

18th annual SPRU

DPhil Day

Incorporating DSkills Day



Monday 28th May | Tuesday 29th May, 2012
Freeman Centre | University of Sussex

Acknowledgements

The DPhil Day organising committee would like to thank *SPRU – Science and Technology Policy Research* at the University of Sussex for providing financial support.

We are extremely grateful for the contributions of knowledge, time and intellectual challenge provided by our honoured guests: Tim Foxon, James Wilsdon, Mariana Mazzucato, Simona Iammarino, Matias Ramirez, Ben Martin, Steven Hill, Laurence Pearl, Melissa Leach and Richard Tol.

In addition, we would like to thank those who inspired and informed through their contribution to DSkills Day: James Wilsdon, Andy Stirling, Alex Coad, Erik Millstone, Paul Nightingale, Sarah Robins-Hobden, Catherine Reynolds, Amelia Philpott, Jane Riley, Roberto Camerani, Puay Tang, Florian Kern and Tommaso Ciarli.

Finally, we would like to thank the following for their assistance, without whom DPhil Day 2012 would be a nascent innovation without hope of takeoff: Janet French, Joy Blake, Yvonne Barnes, Danielle King, Gordon MacKerron, Ed Steinmueller, the long list of volunteers and our DPhil Day organising colleagues from years past.

– The 2012 organising committee

Day 1: Monday 28th May – DSkills Day

All sessions will be held in the Freeman Building, G24/25

- 9:00 – 9:30 **Welcome coffee**
- 9:30 – 9:45 **Opening remarks**
Professor Gordon MacKerron (Director of SPRU)
Jake Barnes (DPhil Day committee)
- 9:45 – 10:25 **Session 1: Experts, advocates or honest brokers? The role of researchers in public policy**
Professor James Wilsdon and Professor Andy Stirling
- 10:35 – 11:30 **Session 2: PhD research & beyond: benefits, challenges, pitfalls & other issues**
Dr. Alex Coad
- 11:30 – 11:45 **Coffee break**
- 11:45 – 13:00 **Session 3: Preparing for fieldwork**
Professor Erik Millstone
- 13:00 – 14:00 **Lunch**
- 14:00 – 14:55 **Session 4: Writing and publishing**
Dr Paul Nightingale
- 15:05 – 16:00 **Session 5: Conferences and networking**
Amelia Philpott, Jane Riley and Catherine Reynolds
- 16:00 – 16:15 **Coffee break**
- 16.15 – 17.10 **Session 6: Questions you were afraid to ask about your DPhil, until now...**
Dr. Roberto Camerani, Dr Puay Tang, Dr Florian Kern and Dr Tommaso Ciarli

End of day 1

- 19.00 **Conference Dinner**
Terre à Terre
71 East Street, Brighton, BN1 1HQ

All presenters, honoured guests, speakers and registered conference attendees are invited.

The restaurant can be easily reached by public transport and a short walk. There will also be a chaperoned group leaving the Freeman Centre, taking the local bus, at 6 pm.

Day 2: Tuesday 29th May – DPhil Day overview

09:40 10:00	Opening remarks Paul Nightingale / Andy Stirling G24/25		session chair location
10:00 11:30	1a Tim Foxon G24/25	1b James Wilsdon G23	
----- coffee -----			
12:00 13:30	2a Simona Iammarino G24/25	2b Mariana Mazzucato G23	2c Matias Ramirez G22
----- lunch -----			
14:30 16:00	3a Steven Hill G24/25	3b Ben Martin G23	
----- coffee -----			
16:30 17:00	Closing remarks Ed Steinmueller G24/25		
----- drinks reception -----			
18:00 19:30	DPhil Day Debate – The Geek Manifesto: should science play a bigger role in politics & policy? G24/25		

DPhil Day timetable

- 9:00 - 9:40 **Welcome coffee**
Freeman Centre, Business Lounge
- 9.40-10.00 **Opening remarks**
Freeman Centre, G24/25
Dr Paul Nightingale and Professor Andy Stirling
- 10.00 -11.30 **Parallel session 1a:** Chaired by Dr Tim Foxon
Freeman Centre, G24/25
- **Managing the diffusion of electrification in Bangladesh**
Pranpreya Sriwannawit
 - **Innovation Journeys in Community Energy Initiatives**
Jake Barnes
 - **The diffusion of green innovation systems: A co-evolutionary approach**
Cian O'Donovan
 - **Shifting Energy Consumption in the Home**
Nikki Fox
 - **Discontinuous environmental innovations**
Dedy Sushandoyo
- Parallel session 1b:** Chaired by Professor James Wilsdon
Freeman Centre, G23
- **Conflict in Transition**
Misha Velthuis
 - **Compulsive Policy-Making - The evolution of the German Feed-in tariff system for solar photovoltaic power**
Joern Hoppmann
 - **An investigation into the determinants of diffusion of wind power**
Konstantinos Delaportas
 - **Rethinking sustainability: Technology application and ecological modernisation in the bamboo industry, Lin'an China**
Kin Wing Chan
 - **Regulatory Support for the Adoption of a Radical Eco-innovation**
William Sierzechula
- 11.30 -12.00 **Coffee break**
Freeman Centre, Business Lounge
- 12.00 -13.30 **Parallel session 2a:** Chaired by Professor Simona Iammarino
Freeman Centre, G24/25
- **The Governance of Innovation: Science Cities and Science Parks in Russia, 1989-2010**
Imogen Wade
 - **In search for the economic and financial sustainability of Science and Technology Parks Management Organizations: proposition of a business model in the Brazilian context.**
Aline Figlioli
 - **Technology transfer for technological learning and capabilities development. The role of intermediaries.**
Saoud Al Shoailli

- **The role of cooperation with external partners for radical innovation: the moderating effects of other sources of innovation**

Natalia Ryzhkova

Parallel session 2b: Chaired by Professor Mariana Mazzucato
Freeman Centre, G23

- **Organisational capabilities for policy and innovation in the public sector**

Chux Daniels

- **Does governmental venture capital certify the value of new technology based firms? Evidence from Europe**

Anita Quas

- **Financing innovation: Strategy and the choice of funding sources**

Jaime Sierra

- **Understanding the conditions under which drugs for rare diseases are developed to overcome unmet therapeutic need**

Philippa Crane

- **Dividends' behaviour during the times of recession.**

Madina Tash

Parallel session 2c: Chaired by Dr. Matias Ramirez
Freeman Centre, G22

- **Absorptive capacity and innovation: the theory revisited**

Abiodun Egbetokun

- **The interaction of external and internal knowledge and the organization technological learning dynamics: from capacity building to technological transformation**

Julian Pineres Ramirez

- **Institutional evolution in the Taiwanese Biopharmaceutical Innovation System: the Evolving Roles of Research Institutes**

Shih-Hsin Chen

- **Intra-firm diffusion in a project-based organisation: the case of Petrobras**

Patricia Andrea do Prado Rios

13.30 - 14.30 **Lunch**
Freeman Centre, Business Lounge

14.30 - 16.00 **Parallel session 3a:** Chaired by Dr Steven Hill
Freeman Centre, G24/25

- **The Bristol Pound**

Andras Novoszath

- **Monitoring performance or performing monitoring? The case of monitoring access to rural water supply in Ethiopia**

Katharina Welle

- **Is wireless communication a health risk? Analysing the scientific framing of a societal controversy**

Marijke Hermans

- **What is SPRU? What does SPRU do? An application of Q-Methodology**

Yusuf Dirie

Parallel session 3b: Chaired by Professor Ben Martin
Freeman Centre, G23

- **Low emission vehicles, niches, market segments, and eco-labels: strategies of car manufacturers**
Alexander van der Vooren
- **New Industrial Policy for Firm Upgrading in Buyer-Driven Global Value Chains: A Case Study of the Peruvian Textile Industry**
Miklos Lukacs de Pereny
- **Hegemonic and alternative journal indexation systems in Ibero-America: their role in research evaluation and academic publishing practices**
Diego Chavarro
- **Policy Reformation as Learning: Evidence from the Chilean Salmon Farming Industry Crisis**
Veronica Roa Petrasic
- **The Global Regime for Competition; Two routes, different results**
Hammed Roohani

16.00 -16.30 **Coffee break**
Freeman Centre, Business Lounge

16.30 -17.00 **Closing remarks**
Professor Ed Steinmueller (Director of Doctoral Studies – School of Business and Management)
Freeman Centre, G24/25

17.30-18.00 **Drinks reception**
Freeman Centre, Business lounge

18.00- 19.30 **DPhil Day Debate-**
The Geek Manifesto: should science play a bigger role in politics & policy?
Freeman Centre, G24/25

Mark Henderson - Author, The Geek Manifesto

James Wilsdon - Professor of Science & Democracy, SPRU (Chair)

Laurence Pearl - Professor of Structural Biology & Head of School of Life Sciences

Melissa Leach - Professorial Fellow, Institute of Development Studies

Steven Hill - Head of Strategy Unit, Research Councils UK

Richard Tol - Professor of Economics

Whether we want to improve education or cut crime, to enhance public health or to generate clean energy, science is critical. Yet politics and public life too often occupy an evidence-free zone. Just one of our 650 MPs is a scientist. Ministers ignore, and even sack, scientific advisers who offer inconvenient evidence. The NHS spends taxpayers' money on sugar pills it knows won't work, while public funding for research that would boost the economy is cut. In his agenda-setting new book, Mark Henderson builds a powerful case for science to become more central to government and the national conversation. Mark Henderson will present The Geek Manifesto, followed by a panel debate. In Henderson's words: 'It's time to mobilise the geeks!'

Abstracts

Session 1a: Chaired by Dr Tim Foxon
(Reader in Sustainability & Innovation, University of Leeds)
Freeman Centre, G24/25

Managing the diffusion of electrification in Bangladesh

Pranpreya Sriwannawit – Department of Industrial Economics and Management, Royal Institute of Technology, Sweden

“This empirical paper analyzes a rural electrification project done by Grameen Shakti, an energy company in Bangladesh. It is a case study, using three ways of empirical data collection: interview, observation and document. Grameen Shakti is analyzed as an organization as a whole. The mechanism and challenges of the diffusion of rural electrification project are analyzed qualitatively regarding different kinds of variables that determine the adoption rate of an innovation in connection to the bottom of the pyramid concept. Theoretical contribution is the linkage of diffusion theory to the bottom of the pyramid framework and identification of limitations in diffusion research for development field. Empirical contribution is the application of the mentioned frameworks to renewable energy technology.”

Innovation Journeys in Community Energy Initiatives

Jake Barnes – SPRU, University of Sussex

“The research inquires into the innovation processes within contemporary examples of grassroots innovation for sustainable development. It specifically seeks to address the nature of community energy innovations and the micro level processes within innovation journeys under this context. The research uses a ‘social systems framework’ as a means to approach the variety and diversity of actors involved in the sector and uses the core concepts of ideas, people, context, transactions and outcomes, taken from the process model of innovation, to inquire into community energy innovation journeys. It is expected that notable differences will be found between the process model of innovation and the innovation processes under community energy, with significant implications for supporting and harnessing particular types of innovation for sustainability.”

The diffusion of green innovation systems: A co-evolutionary approach

Cian O'Donovan - SPRU, University of Sussex

“Much is known about the diffusion of products and processes. However the growth of renewable energy offers a number of novel features which I suggest would benefit from further research. First, green technology is a collective good. Second, the understanding of renewable energy technology as a (socio-technical) system.

This paper proposes a co-evolutionary approach to understand the processes which affect the diffusion of socio-technical systems. By this I mean to draw into a framework relevant processes from the policy environment, the business environment and wider society.”

Shifting Energy Consumption in the Home

Nikki Fox - SPRU, University of Sussex

Discontinuous environmental innovations

Dedy Sushandoyo

Although discontinuous innovations potentially offer sharp price/performance improvements and even multiple significantly new characteristics; however, such innovations typically involve significant elements of new-unproven technology. In the early years of introduction, when the technology is still developing; the merits of such innovations are often not evident and still have to be proven. These innovations are often ill-developed in terms of user needs and expensive because of low-scale production. Some studies argue that close producer-user interactions in the early years of introduction of discontinuous innovations are hence essential.

According to the literature, interactions between users and producers are however not sufficient for the introduction of environmental innovation. This is because different actors than users often promote environmental product demands. Hence, to articulate demand and acceptance for environmental innovations, producers also need to involve additional actors, such as government (i.e. policy makers and regulators), in the introduction process.

When the technology is ill-developed, the merits of the innovations may potentially be valued in different ways by different stakeholders (i.e. producers, users, government); which makes managing the introduction of discontinuous environmental innovations is a challenging task. The purpose of this study is to investigate producer-user-government interactions in the introduction of discontinuous environmental innovations of complex products. Two research questions are posed: (i) what are the types of producer-user-government interactions that exist in the introduction of such innovations? (ii) How is it possible to manage the interactions that facilitate the introduction of such innovations? Using case study methods, this study will analyse five projects in which hybrid-electric heavy hybrid vehicles were introduced.

Session 1b: Chaired by Professor James Wilsdon
(Professor of science and Democracy, SPRU)
Freeman Centre, G23

Conflict in Transition

Misha Velthuis- Industrial Engineering and Innovation Sciences, Technical University of Eindhoven, Netherlands

“The past few years have seen repeated calls for more attention to the role of inter-stakeholder conflict within socio-technical transitions (Shove & Walker, 2007, 2008, Smith & Stirling, 2008). While opposition between niche- and regime processes has received some attention (Smith, 2007), the role of antagonist social relations within and among niches, and within and among regimes remains underexposed. Especially in the normatively diverse realm of sustainable development this constitutes an important impediment to our understanding of transitions.

This paper aims to 1) (re)assess these claims on the basis of an extensive literature review, and 2) to propose a framework through which existing knowledge on inter-stakeholder conflict can be mobilized to overcome some of the shortcomings identified in step 1. Both steps will focus on both socio-technical transitions in general and sustainability transitions in particular. Step 1 entails a categorization of the dominant conceptual, empirical and theoretical approaches to the subject of inter-stakeholder conflict. Step 2 entails a reconsideration of the theoretical roots of transition studies in Evolutionary Economics, Science and Technology Studies (STS) and Sociology. The resulting “rule-based approach” accommodates the integration of insights from Conflict Studies and Organizational Learning within existing theory on socio-technical- and sustainability transitions. As such the paper

contributes to a better theoretical understanding of when, how and why such transitions take place, which in turn provides a fruitful basis for further empirical research.”

Compulsive Policy-Making - The evolution of the German Feed-in tariff system for solar photovoltaic power

Joern Hoppmann – Department of Management, Technology, and Economics, ETH Zurich, Switzerland

“In recent years, technological innovation system (TIS) approaches have gained increasing prominence to examine how policy makers can foster a transition towards sustainability. A number of functions or key processes of socio-technical systems have been identified that policy makers should support to encourage the development and diffusion of environmentally benign technologies. But while the general usefulness of the functional analysis of TIS has been demonstrated in a large number of empirical settings, we still lack a detailed understanding of the dynamics at play when policy makers engage as ‘system builders’. In this paper, we draw on the case of the widely-copied German feed-in tariff system for photovoltaic power to show how two mechanisms – limited attention of policy makers and complex system interdependencies – affect policy-makers’ ability to purposefully shape socio-technical systems. We argue that, similar to technological systems, the process of intervention in socio-technical systems can be described by what Rosenberg (1969) calls ‘compulsive sequences’. More specifically, we propose that, at each point in time, policy makers tend to target only a limited number of system bottlenecks. Due to interdependencies in system elements, these interventions often lead to unintended changes in the socio-technical system and the occurrence of new bottlenecks to be targeted in subsequent steps. Based on our findings, we derive implications for the TIS literature. Furthermore, by demonstrating the value of policy learning in the context of TIS, our framework represents a first step in connecting this line of inquiry with the work on transition management and reflexive governance.”

An investigation into the determinants of diffusion of wind power

Konstantinos Delaportas – School of Slavonic and East European Studies, University College London

“My research seeks to investigate the factors that influence the diffusion of wind power in a total of 130 countries over the time period 1990-2009. The paper treats electricity from wind power as an eco-innovation, and tries to add to the literature that examines the barriers of diffusion of ecoinnovations, by drawing upon the theory of diffusion of innovations. In particular, it tries to unify a “neoclassical economic approach” with a sociological perspective, and then uses hazard models to examine the factors that can explain differences in the speed of diffusion of wind power across countries.

On a conceptual basis, the paper tries to unify two approaches into the analysis of diffusion of innovation. The one comes from the traditional economics of innovation that emphasizes the profitability aspects of an innovation as the key to its diffusion. The other is a more holistic approach that is based on a sociological background. It treats diffusion as a more complicated process and incorporates into the analysis innovation characteristics other than profitability. Examples include the innovation’s compatibility with the established system, the extent to which the innovation’s adoption is visible, etc.

To model the aforementioned theoretical framework, the paper uses hazard models (also known as event history models) in an attempt to identify the reasons why a certain event has occurred within a given period of time. In this paper two major questions are examined: first, what are the factors explaining whether a country has integrated wind energy into its electricity generation system, and second, what factors can explain the speed of diffusion of wind technologies into a country.”

Rethinking sustainability: Technology application and ecological modernisation in the bamboo industry, Lin'an China

Kin Wing Chan – School of City and Regional Planning, Cardiff University

“Bamboo production has presented a shift of human-nature relations under China’s modernization. Current research on bamboo in China mainly focuses on economic value, model simulation, forestry management, and taxonomy. However, there are lacunae in both literature and approach to understanding how technology is used to utilize bamboo’s production and sustainability. There are two major objectives of this research: (1) to examine how technology are used to utilize bamboo production space and bamboo waste in the processing process, (2) to evaluate the technological impacts on the environment and socio-political domain in the bamboo industry. This research employs mixed-methods such as surveys, in-depth interviews, and case studies to contextualize how technologies transform the bamboo industry to address sustainability. Bamboo is a multi-purpose material. Substituting wood with bamboo materials can reduce logging and ameliorate the impact of global warming. Understanding how technology is used to produce bamboo materials can increase nature-social capacities and identify alternative development paths in addressing rural-urban sustainability.”

Regulatory Support for the Adoption of a Radical Eco-innovation

William Sierzechula – Transport and Logistics, Delft Technical University, Netherlands

“My research seeks to understand how different levels of government use regulation to support the adoption of a radical eco-innovation during an era of ferment. Based on externalities such as knowledge spillover, pollution reduction, and lower external costs, firms are not properly incentivized for developing eco-innovations. Governments have attempted to correct for this market failure through a variety of policies that support their development and adoption. Due to the broader commercial introduction of electric vehicles, the automobile industry is currently in a fluid early stage of a technological transition known as an era of ferment. Our research will analyze policy regulations from several different countries to determine how country type (large or small), policy type, and level of government are correlated to the commercial introduction of a radical eco-innovation.”

Session 2a: Chaired by Professor Simona Iammarino (Reader in Economic Geography and Regional Science, LSE)
Freeman Centre, G24/25

The Governance of Innovation: Science Cities and Science Parks in Russia, 1989-2010

Imogen Wade – School of Slavonic and East European Studies, University College London

“How is Russia’s innovation infrastructure organised regionally and with what results?”

Understanding how innovation is organised and governed is important in light of recent political and economic developments. Russia lags behind more advanced countries technologically and depends heavily on natural resources. Since the mid-2000s, Russia’s top political leaders have called for economic modernization, diversification from natural resources and the development of an innovation and knowledge economy. It is a state-led modernisation, as shown by the recent establishment of ‘Skolkovo’ innovation centre near Moscow, widely publicised as Russia’s Silicon Valley. This is part of Russia’s ‘state-directed capitalism’, a common feature of many emerging economies in the last 15 years. Thus this paper puts these recent developments in perspective by examining Russia’s history of efforts to build innovation infrastructure.

My PhD examines (using mixed methods) the evolution of some of Russia's 'science cities' and 'science parks' over time (part of Russia's 'innovation infrastructure'). The project operates at two levels: macro (national system of innovation) and micro/meso level (science cities and science parks, firms and research institutes and other organisations located within the cities/parks). The analysis will help understand the role of science cities and science parks in economic and social modernisation processes.

This paper reviews the literatures on innovation systems, the role of the state in innovation promotion, and the state of innovation in Russia. Next, it provides preliminary evidence from some of Russia's regions about the outcomes of different geographical units of innovation such as science parks and science cities."

In search for the economic and financial sustainability of Science and Technology Parks Management Organizations: proposition of a business model in the Brazilian context.

Aline Figlioli– University of Sao Paulo, Brazil (SPRU Visiting Student)

"The science and technology parks (STP) are habitats of innovation spread almost all over the world. It is noteworthy that the literature on technology parks, in general, addresses them in a macro approach, comprising the set of organizations that are installed on it, with little or no analysis with a more specific view on the performance of its management organization (MO). Once the parks have different configurations in relation to various aspects –infrastructure and services, shareholders, stakeholders, governance models, among others - the business models of its MOs rebound these differences, reflecting the way the "business" of technology park promotes return to the investment, financial or otherwise, held by shareholders, and the way they comply with the interests of stakeholders.

As STPs are large and long-term investments and because they have a strong appeal to local development - which often overlaps with the question of the business itself - they tend to be unattractive, at least in the early deployment stages, to the participation of private investment in its funding (GOWER; HARRIS, 1994). This research focuses on understanding the business model of STPs MOs to contribute to the development of a model in the Brazilian context that fits the characteristics of the enterprise "science and technology park" and allows a lower reliance on public funds to its operation. It must be emphasized that it considers more than just self-sustainability, once from the perspective of technology parks as instruments of public policy, MOs could have access to public resources, but not rely on them extensively to maintain its operations, given the context of emerging countries like Brazil. Thus, the driven question of this research is: Which business model of management organization of STPs leads to economic and financial sustainability in the Brazilian context? The methodology phases comprises multiple case studies, proposition of BM, a financial essay of the business model, and the proposed BM assessment by experts."

Technology transfer for Technological learning and capabilities development. The role of intermediaries.

Saoud Al Shoaili – SPRU, University of Sussex

"This study aims to examine firm's technological learning from its technology suppliers, when suppliers are not the technology producer but agents intermediate the transfer of technology to the firm. Technology transfer literature has highlighted the role of technology suppliers in promoting technological learning and technological capabilities of the users of technology. However, in most studies, there is an implicit assumption that the supplier of technology is the producer with whom the buyer interacts. Moreover, the literature has also highlighted that, where technology producers are not present, intermediaries replace them in supplying technologies to users. This is the case with most firms in developing countries that rely on imported technologies for their operations. Although intermediaries can facilitate the transfer of physical object of technology, whether they can act as technological teacher for the

user firms given that intermediaries haven't produced the technology or its technical knowledge. Under this scenario, the buyer of technology does not interact with the producer of technology but rather with an agent.

The case study for this research is firms operate in the oil sector in Oman. They rely on local and international suppliers to provide their technologies. Some of the suppliers are the producers of the technology while some are just intermediaries. This study will examine, through a comparison, how firms' interaction with both suppliers in the technology transfer affects their technological learning and capability development"

The role of cooperation with external partners for radical innovation: the moderating effects of other sources of innovation

Natalia Ryzhkova – School of Management, Blekinge Institute of Technology, Sweden

"In recent years, there has been growing interest in cooperating with external partners for innovation purposes. Research so far presents contradictory results on how cooperation with various partners influences firms' innovation output. This paper claims that effectiveness of cooperation activities for radical innovations is moderated by the use of other sources of innovation. Drawing from the resource-based view (RBV), firms' objectives for engagement in cooperation activities could be the need to get access to valuable resources and assets. Unique resources, especially knowledge resources, from different cooperation partners may however not be suitable for effective employment unless complemented with appropriate firms' internal competences and other assets. This paper aims at identifying these complementarities and suggests that through the use of other sources of innovation such as internal R&D, acquisition of external knowledge and training for innovation companies may be achieving effective combinations of resources that impact innovation performance. Based on the data from the 4th Community Innovation Survey (CIS 4) conducted in Sweden, the study reports the investigation of relationships between firms' cooperation for innovation activities and radical innovation and the effects of moderating factors of internal R&D, acquisition of external knowledge and training for innovation. The results show that the acquisition of external knowledge plays an important moderating role while R&D investments and training for innovation does not have impact on the relationship between cooperation and radical innovation."

Session 2b: Chaired by Professor Mariana Mazzucato
(R.M. Phillips Professor of Science and Technology, SPRU)
Freeman Centre, G23

Organisational capabilities for policy and innovation in the public sector

Chux Daniels - SPRU, University of Sussex

"The study into organisational capabilities and competences in the public sector is still in its embryonic stage of development as compared to other areas such as technological capabilities, dynamic capabilities, private sector capabilities or studies in capabilities approach. This research investigates the gap in public sector organisational capabilities with respect to capabilities needed for policy and innovation in science, technology and innovation (STI) institutions. Although academic literatures and other sources reviewed so far indicate that this research areas of great interest and general concern to both developed and developing countries, this study focuses on its application in the context of developing countries (DCs). The research therefore seeks to identify a set of internal (organisation-specific) capabilities and competences needed for policy and innovation in public sector (government) STI institutions in DCs. A conceptual framework is being developed to help frame and interrogate

the area of study. The research will attempt to provide, as outcome, a suggested list of generic “core capabilities” for public sector policy and innovation.”

Does Governmental venture capital certify the value of new technology based firms? Evidence from Europe

Anita Quas – Dipartimento di Ingegneria Gestionale, Politecnico di Milano, Italy

“Despite the fact that private venture capital (PVC) has been recognized as the main financing source for new technology based firms (NTBFs), only a tiny fraction of these firms receive PVC funding, mainly because of the high information asymmetries that hide NTBFs’ value and the risk-averse mentality of PVC investors. Therefore, it is likely that a great number of good quality NTBFs remain financially constrained and are forced to give up some profitable investments because of the shortage of financial resources. Governmental Venture Capital (GVC) programs have the aim to fill this equity gap. They are seen as “demonstration projects” launched through the market with the aim to select good quality firms and certify their value to PVC investors. Doing so, GVC can potentially reduce the risk adversity of PVC investors and leverage the PVC market. However, the theoretical grounding and the empirical evidence on certification ability of GVC programs are very preliminary. In this paper we explicitly test the assumption underneath certification theory. We find that GVC investors are able to increase the probability of receiving a first round of financing by PVC investors. However, the probability of receiving the second round of financing by PVC investors is lower for firms previously backed by GVC. We interpret these results as the fact that GVC investors actually send a quality signal to the PVC market, but this signal is not necessarily reliable. Important implications on the GVC effectiveness in leveraging the PVC market follow.”

Financing Innovation: Strategy and the choice of funding sources

Jaime Sierra – Manchester Business School, University of Manchester

“Decisions on the financing of innovation are considered under two dominant views in the financial literature regarding the capital structure of companies that finance long term real investment. The Trade-Off theory and the Pecking Order theory have been applied to highly innovative companies in an attempt to explain where and why funding is sought. However, the characteristics of innovative projects make it difficult to establish the best combination of resources in terms of the “optimal” mix of debt and internal funds or the most appropriate hierarchy of financing sources.

This approach, however, does not account for a number of factors that impact project funding. Firstly, all innovative companies’ decision-makers are assumed to reason along the same line irrespective of company differences, of varying reasons for seeking external funding, and of the existence of other factors that might have an impact on the funding strategy. Secondly, the supply side role is usually neglected. Thirdly, the relational dimension in which project owners and fund owners interact is ignored; the role of some actors, the importance of institutions, and the part that time plays are often overlooked. Fourthly, no attention is paid to the differing characteristics of the projects thus making the category “R&D” a sort of universal container for innovation projects.

A view is proposed where the characteristics, interactions and contexts of project owners, financiers and innovative projects are approached to understand the main issues playing a role in key decision-making instances where innovative project financing is settled. Finally, some implications for different decision-making levels and agents are advanced.”

Understanding the conditions under which drugs for rare diseases are developed to overcome unmet therapeutic need

Philippa Crane - SPRU, University of Sussex

“The research proposed here aims to identify elements of predictability in medical innovation. More specifically, by investigating the conditions under which drug innovation for diseases that affect small populations (also known as ‘rare diseases’), this research will inform policy and industry actors in potential avenues that could be followed to incentive innovation in this area. There are three main motivations of this research, 1) the need to address unmet therapeutic need in rare diseases, 2) the application of the study to the field of personalised medicine, and 3) the theoretical application to the uneven development of technological change.

The evolutionary perspective on innovation and technological change emphasises the complex web of interacting factors that shape innovation. In this study this dynamic nature of innovation, in addition to a sociological perspective, will be taken as a basis for the theoretical framework. This will then be used to identify the factors which may be interacting to influence medical innovation.

The empirical literature shows that such a study is required due to the lack of holistic perspectives of the drug innovation process. This holistic picture is obtained by implementing Ragin’s Qualitative Comparative Analysis and Fuzzy set methodology which enables a case study analysis, based on particular attributes, to be carried out on a larger sample than would usually be investigated in qualitative studies. This enables both the robustness and generalisation by providing a medium between qualitative and quantitative analyses.”

Dividends’ behaviour during the times of recession.

Madina Tash – BMEC – University of Sussex

The recent subprime crisis showed that despite the hard economic conditions a certain proportion of companies still carried on paying dividends. This raises a number of questions- Why were companies paying dividends during the crisis? Did these companies sustain dividends in the other crises too? If dividends were paid purely due to their signalling functions, were “signals” needed when market was already aware that the overall business environment was not functioning well and therefore did not expect market participants to send such signals as dividend announcements? The proposed research aims to answer these questions by investigating market reaction to dividend announcements and annulments of FTSE100 firms from 1991 to 2009. The stock market reactions to dividends announcements and annulments during the times of financial stability in comparison to the times of financial instability will show whether market perceives the signal in the same manner.

Session 2c: Chaired by Dr. Matias Ramirez
(Senior Lecturer in Management, SPRU)
Freeman Centre, G22

Absorptive capacity and innovation: the theory revisited

Abiodun Egbetokun – Graduate College, Friedrich-Schiller University, Jena, Germany

“Absorptive capacity, allowing companies to understand and apply knowledge generated elsewhere and transferred by technological spillovers, is not freely endowed but has to be built up continuously within the firm mostly through investments in R&D and human capital development. Therefore, it has a key role in the firm’s innovation strategy. This paper offers a revision of the original model by Cohen and Levinthal (1989) accounting for recent empirical findings and explicitly modeling absorptive capacity within the framework of interactive learning. We model absorptive capacity not only as a function of R&D but also as a function of the cognitive distance between cooperating firms. It has an inverse ‘U’-shaped relation to cognitive distance, suggesting that there is a unique optimal cognitive distance at which a firm’s absorptive capacity is maximal and beyond which it declines. Thus, for a given value

of cognitive distance, firms have to decide how to optimally allocate resources between inventive and absorptive R&D which are complementary but mutually exclusive. When cognitive distance changes due to the intensity or duration of interaction, partners are faced with the decision of ensuring that the spillovers within their partnership exceed knowledge available elsewhere. Preliminary comparison of our model with Cohen's and Levinthal's shows that both, the value of knowledge absorbed by the firm and the marginal returns to its R&D investments, have an inverted U-shaped relation to cognitive distance."

The interaction of external and internal knowledge and the organization technological learning dynamics: from capacity building to technological transformation

Julian Pineros Ramirez – CENTRIM, Brighton Business School

"The research focuses on the interaction between internal and external knowledge combined with the process of exploration and exploitation to explain the organization's learning capacity building and its technological transformation over its lifecycle. To understand this interaction the firm's technological learning practices were identified and defined as 'learning schemes', which embody the building blocks of the learning capacity building. The study argues that over the organization's lifecycle these 'learning schemes' describe different transition periods where the organization learns-to-learn how to reflect, assimilate and integrate external knowledge from exploitation to exploration. It also argues that in the long run a path-dependence condition of technological learning can be recognized. The evidence is taken from two firms in Colombia, one in agriculture and the other in the food industry, in a context defined as low in its 'technological opportunities' and emerging in its technological development."

Institutional Evolution in the Taiwanese Biopharmaceutical Innovation System: the Evolving Roles of Research Institutes

Shih-Hsin Chen – Institute for Science and Society, University of Nottingham

"The existing literature maintains that laboratories of the research institutes play a central role in the knowledge production network (Godin et al. 2000; Cook 2005) at the frontier of technology. This paper empirically examines what the changing roles of research institutes in the knowledge production network, using the case of the Taiwanese biopharmaceutical innovation system. The study applies social network analysis with the combination of quantitative and qualitative data analysis. The results show that the leading domestic research institutes have evolved to become technological gatekeepers who actively influence the acquisition, creation and diffusion of knowledge in the domestic network. This evolution contrasts with the typical nature of knowledge production in catching up economies where key technologies are usually transferred from abroad. In fact, in the Taiwanese context, the role of the research institutes and the institutional factors mutually shape one another. From the analysis of the interview data, it was proved that leading scientists have influenced the institutional factors through their advisory positions in the technology policy process while the institutional environment has been transformed from prohibiting the involvement of academia within the commercial entities into encouraging academia-industry collaboration. These results suggest that in the catching up economies, just as at the frontiers, research institutes could gradually develop until they come to play a central role in the knowledge production process in the biopharmaceutical innovation system."

Intra-firm diffusion in a project-based organisation: the case of Petrobras

Patricia Andrea do Prado Rios – Federal University of Rio de Janeiro, Brazil (CENTRIM, University of Brighton visiting student)

"The literature on diffusion of innovations is vast, but there is still a gap in the intra-firm studies, mainly concerning empirical evidence. One of the aspects which needs a broader discussion is the path from knowledge creation to its real use in the innovation process. In this

way, analysis of the intra-firm diffusion can be understood as the analysis of the incorporation of knowledge produced inside an organisation. Against this background, this research attempts to contribute to previous literature with empirical evidence by investigating the intra-firm diffusion determinants in project-based organisations and how the knowledge created within the projects can support the innovation process. This research is carried out as an explanatory case study within Petrobras - PetroleoBrasileiro S.A., the most important Brazilian company in the oil and energy industry. The intra-firm diffusion seems to be considered even more relevant in the context of large firms, where the first adoption could be more clearly seen as the first step of the diffusion process and of the added value and profits which would increase during this process. Due to the different characteristics of the several units of Petrobras, the Engineering Unit, a project-based organisation itself, was chosen for data collection.”

Session 3a: Chaired by Dr Steven Hill
(Research Council UK)
Freeman Centre, G24/25

The Bristol Pound

Andras Novoszath – Sociology Department, Open University

“Bristol Pound is a complementary currency under implementation promising to support local independent businesses, to create and maintain economic diversity, and as a result to make the economy in the Bristol region more resilient against global changes. The main alleged means making this able are its credit union backing, the used mobile payment technology and its physical and 'systemic' distinctiveness from the British Sterling.

In my research informed by material semiotics and actor-network-theory I am conducting an ethnographic fieldwork on both the process of development and on the use of the currency. The central foci of my interest is how economic valuation takes place with a special emphasis on the devices, technologies, ideas, people and practices co-enacted within and the specific role they have in the process.

This then provides opportunity to look at the different modes of knowledges the different theories and method assemblages (like academic disciplines, think-and-do-tanks, embodied practices of buying, measurement devices, shared imaginaries and the various forms of moneys themselves) perform and to consider seriously the relationship between them.

Finally all these different forms bring about distinctions between different moralities both in terms of their 'content' and of the political agencies made possible by the specific agencements.”

Monitoring performance or performing monitoring? The case of monitoring access to rural water supply in Ethiopia

Katharina Welle - SPRU, University of Sussex

“In my thesis I analyse Performance Monitoring (PM) of rural water supply access in Ethiopia to test whether PM functions, as it is conventionally portrayed, as a rational means to arrive at robust policy decisions.

I analyse PBM of rural water access in Ethiopia based on perspectives of the STEPS' Centre's approach to 'social appraisal, which relates to the ways in which knowledge is produced through different practices, approaches and tools. The same phenomenon can be appraised in different ways and with contrasting conclusions. This suggests that appraisals are subject to power manifested in actors' framings.

In line with the STEPS Centre's approach, I analyse different actors' framings of access to rural water supply in Ethiopia and find that, PM, as practised, embodies only a subset of the ways in which different actors frame the notion of 'water access'. Then, I use process tracing

to explore a specific sub-process of PM, the calculation of water supply access. Studying this process in detail, I find that specific dynamics emerge through which some framings are suppressed while others are elevated.

My findings suggest that PM cannot always be understood in a rationalistic fashion as a means to arrive at the most robust policy decisions in water provision. Instead, PM may be used as a means to ‘close down’ appraisal of alternative understandings of access to justify those outcomes that are favoured by powerful actors for reasons entirely independent of those highlighted in PM itself.”

Is wireless communication a health risk? Analysing the scientific framing of a societal controversy

Marijke Hermans – Technology and Society Studies, Maastricht University, Netherlands

“My presentation deals with the controversy around wireless communication technology in the Netherlands which has mostly taken the form of local opposition against the siting of base stations (masts). Scientific expertise takes centre-stage in the controversy, firstly because of the way the issue has become framed: as an uncertain health risk that needs to be governed scientifically. Secondly, because citizens also mobilise scientific knowledge and counter-expertise with which they contest regulatory science. Based on in-depth case study research of local protests and participant observation of a national deliberative platform where societal actors, industry, policymakers and scientists meet to discuss wireless communication technology, I argue that the controversy is not a case of so-called irrational lay people against mistrusted scientists. It has become a ‘knowledge’ problem, by which other problem definitions (such as devaluation of property prices, procedural justice or destruction of the landscape) are marginalized or denied. This ‘knowledge problem’ can however not be solved by more science, because science can never be value-free. In fact, citizens and organised groups that protest against base stations do not attack science per se, but contest the social, conditional and value-laden culture of science, e.g. independence of research, lack of long term foci, untenable high criteria for statistical significance or discrepancy between lab studies and real-life situations. Debating science has become the only means by which the controversy is believed to be solved. I will analyse how problematic it is to treat a societal problem as if it is purely scientific.”

What is SPRU? What Does SPRU Do? An application of Q-Methodology

Yusuf Dirie - SPRU, University of Sussex

“I am conducting a pilot methodological experiment within SPRU using a methodology called ‘Q’ as precursor to my actual research study. The aims of the pilot methodological experiment are to firstly answer the questions ‘What is SPRU?’ as well as ‘What does SPRU Do?’ Secondly to allow for the multiple framings of what SPRU is and does, that exist within the unit to be identified, mapped and understood in relation to each other using a Q-Methodology approach.”

Session 3b: Chaired by Professor Ben Martin
(Professor of Science and Technology Studies)
Freeman Centre, G23

Low emission vehicles, niches, market segments, and eco-labels: strategies of car manufacturers

Alexander van der Vooren – Copernicus Institute of Sustainable Development, Utrecht University, Netherlands

“Many countries have introduced eco-labels in order to indicate the relative performance of

cars regarding energy efficiency and CO₂ emissions to consumers. Policy incentives such as a bonus-malus system are linked to the eco-labels in order to stimulate the diffusion of low emission vehicles and the innovation efforts of manufacturers. Since eco-labels and the accompanying policy incentives possibly affect the preferences and purchase decisions of consumers, car manufacturers might adapt their segmentation (niche) strategy accordingly. The main research question of the project is therefore how policy incentives affect the market segmentation strategies of firms towards the supply of cleaner vehicles?

For the project I have collected a unique dataset of all (41.000) new car models offered on the Dutch market by car manufacturers, between 2001, the year of the introduction of eco-labels for cars, and 2011. With this dataset I can study the evolution of market segments by observing the niche choices of car manufacturers regarding CO₂ emission, energy labels and car prices and incorporate these dynamics in an empirically calibrated model.

The model takes into account that car manufacturers strategically decide whether to enter new market segments. The number of cars supplied by a manufacturer in a certain market segment is an indicator of the attractiveness of that market segment. This attractiveness is influenced by consumer preferences, policy measures, the number of cars supplied in the segment (by other firms) and the innovative efforts by other firms (i.e. when a competitor raises the standards with regard to CO₂ emissions)."

New Industrial Policy for Firm Upgrading in Buyer-Driven Global Value Chains: A Case Study of the Peruvian Textile Industry

Miklos Lukacs de Pereny – Manchester Business School, University of Manchester

"During the last three decades, economic, social and cultural globalization has generated profound changes in international trade and production activities around the world. The geographical and functional fragmentation of global production systems has forced firms in emerging economies from different sectors and embedded within context-specific institutional environments to learn how to adapt and respond to these changes. The Global Value Chain (GVC) theoretical framework has proven useful for guiding policy interventions aimed at fostering firms' engagement and upgrading within them. Although most attention has been paid to the economic performance of large BRICs, market changes also present new opportunities and challenges for smaller emerging economies. In this regard, competitiveness strategies and New Industrial Policy (NIP) designed and implemented to shift from primary resource based to higher value-added industries will be crucial to promote and sustain economic growth.

Following this introduction and making use of the GVC framework, this paper aims to answer the following questions: (i) How can NIP support product, process and functional upgrading in buyer-driven GVCs? and; (ii) How does the institutional environment influence NIP design and implementation to achieve these purposes? The paper will be empirically founded on a case study of the Peruvian textile industry for the following reasons: (i) Peru is an emerging economy; (ii) the textile industry resembles the low value-added industrial realities of more than two thirds of the world's countries, and; (iii) the institutional, governance and upgrading mechanisms involved in this GVC provide fertile ground for NIP rationale and interventions."

Hegemonic and alternative journal indexation systems in Ibero-America: their role in research evaluation and academic publishing practices

Diego Chavarro - SPRU, University of Sussex

It is arguable that users of information generally judge its quality on criteria based on authority, reliability and relevance. In other words, information quality is built on the principle of cognitive authority, which is defined as the acknowledgement by a community of the validity, accuracy and relevance of the information in question.

Journal Indexation Systems (JIS) – online databases that select a core of journals based on certain quality criteria and provide a search interface for their contents, are recognised as

cognitive authorities. The legitimization of JIS as judges of scientific quality has conferred upon them the authority to differentiate what is science from what is not.

As they are incorporated into the reward system of science to measure scientific quality, both at the country and international levels, they are presumably influencing editorial and publishing practices worldwide.

This thesis aims to understanding the influence of JIS in publishing practices. The case studies are Colombia and Brazil and include quantitative and qualitative methods. Drawing from literature on International Political Economy and Information Science, I will analyze whether and how JIS are transforming the behavior of researchers and editors.

Policy Reformation as Learning: Evidence from the Chilean Salmon Farming Industry Crisis

Veronica Roa Petrasic - SPRU, University of Sussex

“This research examines how the processes of innovation policy learning and policy change are shaped and influenced by the behaviour and interests of different actors within policy making processes in a context of industry crisis. Although the policy learning literature (e.g. Heclo, 1974; Sabatier, 1993; Kingdon, 1995) provide insights into the key role that actors play in influencing policy making processes and their outcomes recognising that policy making process is cognitive, technical and political, a deeper understanding of how policy processes and outcomes, in industries facing crisis, affect the position of actors and how industries’ technological trajectories may be influenced by policy changes is needed. The research presents preliminary results exploring the reform of the regulation in the Chilean salmon farming industry within the context an industrial crisis. The findings indicate that the industrial crisis in the Chilean salmon industry is a turning point in its trajectory and opened a policy window for reforming its regulatory framework. Multiple interpretations and discrepancies in expert opinion about the causes of the crisis produced conflicts in the diagnosis of the problems of the regulation prior to crisis which influenced the ordering and outcome of policy deliberations and the resulting adopted measures. The findings also show that the state was unable to anticipate the detrimental consequences of the measures adopted because some actors were marginalised in the deliberation process. The result was an ineffective policy which has provoked a call for further reform by lobbying and political pressures aimed at taking a different course than the initial measures that were adopted.”

The Global Regime for Competition; Two routes, different results

Hammed Roohani - SPRU, University of Sussex

“For over six decades, there have been several attempts by some member states of the GATT and the WTO - the European Union in particular - to negotiate an agreement on a global Competition Policy. All of these initiations have failed; primarily due to persistent opposition of the USA, leaving intra-firm competition to the mercy of a patchwork of unilateral and regional regulations with international projection. Despite this failure, however, and somewhat paradoxically, both the EU and the US have concluded several FTAs that contained provisions for inter-firm competition in international quarters.

My research explains why the efforts in the multilateral trading system have been ill-fated while the bilateral arrangements – by apparently the same objectives and the same countries – struck lucky. I look to the case particularly through the lens of competitiveness strategies of the US and the EU and try to figure out how the EU’s policy choices favor an international deal in the WTO and elsewhere while the USs’ prefer a regional approach over the multilateral route so vehemently.”