

LONDON'S GLOBAL UNIVERSITY
DEPARTMENT OF SCIENCE AND TECHNOLOGY STUDIES



Alchemy

SCIENCE FOR THE REAL WORLD

The newsletter of the Department of Science & Technology Studies / Summer 2020

Welcome to Alchemy

Greetings from Emma Tobin and Jon Agar, the Co-Heads of Department of STS!

We are delighted to be introducing this fourth edition of STS Alchemy. This has been a difficult time for our staff and students. We have been working remotely since March when 22 Gordon Square was closed and Britain went into lockdown. We have been learning how to teach online. We are very proud of how STS has adapted to these changes and we are finding ways to flourish as a community despite our new circumstances. We do look forward to the time that we will be back in 22 Gordon Square, when it is safe for our staff and students to do so.

Sadly, during this crisis we have lost a much-loved colleague. Dr William Fleming MacLehose passed away suddenly on 7th May 2020. Bill's passing is a huge loss to the STS community and will be missed greatly by all of his colleagues and students. We would like to thank people for the messages of condolences already sent which have been a huge consolation for Bill's family and colleagues at this difficult time. You can find a [full tribute to him on the STS website](#) and can also sign an [online book of condolences](#) for those who wish to share their memories of him.

STS has played an important role in the efforts to tackle Covid19. Professor Sarah Edwards has been involved in developing a contact tracing app and Dr Carina Fearnley is working on adapting hazard early warning systems for pandemics. Dr Cristiano Turbil has been looking comparatively at Covid19 and Spanish Flu and many of our staff have given commentary and written about the impact of Covid19.

We would like to offer our solidarity to the Black Lives Matter movement. We were shocked and horrified by events in the US and by the murder of George Floyd and we are aware that the UK and in particular higher education is not guilt free. STS prides itself in being a department where all people are considered equal. Nevertheless, we are aware that structural inequalities exist. We want to do more than just express our solidarity and we are committed to taking action. We are therefore starting a review process in STS to evaluate how we act on this issue in STS. We will be making this a key part of our equalities strategy over the next year.

The year ahead will be tough for universities, but our staff are working hard on producing the best blended learning approach for our students, so that the new normal will not jeopardise the high standards that we hold for teaching and learning at STS. We are also committed to enriching our strong research ethos and culture over the coming year.

Professor Jon Agar and Dr Emma Tobin (co-Heads of Department)



Dr Emma Tobin



Professor Jon Agar

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Heads of Department: Prof. Jon Agar and Dr Emma Tobin

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

Remembering Bill

In May the STS community was shocked and saddened by the loss of Dr Bill MacLehose, Historian of Medicine at UCL. Here Professor Joe Cain celebrates the life of a great scholar, teacher, colleague and friend.

Obituary:

Dr William Fleming MacLehose, 2nd, passed away unexpectedly on 07 May 2020, aged 52.

Bill was a historian of medicine, specialising in Medieval Europe. His expertise focused on Medieval understandings of dreaming and sleep: how did people understand the activities of mind and body during periods when they were not wakeful yet remained active? Bill also was an expert on Medieval concepts of infancy and childhood development. He wanted to understand what adults thought they encountered when they were in the presence of children. For both subjects, Bill's discoveries were fascinating and unexpected.

Bill was a scholar of the glorious old school. He was widely read, and he was precise in his choice of words. He asked questions about long intellectual histories, yet he never lost sight of the humans at the heart of his research. His writing and thinking were deliberately slow: patient, deliberative, and finished with intent. To colleagues and students, he was generous and gentle. He acted with little thought of credit for himself, and he always stepped away from the limelight so others could shine. Bill was the person you'd meet at a party, spend hours in splendid conversation, then notice days later that he had changed the way you understood the world.

At the time of his death, Bill was Lecturer in History and Philosophy of Science in UCL Department of Science and Technology Studies (STS). He joined STS in 2011, previously employed at the Wellcome Trust Centre for the History of Medicine at UCL as Lecturer in Medieval Medicine from 2007. Before moving to London, Bill held academic posts in America, including University of Tennessee, Knoxville (2006-07), Alfred University (2005-06), Temple University (2001-2005), Catholic University (2000), and Loyola University Maryland (1999-2000).



Bill was born on 21 October 1967 in New Providence, New Jersey in the United States. He earned his PhD (2000) and MA (1994) at Johns Hopkins University, and a BA from Vassar College (1989). His doctoral research became the core of his first book, *A Tender Age: Cultural Anxieties over the Child in the Twelfth and Thirteenth Centuries*. (Open access: <http://www.gutenberg-e.org/maclehose/>) This has been republished in several formats.

Bill was praised highly for his teaching skills and for his commitment to students. He was a popular lecturer and mentor. He brought compassion and empathy to pastoral and administrative duties, for example during the many years he managed the department's Master's programmes.

Bill's publications are listed in [UCL Discovery](#).

He was especially proud of two recent publications. One was a collaboration with his close colleague, Dr Chiara Ambrosio, that led to the publication of the 2018 anthology, [Imagining the Brain: Episodes in the Visual History of Brain Research \(Academic Press, ISBN 978-0-12-814257-8\)](#).

Another was a paper long

fermenting in Bill's mind, yet wonderfully illustrative of his interests and expertise:

"TO COLLEAGUES AND STUDENTS, HE WAS GENEROUS AND GENTLE."

MacLehose, W. F. (2019). Captivating thoughts: nocturnal pollution, imagination and the sleeping mind in the twelfth and thirteenth centuries. *Journal of Medieval History*, 1-34. doi: [10.1080/03044181.2019.1695653](https://doi.org/10.1080/03044181.2019.1695653).

Watching his work come to fruition, I felt I was seeing Bill come to acknowledge his own expertise. His voice was growing in confidence. He was appreciating that he, indeed, was an authority and that colleagues benefited from his contributions.

Bill can be heard in recent broadcasts, including:

[When Greeks Flew Kites](#), 07 January 2019,

[Historicising Stress: Anguish and Insomnia in the Middle Ages](#), 11 December 2018.

Words: Prof. Joe Cain

STS in Action: 3D Against COVID

THIS ALL STARTED WHEN THE WIDE-SPREAD LACK OF HOSPITAL RESOURCES ACROSS EUROPE WAS MADE APPARENT TO THE PUBLIC.

As a brief introduction, my name is Alexander Gregoriades, and I am a UCL Science and Technology 3rd year undergraduate student. My best friend and current flatmate,

Rayan Ghandour, a second year at the University of Chicago (BA, BS; Economics, Chemistry), and I have started a project with the targeted goal of producing and delivering for free face shield masks to support the NHS staff. Our campaign, *3D Against Covid*, currently consists of the two of us and one 3D printer.

This all started when the wide-spread lack of hospital resources across Europe was made apparent to the public. While we initially aimed to produce face masks, the primary commodity in need, we were quickly met with the challenge of gathering the starting materials required to



Alexander (Left) and Rayan Ghandour (Right)

produce the desired face masks.

Due to the limited supply of the basic materials, it did not take long for us to conclude that this goal was unattainable on a mass production scale. After several meetings with various NHS members, it was made clear to us that face shields were another piece of equipment that was highly demanded. We therefore embarked upon a journey to create, design, and mass produce face shields, a product that offers the medical staff a much needed second layer of protection over the FFP2 or FFP3 masks they normally wear.

Given that the NHS staff would wear these face shields all day long, we tasked ourselves with the goal of developing a prototype that would be equally comfortable as efficient. After two weeks of research, we had successfully developed and adapted a new face shield that included three levels of adjustment as opposed to one; a feature that allows the user to adjust the shield to their liking, thus guaranteeing comfort and stability.



Face shields stacking up and ready to ship - Image: Alexandros Gregoriades

Alexandros Gregoriades

"THE MASKS ARE CERTAINLY USEFUL, AND THE NURSING TEAMS ASKED ME TO PASS ON THEIR THANKS FOR YOUR CONTRIBUTIONS, WHICH ADD TO MINE; APPARENTLY [OUR FACE-SHIELDS ARE] CLEARER AND MORE COMFORTABLE THAN THE NHS ONES".

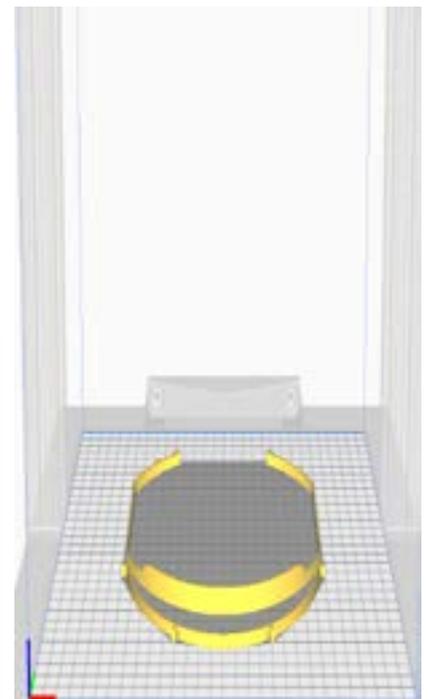
Our next challenge was to mass produce this face shield at an accelerated rate while bypassing the lack of availability of 200-micron acetate transparent sheets and special elastic rubber bands required to build our model.



The team's 3D printer in action - Image: Alexandros Gregoriades

"OUR CAMPAIGN, 3D AGAINST COVID, CURRENTLY CONSISTS OF THE TWO OF US AND ONE 3D PRINTER."

After an additional week of optimising, we had finally developed a prototype that could be produced in under 45 minutes; we currently produce around 15 face shields a day, and deliver in batches of 40 every three days. We have successfully delivered in excess of 380 face shields primarily to the NHS (to date), and other front line workers. Despite specifying the exact hospitals and professors/doctors we are in contact with, they (the NHS staff in general) have made it clear that they would prefer if they remained anonymous in fear of a backlash from the NHS.



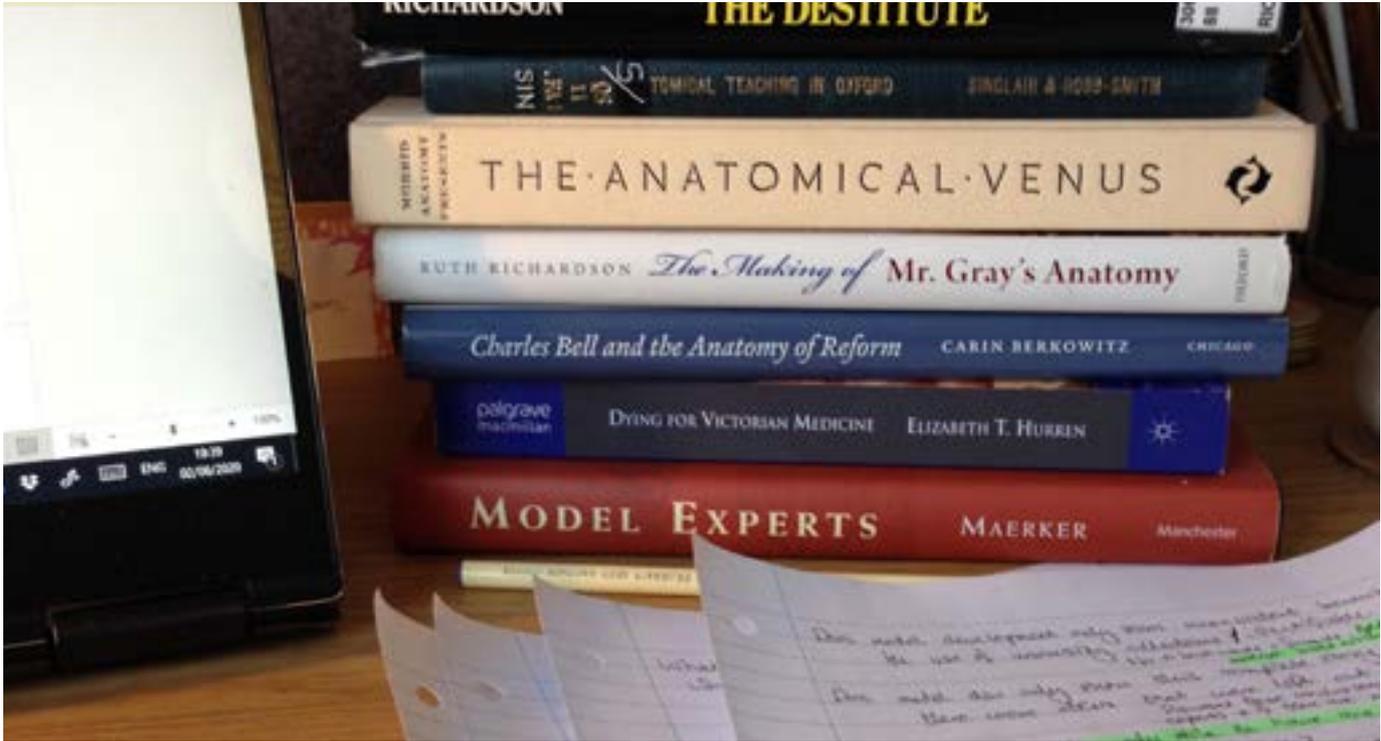
3D modelling - Image: Alexandros Gregoriades

words and photos - Alexandros Gregoriades



Ready for the front line - Image: Alexandros Gregoriades

My Lockdown Viva



An online Viva in action - Image: Rebecca Martin

COVID-19 HAS NECESSITATED MANY ADJUSTMENTS IN OUR LIVES BUT FOR STS PHD STUDENT REBECCA MARTIN, THE STAKES WERE HIGH.

The PhD viva exam is a stressful event at the best of times. On the 21st of May, I was the first student in our department to complete it from lockdown. I was obviously far too nervous in the run-up to the exam to consider the pros and cons of the situation, but with hindsight I think there were a number of benefits to completing the process from the comfort of my own home.

First and foremost: attire. One of the most common concerns in the last few days before the viva is what to wear; you want to feel both comfortable (you can be in there a long time!) but also professional. Doing your viva from home very much solves this problem. Many of us will be used to dressing from the waist up

for our webcams by now and my viva look was no exception to this.

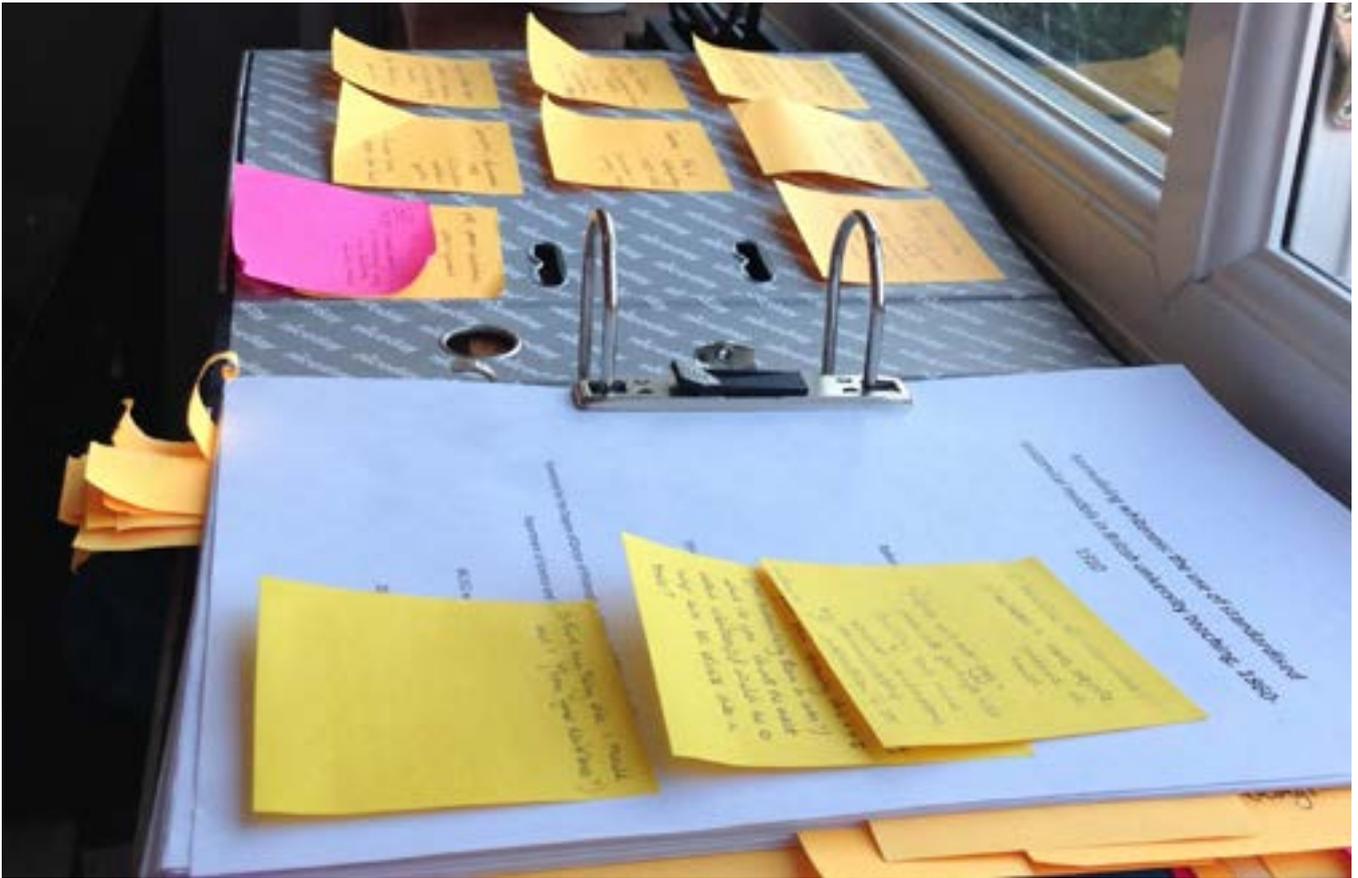
Secondly, it allowed me a much bigger outlet for my nerves. One piece of advice for remaining calm in stressful situations is to ground yourself by holding the base of your chair or other surfaces (thanks calm.com!). I actually used this technique more in my mock viva exam than in the real thing, but it was helpful to know that should I need to grip onto my chair for dear life my examiners would never know.

There are usually two breaks in the examination process; one for comfort and one for the examiners to discuss your result. In these breaks, a student would usually wait outside the lecturer's office in the STS building quietly and nervously. I, on the other hand, was able to run around my house making loud noises. This was obviously of great concern to my partner Lucas, who thought that this meant it was going badly. (Spoiler: it wasn't.)

I also found that some things

changed very little between the in-person and the at-home viva. Most PhD candidates will go into the viva with an annotated copy of their thesis and my own was covered in post-its and highlighter. The webcam angle also allowed me to have sheets of notes in front of me as well as a stack of all my key texts in eyeline, just in case. This really helped me to feel prepared and maintain my calm. However, like all of the other PhD students before me, I found that I used absolutely none of what I had prepared.

In the end, I passed with minor corrections and was really pleased with the whole process. I am particularly grateful to my examiners, Dr Simon Werrett and Dr Agnes Arnold-Forster, for being so flexible with our arrangements for the date. It was with great sadness that we received the news of my secondary supervisor Bill MacLehose's passing just days before my initially scheduled viva date. The flexibility afforded by our remote lockdown setup meant that we were all able to take more time to grieve his passing



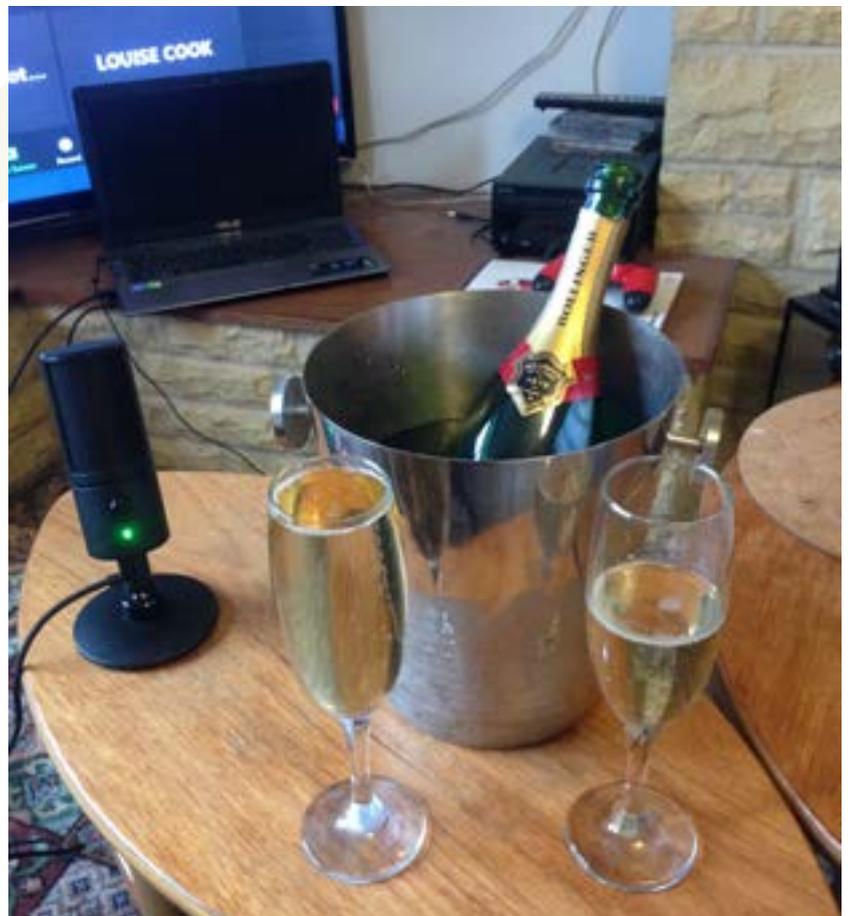
Detailed prep - Image: Rebecca Martin

and I was able to make sure I was in the right place emotionally to really do Bill proud in the viva. Bill will be forever missed, and it is already strange taking these next steps without his advice.

Overall, I think the lockdown viva process felt so much like a regular viva process because of the strong support of the STS community. A final thank you to everyone who made sure I had the usual words of encouragement, mock viva practice, pre-viva supervisor lunch, and post-viva drinks (via zoom of course!) to get me over the finishing line. We have potentially four other PhD students due to viva in lockdown and I am looking forwards to making sure they all have the same excellent experience that I did. Make sure to look out for their celebrations!

Final verdict: It doesn't feel like 10 hours of screen time when you're lunching, viva-ing, and drinking with wonderful people from STS. 10/10, would viva again.

Words: Rebecca Martin



Toasting success! - Image: Rebecca Martin

History Under Lockdown



An early model of Beagle 2. Discussing this with participants brought up lots of interesting memories - Image: Osnat Katz

When I arrived at UCL in September, ready to start my PhD, I thought I had a pretty good idea of what I was going to do. I was going to work on oral history, sitting down with scientists and engineers to record their memories – and I was going to get training from the Science Museum so that I could get up close with some amazing objects, like this Beagle 2 flight spare.

Then lockdown happened. I couldn't risk my participants' safety or my own by meeting up with them, and the Science Museum

was shut. Oral historians consider face-to-face interviews the gold standard; people who work with objects usually do so in person, where we can touch and feel the stuff we work with. Staying home and catching up with published research was still something I was fortunate enough to be able to do – but I was worried about being able to capture history that is disappearing very, very quickly.

After a couple of panicked calls with my supervisors, we came up with a solution: as long as I could see and hear participants well enough to have a conversation,

and as long as I could record the conversations in high enough quality that I could understand what was going on, it was perfectly fine to do interviews online or over the phone. Since then, I've been learning to use different kinds of recording software and figuring out ways to build up trust across an internet connection.

"ONLINE INTERVIEWING HAS EVEN HELPED MY RESEARCH"

When COVID-19 changed our lives, STS PhD student Osnat Katz had to adapt, and fast. Here she reports on conducting research during a global pandemic, the talks and trips involved.

Online interviewing has even helped my research: if I'd still been concentrating on in-person interviews, I would probably only have spoken to people in the UK. Instead, I've been able to talk to people in France and even the US, who have been able to fill in crucial details and provided a wealth of testimony.

Unfortunately, studying objects has proven more difficult and it looks like I won't be able to do anything with objects in-person until at least next year. Even then, I've been experimenting with different methods: many of my participants worked on building instruments to go into space, so showing them pictures could reveal more about the instruments and about the experiences of the people who built them. It's been a really interesting experience, with participants often challenging my expectations, and it's been humbling too. I have been truly amazed at the number of people sending me pictures from their time working in the space sector, and at the number of people willing to explain exactly what's going on in them! I'm also working on getting access to some of the material in the Science Museum's archives – this has been a bit tougher, but it's bringing up interesting new research questions.

I recognise how privileged I am to be able to do research – many other researchers are sadly losing months of potential work. Working under lockdown is very tough. But just sometimes, it's possible.

Osnat Katz is a PhD student working on the history of British space science

Words and pictures - Osnat Katz



A flight spare of the Beagle 2 mission, currently held at Blythe House in west London - Image: Osnat Katz

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Notes From the Field: Liver Cancer, Ambiguous Knowledge and Global Inequality in Senegal

**Noémi Tousignant,
Lecturer and
Wellcome Trust
University Award
Holder**

Liver cancer is one of the top cancer killers worldwide. Globally, the chief cause, we now know, is chronic infection with hepatitis B virus (HBV). Another proven hepatocarcinogen is aflatoxin, a metabolite of fungi that colonise crops including peanuts and corn. My project asks who participated in making this aetiological knowledge, and who has gained more or less – in protection as well as in profit and credit – from its deployment.

I ask these questions from Senegal because it was a key site of early research on HBV as a cause of liver cancer, including one of the first trials of an HBV vaccine. Yet routine immunization was not introduced until decades later, and there are still gaps in diagnostic and epidemiological data on chronic infections in Senegal (about a tenth of the population is probably infected). Furthermore, while investments have been made so that Senegalese peanuts meet aflatoxin standards in export markets, there is little to no control of those eaten within the country.



Peanut warehouse, formerly state-run, Nioro District, Senegal - Image: Noémi Tousignant



Village-level health post in Nioro District, Senegal- Image: Noémi Tousignant

Senegal has therefore exported protection from liver carcinogens (in the form of aflatoxin-safe food and knowledge about HBV prevention) because – yet with little or late mitigation – of the intense exposure of its population. It is a good case study of global health inequalities emerge alongside advancements in science and technology.

One of the most striking moments during my fieldwork in Senegal was my visit, with my friend and research assistant Aissatou, to a village of a thousand inhabitants. Every year in recent memory, one or two persons – mostly men in their twenties or thirties – has died of liver disease. This recurring, collective loss can be seen as the materialisation of decades of non-vaccination and unchecked contamination. The effects are wide-reaching: fear of being the next victim, destabilised livelihoods and divisive suspicions around the manipulation of occult forces.

We reached the village at dusk (when evil spirits roam) to meet with a youth group that had organised HBV screening and information sessions. The

diagnoses had dissipated tension but also generated dilemmas. Villagers now know many among them harbour the virus and have been reassured most infections are benign. But they do not know which infections are damaging, or how, in theory or in practice, they can care for carriers. They were given little or no information about the availability of expensive further testing and antiviral drugs in the nearest city. Carriers were instead advised to avoid eating peanuts and fatty food, advice that is contested by specialists and hard to follow when peanuts are the primary source of (very little) cash, cooking oil, protein and taste.

An important question – Why are our youth dying? – was addressed, and the answer changed, by some rapid tests and aetiological facts. But under conditions of poverty and underinvestment in care, potentially protective knowledge splintered into fragments and futility. This village visit underscored for me the ambiguity of science, at once powerful and helpless, and the complex moral not just material ramifications of inequality.

Words: Dr Noémi Tousignant

They Promised me Robots

F They promised me robots. What I wasn't expecting was a foyer that was something between luxury spa and elderly day centre. I was in Stoke Gifford, ExtraCare's still-under-construction retirement complex outside Bristol, home to over 200 elderly residents and a brand-new innovation apartment, the reason for my visit.

Alex meets me at the oversized reception and leads the tour. You've come on a quiet day he says swiping me in. We don't have residents in the apartment at the moment, which means we get to have a closer look. Alex is the on-site roboticist. He manages the apartment, a living lab and test-bed operated in collaboration with the nearby Bristol Robotics Laboratory, and funding agency Innovate UK.

Inside, the apartment is much like any British new-build. Except for the tech infrastructure. Low-ceilinged rooms have more sensors than usual. Monitors are semi-hidden on walls. There's a sensitivity pad tracking sleepers' movements in and out of bed. The curtains are voice-controlled via an Amazon Alexa. Various operating systems manage data flow. And the fridge talks back. But there's only one robot – a waist-high Pepper model – powered-down in the sitting room. I'm a little disappointed but that's okay. The robots were a bonus. I'm here to put the testers to the test.

"STS RESEARCHERS LIKE ME HAVE A THING ABOUT NOSING AROUND OTHER PEOPLE'S LABS."

STS researchers like me have a thing about nosing around other people's labs. Ignore us, we say. Won't bother you. We're just here observing your routines, your cultures, your politics, and how you stir them into technology in the making. That was exactly my pitch to roboticists at BRL. They were taking technology from their lab and testing them in care homes amongst actual users. Or was that on actual users. Either way, I was here to find out the hows and whys of robotics testing in the wild.

Alex had established a series of trials, device borrowing schemes and focus groups. But looking around the apartment, I had more questions than answers. Where exactly were the boundaries of these



A TIAGo robot from PAL Robotics in the Bristol Robotics Laboratory living lab. Photo courtesy of BRL. (Download: https://www.dropbox.com/s/vezbjvuqovvggsn/TIAGO_kitchen.jpg?dl=0)

tests? After all, residents could come in and out, sometimes taking the technology with them. Could the technology, or the users fail? Or was the real story about demonstrating success of emerging tech, building a case for 'user acceptance'? And what about adapting the tech to the local contexts of care in Bristol? Or was this about reshaping local settings so they would be technology ready?

These are important questions, not least because of the setting, amongst potentially vulnerable people. Research has shown that when elderly people and robots are tested together, it's the people that tend to be objectified. The world is shaped to suit the robots, it's then up to people to adapt. Studies of smart cities have revealed how tech firms have a habit of trying to shape the behaviours of people to fit their technology rather than the other way around, emphasising social control, while promising emancipation.

Chatting to BRL researchers later, they seem alive to these challenges and admit technology infrastructure is a necessary but insufficient component of testing – though living labs and test-beds do help win funding. They tell me about their ongoing research, what they call the "mutual shaping of robots and society", which broadens participation and attempts to put people and issues

traditionally locked-out of innovation in the driving seat. The hidden labours of workers, or social classes excluded from social care services for example. To reach these people they are building research networks with organisations like ExtraCare, the British Red Cross and local care charities.

Covid-19 and decades of policy neglect have exposed unprecedented vulnerabilities in the UK's care sector. Innovation as usual, narrowly focussed on speed, scale and markets, won't cut it. What's exciting about BRL's approach to innovation is that it goes beyond testing only tech. Their focus on local networks, appropriate technology and capability building offers and opportunity to foster real strength, resilience and ultimately care in communities. That's something worth testing.

Words: Dr Cian O'Donovan

[Cian O'Donovan](#) is a researcher at UCL's Department of Science and Technology Studies
 ORCID: <https://orcid.org/0000-0003-4467-9687>
 Twitter: [@cian](#)

Early Warning Systems:

Carina Fearnley has returned to STS after taking parental leave, but the world of natural hazards has been keeping Carina busy, as well as bringing the world to a standstill. Carina discusses the value of providing effective warnings and the inherent challenges involved in managing and communicating uncertainty and risk, and the need for stronger policies.



During my parental leave two key events have highlighted the challenges of providing effective warnings to populations at risk. These two events, White Island Volcano in New Zealand, and the global pandemic COVID19 have demonstrated two very different stories, but both have a common theme. The first story is around the challenges of communicating warnings when natural hazards occur with little precursory activity, thereby preventing timely warnings for vulnerable people to evacuate. The eruption of White Island volcano on 9th December 2018 resulted in 21 deaths and 6 injuries of tourists and tour operator staff. Volcanic eruptions that occur due to water interacting with the magma are inherently difficult to predict as there are very few warning signs, and White Island is mostly the entire crater of the volcano. Having visited there just a few years ago I knew the risks but wanted to see for myself the beauty

of this active crater and understand how the risks were being managed. I was worried, but I think I was the only one, sighing relief once we left the island. Tourists dock where the volcano's curved crater hits the sea, and then walk through the edge of the crater into the heart of it, observing the geothermal activity. There is only one cargo container to shelter in, and no way to escape other than via the sea. New Zealand actually has an exceptional volcano warning and alert level systems, and awareness of increased volcanic activity had been raised via the alert level 2 issued just a week before. Whilst there is a trial to investigate what happened, there is another key element to this story aside the inability to provide timely warnings; White Island is privately owned and therefore national warnings, agencies, and policies had limited influence on the tour operators visiting the island. Whilst visiting an active volcano is exciting, and many people have visited this volcano for years, I suspect few of the passengers really knew the risks involved, and the government had limited capacity to pass on information to tourists. It was sadly a disaster many expected one day, and unfortunate it happened when there were so many on the island, including visitors from a cruise ship. I had the opportunity to chat on Channel 5 news, Sky News, and talkRADIO about this tragedy and discussed that as with all 'disaster tourism' there are risks, but for the victims of this disaster, those risks were not made as clear as they could have been. I suspect there will be no further tourists visiting White Island for a while yet (irrespective of COVID19), and the debate around managing tourists on active volcanoes continues to challenge

risk managers globally as there have been numerous incidents of fatalities in recent years (e.g. in Japan, Italy, Iceland, and Colombia). The reality is it will never be possible to provide safety to all when visiting volcanoes; warnings do have their limitations, and therefore other policies are needed to help protect tourists.

In contrast, and of more global significance is the second story, the COVID19 pandemic. Despite ample warning that an epidemic was slowly making its way to becoming the first major global pandemic in over a century, many countries were both slow and unsure how to respond, resulting in a terrifying death toll that continues to grow. Despite the warnings given by other countries suffering, there was little formal warning in place that enabled nations to make swift and informed decisions; warning systems require preparedness. Keenly examining the crisis from the perspective of early warning systems, I co-wrote with Prof Deborah Dixon (University of Glasgow) an Editorial published in International Journal of Disaster Risk Reduction (2020) titled [Early Warning Systems for Pandemics: Lessons Learned from Natural Hazards](#). In this we discuss the need to apply the many lessons learnt from other natural hazard disasters (e.g. tsunami, hurricanes, volcanoes, weather) to that of pandemics, far from evacuating, one must stay put! There are three important aspects that need to be considered in the use of pandemic early warning systems including: the value of standardisation of warnings by the World Health Organisation and for other international protocols (e.g. aviation, and healthcare) and

From volcanoes to COVID-19

considering the pros and cons standardisation can bring; second, the decision-making involved that is often complex as it is based on uncertainty and in this case, ignorance of the virus itself; and finally the use of robust communication tools used as part of those systems to help manage the crisis. In contrast to White Island, the warnings signs were loud and clear, but the failure of many nations to be prepared has been a stark wake up call. Warning systems to manage the ongoing crisis are also having varying levels of success. As a specialist in alert level systems, I have reviewed the UK COVID Alert Level System outlining seven reasons why the system devised and adopted in the UK is likely to fail see: www.carinafearnley.co.uk/post/why-the-uk-covid-alert-level-system-will-fail. This is in strong contrast to the success of the New Zealand COVID alert level system that has successfully seen the nation progress to eliminate the disease and return to a fairly 'normal' life.

Both stories here demonstrate the complexities involved in early warning

systems and I recently published a chapter [Volcanic Hazards Warnings: Effective Communications of](#) in the Springer Encyclopedia of Complexity and Systems Science (Living Edition) outlining the complexity of natural hazards, the evolution of early warning systems, and the complex adaptive systems that are needed to manage them. There will be lots to learn from the COVID19 crisis to ensure the next epidemic is better managed, but as to whether they will be integrated into policies for the future remains to be seen; lessons identified are not lessons learnt, and often a failure to capture these lessons in policy is the heart of the issue.

In September 2019 I was interviewed for a tsunami documentary on the 2004 Indian Ocean earthquake and tsunami, killing over 225,000 people in just a few hours. The documentary is to be shown across Asia in 2020 and reminds us that many of these lives could have been saved if an early warning system had been in place. Warning systems are a vital tool for preparedness, communication,

and policy for natural hazards and we must share lessons identified and apply where possible. I am therefore delighted that the edited book *Observing the Volcano World: Volcano Crisis Communication* I published in 2018 has had over 539,000 downloads, making it one of Springer's most downloaded books in its environmental collection www.springer.com/gb/book/9783319440958. I hope this work can continue to share its stories as there is much to learn, particularly in doing inter and transdisciplinary work around early warning systems to prevent future disasters. One of the common themes emerging from all this work is that it is nearly always the failure in appropriate policy and communication that are to blame for natural hazards becoming disasters. The key question is how better policy and communication can be made, and STS has plenty to offer to achieve this goal.

Words and images: Carina Fearnley



Carina filming for the tsunami documentary with Maya Dykes of Whatsnext Productions

A new book on Wildlife Television in Britain

“When preparing this book, I met twice with David Attenborough”, Jean-Baptiste Gouyon writes in the introduction to his new book on the history of Wildlife television in Britain.

“When preparing this book, I met twice with David Attenborough”, Jean-Baptiste Gouyon writes in the introduction to his new book on the history of Wildlife television in Britain. Meeting with Sir David was quite an experience, you don’t get to sit with a national monument every day! But there is more in the book than Attenborough. Even though his name is in the title, which is intended to reflect his centrality in our perception of wildlife TV in Britain, the aim of the book, Jean-Baptiste explains, is to show that Attenborough was not alone, and indeed that many more key people have contributed in shaping the presentation of nature on the small screen.

The story begins with television in 1937, as the first programmes with animals from the London Zoo were beamed onto the limited early television audience in London. Then we see the emergence and development of wildlife television production capacities in Bristol, featuring notably naturalist Peter Scott. This is not to say that Attenborough is neglected, as the Zoo quest series are extensively discussed. But what the book shows is also that all innovations in wildlife television making did not originate in the BBC. Important protagonists in this respect were the Oxford zoologists turned filmmakers, Niko Tinbergen and those who funded Oxford Scientific Film. The book ends with an extensive study of

the making of *Life on Earth* and the next two Attenborough blockbusters, which could only happen because of all the story that preceded.

Now that the book is out, Jean-Baptiste continues his exploration of wildlife films, this time to understand the links with wildlife conservation.

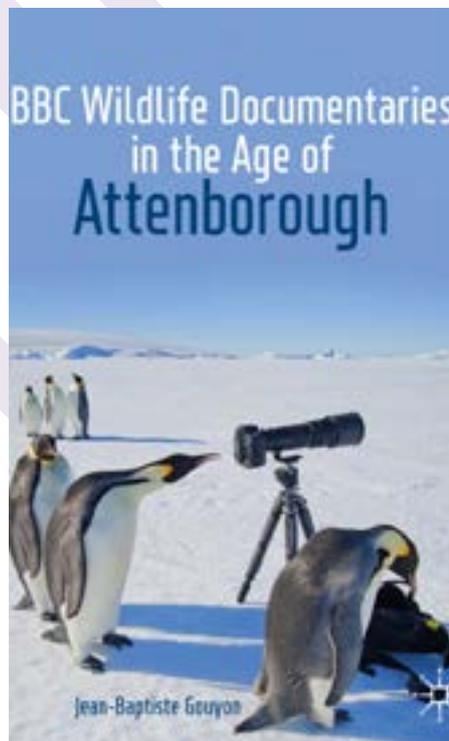


IMAGE: [BBC Wildlife Documentaries in the Age of Attenborough](#) was published with Springer in 2019.

A Nature sponsored captioned video competition

In the autumn 2019, a group of students from STS, Odile Lehnen (BSc SPS), Louis Viard (BSc SPS), Assia Writh (MSc STS) and Louis Durand Dit Dennad (MSc SPS) started putting together a captioned-video competition which was to be sponsored by the scientific journal *Nature*. Entrants were asked to produce a one-minute-and-a-half captioned video about a UCL research project. A captioned video is a video which can be watched with the sound off as it mixes film footage with text.

10 teams decided to take part in the competition. In February 2020, Shamini Bundell, an award-winning film-maker in the Multimedia Team at *Nature*, working on the *Nature Video* YouTube channel, the *Nature Podcast* and *Nature Magazine* online came to UCL to give a masterclass to the participants in the competition, on how to produce video content for social media. After the masterclass, Louis Viard was quite enthusiastic: “I found the masterclass very interesting, it was great to meet the people from *Nature*.”

Unfortunately due to the COVID-19 emergency, organisers decided to cancel the competition for this year. But those who will still be around next academic year hope to relaunch the project. And people at *Nature* might be up for it too! In Shamini Bundell’s words: “I’ll look forward to catching up in that beautiful future when we can all leave our houses again!”. Watch this space.

Words - Dr Jean-Baptiste Gouyon



Dr Stephen Humphreys - Image: Stephen Hughes

Responsible Innovation at STS

- Were scientists in any way responsible for the destruction caused by the atomic bomb?
- Why is it that we can send a Rover to Mars but we can't send food around the world to those who need it?
- Should scientists take a Hippocratic Oath to do no harm?

These are the kinds of questions that we ask UCL's science and engineering PhD students to tackle in our programme on Responsible Innovation (RI). RI has been one of the major success stories of Science and Technology Studies (STS). For decades, STS scholars have been arguing that science has a profound impact on social life, shaping how we live, govern, and relate to ourselves and each other. This has led those in STS to call for careful consideration of these impacts; to reflect on issues of governance, ethics, gender and inclusivity, and public engagement as they relate to science and innovation.

Responsible Innovation is a response to this call, a collection of policies, ideas, political and ethical standpoints, and practices all geared towards harnessing the power of science, technology, engineering and mathematics to change the world for the better. The European Union included [responsible research and innovation](#) as a cross-cutting issue in its €80 billion Horizon 2020 research funding programme. The Engineering and Physical Sciences Research Council (EPSRC) in the UK have now made RI training mandatory for all of its centres for doctoral training (CDTs).

Scholars in UCL STS such as Jack Stilgoe and Melanie

Smallman have been leading this charge. Both have been central to the development of a conceptual framework for responsible innovation and the design of its applications across science, industry, and the third sector. Jack's paper, '[Developing a Framework for Responsible Innovation](#)', contains the widely-cited key definition of RI: "Responsible innovation means taking care of the future through collective stewardship of science and innovation in the present". Alongside writing extensively on RI, Melanie managed training for [RRI Tools](#), a European project that pulled together thousands of training resources and toolkits into a centrally accessible online database.

"FOR DECADES, STS SCHOLARS HAVE BEEN ARGUING THAT SCIENCE HAS A PROFOUND IMPACT ON SOCIAL LIFE, SHAPING HOW WE LIVE, GOVERN, AND RELATE TO OURSELVES AND EACH OTHER."

STS is now spearheading RI training for EPSRC CDT students at UCL, rolling out a series of workshops and online courses for students and faculty. The aim is to encourage students to anticipate

the impacts of the research they do while reflecting on the values and motivations which underpin it. This involves engaging with those who might be impacted by researchers' work and learning how to respond to them.

The workshops have so far produced fascinating discussions about the future of synthetic biology and quantum technologies and their ethical and political implications. Science PhDs have questioned the appropriateness of private companies having access to vast computational power, discussed the increasingly blurred boundaries between the human and the digital, and the effectiveness of a rigid legal system in the face of rapidly advancing technologies.

The aftermath of covid-19 will only increase the need to ask penetrating questions about scientists' social responsibilities: What are the consequences of treating humans as data? What happens to privacy during a period of increased surveillance? And, how can we evaluate scientific advice and the policies that it shapes? Responsible innovation will undoubtedly become an area of increased attention over the coming years as scientists and policymakers seek to answer these questions.

Words and Image: Dr Stephen Hughes

New Arrivals

This year STS welcomed a number of new faces to the team, across research, professional services and the teaching faculty.

Carina Fearnley

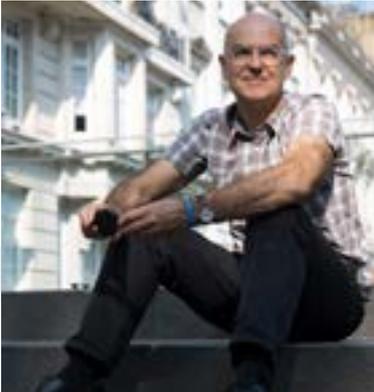
Carina returned to us from maternity leave. Carina's work is around how scientific uncertainty, risk, and complexity to be re-framed and communicated within the context of Disaster Risk Reduction and provide practical insights into how, early warning systems specifically, can be made more effective.

John Dinnewell

John joined in the New year as Operations Administrator for the department, working to help the department run smoothly both behind the scenes, and across our social channels. John has previously worked on Research projects helping to validate EdTech in startups at the UCL Institute of Education.

Christopher Tennant

Christopher joined the department as we entered lockdown to assist Jack Stilgo on the Driverless Futures research project. Chris joins from LSE and his research interests are the interplay between moral values and rational explanation, media representation of contested science, trust and accountability. He studies these in diverse domains such as climate change and autonomous vehicles.



Amy Unsworth

Amy studies the relationship between public understandings of science, religion and supernatural beliefs using quantitative and qualitative sociological methods. Her research interests include: perceptions of evolutionary theory among Christian, Muslim and non-religious publics; science and secularization; science and social class.

Giuseppe La Rosa

Before joining the Department of Science and Technology Studies at UCL, I held a number of roles across two other Higher Education institutions. I started my career in Higher Education as a College Administrator for the College of Nursing, Midwifery and Healthcare at the University of West London. I then moved to managing the curriculum data within the Quality Assurance team of the Registry at SOAS University of London, and finally joined the School of Interdisciplinary Studies as the Department Manager.

I am thrilled to join STS and the wider UCL community and I am looking forward to getting to know both students and staff within the Department. I hope to make a real contribution to the success of STS and I am particularly thankful to everybody for making me feel so welcome at such a strange time to start a new job!

Jenny Bulstrode

Jenny joins us as our new Lecturer in History of Science and Technology. Jenny is a historian of physics, with particular interest in the universalising claims of science and capitalism, and cross-cultural encounters in experiment, innovation, and materials.

New Arrivals (Top to bottom): John Dinnewell, Dr Amy Unsworth, Dr Christopher Tennant, Giuseppe La Rosa, and Dr Jenny Bulstrode

Select Committee - Data Safety



Dr Smallman addresses the Parliamentary Select Committee on Human Rights - Image: Melanie Smallman

In July 2019, STS lecturer Melanie Smallman was called to be an expert witness to the Parliamentary Select Committee on Human Rights. The Committee, which is a joint House of Commons and House of Lords Committee and chaired by Rt Hon Harriet Harman QC MP, was carrying out an inquiry into Privacy and Data. They were keen to hear from Melanie about the work that she had been doing with the Alan Turing Institute’s Data Ethics Group around fairness and inequality.

In a session entitled “Is your Data Safe”, Melanie appeared alongside Google’s Public Policy Manager, to answer questions on whether users’ rights were being respected by companies like Google and Facebook, and how we can ensure that bias and discrimination are not perpetu-

[THE COMMITTEE] WERE KEEN TO HEAR FROM MELANIE ABOUT THE WORK THAT SHE HAD BEEN DOING WITH THE ALAN TURING INSTITUTE’S DATA ETHICS GROUP AROUND FAIRNESS AND INEQUALITY.

ated with data-driven applications. Answering a questions from Joanna Cherry QC about whether the current arrangements for user consent were working, Melanie argued that the balance of power is currently in the wrong place, as legislation was put

in place before we fully recognised the value of our personal data and the extent to which it was going to be collected. She also highlighted how data-driven technologies have the potential to enable greater discrimination and unfairness, by for instance, forcing the lowest income households to give up personal information as a condition to receiving benefits.

“These technologies are not just important because individuals are being discriminated against - they are shaping how we think about the world and how the world will come to be in the future. It is something that we should be worried about, and I am very glad that the UK Parliament is looking into these issues on our behalves” Melanie commented after the hearing.

Words: Dr Melanie Smallman

Awards

STS toasted a multitude of award-winners in the department this year.

April saw Noémi Tousignant claim the prestigious [Fleck Prize 2020](#) for her book *Edges of Exposure: Toxicology and the Problem of Capacity in Postcolonial Senegal*. The prize, overseen by the Society for Social Studies of Science, has been running for 28 years and recognises one outstanding book in the area of Science and Technology Studies (STS). Nominees (a staggering list of 70 this year) are rated on the basis of their contribution to the field, subject novelty, and overall scholarly quality.

The society remarked that 'Edges of Exposure was selected for its careful, unique ethnographic exploration of the sites, material histories and inequalities in the testing and management of toxic exposure and risk in Senegal.'

Accepting the award, Noémi stated 'Every time I look at the list of past Fleck Prize winners, a fresh wave of astonishment washes over me. These books and their authors are beacons; the influence of some exceeds footnotes, woven into the very ways in which we see, think and write, while still challenging us to keep doing so differently. I'm stunned and honoured that Edges of Exposure is joining them.'

Noémi is Lecturer in Science and Technology Studies and a Wellcome Trust University Award Research Fellow. Dr Tousignant is an expert in medical anthropology, studying policy development in subsaharan Africa.

STS, Senior Lecturer in History and Philosophy of Science Dr Simon Werrett scooped the

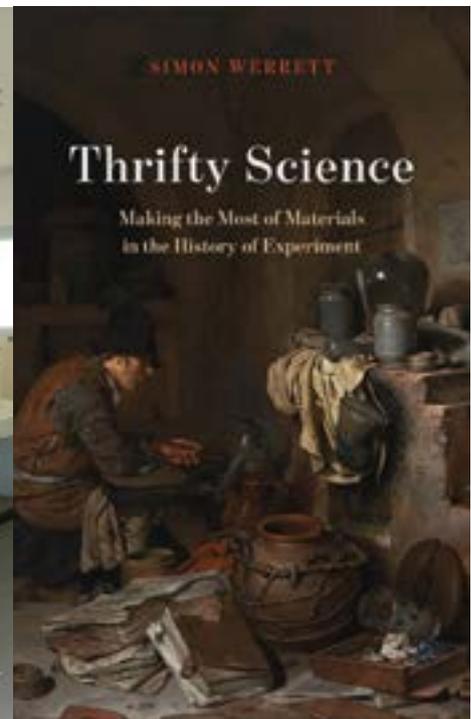


Edges of Exposure: Toxicology and the Problem of Capacity in Postcolonial Senegal and *Thrifty Science: Making the Most of Materials in the History of Experiment*

coveted [2020 Paul Bunge Prize of the German Chemical Society](#) for his book *Thrifty Science: Making the Most of Materials in the History of Experiment*, published by the University of Chicago Press in 2019. The prize is the most recognized international award in the history of scientific instruments and carries a premium of €7500. Simon will collect the award at a ceremony in the Justus Liebig University of Giessen as part of the German Chemical Society's annual meeting on April 2, 2020.

The Paul Bunge Prize is considered the most important honour in the field of the history of scientific instruments worldwide and is advertised internationally. So far, German, British, Italian, US, Australian and Canadian scientists have received the award. The Advisory Board of the Foundation, which is supported by the GDCh and DBG, decides on the award.

Elsewhere Teaching Fellow Dr Cristiano Turbil has been



nominated by students and then shortlisted for a [UCL Provost Education Award](#). The award recognises excellence in teaching and learning at UCL.

Dr Turbil researches history of science and medicine in Europe in the modern period. His current research focuses on the history of evolution and the 'science of the mind' in Europe, especially how evolution and experimental psychology were discussed by scientists, philosophers and amateurs between 1870 and 1920.

Students continued to recognise our faculty by nominating several members of the team for this year's [Student Choice Awards](#). Drs Tiago Mata and Phylis Illari won for their 'Brilliant Research-Based Education', Dr Jean-Baptiste Gouyon was honoured for 'Exceptional Feedback' whilst Dr Jack Stilgoe was recognised for 'Inspiring Teaching Delivery'.

Words - John Dinnewell

Science & You 2021 Fighting “Graoullies”

Late in January 2020, Jean-Baptiste Gouyon, who is an Associate Professor in Science Communication here at STS, went to the French city of Metz. There he took part in the first meeting of the scientific committee of an international science festival, Science & You, which will take place in Metz in November 2021 hosted by the University of Lorraine. Science & You 2021 will be the fourth edition of a festival previously held in Nancy (France), Montreal (Canada) and Beijing (China). The members of this scientific committee came from 12 different countries; China, Turkey, Brazil, South Africa, Germany, France, Switzerland, Canada, United Kingdom, Japan, Portugal and Belgium. Together they discussed about what the main theme for the festival would be and how to organise it. Upon returning from Metz, Jean-Baptiste was very positive, “I found the discussions very uplifting and stimulating, intellectually energizing” he said.

Interviewed on the festival Website, Professor Martin Bauer from LSE, who is the chair of the scientific committee, explains that “the conference will cover science communication at all frontiers of scientific research and development, ranging from energy to



The Graouilly as represented on the cathedral of Metz (copyright JB Gouyon)

nano materials, space exploration, robotics & autonomous vehicles, novel food, medicines & vaccinations, genetic engineering and climate change and others.” But Metz has a legend that a dragon, called there a Graouilly, attacked the city and was defeated by St Clement, the first bishop of the city. The aim of the conference, Bauer continues, will be “to stimulate discussions across these themes on formats of digital media and the challenges that arise from these, many of which are identified

as ‘dragons-Graouillys’ to beat such as fake-news, echo chambers, filter bubbles, misinformation, rumours, biases, conspiracy theories, polarisation of opinions, anti-science propaganda, motivated reasoning etc. One overarching topic will preoccupy the conference: Artificial Intelligence.”

Science and You 2021 will comprise of a conference on science culture and its links to society, a science communication workshops for PhD students, and a Forum of exchanges about research and innovation, a series of scientific and cultural events for the general public, on Artificial Intelligence, as well as a research seminar on Artificial Intelligence, along with a launching conference. It will take place in Metz, 19-21 November 2021. Hopefully by this time the COVID-19 crisis will be behind us!

To find out more: <http://www.science-and-you.com/en/science-you-2021>

Words: Associate Professor Jean-Baptiste Gouyon

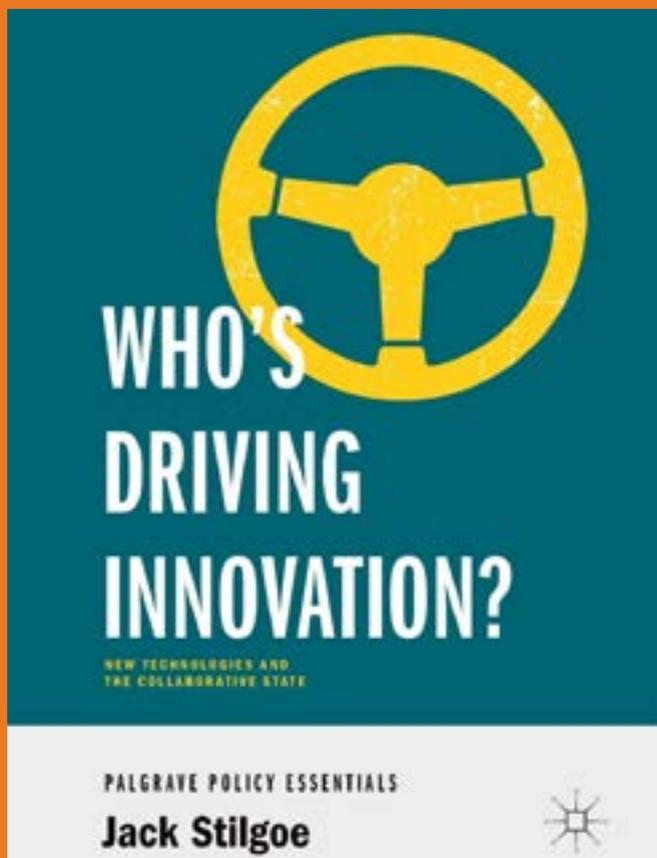


The Scientific Committee of Science and You 2021, group photo - Image: Jean-Baptiste Gouyon

BOOKSHELF

THE

"A MUCH NEEDED, SOBERING LOOK AT THE SEDUCTIVE PROMISES OF NEW TECHNOLOGIES. YOU COULDN'T ASK FOR A BETTER GUIDE THAN JACK STILGOE. HIS BOOK IS MEASURED, FAIR AND INCISIVE." HANNAH FRY, UNIVERSITY COLLEGE LONDON, UK, AND AUTHOR OF HELLO WORLD: HOW TO BE HUMAN IN THE AGE OF THE MACHINE



Who's Driving Innovation? New Technologies and the Collaborative State, Dr Jack Stilgoe, Palgrave Macmillan

STS Associate Professor Jack Stilgoe released [Who's Driving Innovation? - New Technologies and the Collaborative State](#) this year. The book takes us through the effect of technological change, and challenges the perceived model of disruptive innovation in new tech, arguing for a more public interest-focused way forward, with public and private sector organisations working collaboratively.

Summer Internships

This summer STS is pleased to be able to fund four internship positions for students to gain valuable experience across a range of STS-related projects. The first intern will assist Associate Professor Emily Dawson on a literature review into the subject of Radicalisation of Science in Popular Culture. Elsewhere, the second studentship will help the STS team with a revamp of the department's website, engaging in content curation to help us showcase the work of the department to best improve our growing web presence.

Continuing STS's strong multimedia offering, internship three will assist former Head of Department Professor Joe Cain with our podcasting content. Finally, studentship four will work externally to assist Dr Veronica Ranieri with interviews as part of her vital research into health and wellbeing during the COVID-19 pandemic.

STS Seminar Series

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.

You can view all our previously recorded content on our [STS website](#) and [STS Youtube Channel](#).

Departmental news

STS Equalities & Equity Committee

STS Department Manager Giuseppe La Rosa gives us an update on the department's EDI activities.

On 1st June, the Department held the STS Equalities & Equity Committee (EESC) on Microsoft Teams. This is a subcommittee of the Department Committee and focuses on developing the STS Equity & Equality Strategy, covering the main themes of the UCL Equality, Diversity & Inclusion (EDI) policies and procedures.

UCL and STS are committed to Equality, Diversity and Inclusion and EDI forms an integral part of UCL's strategy and has a significant impact on all aspects of our teaching, recruitment, spaces and other activities. The EESC wants to contribute to a positive and proactive environment within the Department and aims to put in practice a more consolidated approach with other Departments to deliver the equalities agenda.

Given the difficult times we are all living in, the main point of discussion of the meeting was to identify those issues that staff and students are or may be experiencing during this period; from juggling work and caring responsibilities, to adjusting to online learning and the impact that this may have on our disabled students. The issues discussed at the Committee will play a key part in shaping the STS Equity & Equality Strategy for the next Academic Year. The group aims to provide meaningful solutions to staff and students to mitigate



"UCL ANS STS ARE COMMITTED TO EQUALITY, DIVERSITY AND INCLUSION AND EDI FORMS AN INTEGRAL PART OF UCL'S STRATEGY AND HAS A SIGNIFICANT IMPACT ON ALL ASPECTS OF OUR TEACHING, RECRUITMENT, SPACES AND OTHER ACTIVITIES."

and overcome the effects of the current crisis.

Another stream of work of the EESC is to support the application for an Athena SWAN award. Athena SWAN is a charter established and managed by the UK Equality Challenge Unit that recognises and celebrates good

practices in higher education and research institutions towards the advancement of gender equality. The last time the Department applied for an Athena SWAN award was 2015 and it was awarded a Bronze award. The Department was due to submit an application in November 2020 but due to Covid-19, the submission has been automatically pushed back by a year to November 2021. Further consideration will be given to this timeline to ensure a meaningful submission from STS.

From September, the Committee will meet quarterly, once per term. We welcome contributions from all staff and students across STS. Furthermore, staff who wish to take part in the upcoming meetings should get in touch with [Giuseppe La Rosa](#).

Words: Giuseppe La Rosa

Want to learn more?

To apply for BSc, MSc or PhD level study, visit the STS admissions pages at www.ucl.ac.uk/sts/study-here:

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

For everything else, contact us via email at:
sts@ucl.ac.uk



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