



Alchemy

UNDERSTANDING SCIENCE



Welcome to *Alchemy*

This is the third edition of STS Alchemy. The third?!? Oh my, how time flies. It seems only yesterday when we were talking about creating an alumni newsletter. With characteristic STS ambitions, we decided to take it up a notch and produce something we thought worthy of the fantastic people, events, and ideas pulsing through our community. "Make it worth the stories it tells," we agreed.

So, here we present the third edition of STS Alchemy. I see it as evidence of the landscape-gardening approach we have in our training and research. Some projects have been long in the making and carefully cultivated. Others have grown closely tied to the soil underneath Gordon Square. Still others are exotic imports, arriving flair and novelty, then leaving us much the better off for them having visited.

I also see STS Alchemy as evidence of a strong community ethos. At a recent event to celebrate publishing a book edited by and including some brilliant research by STS academics, the room was packed with current staff and students, alumni, friends, and sympaticos. Scanning the photos later, we noted with very pleasant surprise just how many of "us" we are.

This year will be rough for universities, for specialist subjects such as ours, and for many of the principles we hold dear. But the bonds we develop in Gordon Square and the confidence we have in those who pass through our programmes give firm foundations for hope. We're going to make it. It'll be tough, perhaps, but we'll continue to be central to the subject.

This is my last opportunity to introduce STS Alchemy. It's the normal course of events at UCL for heads of departments to serve fixed terms, then step aside for new energy and new ideas. This is essential for vitality, and it's a protocol I strongly support. I became STS Head of Department in 2011. After two terms, it's time for me to step aside. STS is profoundly different in 2019 compared with 2011 thanks to the hard work of many, many people. But we're also very much the same: high ambitions, absolute commitment to teaching excellence, and hungry to engage the big problems of this generation. My successors – the headship will be jointly held by Dr Emma Tobin and Professor Jon Agar – have exciting and ambitious plans. They officially begin in September.

Prof. Joe Cain - Head of Department



Professor Joe Cain

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Net Neutrality - undergraduates report!

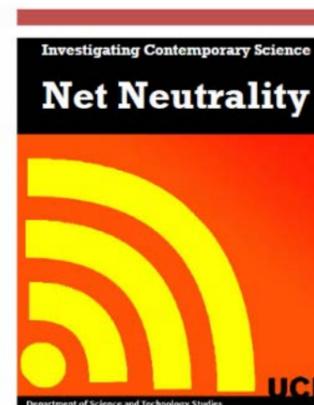
Second and third Year BSc students follow in the footsteps of Simon Schaffer and Helen Longino, by publishing an STS Occasional Paper.

Net Neutrality (NN), is the concept that internet access should be available to all - that internet providers cannot offer faster access to preferred websites, creating a two-tier system. This idea has been challenged in recent years, and STS students are among the first to tackle the subject.

During the 2017-18 HPSC3032 Investigating Contemporary Science module, STS students spent ten weeks using the analytical tools they had learned in the department to investigate the topic of Net Neutrality and produce a report for policy makers, with the individual chapters forming the basis of their assessment.

This report has now been published as an STS Occasional Paper - a step previously taken in publishing works by Simon Schaffer, Helen Longino, Maja Horst and others following their JBS Haldane lectures - see page 28 for more information on recent Haldane lectures.

Available via the STS Website, 'Net Neutrality: Setting Sun or a New Dawn for the Internet?' looks at the very future of the internet. Chapters look at whether new regulations will disproportionately benefit Internet Service Providers and online monopolies, the effect on innovation and emerging technologies,



Net Neutrality: Setting Sun or a New Dawn for the Internet?



The authors of Occasional Paper 8 - (l-r) Raphael Piccolin, Daniel Shuttlewood, Ho Cheung, Josh Huntley, Alice Conway, April Wheeler, Alia Asad, Ralitsa Tchobanova, and Jason Murugesu (Holly Clarke was unavailable)

and whether the US repeal of net neutrality will cause further problems in the UK. Others analyse the evolution of the internet, and ask whether it was ever neutral in the first place.

The students involved - Alia Asad, Ho Cheung, Holly Clarke, Alice Conway, Josh A Huntley, Raphael Piccolin, Daniel Shuttlewood, Ralitsa Tchobanova and April Wheeler - came from a variety of courses around UCL, and used their varied knowledge to approach the issue from such a wide range of perspectives.

THE CURRENT DEBATE AROUND THE SUBJECT IS TOO POLARISED, AND NEEDS TO BE OPENED UP

Module Tutor Melanie Smallman congratulated the students on their work. 'The publication of this paper demonstrates just how hard these students worked. The final report concludes that the current debate around the subject is too polarised, and needs to be opened up to take account of nuanced arguments about the kind of future we want - the kind of nuance that can be found in this report.'

The report is summarised by three recommendations, reached as a result of the students' work. They are:

The NN debate needs to be reconsidered in light of technology's inherent non-neutrality, so as to attain a more adequate approach to managing the Internet and its openness via acknowledging the presence of cultural assumptions and values underpinning it.

Governmental power over the network's core resources should be recognized as necessary in light of it providing some common rules of use, for as long as this is done openly, democratically and responsibly. It should also not restrain the network's evolution beyond what is necessary to achieve regulatory aims.

As users can potentially impact and make informed decisions about the Internet, a user-focused approach to the NN debate can be embraced, where customers are clearly informed about non-neutral features, processes, and policies. User-led appraisal of non-neutral policies can best balance consumer's safety with innovation.

"Net Neutrality - Setting Sun or a New Dawn for the Internet?" is available to read for free and can be found on the STS website.

Words - Malcolm Chalmers

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Alchemy is available as a PDF via the STS website.

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

Undergraduate summers

While our degree programmes pause during the summer, our students keep busy, and in 2018 Mohammad Shan and Wilfred Taylor took part in educational experiences overseas. You can hear the rest in their words...

Last summer, I had the opportunity of spending six weeks teaching English to young children in Ukraine. Admittedly, I was slightly nervous and apprehensive about living in Ukraine by myself for six weeks due to the current political climate. However, I am so grateful that I made the right decision and went on this highly enjoyable and rewarding experience.

The programme is run by **GoCamp**, the biggest volunteering organisation in Eastern Europe, that hopes to bring 1000 volunteers to more than 600 schools, to teach 100,000 pupils all over the country. It is hoped that by 2020, all children aged 10 to 15 will speak English.

During most of my time in Ukraine, I lived in Chernivtsi, which is one of the most beautiful and friendly cities that I ever been to. The city is located in western Ukraine by the Moldova and Romania border. I was based at School 22 and taught daily English lessons through a variety of classroom and outdoor activities with the support of the lovely team of native Ukrainian English teachers. I will never forget how on my last day of teaching, the teachers took me out for dinner and ordered me almost everything off the menu!

Each English teaching volunteer is allocated a native Ukrainian host family to live with for the duration of the program. I was extremely lucky

to live with Marta and Sasha, who treated me with so much kindness, and helped me to learn in detail more about their country and their daily lives.

THE EXPERIENCE OF TEACHING ENGLISH ALLOWED ME TO SEE THE REAL UKRAINE

The highlight of the trip was definitely when Marta and Sasha took me to their ancestral home in the village for a weekend. I had the chance to learn how to fish and



in Ukraine Hong Kong ...



Photographs from Mohammad's 2018 trips to Ukraine (left page) and Hong Kong (right page)

experience what life is truly like without good Wi-Fi!

The classes I taught had some of the most dedicated and brightest young students I have ever come across. I was impressed by the enthusiasm and passion these children displayed towards learning English. I felt extremely proud towards the end of the teaching experience when many of the students were able to have confident conversations with me in English.

I was also blown away by the kindness and generosity of the children who would constantly go out of their way and make me handmade gifts. The experience of teaching English allowed me to see the real Ukraine: a country that is working extremely hard to reform its image in line with modern times through its commitment towards investing in education.

The six weeks of teaching English came to an end and I flew back to London with a heavy heart, knowing that soon after arriving in

THE TEACHING WAS WORLD CLASS AND I REALLY APPRECIATED THE GLOBAL EMPHASIS THAT WAS PLACED IN EACH CLASS BY THE PASSIONATE LECTURERS

London that evening, I was scheduled to take an 18h hour flight to Hong Kong the next morning!

One of the main reasons why I was going to Hong Kong was to participate in a summer school run by the [Chinese University of Hong Kong](#). I was awarded a fully funded scholarship by UCL that was mainly based on my academic performance and extracurricular activities during my undergraduate degree.

I took classes in International Business and Marketing Management. The teaching was world class and I really

appreciated the global emphasis that was placed in each class by the passionate lecturers. I had the pleasure of meeting and working with such a diverse range of students from all across the world and learning about the countries that they come from.

Living in Hong Kong for an extended period of time was definitely an interesting experience. Hong Kong as a country is way more fast paced in comparison to my time spent in Ukraine. Moreover, I appreciated the many similarities and differences the country has in comparison to the UK. I got to try lots of the local cuisine and visited the famous attractions of Hong Kong, such as the Victoria Peak and Victoria Harbour. In addition, I was able to go on many hikes to places such as Lamma Island and Dragon's Back.

Overall, I thoroughly enjoyed my time in Hong Kong, even with all the typhoons!

Words/Photos - Mohammad Shan

...and South America!

During the 2018 summer break from my undergraduate studies at UCL I attended the PUC-Rio (the Pontifical Catholic University of Rio de Janeiro) Intensive Portuguese as a Second Language course, alongside approximately sixty other international students.

The course was a month long and consisted of four hours of classes with approximately two hours of coursework per day. Each class had fewer than ten students at a time, and they were streamed accurately to accommodate varying levels of experience in Portuguese or close languages such as Spanish and Italian.

The course followed a logical, challenging progression that took me from an entry-level understanding of Portuguese grammar to conversational proficiency within a month. Attending the course gave me access to all facilities and social events hosted by the university, specific events organised for attendees of the intensive course (such as sightseeing opportunities across the city and state of Rio de Janeiro) as well as the option to stay with a Brazilian host family for the duration of the course, and longer if desired.

The course has allowed me to finish my degree with legitimate confidence in my spoken and written understanding and expression of a second language, thus providing me with future access to work and study opportunities across the Portuguese speaking world.

On a personal level, attending the course allowed me to fully engage with Brazilian culture, travel across the country and make meaningful friendships and social connections in Brazil, which would have been exceedingly difficult if not impossible to establish otherwise. My favourite feature of the programme was the access it gave me to a huge variety of new, interesting and likeminded individuals both taking part in the course as well as other students and academics associated with PUC.

I WOULD HIGHLY RECOMMEND THAT ALL STUDENTS UNDERTAKE A SHORT-TERM GLOBAL OPPORTUNITY

Travelling and studying in Brazil carries its own unique and unexpected challenges. Chief among these is the level of bureaucracy that one must navigate, especially when dealing within the federal government. However, the high level of attendance on the course as well as the helpfulness of the administrators meant that I was able to obtain useful guidance on how best to resolve such issues in all situations with relative ease.

I would highly recommend that all students undertake a short-term global opportunity during their studies. In my experience, it provides one with unparalleled access and

opportunity to experience the culture of another country and educational institution as well as to make lifelong connections with other outgoing people from all walks of life and academia. The opportunity has broadened my perspective on my education and future career opportunities whilst simultaneously giving me a refreshing and constructive break from my studies at UCL.

Words/Pictures - Wilfred Taylor



Looking at science, in government

STS students visit the Houses of Parliament

The department organised two trips to Westminster in the last year. In January, Melanie Smallman took a host of students from the HPSC2025 Science in Government module to visit the palace, in order to experience first-hand the processes that are undertaken in the creation of laws. Dr Simon Werrett then held a follow up trip in January 2019 with students from the same module.

Dr Smallman greatly enjoyed the visit. "Visiting Parliament and seeing what happens in the flesh was an amazing experience for the students – and for me, particularly as my local MP dropped by to say hello! The students were especially surprised to see how busy the building was and how many different activities were happening at the same time, with us having the chance to look in on various committees, debates and question times. As well as explaining



Melanie Smallman (in red coat) with HPSC2025 students, with Martin Smith (far left)

why the Commons chamber often looks empty on the TV, the visit really brought to life the concepts and ideas that we talked about in the lectures – and I think that showed through in the quality of the students' subsequent work."

Martin Smith, the expert advisor to the House of Commons Science and Technology Select Committee, was the department's host and guide for the day.

Words - Malcolm Chalmers

As part of the NSCI0007 Science Communication and Computing module, Dr Jean-Baptiste Gouyon arranged for a range of speakers from throughout the world of science communication to come and speak to students, giving them an insight into how to develop a career in the field.

Beginning with podcaster and comedian Cerys Bradley, the series introduced communicators from all aspects of the media, including:

Miriam Frankel - Science Editor of The Conversation

Deborah Cohen - Science editor for BBC Radio

Prof. Muki Haklay - UCL Geography

Steve Crabtree - former editor of Horizon, BBC

Ali Boyle - Keeper of Science Collections, Science Museum

Steve Cross - The Talent Factory

Where will science take you?

Science communication - learn from the experts!

THE FRANCIS CRICK INSTITUTE

Maria Ocampo-Hafalla - Francis Crick Institute

Each speaker gave students a different viewpoint and insight into how their career began, whether transferring from a career in the hard

sciences to journalism and comedy, or starting from a more multi-disciplinary, STS-style background. The seminars were a great success, attended by students from all over UCL, and we hope to run them again in subsequent years.

Watching movies. Seeing films. Going to the pictures. We habitually consider cinema as a primarily visual medium. The soundtrack is an added extra, a bonus element that is not essential to the experience of cinema – after all, silent movies can be perfectly well comprehended when viewed without their musical accompaniment.

But what if films could be manufactured where image and sound were of absolutely equal importance? What if the sounds somehow created the images, and the images somehow created the sounds? Is it possible to make such synesthetic films where sound and image are one and the same thing? And if so, what would these films be like?

These questions were addressed at the BFI's recent presentation Experiments in Synesthesia, Early Cinema and Artist Film. Amongst the dozen or so short films shown were several that demonstrated how visual images could produce their own sounds by use of optical soundtracks. Sounds played into an oscilloscope can be expressed visually as waveforms. Optical soundtracks make use of such waveforms by recording sounds as wave-like shapes that can be printed along the edge of a strip of movie film. When the film is projected, the light passing through the celluloid throws the visual images onto the screen and at the same time translates the (unseen) optical soundtrack back into synchronized accompanying sound.

By the early 1930s, animators and artists were starting to see the possibility of moving the optical soundtrack onto the film-frame itself so that the waveforms were projected onto the screen at the same time they were being heard. Sound would therefore become image, and image would become sound.

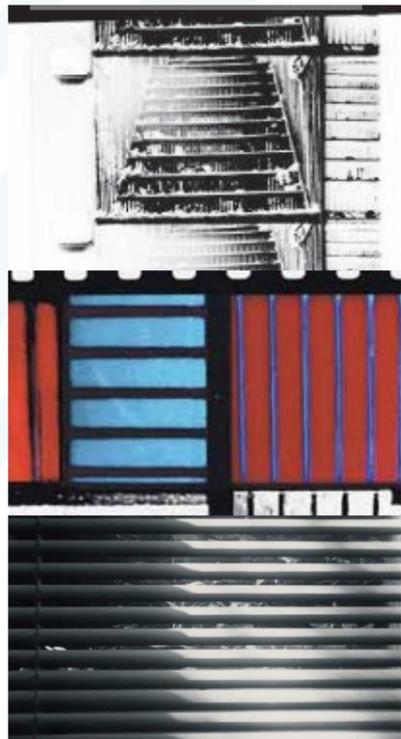
Of all the films shown at the BFI, *Dresden Dynamo* (1971) by Lis Rhodes was the earliest example of a wholly synesthetic film. The highly coloured animation in the form of geometric shapes rapidly flickered across the screen whilst simultaneously being read as their own optical soundtrack. The end result looked and sounded like a highly psychedelic TV set going massively on the blink. As the images

Image = Sound

MSc student Elena Ktori looked at the use of sound in experimental films. Can film convey the feeling of synaesthesia - seeing sound, and hearing images?

flashed and scrolled, they produced buzzes, crackles, drones, and blasts of static. The effect was fascinating, hypnotic, not entirely pleasant, and in danger of inducing seizures.

Guy Sherwin's *Musical Stairs* (1977) applied the same technique but used live-action footage instead of animation. He filmed a metal staircase from different perspectives, variously over- or under-exposing the film. Depending on the angle the stairs were filmed from, and the exposure of the print, different tones were produced when the footage was scanned by the optical soundtrack reader. The more steps were included in the frame, the higher the resultant pitch. Under-exposed footage created louder sounds than over-exposed



Stills from *Musical Stairs* (1977), *Dresden Dynamo* (1971) and *Blinds* (2014)

footage. Every shot was therefore like a single key being pressed on an electronic music keyboard.

THE EFFECT WAS FASCINATING, HYPNOTIC, NOT ENTIRELY PLEASANT, AND IN DANGER OF INDUCING SEIZURES.

By editing his shots, Sherwin could produce different successions of tones. The effect was less eye-splitting than *Dresden Dynamo*, but the sounds produced were much harsher and uncompromisingly stark.

The same procedure was employed in a much more recent film, *David Leister's Blinder* (2014) where instead of stairs he filmed a set of Venetian blinds to generate his soundtrack. Instead of changing the exposure of the film to alter the volume, the slats of the blinds were variously manipulated to achieve the same effect.

As experimental shorts, these films are certainly fascinating examples of sound and image inextricably fused together. They offer the rare opportunity to see sound and to hear images. But there are drawbacks. Nearly forty years separate *Blinder* and *Musical Stairs*, and yet both films use the same technique to produce by-and-large the same result.

This seems to me to demonstrate the inherent limitation of synesthetic films being made in this way. Because the image both dictates and is dictated by the soundtrack – and vice versa – the film-maker is severely restricted in what material they can use and how to deploy it. There seems to be no room to expand the technique into new territory.

What's more, the requirements of the optical soundtrack reader force the films to utilize only abstract images (shapes, steps, blinds), preventing the film-maker from venturing into even the most rudimentary narrative form – and, conversely, the blank-tone sounds the images produce soon become monotonous and lack musical variety and complexity.

For synesthetic films to develop and to offer the same opportunities for film-makers to express their own idiosyncratic artistic concepts as more regular film-makers can, it seems to me that new techniques will be needed, perhaps by means of new technologies. As things stand, synesthetic films lack some vital ingredient to break out of their current limitations and establish themselves more substantially as an art form. I for one would love to see cinematic synesthesia find its feet in the 21st Century.

Words and images - Elena Ktori

Restarting your career

Recent MSc Graduate Isabel Lopez Lopez-Neira discusses her time on the course, and her work with the Restart project

I've always been interested in the intersection between science and society. However, coming from a background in Biochemistry, STS first pushed me to immerse myself in the world of social sciences. Along with my personal development, I have quickly put STS into practice in the professional world.

STS made me explore new topics every day and struggle for months to find my unique most interesting research question for my dissertation. The course was a whole set of challenges that has given me the tools and confidence to examine and discuss science and technology in a very different way.

From my initial interest in public health, I have become more captivated by the process of innovation, and the assumptions we make about technological 'progress'. I've had the chance to develop these ideas within the homely environment of STS.

At the same time, being an Academic Rep, I was lucky to learn about the inner workings of the department, the vast array of courses offered and the initiative from its staff, both lecturers and administrators.

While still at my course, I started working part-time at *The Restart Project*, a charity that looks at people's relationship with technology, and at how repair can fix the global issue of electronic waste. I can't imagine working at Restart with a pre-STs perspective.

UCL IS A VIBRANT PLACE, IN A DYNAMIC CITY, AND STS IS A FANTASTIC HOME

Our work links closely with reflections and conversations had throughout the MSc, such as the innovation process, the role of industry or the importance of public engagement and grassroots initiatives to influence the path of technology.

We even brought one of STS academics - Simon Werrett - to our radio show!

Right after the course, I started working at UCL Department of Science, Technology, Engineering and Public Policy (STeAPP). Here we look at the risks of domestic abuse associated with emerging technologies like the Internet of Things.

Once again, the STS perspective makes this project particularly interesting, as we try to assess innovation processes critically and provide guidance for a more inclusive and responsible technological design.

UCL is a vibrant place, in a dynamic city, and STS is a fantastic home to absorb knowledge and get inspired. I can only recommend you explore this, find your interests, and put your ideas into action.

Words - Isabel Lopez Lopez-Neira



Isabel recording at the Restart Project - photo credit Mark Phillips

Birth of a monster

Having written a 5000 word essay for her Early Modern Science module, MSc student Kathryn Shaw succeeded in revising this into a 1000 word article for *Viewpoint*, the magazine for the British Society for the History of Science (BSHS), reprinted below. I asked Kathryn for her advice for students looking to publish their work.

I had already been in touch with the BSHS team and knew of Viewpoint via Twitter, and sent off an email asking whether they would be interested in the work of a new MSc student. Which is the best lesson to learn - there's nothing wrong with asking! Even if journals or magazines aren't accepting submissions when you enquire, or are only accepting PhD candidates or post-doc, the contact and communication is invaluable - and they might be able to point you in the right direction for a different publication to approach.

*I also managed to get my undergraduate dissertation published in 2017. I spoke to several of my lecturers at the time, and they advised researching journals run by PhD students and based at universities - I submitted to the *Journal of History and Cultures* out of the University of Birmingham. Even though they are small and often online-only, journals like this still offer the usual processes such as peer review and copy-editing, which is great experience.*

BSHS as a whole is also definitely worth checking out if you haven't already. They offer Masters bursaries and host great events - plus an annual postgraduate conference (held in Florence in 2017!!) Viewpoint in particular is a great option to consider. And of course, talk to your tutors and lecturers with STS! Cutting or adding words to fit article-length can be tricky, and they can definitely advise.

In October 1664 in Fisherton near Salisbury, Mary Waterman, wife of John, gave birth to three daughters including conjoined twins – or, a ‘strange monster’ with ‘two Heads, foure Armes, and two Legs.’ The twins died after two or three days and their body was embalmed and taken to London for display and exhibition. For a growing popular press, rife with stories of marvels and monsters, the case of Mary and the birth of her children was irresistible.

A ballad, titled ‘Natures Wonder?’ was published alongside the press story, detailing the ‘monster of misshapen Forme’ and meant that the case could easily be spread by word-of-mouth through communities. The ballad was also intended as a lesson so that listeners ‘may learn to feare Gods Punishment’. The monstrous birth was explained as a punishment from God, though the sins were never

revealed – which in turn worked to create a universal possibility of the birth of a monster for all women if they were to fall pregnant.

Monstrous births were a well-established genre by the 17th century, with descriptions and explanations being offered for centuries from Aristotle, Cicero, Pliny and Augustine to Bauhin, Liceti, Aldrovandi and Paré. One of the most popular and sustaining theories was maternal imagination – that the thoughts of a woman at the time of conception could affect and deform the foetus.

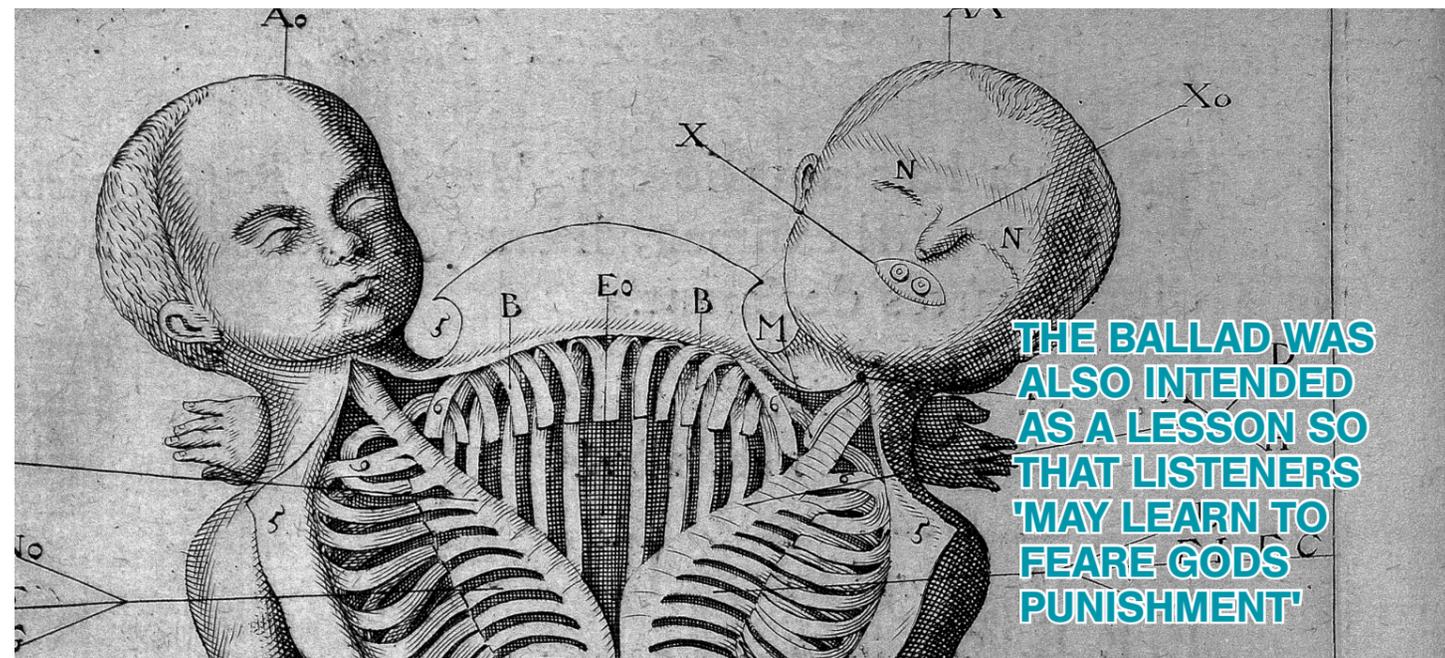
The 17th century has often been identified as a time of conflicting theories, and monstrous births have been a useful case study to frame the debates between science, religion and folklore. Maternal imagination was a particularly attractive theory at this time because it was simple to

understand for both lay people and learned thinkers, and it offered an explanation without resorting to the divine; a highly contentious issue in Reformation England. However, by lessening the emphasis on the will of God, blame was transferred to the mother if her child was born with a deformity. The continued popularity of maternal impression theory and its place in midwifery books meant that expectant mothers would have faced the pressure of policing their very thoughts, lest they harm their future child.

THE STORY OF MARY, MARY AND MARTHA ALSO CONTRIBUTES TO A WIDER POINT: THAT THE SURVIVING SOURCES SHOULD NOT BE USED TO SPEAK FOR ALL OF SOCIETY IN THE EARLY MODERN PERIOD

It is true that cases such as Mary Waterman and her children were symbolic of a wider change in beliefs and understandings of science, religion and human biology. However, the experiences of the women who birthed such children and the relationship between mother and child – or indeed contemporarily, mother and ‘monster’ – were far more complicated and have been given far less attention.

On the surface, one of the strongest relationships between parents and their deformed offspring could even be financial. The exhibition of the conjoined Waterman twins did offer a financial incentive. A printed version of the ballad explained that when on display in London ‘there hath been both Lords, Ladys and much Gentry to see it; The Father (being a poore man) had twenty pound given him the first day, by persons of Quality.’ Yet it is ahistorical to define the parents’ relationship to their children by the money given to John Waterman. Instead, it is entirely likely that there was love and attachment for a child, monstrous or not, and grief when they died.



In fact, shortly before Mary Waterman birthed her ‘monstrous’ twins, she gave birth to a daughter, described as a ‘very comely Child in all proportions.’ The ballad claims that she cannot speak from sorrow, and that this third child allows her to move on. ‘Natures Wonder’ describes this daughter as a comfort and cheer for her mother after the birth of the twins, and a normal child seems to offer the parents life after the monstrous birth.

However, this reading is complicated by the reality of Mary and John’s choice of names for their children. As opposed to what is implied in the ballad, the ‘comelier’ daughter was actually born first, and baptised as Efelet. The conjoined twins came second, and were also baptised, given the names of Martha and Mary. The practice of passing on names from parent to child had grown steeply in this period, so for Mary Waterman to choose to give her own name to one of her ‘monstrous’ daughters instead of the first-born ‘normal’ daughter is highly telling.

The account of Mary Waterman serves as a reminder that monstrous births were human children, and despite popular press coverage that potentially exaggerates accounts in order to create interesting stories, it would have still been possible for a mother to be attached to the child she

carried for nine months. In the early modern period it was understood that a foetus was given a soul, at the time of ‘quickening’ – usually at four months – and from then was regarded as being alive. To generalise experiences denies this possibility, and also risks simplifying the diverse and often contradictory understandings mothers may have had about their children.

HOWEVER, BY LESSENING THE EMPHASIS ON THE WILL OF GOD, BLAME WAS TRANSFERRED TO THE MOTHER IF HER CHILD WAS BORN WITH A DEFORMITY

The story of Mary, Mary and Martha also contributes to a wider point: that the surviving sources should not be used to speak for all of society in the early modern period. This is particularly pertinent in the case of women, and their uniquely female understandings of their own bodies, pregnancies, and children. Because there are so many existing sources it is very possible to write the history of the development of thought that rationalised and classified monstrous births from the perspective

of male natural philosophers. However, the invisible histories of the women at the centre of those births should not be assumed or overwritten by the histories of those that have survived.

For women, the potential of monstrous births was a real fear, and for those who did give birth to a deformed child, their ability to process what had happened and provide potential explanations were based on the information available to them. Ballads and broadside articles were published as a form of entertainment, but for the women who could be affected still conveyed monstrous births as both a direct punishment for transgressions and a seemingly random and unavoidable act of God or Nature.

It is important to study such cases from a different viewpoint in order to gain a richer perspective on how different parts of society understood, processed and applied the changing scientific and medical theories of the time. While a narrative of the progression of ideas from doctors and philosophers is useful, our understanding is impoverished without consideration of those who were most intimately involved.

Words - Kathryn Shaw
Twitter: @airborneobject

STS in NYC

STS PhD Em O'Sullivan reports back from The City That Never Sleeps, where they spent two months as researcher in residence exploring ways to support women's engagement with technology.

The first thing that strikes me about New York is just how damn hot it is.

I walk out of JFK airport at 10pm on an early September evening and a wall of muggy heat hits me. I'm English: I'm not used to it being hot at night. I find the Uber that's going to drive me to the apartment where I'll be spending my first two weeks in New York, and as we start the long drive I watch the orange and yellow blurs of city lights flash past the window and think about the two months ahead of me.

I'm in New York to conduct fieldwork at a makerspace here. My PhD explores the global makerspace movement as a promising new site for supporting women's engagement with technology. We live in a world where technology is pervasive, shaping everything from our communications to our modes of travel. Being able to understand and critically engage with technology is therefore essential for navigating everyday life and exerting agency over our collective

social and political future. However, for various reasons, women and girls typically have fewer opportunities to get involved with technology and engineering than men and boys do.

Makerspaces can help with this. A makerspace is a shared machine shop that provides a set of tools and machinery for making things. This usually includes digital fabrication tools like 3D printers and laser cutters, electronics tools, soldering irons, crafts tools, and wood-working tools. A huge variety of things are created within makerspaces, from wooden tables and knitted scarves to bicycle-powered Scalextric tracks and motorised life-size replica Daleks. Makerspaces, unlike university engineering departments or technology companies, do not have any formal barriers to entry: anybody can access them, regardless of their level of technical knowledge. And most importantly, makerspaces are not just collectives of people sharing a set of tools: they are communities whose members love to learn and to share their knowledge with others.

Unfortunately, however, women are currently under-represented in most makerspaces. As part of my PhD research I'm working with makerspaces who've bucked this trend and have been able to build a gender diverse group of members. The rationale is that if it's possible to gain a better understanding of how they've achieved it, it may be

possible to generalise these findings to support women's engagement with technology in other contexts.

Several months ago I contacted a makerspace in New York that I'd heard had a high proportion of women members. I sent them an email outlining my research and asking if I could visit them to find out how they support women's engagement in their community. Two weeks later I got a reply: an invitation to be their first Researcher in Residence. There followed a huge amount of preparation to spend an extended period of time working in the US, navigating insurance forms, risk assessments, ESTA security authorisations, and Craigslist apartment listings. While packing, I checked and double-checked my list of research equipment to take with me. Now, as I'm chauffeured through NYC traffic – sitting in the front seat of the Uber so I can see as much of the city as possible – I think: 'and now the real work begins'.

MAKERSPACES ARE NOT JUST COLLECTIVES OF PEOPLE SHARING A SET OF TOOLS: THEY ARE COMMUNITIES WHOSE MEMBERS LOVE TO LEARN AND TO SHARE THEIR KNOWLEDGE WITH OTHERS

The next evening, while still not entirely adjusted to Eastern Standard Time, I turn up at the makerspace for my first site visit. I've been to many makerspaces over the years, and even used to be involved with running a makerspace in my hometown of Brighton, so I know roughly what to expect. The makerspace is cleaner and tidier than most, and is thankfully missing the resemblance to an e-waste disposal center that many makerspaces have. Members have covered the walls with LED art projects, posters from parties



New York Public Library - Photo Em O'Sullivan

that have been thrown at the makerspace over the years, and stickers from other makerspaces around the world. I'm given a tour and handed a set of keys. The makerspace – and the people in it – has a knack for helping you feel instantly at home in its cosy den of technology, which is probably a large part of why they've been able to engage a gender diverse group of members.

Over the next few weeks I split my time between conducting interviews and participant observation at the makerspace and exploring New York. I haul my laptop around coffee shops across Brooklyn and take advantage of the warm weather to make use of the free Wi-Fi in the city's public parks. I spend thundery afternoons writing up field notes under the vaulted ceilings of the Rose Main Reading Room at the New York Public Library. I reflect on the data I'm gathering and how it relates to my research questions: How are people interacting with each other in the makerspace? How are they using the tools and machinery? How is knowledge circulating within the makerspace? What knowledges are being recognised and respected?

A highlight of my trip is attending the World Maker Faire, a key event in the global maker community calendar. Held annually at the New York Hall of Science, it attracts

nearly 100,000 visitors from around the world who come to see hundreds of makers exhibiting their coolest and most creative projects. There's an overwhelming air of excitement throughout the Faire, which is attended by many kids and families. My favourite area is a dark room that houses the many light-based projects on display, because if there's one thing makers love it's LEDs.

As I near the end of my residency the weather finally turns. The temperature drops and the trees in Central Park turn brown and orange. Porches are decorated with jack-o-lanterns and plastic skeletons for Halloween. I'm writing this in early November, just before I return to the UK. As well as providing me with a mountain of data to work through when I get home, this residency has opened up opportunities for research collaborations and has expanded my network of academic and practitioner contacts. Working with a research case outside of the UK has provided an opportunity to compare data across different national and cultural contexts. But most importantly, this residency has shown me that there are groups of makers out there who are passionately dedicated to improving equity in technology engagement. I am sure that there is a lot that can be learned from them.

Words/Photos - Em O'Sullivan



The views from Times Square and the Statue of Liberty in New York Harbour - both photos: Em O'Sullivan

GYSS 2018 - SINGAPORE

STS PhD Ellie Armstrong reports on her visit to GYSS 2018, and the talks and trips involved.

Late in January 2018 I boarded a very, very long flight leaving behind the cold of the UK to attend the [Global Young Scientists Summit 2018](#) at Nanyang Technological University, Singapore. Representing UCL, and supported by the STS Department, I was going for a week to hear Nobel Laureates, Fields Medallists, Turing Award Winners, and Millennium Technology Prize Winners talk about their work, to see some of the sights of Singapore's research and innovation landscape.

Two talks over the week stood out to me in particular. [Professor Frances Arnold](#) talked about new methods in synthetic bioengineering utilizing mutations to develop novel enzymes for potential applications in our lives. When I was studying chemistry, I learnt about protein structures and the incredibly good fit they had with their purpose (my personal favourite example that we looked at will always be haemoglobin). Rather than trying

to mimic this spectacularly good fit, as many researchers have been doing using computation models or direct synthesis, Frances talked about mutating enzymes and selecting those that work best to mutate through further generations to accelerate the rate of being able to find solutions. This reversal of the usual mode of development fascinated me, a change that was almost a retro-step to how early modification trials were carried out by Victorian botanists, but with a significantly faster throughput.

I was also captivated by [Professor Klaus von Klitzing's](#) talk about a change in the standard measure of a kilogram in 2018. All SI units have standardized, international definitions that many an unfortunate physical scientist (including myself) is forced to learn by heart at some point in their career. Of all seven, the kilogram is unusual in that it is still defined by an actual piece of metal "le grand K" – kept safe behind multiple locks held by different

key holders in a basement vault in Paris. It is the kilogram against which all other kilograms are compared, but with the passing of time, the kilogram gets slightly lighter all the time, which is not good for a standard, universal unit! Klaus' work moves the unit of the kilogram from being this lump of metal, to being a function of the well-defined universal Planck's constant (h), that von Klitzing has helped define to extreme precision.

I particularly enjoyed this talk as it shows how important it is to think not just about the concepts and theories that we build up in STEM, but about the small base units that we rely on to make our modern world work.

THE CONFERENCE BROUGHT TOGETHER 2,000 EARLY CAREER RESEARCHERS FROM AROUND THE WORLD, MEANING LOTS OF INTERESTING CONVERSATIONS ABOUT PEOPLE'S ACADEMIC WORK

We didn't just stay on the Nanyang Campus, but went on field trips around the city as part of the summit throughout the week. On the final day, I was allotted a trip to the [Botanical Gardens of Singapore](#) – one of the oldest tropical botanical gardens in the world.

As someone interested in how science is shared with visitors, I was inspired by the (literal) windows onto the different parts of the cultivation process for the orchid breeding programme that the Botanical Gardens undertakes. Showing five different steps, from artificial pollination, through germination, to full growth of new varieties of orchid, visitors could watch botanists through the window while being able to read about the purpose of that step of the process.

We had an amazing tour around the extensive gardens, that covered things such as the use of the *Abrus precatorius* seeds which have such uniform weights that Indian



Ellie Armstrong (far left) with colleagues from GYSS Singapore 2018

traders used them to weigh gold in standardised Ratti units; histories of gardeners and plants during the Second World War when Singapore was occupied territory; and uses and cultivation of tropical plants within the gardens. Another personal (non-scientific) highlight was the tree-top hammock we got to spend some time sitting in, suspended above a well-tended tropical rainforest.

Of course, I wasn't doing this alone. The conference brought together 2,000 early career researchers from around the world, meaning lots of conversations about people's academic work, what it was like to work in different universities, and of course, our varying degrees of jet lag!

We talked over dumplings at breakfast, while sitting outside in the humid heat (or running inside during sudden tropical storms!) drinking coffee between talks, and while out to drinks and dinner in downtown Singapore. As the only woman from UCL I ended up sharing with a biomedical researcher from the University of Cambridge who was seconded to Harvard at the time, and I built friendships with researchers from the Physics Department at the Australian National University, Chemists at Seoul National University and Medical therapists at the University of Helsinki.

This five-day programme of fantastic talks, trips, and new colleagues was a wonderful way to remind myself how

scientists talk about themselves and their work. As a scholar my work looks at how we present space science in museums, with particular attention to the stories we tell about scientists, as well as about their science, and this trip helped me frame some of these ideas as part of a broader discussion about the way we talk about science in public.

None of this would have happened without the support of the STS Department – from recommending me to UCL to propose as an attendee, to providing a travel grant for the trip. It was a fantastic experience, and it will stay with me forever!

Words/Photos - Ellie Armstrong



PhD News

STS Summer School - iPhone, therefore I am!

Every year, UCL runs a series of non-residential summer workshops for teenagers, to open their minds to new ways of thinking, and to help prepare them for later study.

This year, STS PhD Ellie Armstrong will be running the workshop 'iPhone, therefore I am!'. This Summer Challenge takes a single aspect of science and technology familiar to students coming into the course – the mobile phone – and explores it through a number of different science and technology studies lenses to give students an understanding of how science and technology concepts can be used to interrogate the world around them.

Over the six sessions students will be thinking about:

- Technological development of mobile phones by and for particular people.
- Mobile phone use in non-UK contexts (mixed methods).
- Sociology of mobile phones.
- Teaching about sexting, and other mobile app-based concerns.
- Histories of technological developments in mobile phones.
- Science Communication about technological development in mobile phones.

If you, or someone you know, is in year 12 or 13 and is interested in taking part, you can find more details on the UCL Widening Participation website, at www.ucl.ac.uk/widening-participation/learners/year-12-and-13/year-12-summer-challenge.

Congratulations STS Doctors!

A number of STS PhD students have successfully completed their PhD viva during 2018. These are:

Dr Julia Sanchez Dorado - Scientific representation in practice: models and creative similarity.

Dr Jacob Ward - Information and



PhD students at the 2018 Research Day (see p23) - clockwise from top left: kat cecil, Jonathan Griffiths, Ben Weil and Claudia Cristalli

control: inventing the communications revolution in Post-War Britain.

Dr Hannah Wills - The diary of Charles Blagden: information management and the gentleman of science in eighteenth-century Britain.

Dr Farrah Lawrence-Mackay - Medical extractions in the 'Red' Atlantic: Translating A Mi'kmaq smallpox cure in the mid-nineteenth century.

Dr Hattie Lloyd - Rulers of Opinion: women at the Royal Institution of Great Britain, 1799-1812.

Congratulations to all of the above, and especially to Hattie Lloyd, who received a Dean's Commendation in the MAPS Faculty Postgraduate Prizes for 2018. Well done Hattie!

New Starters

A host of New PhD students have joined the department, and we look forward to seeing the results of their research. These include:

Rebecca Coates - From Deficit to Dialogue? The role of the Royal Institution in COPUS from 1985-2002.

Elena Falco - How can we foster good practices in crowdsourced knowledge-production?

Scott Keir - The Royal Institution and COPUS: lessons from the 1980s and 1990s to inform 21st century public engagement.

Tadfumi Kubota - The role of deliberation councils in science policy making: a cross-cultural comparison between the UK and Japan.

Rakhshi Memon - Ethics and cluster trials in postnatal health: the limits to equipoise and evidence.

Henry Roberts - A History of Audience Thinking at the Science Museum.

John Van Laun - John Cooke Bourne (1814-1896), Lithographer 'Drawings of the London and Birmingham Railway, 1836-1839'.

Nathan Bossoh - A critical analysis of Darwinian evolution and its cultural impacts in Victorian Britain through the life and writings of George Douglas Campbell, 8th Duke of Argyll.

Words/Photos - Malcolm Chalmers

Alumni News

We know our alumni keep busy, but we're always happy to hear of their successes. Here are a few things we're heard about this year.

Ilan Goodman (MSc HPS 2017), not content with his work in acting and video production, has recently begun a philosophy and neuroscience podcast entitled "Nous".

Despite being only four episodes in, the podcast has already reached number 2 on the US Podcast chart for philosophy. You can listen now via Soundcloud, iTunes, or their main site at nousthepodcast.libsyn.com

Recent PhD graduate Jacob Ward is also off to a flying start, as he has been awarded the prestigious Duncan Tanner Essay Prize for his article 'Financing the Information Age: London TeleCity, the Legacy of IT-8s and the Selling of British Telecom'. The essay will be published later in 2019.

Not to be outdone, recent PhD finisher Farrah Lawrence-Mackay has already landed a position at the Science Museum, working as a Medicine Galleries Research Fellow.

'Essentially my job is to research elements of the collection and produce academic output while also encouraging academic engagement with the collections', says Farrah. 'I am looking at the mental and physical spaces that medical technologies, the dialysis machine and iron lung, take up. My research is object and patient focused'.

Dr Raquel Velho, who wrote the 'How to do a PhD' piece in the last issue of Alchemy, is now an Assistant Professor at Rensselaer Polytechnic Institute in New York.

We've also hosted career podcasts in 2018 with former STS students Oli Usher, Ellie Blackwell, Adrien de Sutter, and Katherine McAlpine. You can find these podcasts now via the STS Careers Soundcloud.

Would you like to let the rest of STS know what you've been up to? Get in touch at sts@ucl.ac.uk



Made in STS - The Best of the Best.

For years, STS Lecturers have commented on the high quality of the essays, dissertations and other assessments submitted by students, hoping to find a way of publicising their work more widely. Similarly, new students have often struggled to find examples of good work to learn from – especially students from a hard science background attempting to write essays for the first time.

With that in mind, the department has created a new website - made-in-sts-ucl.ac.uk - which hosts a selection of written work from past years. Every piece uploaded has received a minimum grade of 75%, allowing students to gain a feel for what the best student work contains, without having to worry about plagiarism.

STS Teaching Fellow Erman Sozudogru, who has taken the lead on keeping the site updated, explains.



'We wanted a chance to celebrate the best work our students have done, and to give new students a chance to see the kind of work they are capable of producing. Currently we've focussed on essays and dissertations, but there are also blogs, policy papers and several films – and we hope to increase the variety of assessments as we continue to build up our catalogue'.

Today, the site includes dissertations on the history of Mendelian Genetics, the USA ban on

WE WANTED A CHANCE TO CELEBRATE THE BEST WORK OUR STUDENTS HAVE DONE

Partial Birth Abortions, and religious beliefs in the UCL student population; films on the GM wheat controversy, Down's syndrome testing and London air quality; policy papers on zoos and conservation and much more.

We'll be contacting alumni regularly to ask for permission to upload their work, so please respond promptly if contacted - we will only make material available with the author's permission.

Do you have a piece of highly-graded work which you would like to submit to Made in STS? Feel free to contact us via the department email at sts@ucl.ac.uk and we'll be in touch.

Words - Malcolm Chalmers

New research in the department!

A number of new projects received funding in STS in 2018 - including major research into Autonomous Vehicles (AVs), and two connected projects exploring modern co-creation practices.



Self-driving cars or automated vehicles (AVs) promise to be one of the most disruptive technologies of the 21st Century. Proponents imagine them as a solution to problems as varied as road safety, sustainability, traffic, and accessibility. Governments in the UK and elsewhere see the potential to secure economic growth and new high-tech jobs. The UK's Industrial Strategy, launched in 2016, has AVs as a priority, backed by substantial investments in science and engineering. Consultants and investors are optimistic. Morgan Stanley (2014) forecasts a multi-trillion dollar global market with billions of extra dollars in productivity gains in a 'New Auto Industry Paradigm'. KPMG (2012) calls AVs 'The Next Revolution'.

The history of science and technology tells us that paradigm shifts and industrial revolutions are rarely smooth and never just about science and technology. Policy reports have already identified the potential for self-driving cars to worsen inequalities by taking away millions of driving jobs. The development of the technology is not pre-ordained, nor will it be unproblematic. As self-driving cars encounter pedestrians and other vehicles on the road, new questions of responsibility come to the fore.

A new collaboration between UCL and UWE Bristol, 'Driverless Futures' began in January 2019, running until the end of December 2021. It will be led by Dr Jack Stilgoe of STS, alongside Dr Tom Cohen and Prof. Peter Jones from UCL, and Prof. Graham Parkhurst and Prof. Alan Winfield from UWE. The project aims to work with the people developing the technology as well as with public groups, and will establish a hub for international collaboration and comparison.

THE HISTORY OF SCIENCE AND TECHNOLOGY TELLS US THAT PARADIGM SHIFTS AND INDUSTRIAL REVOLUTIONS ARE RARELY SMOOTH.

The project is now underway, and STS MSc student Saba Mirza has joined the project as Research and Impact Assistant, helping to strengthen the already powerful team. First results should be visible by the end of 2019.

Two similar projects have also begun in 2018, looking at the

phenomenon of co-creation, currently flourishing in Europe. The first, SISCODE, runs until April 2021, and looks at the role of co-creation in the implementation of Public Engagement (PE) and Responsible Research and Innovation (RRI). Both PE and RRI demand the early involvement of the public, but this rarely goes beyond the consultation stage.

SISCODE has identified several barriers to social innovation, including a lack of awareness, the 'sectorialised' approach to policy making, missing competences and methodologies, and the lack of a learning framework to support replication of the work. SISCODE plans to analyse and compare 40 cases of co-creation ecosystems across Europe, develop a learning framework for co-creation, and to build a transnational system of co-creation laboratories.

Similarly, the SCALINGS project also looks at co-creation and open innovation practices. The project brings together experts from the Technical Universities of Munich, Eindhoven, Lausanne, Denmark and Paris, alongside BOKU in Vienna, Wroclaw University of Economics, and STS UCL. Funded by Horizon 2020, SCALINGS aims to be the first ever rigorous comparative study design of co-creation, and will focus on Robotics, Urban Energy and Autonomous Driving. For example, when engineers, doctors, patients and their relatives co-develop a healthcare robot for a hospital in Munich, it might be optimally suited for this environment. However, it is uncertain whether the robot will fit the social, cultural, economic or organizational context of another hospital, city, region or country.

You can find out more about these projects by visiting their websites - driverless-futures.com, www.scalings.eu and www.ecsite.eu/activities-and-services/projects/siscode

Words - Malcolm Chalmers

Falling Walls Berlin - presenting awards

In November 2018, STS Lecturer Melanie Smallman was invited to be a member of the jury and the keynote speaker at the first ever 'Falling Walls Engage' conference in Berlin.

The Falling Walls Conference is an annual global gathering of forward-thinking individuals, marking the anniversary of the fall of the Berlin Wall. With speakers covering topics from Human-Robot interaction (Leila Takayama, University of California) and Artificial Intelligence (Bernhard Schölkopf, Max Planck Institute) to Recycling (Veena Sahajwalla, UNSW Australia) and Coral Reef Ecology (Terry Hughes, ARC Centre of Excellence), the event's remit spread far and wide.

Taking place the day before the main conference, Falling Walls Engage aimed to showcase forward thinkers in science communication and public engagement, with the presentation of an award from the Robert Bosch Stiftung for projects that attempt to 'tear down the walls between science and the public'.

The best submissions were invited to share their science engagement projects in a fast-paced pitch competition in front of a peer audience before two winners would be selected by a wide-ranging and distinguished jury.

Projects presented at the event ranged from public science to pub science, from kindergarten education to VR experiences, and from citizen science to journalism, with presenters from countries including India, Greece, Israel, Jordan, and more.

All participating projects were digitally documented and presented



Dr Smallman and the other conference attendees - photo credit Felix Zahn/Falling Walls



Dr Smallman opening the Impulse Workshop - photo credit Falling Walls

on an interactive learning website to inspire both professionals and the general public. Following the presentation pitches, co-learning workshops created an opportunity for further discussion, exchange of expertise and cooperation.

THE BEST SUBMISSIONS WERE INVITED TO SHARE THEIR SCIENCE ENGAGEMENT PROJECTS IN A FAST-PACED PITCH COMPETITION IN FRONT OF A PEER AUDIENCE

The programme sought to highlight the scientific community's responsibility for the common good

and to spread scientific literacy, with a special focus on "hard-to-reach" target groups.

The two winning projects, which both had the opportunity to present at the main Falling Walls Conference were "Colomba-Hypatia: Astronomy for Peace", which is running astronomy camps for children in the UN buffer zone in Cyprus and "I'm a scientist, get me out of here", which aims to connect schools to scientists across the UK.

The full list of jury members included such luminaries as Johannes Vogel (Director-General, Museum für Naturkunde Berlin), Daniel Glaser (Founding Director, Science Gallery London), Imran Khan (Head of Public Engagement, Wellcome Trust), Ivvet Modinou (Head of Engagement, British Science Association) and Gary Stix, Senior Editor of Scientific American.

Commenting on her experience as a Jury member, Melanie said: 'It was amazing to see such an array of science communication projects that, as well as improving science literacy, were truly making the world a better place through public engagement'.

Falling Walls Engage 2019 will take place on 8th November 2019, and will soon be open to applications. Visit falling-walls.com for more details on the process, and about the Falling Walls conference more widely.

Words - M. Chalmers/M. Smallman

Book Launches

Several books have been published by STS Staff members in the last year - resulting in a number of successful launch parties...



In September, Carina Fearnley launched the open access book *'Observing the Volcano World: Volcanic Crisis Communication'*, published by Springer. Inspired by her PhD research, Carina saw that many people involved in volcanic crises rarely published their experiences on what worked well, or not, in order to improve volcanic crisis response.

Consequently, the book brings together more than 100 authors from all over the globe who work with volcanoes, ranging from observatory volcanologists, disaster practitioners and government officials to NGO-based and government practitioners, to address three key aspects of volcanic crises communication:

- Adapting Warnings for Volcanic Hazards
- Observing Volcanic Crises
- Communicating into the Future

The ebook is available online with open access (free) on: <https://link.springer.com/book/10.1007/978-3-319-44097-2>. The launch event, which included a fascinating panel discussion, was filmed and is available via the [STS YouTube channel](#).

Soon afterwards, Jon Agar and Jacob Ward held a small launch for their collection *'Histories of Technology, the Environment, and Modern Britain'*. The book brings together historians with a wide range of interests to take a uniquely wide-lens view of how technology and the environment have been intimately

and irreversibly entangled in Britain over the past 300 years. It combines, for the first time, two perspectives with much to say about Britain since the industrial revolution: the history of technology and environmental history.

Various contributors to the book were on hand to celebrate the release, and Jon and Jacob gave short speeches thanking those who were present, and also those further afield. The book is available now, published by UCL Press, and a free download is available from the [UCL Press website](#).

Finally, just as 2019 began, Chiara Ambrosio and Bill Macleahose celebrated the publication of their long awaited collection *'Imagining the Brain'* by Elsevier with a celebration at the UCL Pathology Museum, Royal Free Hospital. The book release - was celebrated by a number of contributors.

IT COMBINES, FOR THE FIRST TIME, TWO PERSPECTIVES WITH MUCH TO SAY ABOUT BRITAIN SINCE THE INDUSTRIAL REVOLUTION: THE HISTORY OF TECHNOLOGY AND ENVIRONMENTAL HISTORY.



Images from (above) the *'Imagining the Brain'* launch at the UCL Pathology Museum, (below) the *'Observing the Volcano World'* discussion, and (bottom) the *'Histories of Technology'* launch.



With chapters on topics as diverse as medieval attempts to map the brain, Gertrude Stein's modernist approach to the brain, and the presence of patterns in neuroimaging data, "Imagining the Brain" collects research on a wide range of historical and modern perspectives.

The book is available to purchase now via Elsevier - those with a UCL account can also read individual chapters via [ScienceDirect](#).

Words - Malcolm Chalmers



STS MSc students - plus Dalek - at the BBC

With the recent media discussion on autonomous vehicles, it's no surprise that Jack Stilgoe's expertise was frequently sought out. The death of a pedestrian in an accident with an AV led to appearances on BBC, ITV and Sky News, as well as writing articles for the [Literary Review](#), [Gizmodo](#), [Tech Review](#) and more. Jack also contributed to Prof. Jonathan Ball's documentary series *'Biohacking'* on Radio 4, discussing the legalities behind technologies such as CRISPR Gene editing, and was the subject of a piece for CBS News in the US - their feature on the 200th anniversary of the publication of Frankenstein led to a film crew appearing in his class, to give viewers a taste of what it's like to study at STS.

Elsewhere on the BBC, Simon Werrett was the main academic expert consulted on Lucy Worsley's

'Fireworks for a Tudor Queen' on BBC 4, helping Lucy and her viewers understand the meaning and creation of fireworks during the 16th Century.

The Sunda Strait tsunami in Indonesia was news throughout the world, which led to media appearances for STS's resident disasters expert Carina Fearnley, as she appeared on BBC News, Saturday PM and Istanbul's TRT World.

Also appearing on the BBC was Bill Macleahose, as Radio 4's series *'When Greeks Flew Kites'* looked at sleep as a source of preoccupation and worry. Bill provided a historical slant on sleep-based anxieties and mysteries.

Finally, Jon Agar ended the year with a brace of appearances. Firstly, [The Guardian](#) asked for his opinion on the recent disappearance of archive files

STS in the media

STS staff and students have made numerous appearances in the media during 2018. Here are just a few examples...

relating to Britain's nuclear weapons and atomic energy programmes. Secondly, he appeared on Radio 4's PM to discuss recent moral panics over the mobile phone.

However, our academics were not the only STS people to appear in the media. A group of STS MSc students have been working with the BBC to create videos for [BBC Future](#), including short pieces on the health benefits of coffee and cold water swimming and the search for safe nuclear storage.

Our PhD students have also made themselves visible. Ellie Armstrong featured in a Sunday Times piece on the *'Queering The Museum'* tours that she runs, while Sadie Harrison has been a regular guest on the BBC's *'Evil Genius'* podcast with Russell Kane. We look forward to seeing more in 2019!



left - Simon Werrett on BBC 4 with Lucy Worsley, right - Jack Stilgoe being filmed for CBS

Staff news

New professors - including first female STS Prof!

STS have seen great success in the most recent round of UCL promotions, with the appointment of the department's first female professor, and four members of staff who have been promoted to the new position of Associate Professor - a replacement title, combining the previous positions of Senior Lecturer and Reader into one role.

The STS promotions are as follows:

Dr Sarah Edwards promoted to Professor - the department's first female professor.

Dr Emily Dawson promoted to Associate Professor.



(l-r) Sarah Edwards, Emily Dawson, Brendan Clarke, Simon Lock and Carina Fearnley

Dr Brendan Clarke promoted to Associate Professor.

Dr Simon Lock promoted to Associate Professor, alongside his appointment as Co-Director of qUCL (see next page).

Dr Carina Fearnley promoted to Associate Professor.

As of October, STS academic staff will include:

- Six Professors
- Five Associate Professors/Senior Lecturers/Readers
- Five Lecturers
- Four Teaching Fellows
- Two Research Fellows

We're glad to see the hard work and commitment of our staff has been rewarded. All of the above staff make considerable contributions to the department, and we're happy to have them at our side.

More than half of STS's permanent staff now hold the title of Professor or Associate Professor - a sign of the level of expertise within the department, and a percentage that we hope to maintain.

The full list of UCL promotions can be found on the [UCL HR Website](#). The deadline for applications for 2019 occurred at the end of 2018, with results confirmed in July 2019 - we hope to bring you news of yet more promotions next year!

Turing Fellowships

The [Alan Turing Institute](#), founded in 2015 and named after mathematician and codebreaker Alan Turing, is the United Kingdom's national institute for data science and artificial intelligence. The institute has just announced its third year of academic work, and now has a list of over 250 Turing Fellows from 11 universities around the UK - three of whom are now STS staff.

In addition to returning fellow Dr Phyllis Illari, Dr Jack Stilgoe and Dr Melanie Smallman have been announced as new Turing Fellows, bringing the department total to three. The Institute will also launch more than 50 new research projects in the coming months, all generated in partnership with their expanded university network.

Phyllis and Melanie will both be serving on the [Data Ethics Group](#) of the Institute, looking at issues around responsibility and social acceptability in AI and Data Science, in particular looking at the role of new technologies in growing inequalities, and how these issues can be taken account of within ethical frameworks.

A full list of current Turing Fellows can be found via the [Alan Turing Institute Website](#).



left - returning Turing Fellow Phyllis Illari

above/left - new fellows Melanie Smallman and Jack Stilgoe

Staff news

Melanie Smallman - Sharing Diversity project

While UCL has a long record of teaching and practice in science communication and public engagement, the experience of communicating science across the deep cultural, social and economic divisions in South Africa means that approaches being developed here promise valuable lessons for the rest of the world.

The [Sharing Diversity in Science Communication project](#) aims to bring together these two diverse but complimentary perspectives, to share learning and experience of teaching and researching science communication in the UK, while bringing the insight in engaging with diversity from South Africa.

This will involve exchange visits between staff at UCL and Stellenbosch, as well as developing a possible joint teaching activity, on which students in Stellenbosch and UCL could work together. We look forward to seeing the results, and congratulate Melanie on her success!

STS Research Day

The annual STS Research Day took place in May, with over 40 staff, students, alumni and honorary fellows convening to discuss their recent work. Taking place in the Medawar Building, the event provided a full day of talks and demonstrations from the STS community.

With presentations from PhD students including kat cecil, Jonathan Griffiths and Ben Weil, honorary fellows including John Lidwell-Durning and Michaela Bella, and staff such as Brian Balmer and Frank James, the day provided a perfect encapsulation of the varied work the department undertakes.

If you're interested in taking part in future research days, either sign up for the [STS Mailchimp mailing list](#) via our website, or email us directly at sts@ucl.ac.uk



(top) John Lidwell-Durning, (mid) Frank James and the audience, (bottom) Dr Simon Lock

qUCL Co-Director

Launched in 2014, [qUCL](#) is a university-wide initiative that brings together UCL staff and students with research and teaching interests in LGBTQ studies, gender and sexuality studies, queer theory and related fields.

In August 2018, Bob Mills stood down as director of qUCL, and we are delighted to announce that STS's Simon Lock has stepped up to take the position of qUCL Co-director, alongside Steven Vaughan from UCL Laws.

We look forward to seeing the future work of qUCL throughout 2019. For more information, visit the qUCL site at ucl.ac.uk/lgbtq-research, or follow the qUCL twitter feed @ [qUCL_research](https://twitter.com/qUCL_research).



New arrivals

Dr. Noemi Tousignant joined the department as Wellcome Trust University Award Research Fellow, and is currently carrying out research in Senegal. Before she left, she spoke to *Alchemy*.

Having joined the department from the University of Montreal, Noemi's research project led her to depart almost instantly to begin research, but she will be based in London from late 2019 onwards, and we look forward to her being a regular part of the department. I asked her to describe the work she was setting out to do.

'My current project looks at the history and anthropology of liver cancer in West Africa. Since at least the 1950s, this region has been known, albeit in varying ways over time, for a strikingly high incidence of liver cancer. This intensity of exposure has enabled crucial research on the causation and prevention of this pathology, notably via hepatitis B vaccination. Yet West Africans have been protected less or later than others by knowledge of risk and technologies of control (as well as of care), while also shouldering some of the cost for others' protection, notably through foreign regulation of aflatoxins in the groundnuts they have sought to export.'

I HOPE TO LEARN FROM THE DEPARTMENTAL COMMUNITY NEW WAYS OF SPEAKING TO EVER BROADER AUDIENCES ABOUT OUR WORK, AND TO BRING TO IT NEW WAYS OF THINKING ABOUT METHODS

'By investigating histories of biomedical and agricultural research, food regulation and immunization, I hope to better understand how techno-



Dr Noemi Tousignant - STS's new Research Fellow

scientific progress generates uneven global geographies of protection, and how specific gaps in protection are made and maintained, explained, endured, elided or protested'.

Noemi is a historian of science and public health in late-colonial and postcolonial Africa, and much of her research concerns the interaction between technoscience (biomedical, environmental and agricultural) and embodied risks, vulnerabilities and exposures in Africa, particularly in Senegal. 'I ask how, in and around these interactions, global inequalities in health and in capacity are created, experienced and called into question'.

Protection and unprotection – i.e. the active production or preservation of gaps in protection – are central themes in her work, as are infrastructure, temporality, toxicity and immunity. 'I am particularly interested in how (un)protection is, over time, defined, distributed and (de)politicized in relation to the production and uses of scientific knowledge and technologies'.

Once her initial research period is completed, she'll continue her work while lecturing in the department. I asked her how she felt about joining STS and moving to London after spending time in Montreal and Senegal.

'I'm thrilled to be joining such a dynamic department, and especially looking forward to getting to know it properly. Having this time for research is a privilege, and I'm expecting to return with lots of stories and questions to wonder at and puzzle through with students and colleagues. I hope to learn from the departmental community new ways of speaking to ever broader audiences about our work, and to bring to it new ways of thinking about methods and how they can reveal and address global inequalities. I aim especially to create and strengthen links between STS and other parts of UCL and other academic communities, notably in African studies, anthropology, medical humanities and global health'.

Interview - Malcolm Chalmers

Other new additions...

The ESRC-funded SISCODE and SCALINGS projects (see p18), new for 2018, have resulted in two new Research Fellows in the department. Trupti Patel joins from her previous positions at STEaPP and the London Centre for Nanotechnology, while Cian O'Donovan had previously worked at the University of Sussex. We're happy to add both to the team.

and to making the department a success.

Finally, as 2019 began, and the new Driverless Futures? project commenced, STS MSc student Saba Mirza joined the department as Research and Impact Assistant. We hope you welcome them all to the department.



New staff - Cian O'Donovan, Trupti Patel...

Cian will also be covering for Carina Fearnley as Teaching Fellow during term two, while Alex Mankoo joins the teaching staff, having just completed his PhD in the department. Other Teaching Fellows in 2018-19 include Cristiano Turbil, formerly of King's College and Brighton, and Bex Coates, who returns to run the Science and Film Production module. We thank all five for their contributions to our teaching,



... Cristiano Turbil, Alex Mankoo and Saba Mirza.

...and departures

Sadly, the department also bid farewell to Norma Morris, who joined the department back in 1996 - despite already having retired - as an honorary research fellow. Prior to joining the department, she worked for the UK Medical Research Council, reaching the position of executive director. She continued to work on a number of projects, writing countless papers and bringing considerable research grants into the department, and was awarded a PhD in Science Policy in 2004 from the University of Twente (Netherlands).

In addition, she was involved with, among other things, the regulatory body for chiropractors, and Save British Science/The Campaign for Science and Engineering. In her spare time, she enjoys travelling and canoeing. Now reaching her second retirement, Norma plans to spend far more time on the latter activities!

Norma has long been an important part of the department, both in terms of research output, and in contributing to the collegiate feel of the building, and while we'll no doubt hear more from her in future, the department is sad to see her go. Best wishes for the future!



Norma Morris, at her leaving party.

Departmental news

Accessibility problems solved

STS has taken a number of steps to improve the accessibility of its communications, by improving both the STS website and its audio-visual material. Firstly, STS has been one of the first UCL departments to move to a Drupal-based website, and as a result the website is now much easier to use on mobile devices, and has additional benefits for those using screen readers and similar. This has been in place since summer 2018, and will likely undergo further improvements in Summer 2019.

Second, our popular [STS Careers podcasts](#) have all been transcribed, and pdf versions are available on the STS website. This makes the interviews much easier to follow, both for those with hearing impairments, and those unable to listen for other reasons.

Finally, our video content has increased in the last year, with recordings of our JBS Haldane lectures, our Module Catalogue videos, virtual open days, seminar recordings and more. STS is now committed to including full closed captioning on [all of our video material](#). Our entire module catalogue and all of our Haldane recordings and promotional videos are fully subtitled, with our seminar recordings next in line.

Do you have any suggestions for improving our accessibility, or have you noticed any issues with our existing material? Let us know and we'll do our best to improve - email sts@ucl.ac.uk

BEAMS-ing with pride Professional Services staff recognised

UCL BEAMS (The School of the Built Environment, Engineering and Mathematical and Physical Sciences) combines the various departments from the Bartlett Faculty of the Built Environment, UCL Engineering, and the Faculty of Mathematics and Physical Sciences, which includes STS. In an attempt to recognise the positive attitude and commitment that individual professional services staff in BEAMS bring to their work, and to celebrate how they are contributing to the UCL 2034 enablers, the [BEAMS Professional Services Awards](#) were founded in 2017.

This year, two members of the STS Professional Services team were recognised for their work. Department Manager Lori Coletti Campbell was runner-up in the 'Valuing our staff and delivering on equality and diversity' category, while Operations Administrator Malcolm Chalmers was the winner of the 'Communicating and engaging effectively with the world' award.

Nearly 80 separate nominations were submitted in total - to receive two awards for a relatively small department can be considered quite a success, and both Malcolm and Lori were nominated by STS staff for their continued dedication to helping the department maintain its already high standards.



Malcolm (above) and Lori (below) receiving their awards from Rex Knight



The prize giving was followed by a short speech from Rex Knight - Vice Provost (Operations), who thanked staff for their nominations, and praised the entire UCL Professional Services group for their work, noting that without their assistance and input, UCL would not have the global reputation that it does.

Nominations for the BEAMS Professional Services award begin in May 2019. If you have a member of staff you wish to nominate, details will be found on the [UCL BEAMS website](#).



The combined winners of the BEAMS Professional Services Awards

Departmental news

STS Teacher Inset Day: Women in Science

The Department ran its first Inset day for teachers in 2018, to help encourage young women into STEM subjects.

A considerable gender gap exists when looking at STEM subjects at University, despite girls outscoring boys in tests at school level. The field of STS, with its insight into communication and policy, has much to offer when trying to solve this issue, and so the department decided to run its [first Inset day](#) to help teachers find new approaches for encouraging young women to take up STEM subjects.

The day began with a brief introduction from Dr Emma Tobin, covering the programme for the day, before Dr Emily Dawson held a session on 'The Co-construction of Gender and Science'.

Head of Department Prof. Joe Cain then gave a talk on using biographies to move beyond the idea of the 'genius male scientist' - a talk based around the book ['Women in Science'](#) by Rachel Ignotofsky.



'THE SPEAKERS WERE ALL EXTREMELY ENGAGING AND KNOWLEDGEABLE! THANK YOU!'

'THIS WAS A REALLY USEFUL + INSIGHTFUL WORKSHOP - THANK YOU SO MUCH!'

'REALLY GOOD DISCUSSION, GET TO THINK THINGS THROUGH PROPERLY. LOVE THE BACKGROUND AND LITERATURE.'

Free copies of the book were also given to attendees to help provide inspiration for future classes.

Following a short coffee break, the group then moved to the UCL Art Museum where Dr Chiara Ambrosio discussed using objects and informal science learning spaces to move beyond standard teaching approaches. Using several artworks from the museum, Chiara discussed ways in which historical views of men and women can be countered, allowing for a less gender-biased teaching method.

After a brief tour around UCL's 'Disrupters and Innovators' exhibition, the group then broke for lunch, finishing off with a detailed session on using data analytics to make gender inequality more visible, held by PhDs students kat cecil and Em O'Sullivan.

Feedback from the event was overwhelmingly positive, and future inset days are planned. If you're a teacher and would like to take part, or would like someone from STS to give a talk to your pupils, contact the department by email at sts@ucl.ac.uk



Departmental news

JBS Haldane Memorial Lectures - Four in a row!

The JBS Haldane Lecture Series is the flagship lecture series held by the Department. Launched in 2014, the series has presented talks from experts such as Helen Longino and Simon Schaffer, and in 2018, three different lectures took place, each representing the varied work the department covers.

In January, just after publication of the last issue of *Alchemy*, Prof. Heather Douglas asked 'How can the Public Assess Expertise?'. Centred around the case of the earthquakes in L'Aquila, Italy, and the subsequent manslaughter charges, Prof. Douglas analysed the position of experts in society, and asked what tools non-experts could use to verify the arguments presented to them.

As the academic year ended in June, Prof. Trevor Pinch (Cornell) presented his postponed talk on the history of the Moog Synthesiser as a Technological and Sound Object. A professor in the emerging field of Sound Studies, Prof. Pinch's talk looked at the work of Bob Moog, and



how his instruments influenced the music of the time This was followed at the start of the 2018/19 year with an equally fascinating lecture from Prof. John Tresch of the Warburg Institute. By drawing similarities between the lives and works of three figures - conman P.T. Barnum, polymath Alexander Dallas Bache, and writer Edgar Allen Poe, Prof. Tresch suggested a harmonious link between the public image of science,

'THE SCIENTIFIC COMMUNITY LEAPS TO THEIR DEFENCE. SCIENTISTS MESSED UP, AND THEY MESSED UP BADLY. THE SCIENTIFIC COMMUNITY THEN CIRCLED THE WAGONS'.

HEATHER DOUGLAS, JANUARY 2018



l-r - John Tresch, Massimiano Bucchi, Heather Douglas, Trevor Pinch, and JBS Haldane.



and the fantastical fictions of Poe and Barnum

As this issue goes to press, the department has held the first Haldane Lecture of 2019, with Prof. Massimiano Bucchi of the University of Trento with his talk 'Geniuses, Heroes and Saints: How the Nobel Prize has (re)invented the public image of science'. His book on the history of the prize will be published by MIT Press later in 2019, and the talk provided a unique opportunity to hear Prof. Bucchi discuss his work in person.

Details of forthcoming talks, and links to reserve your seat can be found on the STS website. Fully subtitled video of the 2018 lectures can also be found on the department [YouTube channel](#), with the recording of Massimiano Bucchi due to follow - to be notified of future talks, sign up to our [Mailchimp list](#) by emailing sts@ucl.ac.uk or clicking the link on our website - www.ucl.ac.uk/sts

Words - Malcolm Chalmers

Departmental news



STS1Book - Inferior

The STS 1Book for 2018-19 is Angela Saini's 'Inferior'. Shedding light on controversial research and investigating the ferocious gender wars in biology, psychology and anthropology, Saini takes readers on an eye-opening journey to uncover how women are being rediscovered.

All students and staff, including our incoming first years, were invited to read this book over the summer in preparation for the new year. The aim is to give a common reference point for discussions during the first term. As part of this Angela Saini will be visiting the department to give a short talk and hold a Q&A on Wednesday 13th March.

Since choosing Inferior for our 1Book, it has received considerable publicity, including a campaign to place a copy in every school in the country - so we expect this event to be very busy. For more information, and to reserve your place, visit the STS 1Book event page on the STS website - www.ucl.ac.uk/sts/sts-events, or search Eventbrite for '1Book'.



(From top-bottom) Dr Cristiano Turbil, Dr Emily Dawson, Dr Simon Werrett, Dr Chiara Ambrosio, Dr Erman Sozudogru, Dr Carina Fearnley and Dr Bill Maclehorse

Module-Tube

Changes in UCL policy have hugely restricted the time available for students to choose their modules and change their choices. Whereas in previous years, students could attend a small number of lectures before finalising their decision, modules must now be finalised in Term 1.

To help students understand what they can look forward to, the department has recorded short introductory videos for nearly every module available - a total of 41 at this point. These modules cover basic information about the course - Who is the tutor? What topics will be covered? What is the assessment? Do I need to know anything in advance? - while also giving potential students a chance to encounter their lecturers for the first time.

We also hope that these videos help publicise the department more widely, with applicants to our courses able to see for themselves the kind of subject matter they might be introduced to as part of a degree from STS.

As our module catalogue varies from year to year, we hope to keep this resource updated with new, exciting module choices. If you'd like to take a look at what STS has to offer, visit the STS UCL Youtube channel and search for the playlist '[HPSC Modules](#)'

Words - Malcolm Chalmers



BOOKSHELF

In addition to the book launches discussed earlier, the following department-related books came out in 2018.

Being Modern - Frank James (Editor) (UCL Press)

In the early decades of the twentieth century, engagement with science was commonly used as an emblem of modernity. This phenomenon is now attracting increasing attention in different historical specialties. *Being Modern* builds on this recent scholarly interest to explore engagement with science across culture from the end of the nineteenth century to approximately 1940.

Seventeen distinguished contributors from a range of fields including the cultural study of science and technology, art and architecture, English culture and literature examine the issues involved. The book will be a valuable resource for students, and a spur to scholars to further examination of culture as an interconnected web of which science was a critical part, and to supersede such tired formulations as 'Science and culture'.

Thrifty Science - Simon Werrett (Chicago)

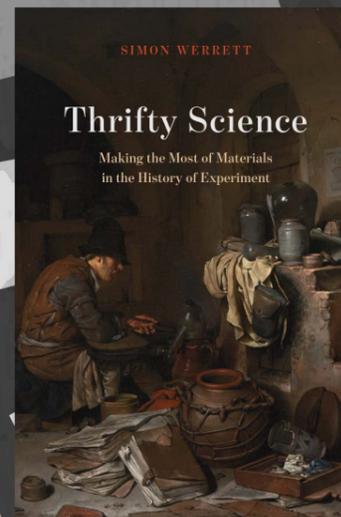
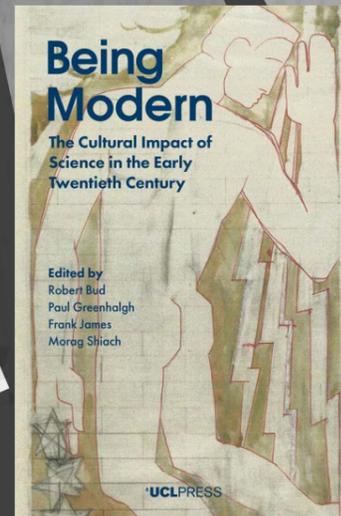
If the twentieth century saw the rise of "Big Science," then the seventeenth and eighteenth centuries were surely an age of thrift. As Simon Werrett's new history shows, frugal early modern experimenters transformed their homes into laboratories as they recycled, repurposed, repaired, and reused their material possessions to learn about the natural world.

Thrifty Science explores this distinctive culture of experiment and demonstrates how the values of the household helped to shape an array of experimental inquiries, ranging from esoteric investigations of glowworms and sour beer to famous experiments such as Benjamin Franklin's use of a kite to show lightning was electrical and Isaac Newton's investigations of color using prisms. This thriving domestic culture of inquiry was eclipsed by new forms of experimental culture in the nineteenth century, however, culminating in the resource-hungry science of the twentieth. Could thrifty science be making a comeback today, as scientists grapple with the need to make their research more environmentally sustainable?

Evaluating Evidence of Mechanisms in Medicine: Principles and Procedures - B. Clarke, P Illari et al (Springer)

The EEIM (Evaluating Evidence in Medicine) project, which ran for three years, looked at issues with the approach of EBM - Evidence-based Medicine. While EBM is great at weighing statistical evidence of associations, it can also be error-prone for a number of reasons. For example, blood pressure trials are typically administered on clean populations, whereas the treatment is usually given to people with multiple morbidities. Also, hardly any trials are done on pregnant women or for drugs with little financial promise. EBM+ tries to find a better way, by looking for evidence of mechanisms, rather than just results.

Evaluating Evidence of Mechanisms in Medicine is available now via open access - visit ebmplus.org to find out more.



**FRUGAL EARLY
MODERN
EXPERIMENTERS
TRANSFORMED
THEIR
HOMES INTO
LABORATORIES
AS THEY
RECYCLED,
REPURPOSED,
REPAIRED, AND
REUSED THEIR
MATERIAL
POSSESSIONS**

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, alongside recordings from previous years

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

Kathleen Vogel (UMD): 'Bringing the National Security Agency into the classroom: ethical reflections on academia-intelligence agency partnerships'

Anna Alexandrova (HPS, University of Cambridge): 'When well-being becomes a number'

Dr Ian Kidd (Nottingham): 'Feyerabend, science, and scientism'

Dr Alex Wragge-Morley (UCL History): 'Aesthetic Sciences: Empiricism and Embodied Intersubjectivity in the early 18th Century and Beyond'

Mark Johnson (University of Alberta): 'Why do people watch other people playing video games? The rise of the broadcasting and spectating of digital play'

Rebecca Wright (Northumbria University): '68 Degrees: Health, Energy and Politics in New York City's Residential Heat and Hot Water Code, 1918-1968'

Wendy Parker (Durham University): 'Attributing climate change: Risk, Storylines and Beyond' (not recorded)

Audra J. Wolfe - 'Science, Freedom, and the Cold War: A Political History of Apolitical Science'

Josie Gill (Bristol) - 'Handle with Care': Literature, Archaeology, Slavery

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

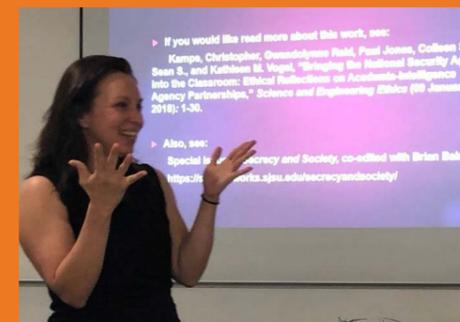
- 6 March 2019 Elaine Leong, UCL History/Max Planck Institute for the History of Science

'Learning medicine by the book in early modern England'

- 20 March 2019 Rob Iliffe (Oxford)

'Creativity and the Invention of the Scientific Genius, 1740-1860'.

Talks begin at 4.30pm - for details including venues, abstracts and biographies of the speakers, visit the STS calendar at <https://www.ucl.ac.uk/sts/sts-events>. If you would like to be informed of future seminars, sign up to the [STS Mailchimp mailing list](#) - email sts@ucl.ac.uk for details.



Kathleen Vogel, Alex Wragge-Morley and Ian Kidd, giving their 2018 seminars.

Want to learn more?

To apply for BSc, MSc or PhD level study, visit the STS admissions pages at ucl.ac.uk/sts/theres-nothing-quite-sts or email:

sts-admissions@ucl.ac.uk
sts-msc-admissions@ucl.ac.uk

For everything else, contact us via email at sts@ucl.ac.uk or via the methods below



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