

ISSTI

THE INSTITUTE FOR THE
STUDY OF SCIENCE
TECHNOLOGY AND INNOVATION
www.issti.ed.ac.uk

newsletter

no. 41 | February 2022



ISSTI

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Institute for the Study of Science, Technology and Innovation (ISSTI)

A virtual research institute, hosted by Science Technology and Innovation Studies. ISSTI brings together groups from across the University of Edinburgh involved in research, teaching and knowledge transfer on social and policy aspects of science, technology and innovation

As part of a major University-wide IT infrastructure uplift ISSTI got a new website.

Check it out at www.issti.ed.ac.uk

About

The Institute for the Study of Science, Technology and Innovation (ISSTI) is a

We are pleased to announce some exciting new research awards and also report on outputs from our existing research projects. This first Newsletter of 2022 provides an opportunity to list the wide array of books, refereed journal articles and other papers published by ISSTI members over 2021. These provide evidence of Edinburgh's sustained contribution to the field of Science, Technology and Innovation Studies and also to our interdisciplinary research collaborations.

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New Grants and Projects



Investigating the automation of social security in the UK

[Dr Morgan Currie](#), Lecturer Data & Society in Science, Technology and Innovation Studies has secured a prestigious New Investigator Grant from UKRI's Economic and Social Research Council for a project on Automating Universal Credit in the UK.

This two-year project will investigate automated systems in the UK's Universal Credit scheme, exploring how they affect different users and whether they contribute to social inequalities. The project aims to make recommendations for incorporating more public input and oversight into the development and deployment of this technology.



Morgan and Co-Investigator Dr Jay Wiggan, Senior Lecturer in Social Policy, will work with the Department of Works and Pensions, Citizens Advice Edinburgh and other Scottish and UK charities to understand how claimants interact with automated components of Universal Credit. A series of workshops will give welfare claimants the opportunity to give feedback on the system and provide a template for how designers of these systems can conduct their own evidence-based consultations with diverse types of users. The study promises to have wider resonance by driving efforts towards building more democratic oversight of automated systems.

Launching TransFIRE - Transforming Foundation Industries Research and Innovation hub

Edinburgh colleagues have joined a research consortium examining how the foundation industries - chemicals, cement, ceramics, glass, metals and paper – can prosper and develop while helping achieve the UK's Net Zero 2050 environmental targets.

TransFIRE was developed to transform these industries, which produce 75% of all materials in the UK economy, worth £52bn, and are vital for the UK's manufacturing and construction industries. They produce 28 million tonnes of materials per year and account for about 10% of the UK's total CO2 emissions.

The consortium brings together 20 researchers from Edinburgh, Bangor, Cambridge, Cardiff, Durham, Exeter, Leeds, Northumbria, Sheffield Hallam and York universities and the British Geological Survey, led by Cranfield University, and includes 49 companies and 14 non-governmental organisations related to the sectors. It will develop a self-sustaining hub of expertise to support the foundation industries' transformation into non-polluting, resource-efficient, modern, competitive manufactories working in harmony with the communities in which they are situated.



[Professor Steven Yearley](#) is part of the new consortium and will focus on the socio-economic component of this hub, which is concerned with the environmental and socio-economic impacts of the way decarbonisation is handled in the UK's foundation industries. He commented "The foundation industries are key to a lot of things that we will still want as we decarbonise – aluminium for electric vehicle wheels for example. If we don't want simply to import all these materials, the UK's foundation industries will need to make profound changes over the next 25 years. At the same time we need to think about the implications for local communities and the impacts on local environmental quality." Steve will bring in expertise from across the social sciences and neighbouring disciplines. The project has also just appointed a Postdoctoral Research Fellow, Dr Kyle Parker.

This is the Newsletter of the Institute for the Study of Science, Technology and Innovation (www.issti.ed.ac.uk). This interdisciplinary network, founded in 2000 by Robin Williams, brings together colleagues from across the University studying science, technology and innovation and is hosted by the Science, Technology and Innovation Studies (STIS) Subject Group.

Science, Technology and Innovation Studies (STIS) Subject Group at the University of Edinburgh is internationally recognised as a leading centre of research, teaching and knowledge exchange in this important interdisciplinary field. With more than 40 staff, STIS enjoys outstanding ratings for its scholarly publications and impact, sustains research intensity with a high volume of external research income, and excels in teaching through a suite of undergraduate and postgraduate courses and programmes. For more information, see our website: www.stis.ed.ac.uk.



Developing a Framework for Evaluation of International University Partnerships

[Dr Niki Vermeulen](#) leads the University of Edinburgh's contribution to an international project which aims to improve the quality of International Strategic Partnerships between universities by providing a framework for the evaluation of success. Funded under the Erasmus programme, it will develop a framework for evaluating international strategic partnerships between universities in line with current developments on responsible research assessment.



The project will review existing models for evaluation in similar settings and develop a series of protocols for implementing an evaluation framework within the university setting for *International Strategic Partnerships*. Traditionally this could involve student and staff mobility, research collaboration, collaborative teaching provision, joint appointments of staff, network development and participation, commercialisation of research and funding relationships for teaching & research. However, there is a drive towards innovation in this area of work so it is important to ensure that models for evaluation can be flexible and adapted to suit new purposes. International Strategic Partnerships are seen as investments that will bring some benefit to the institutions involved, but the evidence-base for this is often lacking. This project will enable institutions to determine how International Strategic Partnerships are performing and highlight areas for development. It will also provide a basis for determining when performance is below the desired level and therefore not representing a good return on investment of public funds.

This 36 month project builds upon and strengthens our collaboration with Leiden University's, Centre for Science and Technology Studies (CWTS) and brings together a range of universities (including University College Dublin, University of Copenhagen, University of Helsinki and University of Sydney) with varying experience in developing and delivering all types of partnerships to collaboratively develop a methodology that can be used to evaluate and continually improve the quality of partnerships that universities and similar organisations are involved in.

Dr Niki Vermeulen received a **visiting professorship from the L'École des hautes études en sciences sociales (EHESS)** and will be spending March 2022 in Paris, and **DAAD funding for a research visit to Berlin** in May-June 2022 to work at the Museum für Naturkunde and the Institut für Europäische Ethnologie of the Humboldt-Universität.

Governance Through Socio-Technical Infrastructures

This upcoming March, ISSTI is proud to co-host a workshop on governance through socio-technical infrastructures with the STSLab, University of Lausanne. The workshop will invite more than two dozen researchers from across the two institutions to Lausanne to share ideas and develop collaborations.



By focusing on the ways in which visions for society become realized in the development of infrastructures, the workshop builds on existing research in ISSTI and STSLab, and aims to provide opportunities for further development of research in this area.

We are especially keen to use the workshop as a chance to develop long-term collaborations between Edinburgh and Lausanne. If you want to be part of such collaborations or want to share ideas, regardless of whether or not you participate in the workshop, we invite you to get in touch!

The workshop has been generously funded by the Swiss National Science Foundation, the University of Lausanne, and the University of Edinburgh. It was organized by two PhD students, James Besse (Edinburgh) and Léa Stiefel (Lausanne).

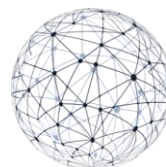
International Collaboration



PATH-AI (Privacy, Agency and Trust in Human-AI Ecosystems)

The [PATH-AI](#) is an international collaborative and multidisciplinary research project between the UK and Japan, involving The Alan Turing Institute (Dr David Leslie, Dr James Wright, Dr Florian Ostmann, Ms. Morgan Briggs), the University of Edinburgh (Professor Charles Raab, Dr Fumi Kitagawa), and the RIKEN research institute in Japan.

Funded by UK Research and Innovation and the Japan Science and Technology Agency, PATH-AI examines how the three interrelated values of privacy, agency, and trust are manifested in very different cultural contexts (i.e., Japan and the UK) in relation to AI and other data-driven technologies, and how a focus on these values can inform the shaping of the international landscape for AI ethics, governance, and regulation.



PATH-AI

[The interim report](#) (December 2021) discusses differences between Japan and the UK in attitudes towards the three values, partly in the context of national responses to the COVID-19 pandemic. Ninety-five participants, including experts and members of the public, were asked about three different examples of data-intensive technologies used in health and social care: digital contact tracing apps, medical symptom checking tools, and care robots. Some key differences in perspectives surfaced across the two countries. For example, Japanese respondents were overall more optimistic and seemed more comfortable with the idea of, for example, interacting with robots – with 90% of respondents answering that care robots were a good idea. In contrast, UK respondents were less sure about what the role of robots should be and thought that care robots should only ever be used as a supplement rather than a substitute for human care. Additionally, some UK participants worried that emerging technologies might cause harm due to inadequate design and implementation, whilst many Japanese participants seemed more worried that they would work too well or become too powerful, introducing a risk of losing control or creating a future society ruled by automated decisions and actions that would be difficult for individuals to contest.

There were also significant areas of agreement across both countries with regard to the use of technologies to combat COVID-19. For example, both British and Japanese respondents raised privacy concerns about governments' decision to develop digital contact tracing apps with centralised databases, which were later abandoned in favour of a privacy-friendly decentralised approach. Similarly, both groups expressed worries about how data gathered by symptom checking and other digital health tracking tools might be used or monetised. Across the UK and Japan, we noted a widespread sense of growing asymmetries – of data, informed choice, resources, and ultimately power – between users, governments, and companies. Many respondents felt confused about what data was being collected about them and how it was being used, fuelling a feeling of disempowerment, distrust and lack of agency. The recent prominence of data privacy can be seen partly as a response to a growing distrust towards both government policies and technology companies, but several experts noted that legislation has so far tended only to confuse citizens while not preventing companies from collecting ever-greater amounts of personal data.

Building on this research, [the PATH-AI Residency Programme](#) was launched to commission artists to create new works critically engaging with cross-cultural ideas of privacy, agency and trust in relation to artificial intelligence (AI) and other data-driven technologies. The Programme will be run in partnership with Somerset House Studios and the UAL Creative Computing Institute, and is aimed at artists interested in exploring the international landscape for AI ethics, governance and regulation. Three artists will be supported to develop new works over a six-month period, with final works presented virtually by Somerset House in 2022.

Establishing Geographies of Collaboration RSE Network

Niki Vermeulen received an RSE Saltire Network Grant on Geographies of Collaboration with our French partners at CNRS, Marion Maisonobe and Morgan Meyer.

From our side this network involves Mayline Strouk, Rodrigo Liscovsky, Fiona Coyle, Rob Smith, Rhodri Leng and Gil Viry on behalf of the Social Network Analysis in Scotland Group. We aim to further advance ways of understanding the geography of research collaborations, combining qualitative and quantitative analysis with a focus on marine biology and gene editing. We are also organising a session on this at the upcoming EASST conference in Madrid.



Evaluating the Impact of Artificial Intelligence (AI) in Cancer Detection

Kathrin Cresswell and Robin Williams are undertaking a qualitative evaluation of the implementation in UK hospitals of AI-based computer-aided detection/diagnosis of potentially cancerous Lung Nodules.

This is part of a novel clinical evaluation programme that aims to examine the impact of AI on radiology decision making in the lung cancer pathway and the patient outcomes from these decisions. The [INPACT programme – Investigating Nodule Protocol Adherence using CADe/x Technology: A real-world evaluation of the impact on, and outcomes from, radiology decision making using AI software for pulmonary nodule management](#) is a collaboration between Aidence, clinical consultancy Hardian Health, and the University of Edinburgh, led by Miguel Bernabeu, Senior Lecturer in Medical Informatics at The University of Edinburgh, Usher Institute and supported by an **NHSX** AI in Health and Care Award, funded by the National Institute for Health Research.

Research into AI medical imaging solutions is often centred around their performance in controlled research conditions that do not match real clinical workflows. INPACT aims to gain insight into an understudied area: the impact of AI technology on human decisions in actual use of these tools. Aidence’s Veye Lung Nodules software automatically finds, segments, measures, and tracks the growth of pulmonary nodules on chest CT scans will be implemented in 20 hospitals in the UK. The programme will investigate how this influences the way radiologists perform their lung nodule analysis.

Independent Evaluation of NHS Global Digital Exemplar Programme

Robin Williams and Kathrin Cresswell also recently completed the independent evaluation of NHS England’s flagship Global Digital Exemplar (GDE) programme. The GDE programme sought to promote the digital transformation of English hospitals through creating a cohort of provider organisations that would act as exemplars of excellence. Our multidisciplinary research team undertook a qualitative evaluation of this 36 month programme.

Across 36 hospital trusts we charted the factors promoting digital transformation and the emergence of a learning ecosystem amongst participating organisations. Feedback from this formative evaluation was provided to NHS digital leaders and shaped the evolution of this and subsequent programmes. Dermot O’Ryan, director of frontline digitisation at NHSX, said: “The lessons learned from the GDE programme have been carried forward into Frontline Digitisation and the associated Digital Aspirant programme, through which over 60 local bodies are benefitting so far.”

GDE Evaluation programme team

University of Edinburgh



University College London



NHS Arden & GEM Commissioning Support Unit



The full report of the evaluation is available here - <https://www.ed.ac.uk/usher/digital-exemplars/final-report> where there are links to a range of [journal papers](#) that have explored specific aspects in detail.

Community and Policy Engagement



Fuel Poverty

Dr Kirsten Jenkins has been appointed as a member of the Scottish Fuel Poverty Advisory Panel to the Scottish Government.

This is a new advisory public body designed to contribute to policy development to tackle both fuel poverty and extreme fuel poverty in Scotland. The announcement by [the Cabinet Secretary for Net Zero, Energy & Transport](#). (23 December 2021) states that “the Panel will collectively hold the Scottish Government to account on their progress in tackling the four drivers of fuel poverty: poor energy efficiency of the home; low household income; high fuel costs; and how energy is used in the home. It also has a lead role in considering the impacts of actions by others on fuel poverty in Scotland, providing constructive challenge as appropriate. Across the Panel’s work, it will seek to influence stakeholders effectively to deliver change”.

Kirsten was also appointed as Deputy Champion for the Energy Policy People & Society theme of the Energy Technologies Partnership: <https://www.etp-scotland.ac.uk/AboutETP/About.aspx>

The Social Lives of Climate Change

On November 19th 2021 Sophie Haines hosted an online workshop on ‘Teaching the Social Lives of Climate Change’ as part of the ESRC Festival of Social Science (grant ES/T50189X/1).

Scheduled soon after the close of the COP26 Conference in Glasgow, this knowledge exchange event provided a forum for educators and young people in Scotland and elsewhere to exchange knowledge and ideas about teaching climate change, informed by social science research and teaching experience. Discussions encompassed various pedagogical approaches and the use of text-based, artistic and multimedia materials, and explored challenges and successes in research-led teaching in the social sciences. Participants considered how climate change can be understood as embedded in social, political and cultural relationships, and how learning about how people in diverse historical and geographical settings encounter and respond to environmental change can stimulate new ways of thinking about possible futures.

Edinburgh: For Every Statue of a Man, the Story of a Woman

In Autumn 2021, Kate Bowell and Niki Vermeulen received funding from the Creative Informatics PhD Research Assistant Funding scheme to begin preliminary research on the planned [Curious Edinburgh](#) tour: *Edinburgh: For Every Statue of a Man, the Story of a Woman*.



This tour aims to bring to the forefront the stories of remarkable women in the history of Edinburgh (many of whom have featured in previous app tours), centring their lives and work within the scope of the story of the city. In an effort to redress the fact that there are currently more statues of animals in Edinburgh than women, this project proposes using statues of men as the sites to tell stories of women, as well as exploring additional technological options, including creating virtual statues for the tour. This award will allow Kate to survey existing material and conduct additional research into the presence of women in Edinburgh’s history of science, technology, and medicine, as well as their roles in the broader history of the city and identify the themes and patterns that will guide the development of this tour and possibly others.

Niki has also been developing a **Coastal Knowledge map** with the Young Academy of Scotland’s group on marine (social) science. Contributions welcome: <https://www.youngacademyofscotland.org.uk/coastal-knowledge/>

STIS PhD Student Leads Public Debates on AI

Vassilis Galanos contributed to a European Trade Union Institute training workshop: [AI in the Workplace: Data and Algorithms](#) informing trade union representatives from across the EU on imagined and actual capabilities and pitfalls of AI, as well as [two talks at the Scottish Seniors Computer Club’s Musselburgh group in Edinburgh](#), which aimed at demystifying current AI debates for the elderly.

Community News



We are delighted to welcome a new colleague.

Dr Gladys Kostyrka

Gladys Kostyrka has been appointed as Research Fellow on the European Research Council-funded "[Epidemy Project: A History of Epidemiological Reasoning](#)" led by Lukas Engelmann. Her first case study aims at understanding the historical emergence and roles of transdisciplinary networks in the fight against Ebola epidemics, with a focus on the work of medical anthropologists and on the integration of psychiatric approaches into more strictly biomedical epidemiological models.



Gladys is a philosopher and historian of the biological and biomedical sciences. After completing a Master's Degree in Philosophy of science (The Notion of "force" in 17th Century Physics) and in Political Philosophy (Three Dystopias in the 20th Century), her PhD (at Panthéon-Sorbonne Paris 1 University and the Institut d'Histoire et de Philosophie des Sciences et des Techniques), examined the old but still ongoing debate about the (living?) nature of viruses among biological scientists and beyond

We are pleased to announce new appointments for our recent alumni.

[Dr Ros Attenborough](#) was awarded an ESRC Postdoctoral Fellowship for 2021-22, titled *Open and healthy research cultures: bringing insights into policy and practice*, building on her PhD work.



[Dr Matjaz Vidmar](#) has been appointed Lecturer in Engineering Management in the School of Engineering. He has also joined ISSTI Steering Group where he will play a particular role in strengthening our interdisciplinary work.



Dr Holbrook's Wide Reaching Public Engagement

Jarita Holbrook did an outreach talk for the Rosa Parks Library in Soweto, South Africa: "[Astronomy is for South Africa](#)" on 28th October 2021. The English version of Jarita's film "SKA ≥ Karoo Radio Telescope" was also an official selection of the Sigma Xi STEM Art & Film Festival 2021.



We are delighted to record the successful degree completions of our PhD students

Adolfo Montero: [Energy justice and utility wind power development in Mexico: Voices from "El Istmo"](#).

Andrés Alberto Domínguez Hernández: [Distributed Infrastructuring and Innovation: an ethnographic enquiry into collaborative modes of work in an internet of things ecosystem](#)

Fábio Neves da Rocha: Organising Digital Innovation in ERP Platforms

AI Ethics & Society Group

Since 2019, Benedetta Catanzariti, Yazmin Morlet Corti, and Vassilis Galanos from STIS contributed to organising events with the Edinburgh-based [AI Ethics & Society group](#) led by Sarah Bennett from Edinburgh College of Art. Their recent [Doctoral Colloquium](#) attracted new students with an interest in social dimensions of AI and data-driven innovation.

2021 Publications*



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2021 Publications



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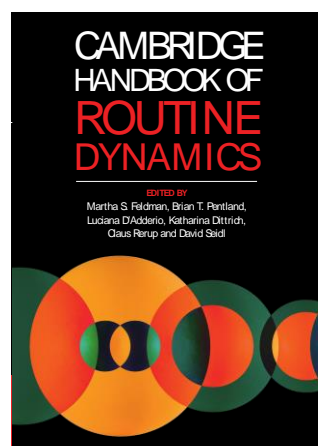
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Books



Martha S Feldman, Brian T Pentland, Luciana D'Adderio, Katharina Dittrich, Claus Rerup, David Seidl (eds) [Cambridge Handbook of Routine Dynamics](#).

Luciana D'Adderio co-edited and contributed to three chapters in the [Cambridge Handbook of Routine Dynamics](#) (Cambridge University Press 2021). Scholarship in this area brings together an international community which applies practice theory and related process-informed theories to understand organizational phenomena, united by an interest in examining the emergence, reproduction, replication and change of routines as recognizable patterns of actions. The handbook provides an accessible introduction to the state of the art of scholarship in this area and offers both methodological and theoretical resources for those studying the dynamics of routines.

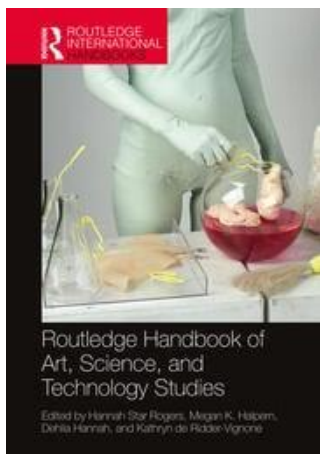


Morgan Currie and Melisa Miranda Correa: The Culture and Communities Mapping Project

This book (Palgrave 2021) describes three years of work by the Culture and Communities Mapping Project that uses maps as an object of study and also a means to facilitate research. Taking a self-reflexive approach, the book draws on a variety of iterative mapping procedures and visual methodologies, from online virtual tours to photo elicitation, to capture the voices of inhabitants and their distinctive perspectives on the city of Edinburgh. The book argues that practices of cultural mapping constitute a research field in and of itself. It situates this work in relation to other areas of research and practice, including critical cartography, cultural geography, critical GIS, activist mapping and artist maps. The book also offers a range of practical approaches towards using print and web-based maps to give visibility to spaces traditionally left out of

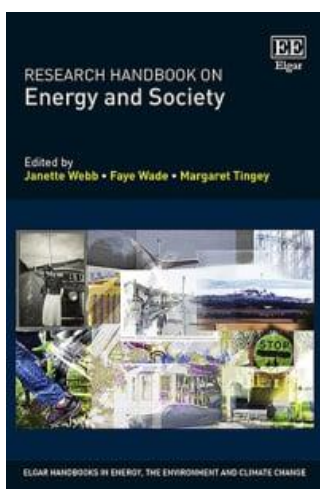
city representations but important to the local communities that use them. The authors reflect critically on how, through the processes of mapping, we create knowledge about space, place, community and culture.

Morgan Currie was in addition one of the many authors of this Stanford University report: [Gathering Strength, Gathering Storms: The One Hundred Year Study on Artificial Intelligence \(AI100\) 2021 Study Panel Report](#)



Routledge Handbook of Art, Science, and Technology Studies

Visiting scholar, Hannah Rogers, coedited, with Megan K Halpern, Dehlia Hannah, Kathryn de Ridder-Vignone, the [Routledge Handbook of Art, Science, and Technology Studies](#) (ASTS) (Routledge, 2021). The handbook defines the modes, practices, crucial literature, and research interests of this emerging field. It explores the questions, methodologies, and theoretical implications of scholarship and practice that arise at the intersection of art and STS. More than sixty artists, scientists, STS scholars, and curators contributed to this 42 chapter book, which is introduced by Hannah Star Rogers and Megan K. Halpern. The book features a reprint of the chapter by Jane Calvert and Pablo Schyfter "What can science and technology studies learn from art and design? Reflections on 'Synthetic Aesthetics'."



Jan Webb, Fay Wade & Margaret Tingey (eds) Research Handbook on Energy and Society

The [Research Handbook on Energy and Society](#) examines the relationship between energy and society in the context of the climate crisis. Featuring an extensive examination of current research in the field from fifty expert international contributors, it offers important insights into the inter-connections between the globally organised fossil fuel energy system and the changing structures of society.

The Research Handbook begins with an analysis of the evolution of large-scale energy production and consumption using coal, oil and gas. It then explores social divisions and inequalities in energy systems in different countries, before moving on to discuss energy governance, policy and politics, along with strategies to achieve transformation. The final part investigates forms of knowledge, stories and public engagement being used to re-make energy futures, concluding that social sciences are identifying the inter-locking societal and technical changes needed to enable rapid systemic changes in energy.