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Incentivising Knowledge Exchange:
A comparison of vision, strategies, policy and practice in
English and Scottish Higher Education

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Executive Summary

Context of the Study - Promoting flows of knowledge between academia and wider society, and external engagement of academic researchers has been of interest to policy makers at multiple levels, including European, national and sub-national governments and public funding bodies. This report considers the 'incentivisation' and 'institutionalisation' of knowledge exchange activities within the higher education policy in the UK. It is an exploratory piece based on comparing the policy, strategies and funding incentives in the English and Scottish higher education sectors. The comparison between these two higher education sectors highlights both divergence and convergence in terms of the policy visions and strategies at "national/regional" level with nuanced and distinctive policy conditions and institutional processes. Both in England and Scotland, we see similar sets of processes of *incentivising* knowledge exchange activities in parallel, underlined by common UK research and innovation policies, but also with diverging and contrasting policy rationales.

Aim - The overarching aim of the project is to explore and compare the policies and practices designed to incentivise knowledge exchange in English and Scottish Higher Education.
Our focus is two-fold:
a) High level strategies and policies developed by Higher Education policy and funding bodies (e.g. HEFCE, SFC, UK government and Scottish government); and
b) The practices which have been developed in response to this strategic vision (by funding councils, research councils, individual HEIs and academics).

Focus and Methodology of the Study - This project is primarily based on an extensive review of literature, the qualitative analysis of policy documents, evaluation reports and other secondary sources, supplemented by confidential and semi-structured interviews with senior officers at funding councils, university research and knowledge exchange managers and academics in England and Scotland. There were additional unstructured and unrecorded interviews and discussions with academics and managers, which provided invaluable insight. A small number of interviews (eight) were transcribed and analysed for the comparative policy and institutional analysis. Short institutional cases were written based on interviews, institutional documentary sources and website information.

Key Findings

- The interpretation and implementation of knowledge exchange policies and strategies are conditioned by different sets of policy actors at the UK level, and in England and Scotland respectively. The institutionalisation processes have taken different forms – whilst the Scottish sector adopted a collective policy-goal-driven approach the English approach has been increasingly institutionally driven.

- In both systems, metrics and performance indicators and the underlying policy effectiveness models have been skewed towards market impact and economic development. An inherent and unresolved problem is the difficulty of systematically capturing broader 'socially' oriented KE activities with appropriate metrics and indicators.

- At the institutional level, tensions exist in the conceptualisation and institutionalisation of knowledge exchange in relation to teaching and research activities. This relates to the issues of resource allocations and integration of KE within the institutional architecture. Understanding the variety of interactive and interdependent contexts between research, teaching and KE activities is imperative.

- Incentives include both direct and indirect forms, such as recognition, reward, promotion and, capacity building as well as nurturing linkages between KE, teaching and research.

- With an ongoing change of research policy and funding arrangements in the UK, a further study is required in order to better understand, and better shape this rapidly changing and developing KE agenda in higher education policy landscape. There are a number studies conducted in different national contexts but comparative studies are rare. An international comparative perspective as well as interdisciplinary approach will help highlight the complexity of the changes taking place at multiple – policy, institutional and personal– levels.

Incentivising Knowledge Exchange:

A comparison of vision, strategies, policy and practice in

English and Scottish Higher Education

1. Introduction

The relationship between higher education and society, and the way knowledge flows between the university and society is dynamic, being influenced by broader political economy, institutional and policy contexts. The last thirty years have witnessed a continuous process of reorganisation of the higher education sector, driven by the rise of the "knowledge-based economy", the "academic capitalism" (Slaughter and Rhoades, 2004) and "massification" of the higher education sector (McNay, 2006; Scott, 2012). In the "pursuit of the knowledge-based economy" (Ozga, 2008), knowledge has been positioned as central to future economic growth by policy communities (e.g. European Commission, 2000, 2007; OECD, 1996). This seems to have given universities and academic researchers a significant role, not only in terms of the generation of knowledge but also of its adaptation, application and impact on society. In this context, Knowledge transfer (KT) and knowledge exchange (KE) are seen as priority areas for research and innovation policy development across many countries. What is distinctive over these past thirty years seems to be the 'institutionalisation' (Geuna and Muscio, 2009) of knowledge exchange, and more recently the 'incentivisation' (HEFCE, 2011a) of such activities at national and sub-national higher education policy levels and within higher education institutions themselves.

This intensified policy attention and growing institutional strategies, resulted in an increase in the number of studies in academia investigating the contribution of universities in innovation and economic development processes. More recent work has begun to question the extent to which policy initiatives are based on evidence about processes of knowledge flows, and question the impact university knowledge can have on economic development. Indeed, despite inconclusive evidence about the role of universities in territorial development and a number of contextual issues raised by scholars of local economic development and innovation studies (e.g. Rutten and Boekema, 2009; Power and Malmberg, 2008; Huggins and Johnston, 2009), governments are encouraging universities to become more

entrepreneurial with the aspiration of further promoting economic growth (Geiger and Sa, 2008). The interpretation and implementation of knowledge exchange policies and strategies are seen to be conditioned by the institutional architectures of individual universities – missions, strategies, resources and the nature of the institution's business (Vorley and Nelles, 2008; Wersun, 2010), as well as individual academics' experiences, motivation and perceptions of opportunities. In addition, the barriers related to their academic work environment also require consideration. This is the area where higher education, Science and Technology (S&T) policy and innovation policies intersect. We also need a better understanding of how policy expectations are formulated, how policy is then translated into funding incentives, and how institutions respond to such incentives. The development of knowledge exchange strategies and new practices may well change the perceptions and practices of individual academics (see Ozga and Byrne, 2006).

There is a growing recognition that knowledge exchange and 'third mission' activity are an integral part of the changing nature of academic research and knowledge production (see, Wedgewood, 2006; Nedeva, 2008). Institutions are responsible for implementing KE strategies and building institutional infrastructure to support this. However, incentives at individual level are complex - motivations of individual academics are multiple in nature, and are not purely economic. Thus the reasons for engagement may range from academic (e.g. enhancing teaching and/or research) to economic (e.g. raising revenue for the research/department/ universities); from accountability to betterment of the world (e.g. pursuing social responsibility for publicly subsidised research; improving policies practice or public awareness through the better use of research). This corresponds to the perceived emergence of wide range of 'communities of engagement' (Nowotny et al., 2003, p. 192). There are also factors inhibiting 'supply side' KE activities including 'traditional indicators of recognition and impact' (Jongbloed and Zomer, 2010). These also differ depending on academic disciplines, career stages, institutional pressures and personal motivations (Jacobson et al, 2004; Jensen et al., 2008; Markman et al, 2004; Poliakoff and Webb 2007; Stephan and Levin, 2001; Meagher et al. 2008; Wigren-Kristoferson et al., 2011). There are a number studies conducted in different national contexts but comparative studies are rare.

The 'incentivisation' and 'institutionalisation' of knowledge exchange reflects the recent 'asymmetric' devolution processes in the UK – in Scotland, Wales and to a lesser extent in

Northern Ireland, higher education policy has increasingly become the responsibility of the devolved administrations (Universities UK, 2008; Bruce, 2012; Huggins and Kitagawa, 2012). At the UK policy level, research policy, research funding allocation and the new research 'impact' agenda are managed nationally. The higher education funding councils in England and Scotland, the Higher Education Funding Council for England (HEFCE) and the Scottish Funding Councils (SFC), both fund different activities at higher education institutions, and knowledge exchange is promoted through different models and mechanisms. The comparison between England and Scotland highlights divergence as well as convergence in terms of the policy visions and strategies at "national/regional" level, with nuanced and distinctive policy conditions and institutional processes.

This report adopts the following structure to present the findings of the research project conducted under the 2011/12 SRHE Research Award. Following this introduction, the second section presents conceptual models of knowledge exchange, adopting modes from public policy literature. The third section presents the developing policy landscape in England and Scotland emerging from the devolution of higher education. The evolving funding mechanisms for knowledge exchange in England and Scotland are then considered, identifying different models of incentivisation at work. The fourth section presents findings from a small number of interviews conducted at different types of universities, and brief review of institutional practices on incentivisaiton of KE activities drawn from a number of recent studies in the UK. The final section concludes the report by arguing:

> *1) incentivisation and institutionalisation of KE activities has started to change the activities and attitudes of UK higher education institutions;*
> *2) both England and Scotland have unresolved problems in balancing economic impact and broader 'socially' oriented KE activities with appropriate metrics and indicators;* and
> *3) there is a complex relationship between different conceptualisation and management of KE in relation to research and teaching set within individual institutional cultures.*

Whilst incentivisation and institutionalisation of KE is necessary to change the institutional practices, it may not be necessarily sufficient to change individual behaviour. The ongoing impact agenda and changes in research funding mechanisms at the UK national level (e.g. the REF Impact exercise; RCUK pathways to Impact) may result in wider transformation in academic value, and thus affect individual motivation.

2. Conceptual Models of Knowledge Exchange

Whilst the term 'knowledge transfer' is usually regarded as an activity that promotes and deploys academic 'know-how' to specific users or industry sectors, there is the recognition that knowledge flows are inherently two-way processes (Abreu et al., 2009). Therefore, in recent years, the term 'knowledge exchange' is used in preference to 'transfer' (ESRC, 2009). In addition to 'knowledge exchange' and 'knowledge transfer', terms such as 'technology transfer', 'research mobilisation', 'research commercialisation', 'public engagement' 'research utilisation' and 'valorisation activities' refer to processes or activities related to different types and forms of knowledge flows and interactions, involving academic researchers engaging with external stakeholders such as businesses, policymakers, practitioners and the general public. These are broadly termed university 'third mission activities' which go alongside the research and teaching missions (Molas-Gallart and Casto-Martinez, 2007).

In order to better understand and conceptualise the policy context, we adopt the framework of 'policy effectiveness models' from public policy literature (Bozeman, 2000). As an analytical framework, Bozeman's (2000) model on technology transfer provides a useful starting point. Bozeman's model focuses on technology transfer rather than broader knowledge transfer/exchange, but it identifies five dimensions of the diverse environment, which help broaden our understanding of KT (here used as interchangeable as KE) activities and processes. Bozeman (2000, p.637) identified the five dimensions of technology transfer environment as follows:

- *The transfer agents:* individual, institution or organisation seeking to transfer knowledge.
- *The transfer object:* contents and form of what is being transferred (tacit or codified knowledge in the form of a product, a method, a process, a design, etc.).
- *The transfer media:* means through which KT occurs, that is, whether knowledge is transferred through formal or informal mechanisms or collaborations.
- *The transfer recipient:* individual, organisation or institution receiving the *transfer object* (private individuals, firms, public sector organisations, etc.).
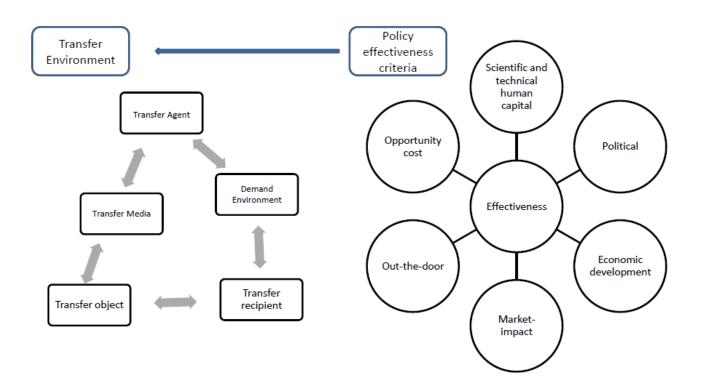
- *The transfer demand environment:* factors related to *the demand environment* such as market, social, cultural and economic need for the transferred object.

We would question several of the underlying assumptions presented within this technology transfer framework, in particular the conceptualisation of *transfer agents* and *recipients*. In this conceptualisation, transfer and receipt of knowledge is only on one-side – we would argue that in the knowledge exchange environment, all actors and agents are recipients of knowledge. Despite these limitations and a narrow conceptualisation, we contend that these five dimensions identified of transfer environment offer a useful starting point for discussion of the relationship between public policy and KE environment and activity.

The development of KE policy is a key factor that conditions the whole *transfer environments* as well as the perceptions and behaviour of the *transfer agents* (Slaughter and Rhoades, 1996). National and international policy objectives are often presented in general and broad terms, sometimes with 'ambiguity' – that is, to increase the contribution of universities to the economy and society - which is then interpreted and applied in different policy contexts through the policy implementation stage (Molas-Gallart and Casto-Martinez, 2007, p.323).

Bozeman (2000, p.637) presented the 'Contingent Effectiveness Model' of knowledge transfer. We apply this model to the analysis of KE activities and policy interactions, which is much broader than the original conception of Bozeman's model. The following six types of KE policy 'effectiveness' are identified: *Out-the-Door; Market Impact; Economic Development; Political Reward; Opportunity Cost*; and *Scientific and Technical Human Capital*. *Out-the Door* refers to simple reception of knowledge; Opportunity cost refers to the possible other impact from KE activities; *Market Impact* and *Economic Development* refer to commercial impact and spill over effects; *Political Reward* refers to the expectation of political benefits gained from participation in the KE; *Scientific and Technical Human Capital* refers to impact of KE activities on the 'enhanced scientific and technical skills', social capital derived from interactions, and the development of networks and infrastructure.

Figure 1 'Contingent Effectiveness Model' of knowledge transfer adopted from Bozeman (2000, p.638)

There is a tension in connecting a set of policy objectives, priorities and targets and translating these back into the specific *transfer environment* (Molas-Gallart and Casto-Martinez, 2007, p.327). Certain sub-sets of KE 'policy contingent effectiveness'(Bozeman, 2000) models will be selected and pursued – leading to the 'policy effectiveness criteria' – with a set of policy objectives, indicators and funding allocation mechanisms (Molas-Gallart et al., 2002; Molas-Gallart and Casto-Martinez, 2007). This will then be translated into recognition, incentives and rewards mechanisms through which the variety of routes of KE activities are re-moulded in light of certain criteria. This process influences the transfer environment through its interactive feedback loops. This adopted model is schematically presented in Figure 1 above.

Universities, then, are left with the challenge of identifying what *combination* of 'institutional policies,' will increase the volume and speed of flow of knowledge from universities to knowledge users leading to higher rates of innovation and economic development, meets the needs of policy, practice civil society communities and contributes to open knowledge and free enquiry (Goldstein, 2010, p.13). Further, the interpretation and implementation of KE policies and strategies are influenced and conditioned by institutional values and culture of individual universities - missions, strategies, resources and the nature of the institution's

business (Kenny and Goe, 2004; Jongbloed and Zomer, 2010; Vorley and Nelles, 2008; Wersun, 2010) as well as individual academics' experiences, motivation and perceptions of opportunities as well as barriers related to their academic work environment (Abreu et al., 2009; Goldstein, 2010; Olmos-Peñuela et al, 2010; Meagher et al 2008).

We take a view that knowledge production and innovation processes are 'interactive processes with numerous feedback loops' (Jongbloed and Zomer, 2010, p.100) rather than a linear process. Academics get involved with different forms of knowledge exchange and external engagement, and it is pointed out that this is done mostly through 'spontaneous, endogenous' activities (Geuna and Muscio, 2009:109). Universities are in search of a design of a governance structure of KE activities that 'creates the right incentives for academics' (Geuna and Muscio, 2009, p.102). However, there is a danger that the variety of KE activities, sometimes tacit in nature, would not be reflected in the institutionalisation processes.

3. Incentivisation and Institutionalisation of KE in England and Scotland within the UK Research Policy

At the UK national level (often intertwined with the English system), there have been distinctive policy developments in the intertwined areas of KE activity and research impact (Pearson, 2001; Martin, 2011). Following the *Lambert Review of Business - University Collaboration* (2003), the House of Commons Select Committee Inquiry into Knowledge Transfer and the External Challenge Report on Research Council Knowledge Transfer (the Warry Report) (2006) recommended that research councils increase their economic impact and improve public health and quality of life through the research they fund. Following this, the RCUK's *Excellence with Impact* and *Public Engagement with Research Strategy* reports were published calling for pro-active knowledge transfer, engagement and connectivity with users (RCUK, 2006; 2007; 2010). The Sainsbury Review *The Race to the Top* (Sainsbury 2007) recognised that significant progress had been made since the Lambert Review.

After the world financial crisis and recession in 2008-9, increased public spending restraint and demands for accountability mean that the higher education sector is under increased pressure to support the utilisation of the research it produces and to identify, measure and demonstrate its impact and relevance of the research. Universities are also expected to provide short-term skill focused, and local demand focused provisions for innovation and

economic growth to the employers and business communities (Kitson et al, 2009). The recent *Wilson review of business – university collaboration* (2012) emphasises the skills and employability agenda whilst acknowledging the diversity of the landscape and relationships between business and university.

Whilst the Funding Councils in England, Scotland, Wales and the department in Northern Ireland principally support building institutional infrastructure and 'capability' (and more recently, 'outcomes') of KE activities, the research councils at the UK level provide resources for 'activities' related to research and impact. The evolution of the research policy and funding landscapes at the national level affects knowledge flows from the university to the outside users, and the way these knowledge flows are perceived, measured and incentivised. The research councils now require 'Pathways to impact' of proposed research; and under the new Research Excellence Framework (REF) exercise, 'impact assessment' is being added to the process of peer-reviewed research evaluation (HEFCE, 2011c; Hughes, 2011; Martin, 2011).

The Funding Councils have played a key role in supporting and enhancing the institutional capability of knowledge exchange activities in both England and Scotland. One of the key challenges for each of the funding councils seems to have been the establishment of criteria to distribute these funds across HEIs, with different measurement and funding allocation mechanisms have been developed, tried and implemented in England and Scotland respectively. HEIs have been playing the important role in developing the KE funding mechanisms along with the funding councils (HEFCE and SFC) and government ministries (e.g. Treasury, Department of Business, Innovation and Skills, Scottish Government) and other organisations related to innovation, economic development and knowledge exchange (e.g. Technology Strategy Board, Scottish Enterprise). The KE policies in England and Scotland have been somehow diverging from each other. This is distinctive in terms of a) shift of emphasis between competitive project bidding and formulae based funding; and b) emphasis of policy incentives between individual institutional KE capacity building and collaborative institutional KE capacity building, and shift to KE outcomes.

Since 2001, the HEFCE has been carrying out an annual survey, initially called the Higher Education Business Interaction (HEBI) survey, and was later renamed *the Higher Education*

– *Business and Community Interaction (HEBCI)* survey. The survey collects data on a broad range of third mission/KE activities encompassing the contributions of universities to both economy and society, covering all the HEIs in the UK including England, Scotland, Wales and Northern Ireland. The survey has been developed over the past decade, and with the development of the formulae for funding allocation in England, the use of HEBCI data has become an explicit part of the policy goals. Now the objectives of the survey are identified as: 1) to provide data on the continuing development of interaction between higher education institutions (HEIs) and business and the community; 2) to provide reliable and relevant information to support the continued public funding of the third stream of HEIs' activity in the UK; 3) to give HEIs good benchmarking and management information; and 4) to develop a source of indicators at the level of the individual HEI, some of which will be useable to inform funding bodies' allocation of continued funding (HEFCE, 2011b, p.11).

In Scotland, a clear framework of outcomes and indicators for the public has been established since 2007, called the National Performance Framework. One of these outcomes is to 'Improve knowledge transfer from research activity in universities' (Scottish Government, 2007). Performance on this indicator in based on *KTG metrics* from Higher Educational Institutions. The reporting mechanisms have been evolving with the changes of the funding mechanisms. In order to meet the Scottish Government's policy objective to 'Improve Knowledge Exchange from university research' a joint SFC/Universities Scotland Knowledge Exchange Reporting Working Group (KERWG) was established in October 2010 to develop a reporting mechanism for formulaic knowledge exchange funding. The SFC's *Knowledge Transfer Metrics Return* records the income received by all SFC-funded HEIs from knowledge exchange activities, designed as a 'means of allocating a grant for knowledge exchange', rewarding them for the volume of income from their historic knowledge exchange activities.

Two different sets of responses from the funding councils in England and Scotland emerge, showing different roles and functions of funding councils as *policy transfer agents*. Firstly, it is interesting to note that whilst the HEFCE decided to move away from project-based funding allocation to formula/metric based KE funding allocation, the SFC has tried to move to an opposite direction. The SFC had started from formula-based allocation based on KTG metrics, and tried to increase the project-based allocation in order to achieve their strategic

policy focus and objectives. In the case of Scotland, the metric-based system was designed and developed over the years to 'differently reward' universities based on their performance against the priorities of the SFC and the Scottish Government. After the KE consultation in 2010, the SFC decided to keep metric based funding as the core, while a limited amount of project-based funding was introduced. It is a balance between the metric-based system which was designed to 'reward universities for what they have actually done', and the project-based funding that 'will fund universities for what they say they plan to do'.[1] The English funding model moved away from project-based to metric model, arguably emulating the original metric model in Scotland. The evaluation of HEIF seems to confirm that the metric based approach has brought focus to the KE agenda and has embedded KE as a higher priority in institutional missions (PACEC, 2008). The institutionalisation processes have taken different forms – whilst the Scottish sector has taken a collective policy-goal-driven approach, the English approach has been increasingly institutionally based.

Secondly, related to the first point, whilst the Scottish higher education sector tends to take collective and unified approach to 'excellence' (Kitagawa, 2009), the English approach, especially under the current Coalition government, is principally driven by the objectives and missions of individual institutions. It is notable that Scotland has managed to create 'research pooling initiatives' and demand-led KE initiatives such as Innovation Voucher schemes (see SFC, 2010). In England, with the abolition of Regional Development Agencies (RDAs) in 2012, the regional governance mechanisms of research commercialisation, business and community engagement support seem to be rapidly disappearing. These differing approaches will impact on the relationships between local authorities, local economic development and higher education sector in both England and Scotland.

4. Findings from Interviews and Institutional Practices

At the institutional strategic level, these recent policy developments appear to be influencing the institutional strategies for knowledge exchange. Recent series of studies conducted for HEFCE shows that in England knowledge exchange is getting 'permanently embedded within many HEIs' and 'has become a strategic activity working to support and enhance

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[1] KE Consultation: Response form
http://www.sfc.ac.uk/web/FILES/Consultations_SFC012010C_Responses/_University_of_Glasgow.pdf
available on-line 16 June 2012

research and teaching' (PACEC, 2012, see also PACEC, 2008). The majority of institutions in both England and Scotland respond positively for the presence of institutional strategies about business support, and strategies about public and community engagement (Q7a and Q7b HEBCI survey, 2012).

However, having an institutional strategy in place is one thing; having the strategy embedded as part of institutional and individual practice is quite another. A number of studies illustrate recent policy and institutional landscapes (e.g. PACEC, 2012; PACEC, 2010; PACEC, 2008; PACEC/CBR, 2009; Lock, 2009; Abreu et al., 2009). In order to supplement these study results, and the policy landscapes in England and Scotland illustrated above, we conducted a small number of interviews as part of the project. Some insights from these interviews and lessons drawn from some of the institutional examples are presented below. The aim of this brief section is to illustrate how the process of change around knowledge exchange has been pursued and interpreted within institutions. It does this by exploring a variety of organisational forms and cultural changes taking place over the time.

Three institutional examples are provided in Appendix, illustrating some of the institutional initiatives to incentivise and promote KE. The sources of institutional cases are multiple – drawn from the universities' institutional documents, information available on their institutional websites, and interviews conducted with institutional KE managers, and conversations with individual academics. The interviews were conducted between August 2011 and September 2012, face to face when possible, and also by telephone. The choice of the cases presented here is not intended to be representative of the sector nor the whole institution. The intention here is to highlight the variety of contexts of institutional strategies and practices, and changing forms of organisation of knowledge exchange activities within the institution. The institutional cases are: College of Humanities and Social Science, University of Edinburgh; University of Brighton, Community University Partnership Programme (Cupp); and University College London. These examples show institutional incentives at different levels (a dedicated KE programme for the whole university; KE strategies formed at the College level; and the institutional strategies and leadership structure developed at the University level) (see Appendix for the summary of cases).

Incentivising KE activities at the institutional level encompasses different targets, motivation

and resources according to the nature of the institution; includes a variety of nature and scope of KE activities (e.g. teaching related/research related; commercially oriented/community oriented); and influences the nature of the career of individual academics. Recent studies based on the results of the survey with the UK academics conducted in 2008 (PACEC/CBR, 2009; PACEC, 2010) present strong 'synergies and trade-offs between research, teaching and knowledge exchange'. Our interview results show complexity, subtlety and sometimes tensions, in the conceptualisation, institutionalisation and incentivisation of knowledge exchange in relation to teaching and research activities.

In terms of the relationship between research and knowledge exchange activities, there seems to be a broad spectrum of perceptions and different forms of 'incentivisation'. At one end, there are research intensive universities where KE is included as part of research, whilst on the other end, there are teaching focussed universities where KE is promoted as part of strengthening (still emerging) research capacity. Such incentivisations of KE activities seem to be less explicit at 1994 Group institutions, despite having research as the core of their institutional missions.

The PACEC/CBR study notes that most of the universities ranked in the top six in terms of research intensity (Imperial College London, King's College London, University College London, University of Cambridge, University of Manchester and University of Oxford)[2] are likely to have comprehensive policies for the third stream already in place. Whilst these research intensive universities "believed that while knowledge exchange should be encouraged, promotion and assessment should be based primarily on research", many of these institutions have introduced "some changes either implicitly in the way in which assessments are carried out, or explicitly with particular sections relating to knowledge exchange included in the appraisal" (PACEC/CBR, 2009, p.104).

In response to our interviews, a research administrator at one of the most research intensive universities in England (one of the top six in the PACEC/CBR report) said that their prime focus is on research, and KE is not treated separately, but is considered as part of the university's research culture. At the time of the interview (January 2012), KE activities were

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[2] Research intensity was calculated from the HESA data as the research income UK public total and the research income from OSI total, divided by the number of full-time equivalent (FTE) staff in academic departments (PACEC/CBR, 2009, p.49).

not explicitly present in the university promotion policy. As mentioned above, several research intensive Russell Group universities are strengthening KE activity (both commercial relationships and public engagement) as part of institutional strategies, including changing promotion criteria. In terms of incentivisation of KE at the institutional level, some research intensive universities are changing their promotion criteria to include knowledge exchange/transfer activities and/or public engagement (e.g. University of Edinburgh, UCL, University of Bristol, University of Cardiff). A couple of interviewees highlighted examples of people being promoted to professorial posts in large part due to their knowledge exchange activities, though knowledge exchange in itself was not considered sufficient for such a promotion. Therefore, rather than promotion being an incentivisation of KE related behaviours, it is used to reward and recognise such activity from a wider perspective.

The case of UCL (see Appendix) highlights strategic embedding of the knowledge exchange (KT/KE) activity into organisational structure at different levels, including promotion processes. UCL's establishment of a Vice-Provost (Enterprise) post has been seen as a trigger for improvements in KE activities. New evaluation and communication structures are in place, which are geared towards successful implementation of embedding KT/KE into the university structure.

The Case of the College of Humanities and Social Science University of Edinburgh (see Appendix) illuminates the processes of institutional change in response to the knowledge exchange policy incentives at multiple levels through the creation of organisational strategies and structures. The development of KE strategies at the College is aligned closely and explicitly with the development of SFC KE funding and recent RCUK research impact agenda. [3] The fact that future knowledge exchange funding is allocated on the basis of previous activity has also increased the importance of data collection around knowledge exchange.

There are examples of creative ways of supporting and promoting such activities. The University of Edinburgh's College of Humanities and Social Science has created and promoted a Knowledge Exchange fellowship scheme which provides support for people who

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[3] University of Edinburgh (2012) *Engaging for Impact: Knowledge Exchange Strategy for the College of Humanities and Social Science 2012-16*

want to spend time within the university undertaking specific projects. There is no funding in this scheme but fellowships are provided with access to resources, computer space and an academic mentor if there is an alignment of interests and the head of school approves it then the fellowship is arranged. The lack of funding available highlights, however, this is about creating space and nurturing KE rather than directly incentivising KE activity. There are also examples of academics being encouraged to undertake knowledge exchange activities through buying out their time from teaching and research.

Teaching-focussed new universities have different perspectives. When the institutional focus has been predominantly teaching and administration, getting research and KE onto the institutional agenda takes time and requires institutional capacity building. A senior manager at the research and enterprise development office at one of the new universities in Scotland said that his strategy at the teaching-focussed university is to promote the culture of research and knowledge exchange by promoting international partnerships, and championing those successful in generating research grants, innovation and working with businesses, and spread this through the university (interview, senior research manager, February 2012).

On the other hand, teaching-focussed universities in particular have strengths in a number of 'teaching related KE activities' such as student placements and professional employee training and, working with local industry and communities – so-called 'people-based' activities (Abreu et al., 2009). These areas are strategic activities of many of these new universities. According to the survey conducted by the UK~IRC in 2008, a higher proportion of academics working at new universities acknowledge that "motivations for activities with external organisations" is to "further my institution's outreach' mission" than those working at older universities. KE activities are reported to have made positive impacts on teaching activities, again, much higher score at new universities than old ones (Abreu et al, 2009, p.54). In some of these cases, KE activities are already embedded as part of the institutional mission, and one may argue that it may not be necessary/appropriate to incentivise KE activities separately.

More detailed information on the different areas of KE activities and corresponding incentive mechanisms is needed. In terms of commercially oriented KE activity, a survey conducted on behalf of Universities Companies Association (UNICO) (Lock, 2009) noted that despite

policies that recognise the value of enterprise activities, there has been a distinct lack of information available on the nature, form and effect of incentives in this area. This includes information on average salaries, reward and promotion for individuals, institutional strategies, and the overall benefits and motivations of enterprise activities and schemes at institutional level (e.g. royalty income share, consultancy income). In our interviews, consultancy and the potential to earn additional income through KE activities was highlighted as a significant incentive for some academics (interview, KE manager in humanities and social sciences, August 2011).

In the case of third stream activity of a non-commercial nature (such as community/civic engagement), information on incentives and reward mechanisms is scarce. The challenge of incentivising KE activity in this area may well be a result of the fact that very often the audit and evaluation of community engagement is still at a formative stage (Hart and Northmore, 2011), and that rewards are not financial and therefore may not be formalised. Furthermore, it takes long time to build relationships with communities and nurture 'mutually beneficial relationships and long-term connections' (interview, director, community engagement, September 2012). Short-term incentivisation and inclusion of KE in promotion criteria may not be the best way to nurture the long-term relationships. At national level, the National Co-ordinating Centre for Public Engagement (NCCPE), as part of the Beacons for Public Engagement (BPE) initiative, has been working to support, recognise, reward and build capacity for public engagement (NCCPE, 2010). There are examples of institutions providing institutional support mechanisms such as student and staff volunteering schemes (Robinson et al., 2012) and building structures for integrating KE and community engagement activities into teaching and research (see the case of University of Brighton in Appendix).

There would appear to be a need to understand KE activity as part of the changing nature of academic research and knowledge production (Gibbons et al., 1994; Jacob and Hellstrom, 2000; Brew and Lucas, 2009). A question may be asked about the conceptualisation of KE in relation to different natures of research (e.g. 'applied,' 'problem-based', 'user-inspired basic'; 'interdisciplinary' and 'transdisciplinary') in different fields (Abreu et al., 2009). There also seems to be a discontinuity in the institutional management between research and enterprise activities (McNay, 2009), despite the fact that increasingly universities have created joint-named central offices such as Research and Enterprise Development Office. The

conceptualisation of KE has to be examined not only with research but also in relation to different types of teaching and learning (e.g. problem-based learning, enquiry-based learning). Kandiko and Blackmore (2009) have investigated the changing nature of research, teaching and "traditional academic boundaries" as universities engage more and more with interdisciplinary work and KE activities. They note that, in Australia, broadening of tenure and promotion criteria to include knowledge transfer and societal benefit has opened up opportunities for academics to pursue interdisciplinary work earlier on in their careers (Kandiko and Blackmore, 2009, p. 91). This point relates to issues around KE activity at different academic career stages (see Stephan and Levin, 2001; Leisyte et al., 2008).

Individual academics' perceptions about KE activities are complex, conditioned not only by the disciplinary areas, but also the institutional environment. Academic motivation is clearly not a simple financial matter: academics often spend time on unpaid activities in and out of their institutions, including public engagement and knowledge exchange activities (Blackmore and Kandiko, 2009). One of the senior academics in social sciences who we interviewed described KE activities as 'something I have always done because of the nature of my research and my career'. It is about 'solving problems' and 'sharing knowledge'; however, KE is not much about the department where she works because research is not a significant part of the culture of her department (interview, senior academic, February 2012). There are a number of issues about the nature and different conceptualisation of KE (Wersun, 2010) - how it is perceived and strategised by academics and university managers, and how it is positioned and managed in relation to teaching and research activities within the institutions, as well as as part of individual's career development.

5. Conclusion - Beyond Policy Incentives and Institutionalisation

Promoting knowledge exchange activity and external engagement of academic researchers has been of interest to policy makers at multiple levels, including European, national and sub-national governments and public funding bodies (Molas-Gallart and Casto-Martinez, 2007; Jongboed and Zomer, 2010). Knowledge transfer/exchange is a strand of public policy that has developed over the last thirty years in North America, Europe and in many of the industrialised countries, and seen as priority areas for research and innovation policy development across many countries (European Commission, 2007; ESRC, 2009).

Over the past two to three decades, institutionalisation of KE activities has transformed the activity of UK higher education institutions. Universities invested in formal institutional structures such as Technology Transfer Offices, and a number of staff who work on KE activities has increased (Knight and Lightowler, 2010). This has been made possible through policy incentivisation and a series of funding available for institutions to build KE activities and institutional capacity. We presented the policy and funding development in England and Scotland.

The two funding councils, the HEFCE and the SFC, in consultation with other stakeholders, translate selected 'policy effectiveness criteria' (Bozeman, 2000) into metrics and indicators for funding allocation mechanisms affecting the whole knowledge transfer environment. However, the relationship between indicator collection and funding incentives has been a major concern for both higher education systems. Impact of KE occurs over a period of time, and as the result of multiple interactions in the 'feed-back loops', and there are time lags and multiplier effects. There remain a number of methodological as well as analytical issues in how to connect policy objectives to the indicators and metrics. In both England and Scotland, for example, the reporting mechanisms appear to give ever greater recognition of income generating activities and activities which deliver direct economic development objectives rather than wider societal benefits, although these are always acknowledged as important areas of universities' contribution. An inherent and unresolved problem in both of the systems is the difficulty of systematically capturing broader 'socially' oriented KE activities with appropriate metrics and indicators. This could influence and impact on the management of HEIs and possibly practices of individual academics.

The forms of knowledge exchange are diverse and encompass different types of activities, with different forms of outcomes, and very importantly, with different time-scale. Incentivisaiton and institutionalisation of KE activities need to be sensitive to the variety of the nature, forms and time-scale of specific knowledge exchange activities. At policy level, there is a potential for broadening the performance indicators for KE activities, by strategically combining and selecting different 'policy effectiveness models' (Bozeman, 2000). There are alternative models of KE that the sector may pursue by measuring the human resource capacity development related KE and emphasising more mobility of personal between academic and industry/society. There is also a need to acknowledge 'boundary

differences' between the academia and the user communities especially regarding motivations, incentives and timescales (SFC, 2007).

In order to overcome these issues, new forms of knowledge exchanges need to be nurtured at institutional level. There are a number of good examples of demand-led exchange of knowledge between industry and academia. For example, non-academic 'in-residence' professionals from local communities, policy communities; industry (e.g. Professors of Practice); forms of secondment (knowledge exchange fellowship); and PhD placements may be pursued in combination with other forms of KE activities. These may be effectively linked to the career development of researchers (Vitae, 2012) as well as non-academic knowledge users. Here Bozeman's *Scientific and technical human capital* model seems to provide insights in order to understand the changing behaviour of individuals as well as institutions, which could be reflected into the future performance criteria.

Universities transform and engage with society in complex ways, influenced by factors such as their history, culture, geographical location, resource base, status, leadership and ambitions (Slowey, 2004). Leadership and management functions are important for the strategic governance of KE activity at individual HEIs and for the entire academic sector. For example, incentive mechanisms for KE are governed, administered and facilitated by leadership and management at both institutional and departmental/faculty levels. At institutional level, the university may have a human resource policy with specific promotion criteria for KE activity. At the department and/or faculty level, leadership and management associated with KE activity may influence strategic decisions on the nature of academic activities as a whole, support and workload systems (see Barrett and Barrett, 2006), rewards, and different forms of incentivisation.

One of the key issues we found through the interviews is the inherent tensions related to the conceptualisation and institutionalisation of knowledge exchange in relation to teaching and research activities. This relates to the issues of resource allocations and integration of KE within the institutional architecture. Whilst institutionalisation and incentivisation of KE activity is necessary to change the attitudes of universities to go beyond 'ivory tower', it does not seem to be necessarily sufficient to change an individual's behaviours, particularly given the weight of the incentives to encourage greater research activity at many of the HEIs.

Wider transformation in academic value may be happening with the ongoing impact agenda and changes in research funding mechanisms at the UK national level (e.g. the REF Impact exercise; RCUK pathways to Impact). The conceptualisation and interpretation of KE depends on the perceived strengths, priorities and strategies of each institution, department and individual academic. Broadening the concept of knowledge exchange, building appropriate institutional KE governance architectures, and understanding the variety of interactive nature and interdependent contexts between research, teaching and KE activities is imperative. A further study is required in order to better understand, and better shape this rapidly changing and developing agenda in higher education policy landscape. An international comparative perspective as well as interdisciplinary approach will help highlight the complexity of the changes taking place at multiple – policy, institutional and personal – levels.

Acknowledgement

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Appendix 1– Project timeline, key activity and processes

Time	Plan	Implementation and <u>key actions</u>
June 2011 June –August 2011	Commence of the project **Policy studies**	**Policy study with documentary and other secondary sources** **Policy interviews, Consultation with experts** **Initial institutional interview (University of Edinburgh)**
September – December 2011	Policy study writing up	<u>**A conference paper presented at SRHE conference in December**</u>
January – April 2012	**Institutional studies** Interviews/ Writing up institutional cases	<u>**Submit an interim report**</u> **Institutional cases using websites, and interviews; Use of the UK~IRC KE data for analysis.**
May – June 2012	Analysis of KE data	
July- August 2012	Completing the final report and other publications	<u>**Submit a final report**</u>

Both Fumi Kitagawa and Claire Lightowler attended the SRHE annual conference in 2010, and shared interests in knowledge exchange policies and knowledge brokerage practices. Based on this initial communication, we decided to apply for the newly established SRHE Annual Research Award 2011/12, specifically to compare the development of policies, strategies and practices of knowledge exchange (KE) activity in English and Scottish higher education sector.

The project started in the summer of 2011. After conducting policy interviews in England and Scotland, we conducted institutional interviews in England and Scotland respectively, trying to cover different types of institutions (e.g. research intensive and post 92 institutions). We conducted interviews (in some cases two of us interviewing together) in person in Scotland, whilst most of the interviews in England were conducted by telephone. Eight interviews were transcribed, and analysed. There were additional unstructured and unrecorded interviews and discussions with academics, which gave us invaluable insights.

In order to put these accounts at the micro level in wider contexts, we decided to draw on existing secondary data-sets to provide broader picture of academics' KE practices and perceptions. We used the UK~IRC data (2008/9) *Knowledge Exchange between Academics and the Business, Public and Third Sectors*. The data is publicly available on the ESRC archive. We are supplementing this by looking at institutional data available in the results of HEBCI survey and data available in other studies.

Throughout the course of the project, we participated in a number of relevant events including the SRHE annual conference in December 2011, and SRHE policy network seminars, where we discussed the topic of the project with higher education scholars. Other events such as the Genomic Forum's Bridging the Gap Between Research, Policy and Practice Conference, and the ESRC Impact seminar series were useful to capture ongoing policy development and communicate with university managers and practitioners.

Appendix 2 Examples of Institutional Cases

The brief summary of institutional cases here intends to illustrate institutional strategies and mechanisms in place in order to promote and integrate KE activities as part of the institutional architecture. These examples show institutional incentives at different levels (a dedicated KE programme for the whole university; KE strategies formed at the College level; and the institutional strategies and leadership structure at the University level).

The College of Humanities and Social Science at the University of Edinburgh

The College of Humanities and Social Science at the University of Edinburgh consists of 11 schools and around 1400 members of staff.[4] The increase in the Scottish Funding Council's knowledge exchange funding has been seen as a significant incentive for developing further knowledge exchange activity across the College.

In 2009 the University of Edinburgh's College of Humanities and Social Science published its first Knowledge Exchange strategy 'Communication, Engagement and Impact'.[5] The strategy identified a clear strategic goal 'to maximise the contribution of the College's knowledge, ideas, skills and expertise for social, cultural and economic benefits locally, nationally and internationally', and identified three broad overlapping settings for knowledge exchange: *Public and cultural engagement*, *Policy and practice engagement*, and *Business engagement and commercialisation*.[6] They set out to achieve this by implementing effective strategies for:

• Recognising, embedding and promoting knowledge exchange in the College

• Building relationships for collaboration and knowledge exchange

• Securing funding for and raising income from knowledge exchange

Through the process of developing the strategy each of the 11 schools within the College of Humanities and Social Science identified an academic lead for knowledge exchange, called 'knowledge exchange director'. These people have a remit to champion knowledge exchange, and they sit on the College's knowledge exchange committee. The knowledge exchange committee then reports to the resource and planning committee, so it's embedded within the college's structure and in the formal planning process.

The strategy was revised in 2011 and renamed 'Engaging for Impact', representing a move beyond the first strategy's focus on embedding knowledge exchange, and suggesting movement beyond communication and dissemination and focusing more specifically around impact [7]. The recent KE strategy specifically refers to an increase in incentives for

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[4]   Business School; Divinity; Economics; Edinburgh College of Art; Health in Social Science; History, Classics and Archaeology; Law; Literatures, Languages and Cultures; Moray House School of Education; Philosophy, Psychology and Language Science; and Social and Political Science

[5] University of Edinburgh (2009) *Communication, Engagement and Impact: Knowledge Exchange Strategy for the College of Humanities and Social Science 2009-2012*, http://bit.ly/yaX4sx accessed 30 August 2012

[6] University of Edinburgh (2009) *Communication, Engagement and Impact: Knowledge Exchange Strategy for the College of Humanities and Social Science 2009-2012*, http://bit.ly/yaX4sx accessed 30 August 2012

[7] University of Edinburgh (2012) *Engaging for Impact: Knowledge Exchange Strategy for the College of Humanities and Social Science 2012-16*, http://www.ed.ac.uk/polopoly_fs/1.79609!/fileManager/strategydocjan12_web.pdf accessed 30 August 2012

academics to 'engage effectively with non-academic audiences'[8], with the strategy identifying that these incentives emanate from the Research and Funding Councils.

University of Brighton

The University of Brighton has historically had strong relationships with local communities and actively engaged with local vocational skills agenda. The University has 'social engagement' as part of its institutional strategy and has a formal social engagement strategy[9]. The University of Brighton Corporate Plan (2007-2012)[10] includes 'engagement' as one of its five values: "engagement with the cultural, social and economic life of our localities, region and nation; with international imperatives; and with the practical, intellectual and ethical issues of our partner organisations" (University of Brighton, 2007). One of the six aims in the plan states that the university will 'become recognised as a leading UK university for the quality and range of its work in economic and social engagement and productive partnerships'.

The university funds the institutional infrastructure for community engagement. A Department of Economic and Social Engagement was created in 2009, and it acts as the central point for relationships with communities and commercial enterprises, reporting to the University's Business and Community Committee. Also at the institutional level, the University provides an innovative scheme that offers up to five days of contracted hours (pro-rata for part time staff) for volunteering activity to academic, professional and support staff.[11]

A major part of the university's community and public engagement activity has been promoted and developed through the Community University Partnership Programme (Cupp), established in 2003 with an external philanthropic funding. Cupp has created a space where community engagement, teaching and research can come together. For example, Cupp provides support to academic staff by enabling a link between grass root community engagement work and their research and teaching interests. This has involved a 'subtle mentoring process' to ensure staff have the resources to mainstream research outputs or teaching developments (Hart and Church, 2009, 47).[12] Students' learning from community engagement is also encouraged. Synergetic relationships have been created between engagement, research and teaching through Cupp over the past decade utilizing a model of 'co-production' with community partners.

The University has invested in engagement activity and developed a unique institutional and leadership structure where academic and administrative staff are both involved in the management and development of community engagement (see Hart and Church, 2009; Hart, Maddison, and Wolff 2007). [13]

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[8] University of Edinburgh (2012) *Engaging for Impact: Knowledge Exchange Strategy for the College of Humanities and Social Science 2012-16*

[9] http://www.brighton.ac.uk/cupp/whatwedo/community-knowledge-exchange.html accessed 30 August 2012

[10] The University of Brighton Corporate Plan http://www.brighton.ac.uk/cupp/images/stories/Static/about-cupp/corporate_plan.pdf accessed 30 August 2012

[11] http://www.brighton.ac.uk/cupp/whatwedo/staff-volunteering.html accessed 30 August 2012

[12] Hart and Church (2009) Research Leadership for the Community based University: Key Challenges http://www.brighton.ac.uk/cupp/images/stories/MUJ_22_2_Research_Leadership.pdf accessed 30 august 2012

[13] A. Hart, E. Maddison and D. Wolff (eds.), *Community–University Partnerships in Practice*. Leicester:

University College London (UCL)

The case of UCL highlights strategic embedding of the knowledge exchange (KT/KE) activity into organisational structure at different levels, including promotion processes. UCL's Higher Education Innovation Fund (HEIF) 4 strategy is identified as "a step-change in third stream performance" in its focus on strategic themes, its extension of KE beyond science and technology, and its use of new management and support structures (PACEC, 2008, p.3).

UCL's establishment of a Vice-Provost (Enterprise) post has been seen as a trigger for improvements in knowledge transfer performance. The appointment has "signalled UCL's commitment and this ensures that the implications of all aspects of UCL's strategy in teaching and research, is considered in the light of advancing KT". Appointment of Vice-Deans (Knowledge Transfer) in all faculties has also an important feature of "embedding an expanded KT capability".[14]

Institutional orientation towards knowledge transfer has been communicated through a variety of mechanisms at multiple levels. In one document, submitted to HEFCE and describing HEIF 4 institutional strategies, UCL identified the ways in which academic staff are engaged in KT activities. These can be summarised in terms of the following themes:[15]

- **Strong institutional strategy for KT**: "The importance of KT has been highlighted in the Provost's White Paper and Excellence Statement", which have been widely discussed at departmental, faculty and university level.

- **Alignment with governance mechanisms**: These documents have been "endorsed by UCL's Academic Board and Council and inform the discussion that takes place in the context of the biennial appraisal of academic staff".

- **Evaluation of performance in KT:** Performance in KT is evaluated as "a key component of the overall academic commitment of staff". "The balance of contributions may differ between individuals, and across disciplines, but a significant KT component is expected from all academics".

- **Link between KT strategy and promotion**: The KT strategy informs the promotion process and has been taken into account "in the banding of professional appointment" since 2008.

- **Importance of Heads of Departments**: "Heads of Department and Deans have a major role in establishing KT strategy in their areas and its implementation"; "The promotion of the KT strategy is an integral part of the Heads of Departments induction programme, and will also be highlighted in staff induction programmes".

In 2010/11, UCL established *Knowledge Transfer & Enterprise Champions scheme* to promote Knowledge Transfer within UCL and make it easier for academics to receive recognition for their work. The scheme also aims to create inter-departmental links throughout the university: there are seven champions, each from a different faculty. [16]

NIACE.

[14] Group of 8 Backgrounder 6, October 2008 Appendix 1 University College London: Knowledge Transfer Strategy.

[15] University College London, HEIF 4 Strategies http://195.88.100.72/heif3/Forum.aspx?LessonID=1012 accessed 26 March 2012.

[16] http://www.ucl.ac.uk/enterprise/files/Enterprise_Review_1.pdf accessed 30 August 2012