21ST Annual SPRU DPhil Day

May 5-6, Jubilee Building

May 5th: DSkills Day- Uncertainty and Researching STI

May 6th: DPhil Day- PhD Presentations

PhD led conference, with SPRU faculty & special guests:

Prof. Luigi Marengo (LUISS)

Ken Guy (Technopolis)

For Registration and more detailled information:
http://tiny.cc/dphil_day

2015 SPRU DPhil Day Programme

We happily welcome you all to the University of Sussex, and to SPRU. With over two decades of tradition, DPhil Day is a SPRU institution in itself. Giving PhD Candidates the opportunity to come together, learn from one another and gain valuable insights into their current research projects. We hope that you learn from your experiences here at SPRU, and most of all enjoy your time here.

Don't forget to tweet about the event using #DPhilDay or by tweeting @SPRU_DPhilDay

DSkills Day: Uncertainty and Researching STI – Tuesday May 5th – Jubilee Large Lecture Theatre (G38)

MAY 5th MORNING

9.00 – 9.30 Registration and Coffee

G30 (Flexible Workspace) – Jubilee Building, Ground Floor, adjacent to the Jubilee cafe

9.30 – 9.45 Welcome and Opening Remarks

Prof. Johan Schot, Director of SPRU

9.45 – 11 From design to implementation: contending with uncertainty and self-doubt in the research process

Prof. Ed Steinmueller, Prof. Paul Nightingale, Dr. Michael Hopkins, Dr. Mari Martiskainen

This first session aims to introduce the possible challenges that various notions of uncertainty pose throughout the research process, spanning research design to implementation. This includes the choice of methods and design, the availability of data, and of course the "personal" uncertainties related to self-doubt and confidence. Particular attention will be drawn to how researchers tackle these challenges at different stages in their career.

11 - 11.30 Coffee Break – G30

11.30 -12.30 Mixed-Methods and Uncertainty

Yusuf Dirie, Dr. Rose Cairns, Dr. Philip Johnstone

There is an increasing appetite across institutes and departments, funders, and researchers themselves to utilise mixed methods as a way of getting to grips with difficult research topics. This session will explore whether and how mixed-methods and quali-quantitative approaches can help to contend with uncertainty.

MAY 5th AFTERNOON

12.30 – 13.30 Lunch – G30

13.30 – 14.30 Researching the past and unfolding present

Dr. Caitriona McLeish, Prof. Johan Scot, Dr. Adrian Ely

Researching the past, and researching the unfolding present could be seen as inherently uncertain tasks. This session will focus on practically resolving the uncertainties likely to arise when the focus of research is either historical and fading in the memories of those who were there, or emerging and unpredictable.

14.30 – 15.30 Causation, Modelling and Uncertainty

Prof. Maria Savona, Prof. Luigi Marengo, Dr. Alex Coad

Causation is one of the issues at the centre of research and in particular when using quantitative methods. Econometrics has developed many techniques in order to establish causation and many of these issues are present as well when modelling human or social phenomena. This session will focus on how econometrics and modelling cope with the fundamental impossibility of achieving full certainty about the relationships they study.

15.30 – 16.00 Coffee Break – G30

16.00 – 17.15 Policy, Society and Uncertainty

Prof. Erik Millstone, Prof. Mariana Mazzucato, Prof. Andrew Stirling, Dr. Ken Guy

Most would agree that the point of doing research is to achieve some sort of 'impact'. At SPRU, as the name would suggest, those often means pitching towards a policy audience. But is that always the only or even best audience? And are speaking to policy and reflecting on uncertainty in tension? Most research at SPRU is done on highly complex and often contested issues. In this context, this session explores what young researchers should bear in mind when trying to advise, influence, and criticise through their work.

MAY 5th EVENING

17.15 – 17.30 Closing Remarks

Prof. Ed Steinmueller

17.30 – 18.30 Refreshments – G30

18.30 – Transportation to dinner venue (RSVP required) – Pick-up at car park to rear of Jubilee building (point B on map)

7 – late Dinner – RSVP required – Bill's Restaurant, The Depot, 100 North Road, Brighton BN1 1YE

DPhil Day: PhD Presentations - Wednesday May 6th – Jubilee 31, 35, 36

MAY 6th

8.30 – 9 Registration and Coffee – G30

9 – 10 PLENARY: Science, Technology, and Innovation Studies: Past, Present, and Future – Jubilee Large Lecture Theatre (G38)

Prof. Mariana Mazzucato, Prof. Ben Martin, Prof. Martin Bell

With over half a century of previous research activity in the area, where did STI come from? And where is it going? This session provides a history of the STI field and its development, with a particular focus on future prospects, challenges and opportunities.

	Jubilee G31	Jubilee G35	Jubilee G36
	INDUSTRY INTERACTIONS (Dr Matias Ramirez)	**SUSTAINABILITY GOVERNANCE AND CLIMATE ENGINEERING (Dr Rose Cairns)**	**ENERGY SERVICES AND SECURITY (Prof. Gordon MacKerron)**
10.10-10.40	Sussan Grune (University of Wuerzburg)	Joachim Monkelbaan (University of Geneva)	Lina Brand (University of Leeds)
10.40-11.10	Ester de Wit (University of Groningen)	Nicholas Gallie (University of Sussex)	Emily Cox (University of Sussex)
11.10-11.30	Coffee (G30)		
	KNOWLEDGE MANAGEMENT (Dr Dagmara Weckowska)	**ENERGY DEMAND RESPONSE (Dr. Noam Bergman)**	**ENERGY TRANSITIONS-SNM (Dr Rob Byrne) AND REGIME RESISTANCE (Dr Phil Johnstone)**
11.35-12.05	David Eggleton (University of Sussex)	Matthew Gross (University of Sussex)	Joon Huh (Hanyang University)
12.05-12.35	George Siantonas (University of Sussex)	Jan Ossenbrink (ETH Zurich, D-MTEC)	Frederic Bauer (Lund University)
12.40-13.40	Lunch (Dine Central)		
	FIRM LEVEL INNOVATION (Dr Josh Siepel)	**SOCIOLOGY OF SCIENCE (TBC)**	**ENERGY TRANSITIONS IN NATIONAL CONTEXTS (Dr Florian Kern)**
13.45-14.15	Youngha Chang (University of Sussex)	Maria Karaulova (Manchester Institute of Innovation Research)	Marie Blanche Ting (University of Sussex)
14.15-14.45	Jose Manuel Leceta Director, EU Institute of Innovation Tech (EIT)	Felicitas Heßelmann Institute for Research Information and Research Quality (iFQ)	Aisha Al-Sarihi (Imperial College London)
14.45-15.15		Andrew Hunter (University of Sussex)	
15.15 – 15.35	Coffee Break (G30)		
	ENERGY AND ENVIRONMENT INNOVATION (Dr Colin Noden and Ms Emily Cox)	**HEALTH AND BIOSECURITY (Dr Jamie Revill)**	**ENERGY SPATIAL TRANSITIONS (Dr Rali Hiteva)**
15.40 – 16.10	Rui Hu (Imperial College London)	Josh Hutton (University of Sussex)	Jonas Torrens (University of Sussex)
16.10 – 16.40	Anton Sentic (University of Greenwich)	Alex Mankoo (University College London)	Gijs Dercks (Imperial College London)
16.40 – 17.10		Florence Blandinieres (F. Schiller University Jena)	Irene Hakansson (King's College London)

17.15 – 17.30 PLENARY: Closing Remarks – Jubilee Large Lecture Theatre (G38)

Prof. Ed Steinmueller

PRESENTATION ABSTRACTS

Jubilee G31

10.10-11.10 INDUSTRY INTERACTIONS

- Sussan Grune （University of Wuerzburg)
- Ester de Wit (University of Groningen)

Discussant: Dr Matias Ramirez

Sussan Grune Lobbying with Chinese Characteristics – China's Energy Efficient Building Industry

The contemporary world is increasingly dependent upon very large, intertwined and interdependent complex interacting systems, which legitimize power as domination and exploitation, wealth as predatory exploitation, growth as unlimited expansion, work as a segmented specialization. In view of the asymmetries of power between citizens and corporations and the dominant political-technological-economical system controlled by egocentric producers and consumers, critical thinking, interdisciplinary and holistic, values driven approaches are needed. To deal with problems of difficult settlement in our times, an ecosystemic approach is posited for public policies, research and teaching programmes, encompassing four dimensions of being in the world (intimate, interactive, social and biophysical), as they combine, as donors and recipients, to induce the events (deficits and assets), cope with consequences (desired or undesired) and contribute for change (potential outputs), as long as they preserve their singularity (identity, proper characteristics) and dynamic reciprocity (mutual support). Problems are defined within the “boiling pot”, where they originate, not reduced to the bubbles of the surface (effects, fragmented, taken for granted issues); deficits and assets of all the dimensions are considered in the origin of the events, in order to strengthen their connections and seal their ruptures; since all dimensions are complementary in a mutually entangled web (configurations), that should be in a dynamic equilibrium, in view of natural and built environments and physical, social and mental wellbeing. Considering the large differences in power between natural persons and legal persons in public affairs, special attention is given to the role of people at the top of the scale of influence (economic, political, educational, cultural, military, artistic, media, entertainment), as new paradigms of growth, power, wealth, work and freedom, emerging in the socio-cultural learning niches, are embedded into the cultural, social, political and economical institutions in view of the transition to an ecosystemic model of culture.

Ester de Wit Boundary work in university-industry R&D collaborations

Public research funds, such as national and EU funding schemes, increasingly demand collaboration with societal actors. At the same time, companies are changing their R&D strategies to a more open innovation approaches in which they engage with university researcher, amongst other partners. This results in an increase in

research collaborations between universities and business. Often the goals for the use of the research outcomes differ between universities and industry. Successful collaboration requires management of the boundary between knowledge development and application. Previous research on boundary work has identified credibility and salience of results and legitimacy of the process as important factors for the perception of successful collaboration. This paper identifies the practices that researchers use to manage these aspects of the collaboration in such a way that they maintain support from their industrial partners. The research is based on 1 year of ethnographic research during which the researcher attended the progress meetings of three research partnerships. Using an extensive coding framework, the following practices were identified: framing of the results to ensure salience, the inclusion of local knowledge to increase credibility and controlled inclusion of the industrial partners in decision making to increase the feeling of a legitimate/inclusive process. Framing is used to link the results to previously established goals and to interpret results in such a way that they lead to follow-up research that is perceived interesting by the researchers. These follow-up questions are suggested to the industrial partner when they are given a say in the decision about future work. Using local knowledge, such as chemicals and field data from the industrial partner, as cases and to build assumptions ensures that research is perceived as salient.

11.35-12.35 Knowledge Management

- David Eggleton (University of Sussex)
- George Siantonas (University of Sussex)

Discussant: Dr Dagmara Weckowska

David Eggleton- The relationship between leadership and megascience projects - fieldwork experiences and early indications

This paper aims to provide early indications of the relationship between leadership and megascience projects with two case studies under investigation – Tevatron at Fermilab and the Large Hadron Collider (LHC) at CERN. Hitherto, previous research has mainly focused on the management of large projects in non-scientific fields or on the general importance of leadership. A brief explanation of the projects and justification of this work will be provided. Having recently concluded fieldwork involving extended trips to Fermilab, USA and CERN, Switzerland to conduct archival and interview research, the author's experiences of gaining access approval will be shared for future researcher's benefit. Finally the paper concludes with a discussion of what new theory appears to be emerging from the fieldwork data.

George Siantonas - "To what extent can Virtual Communities develop the necessary common sense of place, purpose and identity to facilitate the creation of knowledge, the fostering of learning and the generation of innovation?"

Digital technology is facilitating new forms of creating knowledge within and between organisations – including multi-national firms, professional institutions, gov-

ernmental and non-governmental bodies. People are increasingly working in a distributed way and using technology to mediate their interactions. As a result Communities of Practice are forming across space and time. The proposed study will investigate the development of Communities of Practice across virtual spaces in multinational organisations. The focus will be on understanding the opportunities and limitations, in respect of learning and knowledge creation, that arise when members are spatially and temporally distributed.

The research project will utilise a mixed-method approach with an emphasis on assessing how learning and knowledge creation takes place in virtual Communities of Practice where these are likely to have weaker social ties than co-located Communities of Practice. The technical architecture enables virtual communities' interaction by providing a platform for communication and collaboration. The social architecture provides a framework for relationship building, collaborative learning, knowledge sharing, and action. The aim of the study is to seek to understand whether the social architecture of virtual Communities of Practice differs from that of co-located Communities of Practice and what new opportunities and challenges are emerging in respect of the ability to create and share new knowledge and learning.

13.45-14.45 Firm Level Innovation

Youngha Chang (University of Sussex)

Jose Manuel Leceta （Director, EU Institute of Innovation Tech (EIT)

Discussant: Dr Josh Siepel

Youngha Chang Managing the Directionality of Strategic Innovation: A Case of Corporate Venturing of an ICT Firm

Incumbent companies in a rapidly changing business environment continually try to maintain on-going innovation for business continuity and growth. Corporate venturing is a potential solution as a way of firm-level innovation, which includes creating venture teams inside the company, nurturing them, and making them as new business units (internal CV), and/or investing in external start-ups outside a firm like a venture capital (external CV). Firms have been trying to utilise this activity with strategic and financial objectives. Despite its known benefits, however, corporate venturing entails risk and uncertainty, which are the inherent nature of innovation. Moreover, practitioners have difficulties in managing corporate venturing because of its complexity which may largely due to the lack of understanding of the dynamics of CV. These problems and gaps in understanding lead managing corporate venturing and achieving economically viable outputs to be one of the challenging, but critical issues in technology and innovation management field, and this is why this research is attempting to find answers to the question of "How do a company's CV activities interact with the company's strategies?"

Jose Manuel Leceta Shifting Paradigms for European Innovation Policy: From Cross-Border Collaboration in R&D to Pan-European Entrepreneurial Ecosystems

Overcoming barriers to high-growth firms in Europe: the start up to scale up approach of EIT ICT Labs

Taking aside defense, European citizens publicly invest per capita more than US citizens while today's European infrastructure for incubation and acceleration of new firms is comparable (Telefonica, 2013). On the other hand, creating new business may be a necessary but not yet sufficient condition for growth as 'most of firms start small, but most small firms are old' (Coad et al, 2014). The need for high growth firms in Europe is particularly compelling in the ICT sector considering its contribution and leverage effect on productivity. Created in 2008, the 'European Institute of Innovation and Technology' (EIT) operates through so-called 'Knowledge and Innovation Communities' (KICs) which integrate excellent partners from the knowledge triangle of higher education, research and business to educate future entrepreneurs, create new business and accelerate them to globally successful ventures. First three existing KICs were launched in 2010 including a KIC connected to ICT: EIT ICT Labs. Literature emphasizes that high growth firms would not be useful vehicles for public policy, while 'removing barriers to growth of new firms in industries… is a no-regret policy'. The research examines the particular case of EIT ICT Labs and inquire if its start-up accelerator can make a true difference in helping new firms overcome barriers to growth and ultimately scale up. Using structured interviews and surveys the paper formulates findings and policy recommendations.

15.40-16.40 Energy and Environment Innovation

- Rui Hu (Imperial College London)
- Anton Sentic (University of Greenwich)

Discussant: Dr Colin Noden and Ms Emily Cox

Rui Hu Measuring the effectiveness of energy innovation systems

Energy innovations are vital to realise a sustainable energy system. Driven by the concerns of climate change and energy security, the public expenditure on research, development and demonstration (RD&D) in the energy sector by the member states of International Energy Agency (IEA) is seeing a renaissance after its previous peak in 1980 (Skea, 2014). Given this growth of spending, it is necessary to evaluate how well a nation's energy innovation system has operated and identify what should be improved in order to proceed more effectively. One important step to this direction is to develop adequate indicators to monitor the status and examine the effectiveness of energy innovation systems as indicators can serve as a proxy or metaphor for stakeholders to assess progress and make changes (Cobb and Rixford, 1998). The number of research on these types of indicators is small, for which there are several reasons. Firstly, the indicators used to measure innovation activities are originally designed for studying national innovation system (NIS), thus the majority of existent indicators are macro-level than industry or sector oriented. Secondly, rigorous study on energy innovation systems emerged only in recent years (Hekkert et al., 2007; OECD, 2006; Sagar and Holdren, 2002), even though the viewpoint that innovation processes and patterns vary considerably among different sectors was proposed earlier (Malerba, 2002; Malerba, 2004; Malerba and Orsenigo, 1997). Last but not least, current official statistics have not included sufficient data on energy innovations (Arnulf Grubler et al., 2012; Borup et al., 2013; Klitkou et al., 2012), which im-

pedes empirical study on technological innovations occurring in the energy sector as well as the development of associated indicators.This research aims to build a framework comprising five types of indicators – contextual, input, throughput, output and outcome innovation indicators to evaluate the effectiveness of energy innovation systems.

Anton Sentic Dynamics of sustainability transition processes: the example of combined heat and power (CHP) technologies in the United Kingdom

Combined heat and power (CHP) technologies have been in use in the United Kingdom for more than a century, yet, compared to their success in other North and West European countries; they have never managed to enter the energy generation mainstream. Instead, they have remained confined to a technological niche, extended to form market niches for some particular user groups. In this research project, the author is using several approaches from the area of transition research in order to review the dynamics behind sustainable transitions of energy systems These approaches include Strategic Niche Management (SNM), the Multi-Level Perspective (MLP) developed by Geels (2002, 2005) and Ecological Modernisation Theory (EMT), Also, the question is raised whether socio-technical transition theories at their current stage of development are applicable within the context of sustainable transition processes in a liberalised market economy such as the United Kingdom.

In a first step, the author is aiming to build upon existing secondary literature sources such as the work of Stewart Russell (1986, 1993), Steven Probert (1993) or K. Matthias Weber (2014) in order to develop a longitudinal case history of CHP in the UK. This case history is discussed, with CHP as a whole being located on the micro- or niche level and the incumbent regime represented by the electricity generation system. Special attention is given to the dynamics surrounding the CHP niche, regarding both its long survival and intermittently wavering political support.

Jubilee G35

10.10-11.10 SUSTAINABILITY GOVERNANCE AND CLIMATE ENGINEERING

- Joachim Monkelbaan (University of Geneva)
- Nicholas Gallie (University of Sussex)

Discussant: Dr Rose Cairns

Joachim Monkelbaan Constructing a conceptual framework for sustainability governance

Despite the recognition that governance is a vital condition for sustainable development, prevailing forms of governance seem unable to address unsustainability effectively. Fragmentation of governance along the vault lines of governance scales, levels, sectors, interests approaches and normative perspectives is becoming an important barrier to addressing climate change and sustainable energy effectively. Therefore, the main research question in this study is: How to construct an integra-

tive framework for analyzing sustainability governance and for steering the necessary transitions?

This transdisciplinary study approaches this question from several unique avenues. First, it starts from the premise that a combination of innovative governance theories is needed in order to improve sustainability governance. Secondly, this study explores the interests of key actors in one explorative case study on climate governance and in two unique case studies on 'globalization of sustainable energy technologies' and 'aviation and climate change'. Thirdly, the study draws inferences on some areas in which ITG goes beyond mainstream sustainability governance. The findings together form the basis for a new mode of governance: Integrative Transition Governance (ITG). The ITG and its toolkit includes indicator areas within the cross-cutting dimensions of power, knowledge and norms. Other main findings are that transition governance requires adaptiveness which goes beyond effectiveness; that the transformation of crisis into transitions requires more attention; that global-local linkages determine success; and that humans should be the measure of transition efforts.

Nicholas Gallie Climate engineering discourse and the Arctic cryosphere

My research is focused on climate engineering (CE) discourse. I am interested to understand how, where and by whom CE is being positioned in relation to mainstream carbon reduction initiatives, and how CE might come to engage with the prevailing climate mitigation regime. I ask two questions; how might CE's positioning evolve under the influence of prospective or actual internal climate systems forcing and how might it evolve in the face of a receding threat of internal system forcing? I ask these questions under two very different circumstances. First, under circumstances where the international community has committed to immediate, rapid and deep decarbonisation of the global economy, in line with IPCC advice. And secondly under circumstances where the international community has failed to commit to immediate, rapid and deep decarbonization, preferring to further delay substantive collective action on climate change. I choose to focus on the Arctic cryosphere as one potential source of discursive disruption. In recent years the Arctic cryosphere has undergone state changes outside of predicted parameters. Loss of albedo and a potential mass release of methane from melting permafrost are among a number of internal climate system forcings that have been discussed in relation to these changes. This discourse may come to alter perceptions of the manageability of the global climate as well as the consequences of an accelerated warming. State changes to the Arctic cryosphere may also have major geo-political consequences if, as has also been anticipated, predicted and actual impacts of forced climate change fall unevenly among powerful nation states. I ask, how might CE discourse be affected by such discursive turns (of an increasing and decreasing threat) and I ask this under both the contexts outlined above, that is, under conditions where a discourse of climate emergency has become dominant and under conditions where climate change has been broadly sidelined in favour of other expediencies. Methodologically, my analysis of CE discourse will draw on the major academic and media texts (including conference outputs) associated with CE to date; texts associated with recent and ongo-

ing state changes to the Arctic cryosphere and their climatic, economic and political implications; academic and media analysis of COP 21 with respect to forward decarbonisation strategies and any positioning of CE that emerges.The possible intrusion of CE into the prevailing climate mitigation regime can also be considered from a transitions perspective as a climate mitigation regime centred upon, or heavily dependent on CE would arguably evolve very differently from one relying essentially on economic decarbonisation. I will therefore include elements of transitions discourse within my analysis.

Analysis of texts will be supported by analysis of semi structured interviews to be conducted with key producers of CE discourse and strategically placed producers of Arctic, climate change and transitions discourse.

11.35-12.35 Energy Demand Response

- Matthew Gross (University of Sussex)
- Jan Ossenberg (ETH Zurich, D-MTEC)

Discussant: Dr. Noam Bergman

Matthew Gross- Examining consumer preferences for demand response tariffs in the UK

Key drivers for modernising the electricity system include the integration of an ever-growing proportion of renewable energy, managing greater electrical loads from electric vehicles and heat pumps, as well as preventing supply shortages. Over the next five to ten years, electricity suppliers are expected to introduce a range of 'demand response' tariffs which charge household consumers different prices at different times to shape demand for electricity and assist in managing these issues. Through a stated preference survey of 1300 consumers, this study examines preferences for various types of demand response tariffs. It identifies which tariffs consumers prefer and the range of factors – appliance ownership, socio-demographic characteristics and consumer attitudes - that help to determine these preferences. The analysis shows which factors are most important in driving consumer switching to demand response tariffs and how specific messages about these tariffs might enhance adoption. The Fogg Behaviour Model (FBM) - a conceptual framework developed in the marketing sphere - is applied to demonstrate how the notions of motivation, ability and triggering might be harnessed to promote adoption of these tariffs. Through this theoretical lens it is possible to develop insights into how suppliers could optimise the marketing of these tariffs as well as how national and EU policies might be tailored to encourage consumers to switch to these tariffs from current non-variable tariffs.

Jan Ossenbrink- The viability of distributed energy storage solutions for end-consumers: An assessment of regulatory and financial incentive schemes

Over the last two decades, the increasing share of renewable energy sources (RES) in the electricity sector has spurred a debate about whether, when and where energy storage systems will become a complement to RES to deal with their intermittent nature. Distributed energy storage (DES) systems such as stationary batteries coupled with PV panels and smart control devices have started to gain relevance as a technology option to address this flexibility issue. However using modern DES only for PV self-consumption or energy arbitrage, currently the two dominant applications, means that a large share of their technical potential remains untapped (e.g. contributing to grid investment deferral). While many governments have this issue on their agenda it remains largely unclear how amendments to the current regulatory and market environment must be designed in order to stimulate and compensate for the additional services from DES. So far, nearly all of the studies on DES implicitly assume a stable regulatory environment and singular investment decision for each component (e.g. PV, battery, meter), thereby underestimating the effect of policy dynamics and integrated technology portfolios. In order to address this literature gap we analyse how different incentive schemes influence the viability of distributed energy storage solutions at the end-consumer level. To shed light on this question, firstly we review the landscape of incentives relevant for DES. Secondly, we conduct a techno-economic assessment of DES applications and identify critical sensitivities. Finally, we elaborate on the diffusion potential of DES solutions.This study holds valuable insights for policy makers trying to develop effective and efficient measures to spur innovation in storage technologies. Moreover, utility companies as well as other firms active in the energy domain will benefit from a holistic assessment of behind-the-meter storage systems and their business cases with the potential to further disrupt the electricity sector.

13.45-15.15 Sociology of Science

- Maria Karaulova (Manchester Institute of Innovation Research)
- Felicitas Heßelmann (Institute for Research Information and Research Quality)
- Andrew Hunter (University of Sussex)

Discussant: TBC

Maria Karaulova Migration Effect' in Academic Science: Insights from Russian-Speaking Nanoscience Emigres

This paper problematises effects that scientific migration has for career development in academic science, and on practices that are sustained within departments in public research organisations (Whitley, 2000). Relying on the Actor-Network theory (Latour, 1987) to understand migration as a part of scientific knowledge production, and on the model of the 'entrepreneurial university' (Guerrero and Urbano, 2012) to conceptualise changing organisational environment of scientific practice, this research focuses on three elements of the 'soft' component of scientific practice: teaching, business/entrepreneurial activities and public engagement activities.

These elements are formalised to a different degree across different countries, and across national PROs, thus scientists with migration experience have greater freedom to interpret these elements of the actor-network. Study results suggest that the number of scientists with migration experience in a department, together with the strategy to 'adapt to the rules' or 'transform the rules' have an impact on the eventual career-based 'success' of a scientist. The case study group for this research are Russian-speaking nanoscience researchers who at the moment of the study resided outside of the territory of the former Soviet Union and were engaged in predominantly scientific research. The analysis is based on 68 semi-structured qualitative interviews that were conducted with Russian-speaking nanoscientists during 4 rounds of fieldwork in 2013 and 2014 in the USA, UK, Germany, France and Switzerland. The study has policy implications: it is normally assumed that scientific migration has no 'transaction costs' and is overall beneficiary for the receiving institution. However, the way scientists with migration experience interpret the 'soft' side of their actor-network may interfere with organisational objectives. Therefore, smarter programs of adaptation are required to ensure a smooth transition. This paper is a part of a doctoral research titled "Societal Effects of Scientific Migration: Insights from Russian-speaking Nanoscience Emigres". The problem raised in the paper is also a core research question of the dissertation, which also explores reasons and trajectories of academic career building in the globalised world. (322 words)

Felicitas Heßelmann Legitimizing punishments in science: the emergence of institutions sanctioning scientific misconduct

The topic of scientific misconduct has attracted rising attention during the last decades. This height-ened attention is accompanied by the development of new positions, institutions and organizations that investigate and eventually sanction misconduct. Like any new institutional form, they are facing considerable challenges to legitimize their existence and their actions. Because they engage in defining and defending the rules of scientific practice and are thus potentially very powerful, these institutions are likely to be met with resistance. To gain legitimacy, they employ symbolic resources and discursive strategies to demonstrate congruence with existing institutional contexts of science. At the same time, misconduct remains a highly contested topic within the scientific community: its definitions, the methods for its investigation, the appropriateness of sanctions, and even its extend are under often heated debate. Moreover, the discussion is infused with very different and often contradictory cultural themes, e.g. the theme of rational and essentially value-free science; and emotional and value-laden themes of justice and punishment. Consequently, institutions addressing these topics are facing discordant audiences as well as highly ambiguous symbolic environments. The dissent about scientific misconduct is likely to create tensions between the formal institutional structures and the individuals responsible for enacting them. Therefore, my thesis will focus on emerging sets of practices and rules that are established by already existing organizations (e.g. uni-versities, journals). I shall attempt to show how the ambiguity and contrariness inherent in the symbolic resources opens up a possibility for the actors involved in the institutions to actively shape the emerging structures. By interpreting, modify-

ing or rejecting the institutional claims for legitimacy, these actors can seek to ameliorate the tensions and contradictions. In so doing, they influence not only the chances for institutional legitimacy, but the very forms and meanings the institutions comprise.

Andrew Hunter Making the Case for Publicly-Funded Science: Evidence, Advocacy and Performance around the UK General Elections of 2010 and 2015

With a general election looming in May 2015, the UK's science institutions and research community are expending considerable energy to position public science investment as a key priority for the next parliament and beyond. These debates on research policy and funding are a filter for a much wider set of arguments over the role(s), value(s) and responsibilities of science and innovation in a democratic society and their social and cultural meanings (c.f. Kearnes & Wienroth, 2011). My research focuses on this advocacy work, viewing it through a dramaturgical lens as a form of 'public drama' through which the rationale and goals of public science investment are negotiated and 'the meaning of the task' is performed. This drama is at heart a co-performance between two central 'teams', comprising various institutional science advocates on the one hand (e.g. Royal Society, CaSE, SiV), and (would-be) government policy-makers on the other, with both sets of actors pre-empting the attitudes, priorities and responses of the other, and thus shaping their arguments, evidence and behaviour accordingly. A central goal for the advocates is to extract science policy commitments ahead of the election itself, and to emphasise the value of research and innovation in the subsequent spending review process. In exploring these performative dynamics I draw on a variety of literatures, including Science and Technology Studies (STS), Science and Technology Policy (STP), and Performance Studies; in particular, contrasting the dramaturgy of Anton Stanislavski and Bertolt Brecht, along with Augusto Boal's ideas on the Theatre of the Oppressed and Legislative Theatre. These are also complemented by work on the sociology of expectations and the future, highlighting the importance of 'sociotechnical imaginaries' and considering those imaginaries put forward during science advocacy work.

15.40-17.10 HEALTH AND BIOSECURITY

- Josh Hutton (University of Sussex)
- Alex Mankoo (University College London)
- Florence Blandinieres (F. Schiller University Jena)

Discussant: Dr Jamie Revill

Josh Hutton Inter-Organisational Learning in Pandemic Response

During the response to a pandemic, a global network of actors is convened in what Alvin Toffler calls an 'adhocracy.' These actors may never have collaborated before, or may have varying organisational cultures and practices. Furthermore, during pandemic response, time pressures and the high costs of failure prohibit trial and error learning. Network learning as a field is relatively new, it stems out from the organisational learning literature and specifically looks at the inter-organisational characteristic of learning. Specifically, network learning looks at: how organisations in a

network learn to work with one another; how information and learning is created at the network level; and how information is codified by some network-level mechanism. In his book 'Aid on the Edge of Chaos' Ben Ramalingam reveals a need for a more coordinated framework for aid delivery so as to reduce the amount of waste which is inherent in the system (E.g. donations which cost the recipient more to distribute than the value of aid). This thesis proposes to frame pandemic response from a project management perspective and address a number of questions; what inter-organisational learning occurs during pandemic response and how are these lessons codified ex post to better future responses? Why might this learning be shaped by the ad hoc, time-pressured, high-cost nature of pandemic response? And, how can we (in the global sense) manage learning from pandemics better to improve out responses in the future?

Alex Mankoo Teargas – We haven't got the foggiest: Deconstructing the Ambiguities of Creeping Legitimisation

The past century has seen both the widespread introduction and persecution of chemical agents as weapons of warfare. In the aftermath of WWI, the 1925 Geneva Protocol enforced the prohibition of these technologies. However, since then, teargas has followed a very different technological trajectory to its chemical weapons counterparts, transitioning into a civil context as well as returning to military battlefields. This paper examines the legitimisation of teargas in colonial Palestine during the 1930s, through an analysis of declassified records from the National Archives. It argues that the colonial governments adopted an essentialist approach to teargas, framing it as an inherently non-lethal technology. Colonial policy makers initially based their claims for the legitimacy of teargas in their knowledge of its use in the US, and then employed expert judgment to iron out the technology's uncertainties. This process effected its creeping legitimisation throughout the British colonial empire. Furthermore, this approach failed to account for divergent interpretations of the technology, cultivating ambiguities around and ambivalences toward teargas – a sociological fog – that have characterised discussions regarding its legitimacy since. STS provides a means of analysing and deconstructing this fog through a social constructivist approach to teargas. Grint & Woolgar's onion model of technology is employed to demonstrate the social shaping and interpretative flexibility of teargas technologies, and the paper concludes by highlighting the pragmatic value such an analysis has for policy-making. Paradoxically, the militaristic shaping of teargas is incommensurable with the democratic requirements of this method, and presents an issue for further study.

Florence Blandinieres Lost in Translation: closing the evidence-to-practice knowledge gap

Recent developments in medical innovation studies built up the concept of testing regime which appears a crucial locus of learning to guide technological search (Yaqub, 2010; Yaqub & Nightingale, 2012). The construction of these intermediate conditions represent the key factor to achieve innovation due to the radical uncertainty context in which medical innovation takes place. The authors underline the importance of national and disease-specific institutions to design appropriate testing regimes i.e. defining laboratory methods («instrumentality», Price 1984) and the

conditions to perform the experiments. We argue that, in absence of formal institution specific to standardize research efforts to solve a given medical problem, the testing regime can be established thanks to the emergence of a new instrumentality and can be governed by communities of practice. This study aims at identifying the factors that have enabled the birth of an instrumentality by looking at a specific medical technology, liposomes. Liposomes represent the most mature and successful drug delivery technologies in the field of cancer. Before being considered as potential medical technological candidates, liposomes were used in science as tools to mimick membrane models. Once the existence of liposome is discovered in the sixties, the field of cell biology faced a radical breakthrough. We developed a historical approach based on citation network analysis that investigates technological and scientific developments by crossing patents, scientific and clinical publications. We show that knowledge accumulated when liposomes were used as membrane model shaped the way of solving the problems linked to commercialization.The field of biophysics appears as a matchmaker between several disciplines and expertises to solve the main technological issues. Scientific publications indicate the wide scope of scientific and clinical fields involved in the research efforts organized towards the use of the same artefact and craft experiments, achieved in vitro and in vivo conditions.

Jubilee G36

10.10-11.10 ENERGY SERVICES AND SECURITY

- Lina Brand (University of Leeds)
- Emily Cox (University of Sussex)

Discussant: Prof. Gordon MacKerron

Lina Brand Low carbon development: fact or fiction? Contrasting policy proposals with energy-economic analysis

Understanding how energy systems work and how they relate to social and economic goals is of vital importance. Particularly in a world where economic growth is mainly driven by energy use and human well-being is to a large extent dependent on access to energy sources, but also where the scale of human-directed combustion of fossil fuels is driving changes in the planet that go beyond natural processes. In this context, energy services have the potential of enhancing our understanding of energy systems and thus their relationship with social and economic goals. Analysing energy systems at any level (global, regional or national) using an energy services perspective has various advantages. Firstly, energy flows can be traced all the way to their final stage, where they provide a service to society (for example thermal comfort, illumination or passenger transport). Secondly, the boundary of the energy system is expanded, so analysed conversion processes are not limited to the ones that occur in primary to final energy transformations, but they include the conversion process that occur in end use devices. Thirdly, potential efficiency gains can be assessed more broadly by including passive systems in the analysis. Therefore, the aim is, on one hand, to analyse potential efficiency gains in two countries (one developed and one developing country), based on an energy services perspective and consider-

ing real technological alternatives and country particularities. This might shed some light on future energy possibilities for each country given different stages of technological lock in. On the other hand, the aim is to assess future energy services needs based on social well-being indicators instead of economic growth projections. Here economic growth is not assumed to be society's main long-term objective. The goal of this presentation will be to outline this early stage PhD project.

Emily Cox Assessing the electricity security of the UK in a low-carbon context

In order to meet legislative targets for mitigating climate change, future energy systems will need to become secure, affordable and low-carbon – the so-called 'trilemma' of sustainable energy policy. In the UK, the trilemma has received growing attention as energy security concerns rise up the political and public agenda, driven by declining indigenous fossil fuel reserves and increasing concerns over anthropogenic climate change. As part of a growing body of research into energy security and low-carbon energy transitions, this project seeks to assess the future security of the UK electricity system in a low-carbon context. A new indicator framework for security of both supply and demand has been developed with the specific aim of making projections of the security of a low-carbon electricity system. The framework has been applied to a set of three transition pathways, all of which aim to reduce UK carbon emissions by 80% by 2050. The choice of transition pathways aims to compare and contrast options for market-centric, centrally-controlled and decentralised electricity systems. This presentation will introduce this new methodology and the results from the empirical analysis, along with resulting recommendations for UK energy policy. Additionally, the presentation will introduce some initial conclusions from the next stage of the research, which uses the results from the security assessment as the basis for an in-depth analysis of stakeholder opinions on energy security. The project aims to explore the diversity of perspectives within the UK stakeholder community, and to assess the impact that these perspectives may have on preferred pathways and technologies for maximising low-carbon energy security.

11.35-12.35 ENERGY TRANSITIONS

- Joon Huh (Hanyang University)
- Frederic Bauer (Lund University)

Discussant: SNM (Dr Rob Byrne) AND REGIME RESISTANCE (Dr Phil Johnstone)

Joon Huh Strategic Niche Management for Sustainable and Competitive Automobility Systems: A Case of Autonomous Vehicle Transition

My research will analyse the early stage of autonomous vehicle transition with strategic niche management (SNM) approach.

The sustainability concern for current automobility systems has been persistently addressed due to such challenges as traffic accidents, traffic congestions, and air pollutions. Especially, the car accidents are emerging as major social problems. For example, Korea's total societal cost of traffic accidents in 2012 was KRW 23.6 billion which amounts to 1.9% of national GDP. Since it turned out 90% of car crashes re-

sulted from drivers' distraction, the automotive industry is viewing the autonomous vehicle as a plausible solution.

According to SNM theory, the government should strategically incubate niche technology in order to shape current socio-technical system into better one. I believe SNM approach provides desirable framework to analyse the autonomous vehicle transition case. The technology is emerging but still remains as niche. The autonomous vehicles operate by communicating with intelligent transport systems and other autonomous cars. Building such infrastructure and deploying a significant volume of automated cars require huge investments both from public and private sectors, meaning the necessity of government's SNM. In addition, it should accompany significant social changes such as legal framework and consumer perception.

In my research, I will compare national policies for autonomous vehicle transition between US (industry led) and European/Asian (government led) models. I will elaborate policy insights for Korean government who is aggressively accelerating vehicle automation. Competitive aspect of SNM, maintaining its automotive industry globally competitive, will also be studied to meet the needs of Korean government. Experts' interview with government, policy research institute, and firms will be carried out.

Frederic Bauer Socio-technical transitions in the chemical industry – regime stability and resistance

Socio-technical transitions to low fossil carbon societies affect all sectors of the economy and require significant restructuring to reduce the demand for fossil resources. Significant research efforts have been devoted to study the possibilities of transitions within the energy and transportation sectors, which use the main share of fossil resources to produce heat, power and transportation fuels, but how transitions (can) occur in other industry sectors is yet to be understood in detail. I aim to unpack the profound carbon lock-in of the chemical industry, using the example of ammonia. I argue that technology must be understood as a political phenomenon which reflects specific interests, following Andrew Feenberg's critical theory of technology. As technological innovations are often seen as prerequisites and determinants for socio-technical transitions, there is a pro-innovation bias which ignores the political aspects of innovation and innovating actors, who can focus on evasive innovation instead of transformative innovation. To understand the stability of the current regime in the chemical industry I discuss the drivers for innovation in the sector, and how these are affected by the interests that main actors in the sector have. The analysis shows that the regime structure with large incumbents and high barriers to entry for new actors and extremely large scale of production gives a very stable system with high focus on incremental, evasive innovation and that technological innovation efforts in the industry mirror the interests of the established regime actors.

13.45-14.45 ENERGY TRANSITIONS IN NATIONAL CONTEXTS

- Marie Blanche Ting (University of Sussex
- Aisha Al-Sarihi (Imperial College London)

Discussant: Dr Florian Kern

Marie Blanche Ting Socio-technical energy transitions in South Africa's electricity sector

There is an increasing intersection between economic activities, ecological limitations and the implications on poverty alleviation that has recently led to constraints on developing countries' future development goals. It is a widely accepted fact that developing countries will suffer first and foremost from the consequences of global warming even though they have contributed least to the problem (Stern, 2007). However, the emergence of developing countries has resulted in rising energy demands. This is matched by increased use of fossil fuels and carbon emissions. It is expected that energy related emissions will increase by 45% between 2006 and 2030. These increases are mostly attributed to non-OECD countries, which account for as much as 97% (Rafey and Sovacool, 2011, Pegels, 2009). The overarching research is how developing countries can overcome its challenges for energy transitions as it contends between economic growth and sustainable development. The proposed research will use transitions theory in a South African context, particularly the Multi-Level Perspective framework (MLP) as means of understanding the transformation that is required for a sustainable energy development (Geels, 2002, Smith et al., 2005, Grin et al., 2010). There are three main contributions that this research aims to fulfill. First is the theoretical requirement for enriching the 'regime' within the MLP, as it is currently not properly delineated, and its boundaries are subject to framing and debate (Holtz, 2008). Secondly, the theoretical analysis will evaluate two niches that maybe competing or complementary to an existing regime. Thus, it will analyze the interplay between regimes and niches, as a way of understanding the conditions and responses that is required for niches to displace a regime. A third contribution, aims is to test possible pathways for transition as proposed by Geels and Schot, (2007) but has also been modified by Vergragt, (2012).

Aisha Al-Sarihi Drivers, barriers and strategies for renewable energy implementation in Oman – A multi-level perspective analysis

Oman is as richly endowed with renewable energy sources as it is with hydrocarbons. Over the last decade, the country has been experiencing a gradual shift towards exploring renewable energy development as a driving force to diversify the national economy away from fossil fuels. Academics, firms, and some public sectors have started to pursue pilot developments of renewable energy technology projects in different areas. Due to the lack of policy framework that can guide renewable energy development in Oman, the current practices of renewable energy deployment are fragmented. From a policy perspective, this paper seeks to inform this issue with a process of stakeholder engagement through 18 semi-structured interviews informed by multi-level perspective analysis approach. This approach allows an identification of drivers, barriers and tensions within and between sectors involved in re-

newable energy development in Oman: academic, industrial and public sector. The analysis highlights policy implications with the aim of supporting decision makers in formulating renewable energy policies and future plans for Oman.

15.40-17.10 ENERGY SPATIAL TRANSITIONS

- Jonas Torrens (University of Sussex)
- Gijs Dercks (Imperial College London)
- Irene Hakansson (King's College London)

Discussant: Dr Rali Hiteva

Jonas Torrens Re-municipalisation of energy utilities: the changing role of cities in the German low-carbon transition

Since 2007, a trend towards municipal ownership and control of electricity distribution grids has emerged, with the reversal of more than 190 energy concessions and 60 the creation of new local and regional utility companies (Hall et al., 2013). Now, more than 50% of electricity distribution is done via public ownership. Yet, despite the attention given to the Energiewende, the implications of the re-municipalisation process to low carbon transitions remain unexplored. While expanding on Geels (2010) and Hodson & Marvin (2010), I intent to address two questions. First, how is this process shaping the role the cities are playing in the Energiewende. Second, how it effects the cooperation with community energy projects and other technological niches. At this stage of the research I will present my conceptual framework - articulating the concepts of rescaling and rescoping - and research design. The current process of re-municipalisation is a challenging subject for conventional transitions studies methodologies, as it is rapidly unfolding in a variety of local contexts, with little historical evidence. It is thus an important case of ongoing institutional shifts for sustainability transitions to approach and contend with.

Gijs Dercks Innovation policy for sustainability transitions

Innovation has become the true panacea of the modern world. Whether it is providing economic growth or dealing with climate change, whether it's a start-up, a multinational, a country or an entire continent, the answer to all problems are to be found in innovating. Innovation is a buzzword that cannot be left out of any business plan or policy initiative. Fougere and Harding (2012) even go so far as stating that innovation slowly became something that defines us, a fundamental part of our modern identity that separates us from those cultures (or those companies) that cannot, or cannot so capably, innovate.

In the 20th century, innovation became directly linked to competitiveness and seen as a major source behind economic growth. In this form, academics and politicians were increasingly interested in the promotion of innovation (Fagerberg, and

-gress (Stirling, 2009). Nowadays, most countries and even many cities and regions have adopted their own general innovation strategy.

This doctoral project looks at current developments of 21th century innovation policy in a European context. It observes changes in innovation theory that move beyond a narrow science-based and performance-led approach towards a more broad-based and challenge-led one. Furthermore, it aims to explore how these new ideas are adopted in policy developments in and by the European Union. The specific interest in this area of research comes from the potential of embracing a transformative agenda towards general innovation policy in the pursuit of a low-carbon or green society, and the question to what extend this agenda has been embraced so far.

Irene Håkansson The socio-spatial politics of sustainable transitions: Linking sustainability initiative to urban regeneration and gentrification

This PhD project is part of the EP7 research project 'PATHWAYS — transition to sustainable low-carbon societies'. One of PATHWAYS' objectives is to identify factors that enable or disable sustainability transitions on a level of local, innovative initiatives within key domains like agro-food, land-use, and electricity. Against this background, I critically investigate and compare cases of sustainability initiatives—such as London's food-growing network 'Capital Growth' and the community energy initiative 'Brixton Energy'—in the context of urban regeneration and gentrification. I aim to show how and to what extent the emergence, establishing, and success or failure of these initiatives are affected by such prevalent urban processes or, conversely, have themselves an effect on such processes. The overarching research questions are: How do sustainability initiatives relate to the socio-spatial politics of urban regeneration and gentrification? What implications do these relations have for sustainability transitions? I am currently conducting a pilot study on the above named initiatives while refining my theoretical framework, which combines theories of sustainable transitions with conceptions of urban space and place(-making), theories of gentrification, and conceptual approaches on socio-spatial justice deriving from urban political ecology. The challenge ahead will be to develop the multi-method research approach that I anticipate for comparing cases across domains and across urban localities with differing degrees of gentrification / regeneration. Both "bottom-up" socio-spatial aspects of initiatives such as their neighbourhood inclusiveness, and "top-down" spatio-material aspects of regeneration projects and policies (e.g. the 'New Southwark Plan' for South London) must be captured, along with existing gentrification indicators like changing land values. Difficulties in how to methodologically tackle such cross-scale complexities is what I would especially like to discuss at DPhil Day.

We, the organising committee of DPhil Day, thank the Researcher Led Initiative Fund of the University of Sussex Doctoral School, and the Science Policy Research Unit for their kind support.

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