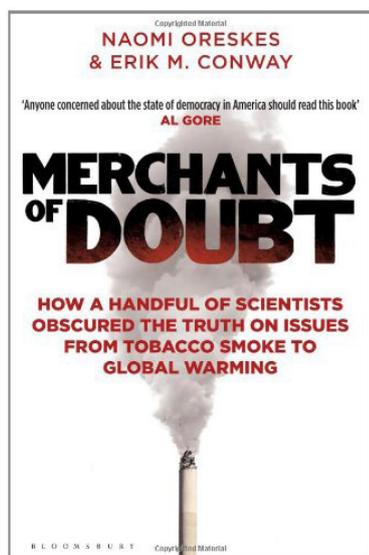
The EBM+ project continues until mid-2018 and has a number of events planned until that point. To find out more, please visit the project website on: <http://ebmplus.org/>

Words and images - Dr Brendan Clarke



The STS Summer Studentship - (l-r) Kate Balding, Ilan Goodman, James McGilligan, Bex Coates, and Dr Brendan Clarke

OneBook / Module Fair



STS 1Book Event

Continuing the success of the STS 1Book series, the book chosen for 2017-18 is Erik M. Conway and Naomi Oreskes's *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*.

Controversial upon release, the book draws parallels between the global warming controversy and earlier controversies over tobacco, acid rain, DDT and others. We'll also be holding a viewing of the documentary of the same name for students later in Term 2, with a discussion afterwards around the themes of the book.

Due to her busy schedule, we have to wait until September 2018 to host our Haldane lecture with Naomi Conway, but students will be treated to a showing of the documentary around the book. Those looking to find out more can also listen to a [podcast on the STS Soundcloud](#) with Prof. Joe Cain and Dr Simon Werrett discussing the book.

The 1Book programme is now in its 12th year, and we're already planning for 2018-19. Do you have a suggestion? Let us know at sts@ucl.ac.uk

The Fun of the Fair

STS's first Module Fair was held this November - another attempt to spread the word about STS teaching.

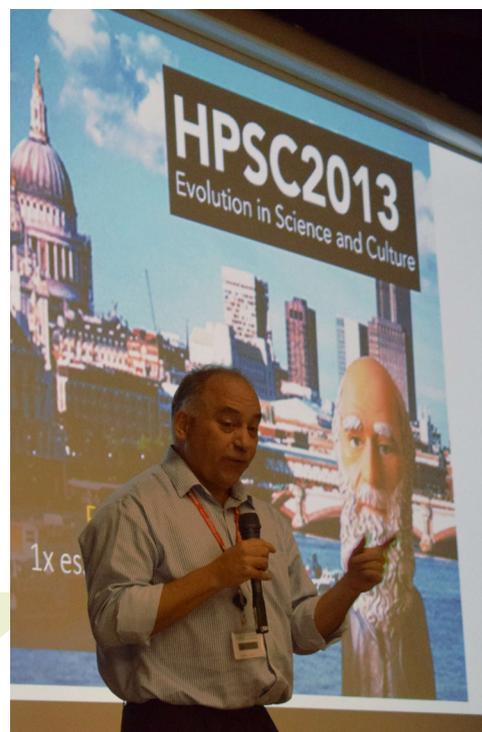
Due to changes in UCL regulations, students will now have to finalise their module choices by Wednesday December 6th. This means that students will no longer be able to change their term 2 module choices once they begin.

The department decided it was of the utmost importance to make sure that students had all the information they might need to make these choices, and so the first ever STS Module Fair was held on Wednesday 15th November.

The aim of the fair was to allow students from all of UCL to find out more about the choices available through STS modules. BSc-level modules were covered first, followed by MSc-level.

All term 2 tutors were present, with the exceptions of Jack Stilgoe, who was represented by 'stunt double' Brian Balmer, and Carina Fearnley, whose presentation was pre-recorded.

After each 5-minute presentation, tutors were available to answer questions from interested parties. Several questions were asked, and a considerable number stayed on to ask questions after the presentations had taken place. Plans are already afoot to



Prof. Joe Cain giving his presentation

increase the size of the module fair next year, and possibly to run it earlier in the year to include term 1 modules.

For those who missed the fair, video recordings are now available. The presentations are split into BSc-level and MSc-level, and can be found at the [STS Youtube channel](#). Links are provided in the comments to skip straight to specific modules.



Tutors discussing their modules at the Module Fair. Images: Malcolm Chalmers

THE BOOKSHELF

Compound Histories: Materials, Governance and Production, 1760-1840 (edited by Simon Werrett and Lissa Roberts (Uni. Of Twente))

Compound Histories, edited by STS's Simon Werrett alongside Lissa Roberts from the University of Twente, offers a new view of the period during which Europe took on its modern character and globally dominant position. By exploring the intertwined realms of production, governance and materials, it places chemists and chemistry at the centre of processes most closely identified with the construction of the modern world.

This includes the interactive intensification of material and knowledge production; the growth and management of consumption; environmental changes, regulation of materials, markets, landscapes and societies; and practices embodied in political economy. Rather than emphasize revolutionary breaks and the primacy of innovation-driven change, the volume highlights the continuities and accumulation of incremental changes that framed historical development.

The Routledge Handbook of Mechanisms and Mechanical Philosophy (edited by Stuart Glennan and Phyllis Illari)

The Routledge Handbook (edited by STS's Phyllis Illari and Stuart Glennan of Butler University) is an outstanding reference source to the key topics, problems, and debates in this exciting subject and is the first collection of its kind. Comprising over thirty chapters by a team of international contributors, the Handbook is divided into four Parts: Historical perspectives on mechanisms, the nature of mechanism, mechanisms and the philosophy of science, and disciplinary perspectives on mechanisms.

Within these Parts central topics and problems are examined, including the rise of mechanical philosophy in the seventeenth century; what mechanisms are made of and how they are organized; mechanisms and laws and regularities; how mechanisms are discovered and explained; dynamical systems theory; and disciplinary perspectives from physics, chemistry, biology, biomedicine, ecology, neuroscience, and the social sciences.

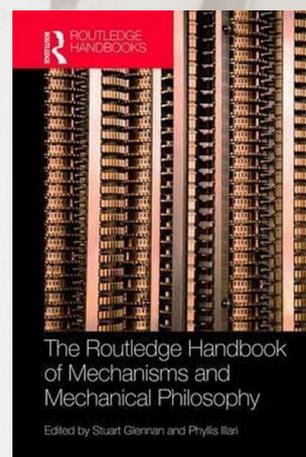
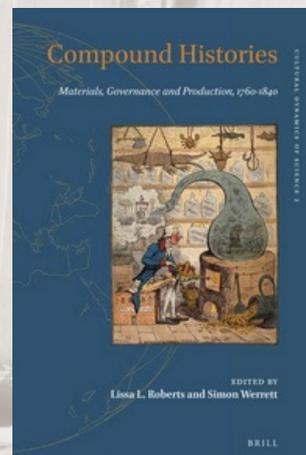
Essential reading for students and researchers in philosophy of science, the Handbook will also be of interest to those in related fields, such as metaphysics, philosophy of psychology, and history of science.

Other Publications

Jack Stilgoe has written a number of articles for The Guardian, which can be found via his [contributors' page](#), as well as taking part in a [podcast with Prof. Toby Walsh](#) on the dangers of Artificial Intelligence.

The Conversation featured a number of articles from STS staff this year, including Jon Agar on [the history behind the film 'Hidden Figures'](#) and Carina Fearnley on both [the eruption of Mount Agung](#), and how [drinking whisky can help you understand the concept of 'Deep Time'](#). Meanwhile, STS PhD Liz Jones appeared on the ['Past Time' podcast](#) discussing her work on ancient DNA and the scientists who are trying to figure out how fossils sometimes preserve more than bone.

The Grant Museum opened their newest exhibition on 'Ordinary Animals' in late 2017 – to celebrate, STS's Brendan Clarke provided a guest blog, which can be found on [the Grant Museum page](#).



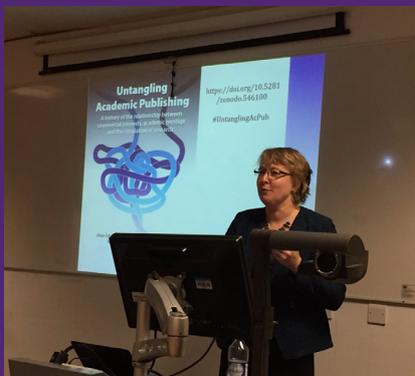
'BY EXPLORING THE INTERTWINED REALMS OF PRODUCTION, GOVERNANCE AND MATERIALS, IT PLACES CHEMISTS AND CHEMISTRY AT THE CENTRE OF PROCESSES MOST CLOSELY IDENTIFIED WITH THE CONSTRUCTION OF THE MODERN WORLD.'

STS Seminars

The STS Seminar series continues to provide a showcase for recent research across the whole of Science and Technology Studies. Recordings of the talks are available via the STS website and Youtube channel, along with the 2016/17 series.

At time of publication, the following talks have taken place, and can be viewed on the [STS website](#) and [STS Youtube Channel](#)

- Annamaria Carusi (Sheffield) - Organismic Reshuffling: chemicals, organisms and computers (11th Oct 2017).
- Prof. Sir Peter Gluckman (Chief Science Advisor to the Prime Minister of New Zealand) - Can science advice be an effective bastion against the post-truth dynamic? (18th Oct 2017)
- Prof. Aileen Fyfe (St. Andrews) - The business of circulating knowledge: The Royal Society's journals in the 20th century (1st Nov 2017)
- Jacob Stegenga (Cambridge) - Medical Nihilism (15th Nov 2017)
- Prof. Stella Bruzzi FBA (Dean of UCL Arts and Humanities) - Evidence as narrative: the law as new media entertainment (6th Dec 2017)



Dr Aileen Fyfe, 1st Nov 2017.
Image: Jack Stilgoe

The following Term 2 talks are due to take place on the dates below:

- Chiara Ambrosio - 'In Pursuit of History: Philosophical Themes from C.S. Peirce's History of Science' (10th Jan 2018)
- Mary Morgan (LSE) - Observing Poverty, Measuring the Good Life (24th Jan 2018)
- Mechthild Fend - Images Made by Contagion: On Dermatological Wax Moulages (7th Feb 2018)
- Mark Johnson - Why do people watch other people playing video games? The rise of the broadcasting and spectating of digital play (21st Feb 2018)
- Andy Stirling (Sussex) - Emancipating Transformations: from accelerating control to murmuring care (7th Mar 2018)

Talks begin at 4.30pm - for details including venues, abstracts and biographies of the speakers, visit the STS calendar at <http://www.ucl.ac.uk/sts/sts-viewer-events-agenda>

WHAT IS THE ROLE OF SCIENCE, VERY BROADLY DEFINED, AS AN INSTITUTION IN A WORLD WHERE TRUST IN INSTITUTIONS, IN ELITES AND IN EXPERTS APPEARS TO BE IN DECLINE AND THE CONCEPTS OF RELIABLE KNOWLEDGE AND THE DISTINCTION BETWEEN FACT AND OPINION NOW APPEAR TO BE UNDER THREAT? THESE QUESTIONS CANNOT BE ADDRESSED WITHOUT ENGAGING IN THE BROADER CONSIDERATION OF HOW SCIENCE AND SCIENTISTS ENGAGE WITH SOCIETY – WHAT IS THE NATURE OF THAT RELATIONSHIP, AND HOW ARE THE PROCESSES OF SOCIETAL DECISION MAKING CHANGING?

Prof. Sir Peter Gluckman (Chief Science Advisor to the Prime Minister of New Zealand) - 18th Oct 2017



Department of Science and Technology Studies
Gower Street, London,
WC1E 6BT | United Kingdom

www.ucl.ac.uk/sts



twitter.com/stsucl



facebook.com/stsucl