An action-oriented ethnography of interdisciplinary social scientific work

Yu-Wei Lin¹, Rob Procter¹, Peter Halfpenny¹, Alex Voss¹, Kenny Baird¹

¹ ESRC National Centre for e-Social Science (N CeSS), University of Manchester

Email address of corresponding author: yuwei.lin@ncess.ac.uk

Abstract. This paper, based on an ethnographic study of a large social science research centre in the UK, provides an empirical account of inter-disciplinary and multi-disciplinary collaborative practices across the social sciences and humanities. It also improves our understanding of inter-disciplinary and multi-disciplinary social scientific work, and informs us of whether and how e-Research technologies and tools can assist social scientific research and enhance collaboration between social scientists. The main enquiries fall into two streams: 1) what institutional, cultural, social, technical and ethical practices inhibit or facilitate the inter-disciplinary work of social science researchers; 2) what tools and technologies are effective in promoting collaboration across disciplines and across geographically distributed research teams.

Introduction

National and international research funding councils have increasingly emphasised that social scientific research and education, like science and engineering, are becoming highly ‘data-intensive, as a result of the proliferation of digital technologies and pervasive networks through which data are collected, generated, shared and analysed’ (e.g., Atkins et al., 2003; Newman et al. 2003). Additionally, funders have also recognised that the complexities of subjects in society are beyond what a single discipline can deal with, hence inter-disciplinary or multi-disciplinary collaboration is needed. To address these challenges, research councils have been encouraging social scientists to adopt collaborative approaches, to share and reuse data, to explore and exploit mixed methods combining qualitative and quantitative approaches, and to develop innovative methods such as computer-based simulation (Mason, 2006; Bardsley & Wiles, 2006; Savage and Burrows, 2007). To these ends, not only have various novel e-Research tools and services been created over the past years, but also a growing number of large-scale collaborative interdisciplinary research projects have been funded.

e-Research (or Cyber-Infrastructure in the US) describes a computationally enabled science that allows researchers from distributed locations and diverse backgrounds to work together. e-Research programmes often emphasise inter-disciplinary and/or multi-disciplinary (RCUK,
2001; Schroeder and Fry, 2007) and it is probably fair to say that the growth of e-Research and inter-disciplinary or multi-disciplinary research shape each other. As such, improving our understanding of how social scientists practice inter-disciplinary work will give us insight into how e-Research tools may be used. In this way, we can design and implement more suitable e-Research tools and services for collaborative work in social sciences.

Interdisciplinarity

Before going on to discuss inter-disciplinarity, it is useful to make clear our working definition. For our purposes, we understand inter-disciplinarity as an approach that allows researchers to work jointly and to integrate information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialised knowledge to tackle one problem. This distinguishes inter-disciplinarity from both multi-disciplinarity and trans-disciplinarity in that multi-disciplinarity allows researchers from different disciplines to work in parallel with each other but still from disciplinary-specific bases to address common problems, and trans-disciplinarity allows researchers to go beyond their parent disciplines, using a shared conceptual framework that draws together concepts, theories, and approaches from various disciplines into something new that transcends them all (Rosenfield, 1992: 1351). Disciplines involved in multi-disciplinary research possess lower dependency than those involved in inter-disciplinary research. Table 1 summarises the characteristics of interdisciplinarity, multidisciplinarity and transdisciplinarity.

Table 1 Characteristics of Inter-disciplinarity, Multi-disciplinarity and Trans-disciplinarity

<table>
<thead>
<tr>
<th></th>
<th>Multi-disciplinarity</th>
<th>Inter-disciplinarity</th>
<th>Trans-disciplinarity</th>
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<tr>
<td>Definitions</td>
<td>an approach that allows researchers to work jointly and to integrate information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialised knowledge to tackle one problem</td>
<td>an approach that allows researchers from different disciplines to work in parallel with each other but still from disciplinary-specific bases to address common problems</td>
<td>an approach that allows researchers to go beyond their parent discipline, using a shared conceptual framework that draws together concepts, theories, and approaches from various disciplines</td>
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<tr>
<td>Disciplinary Dependency</td>
<td>low</td>
<td>medium</td>
<td>high</td>
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<td>Impact on the parent discipline</td>
<td>low</td>
<td>medium (mutual shaping across disciplines, concepts being borrowed and adapted in collaborative disciplines)</td>
<td>high (towards creation of a new discipline)</td>
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<tr>
<td>Boundary Elasticity</td>
<td>high (well-defined boundary across disciplines)</td>
<td>boundaries might be difficult to sustain</td>
<td>towards creation of a new discipline</td>
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<tr>
<td>Identity of researchers</td>
<td>well-defined</td>
<td>defined</td>
<td>hybrid</td>
</tr>
<tr>
<td>Exemplary disciplines</td>
<td>Computer-supported cooperative work (CSCW), Science and Technology Studies (STS)</td>
<td>bio-chemistry</td>
<td>in-silico chemistry or in-silico biology, computational biology, bioinformatics</td>
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Inter-disciplinarity is not a new concept in scientific research. In his seminal work, *The Social and Intellectual Organization of the Sciences* published in 1984, Whitley has argued that, in addition to what they study empirically, scientific fields are shaped and affected by the degrees and types of *mutual dependence* and *task uncertainty* they possess (Whitley, 1984, p. 88). Gibbons et al. (1994) proposed a new form of knowledge production, *Mode 2*, which is context-driven, problem-focused and inter-disciplinary. It involves multi-disciplinary teams with heterogeneous backgrounds working together. This differs from traditional mode 1 research that is academic, investigator-initiated and discipline-based knowledge production. Whitley’s theory of ‘*mutual dependence*’ and ‘*task uncertainty*’ and the *Mode 2* theory proposed by Gibbons et al. have inspired many scholars to explore how inter-disciplinarity, multi-disciplinarity, cross-disciplinarity, or even trans-disciplinarity approaches (Flinterman *et al.*, 2001) are perceived and performed in different research fields, particularly in computer-supported environments.

For instance, Barry *et al.* (2008, forthcoming) have conducted a large-scale critical comparative study of inter-disciplinary institutions based on ethnographic fieldwork at the Cambridge Genetics Knowledge Park, an internet-based survey of inter-disciplinary institutions and case studies of ten inter-disciplinary institutions in three areas of inter-disciplinary research: a) environmental and climate change research, b) the use of ethnography within the IT industry, and c) art-science. Another example is provided by Fry (2003, 2006), whose research aims to understand similarity and difference in information
practices across intellectual fields and who has conducted qualitative case studies of three specialist scholarly communities across the physical sciences, applied sciences, social sciences and arts and humanities. Several more case studies are currently in progress in other disciplines, notably biotechnology and nanotechnology. These studies use qualitative research methods to focus on how actors involved in a project involving more than one discipline communicate, negotiate and cooperate, instead of measuring quantitatively the degree of heterogeneity of knowledge combined in research\(^1\).

Our research on inter-disciplinarity across the social sciences and humanities contributes to this genre of research. It makes social scientists’ work practices the subject of study, whereas social scientists commonly study professions other than their own. The aim of the study is to contribute to NCeSS’s objective of encouraging the uptake of e-Research tools among social scientists, and the interview and ethnographic work undertaken in the study offers as a means of getting to know prospective users and involving them in the process of service development. We are aware that our familiarity with and attachment to the field and the people we are investigating requires extra sensitivity and insight when reflecting on and analysing the data. We have sought not to let the institutional interest of NCeSS as a national institute promoting uptake of e-Research to jeopardize or override our research interest in critically understanding what constitutes interdisciplinary work and how that work is organised in the field of social sciences and humanities.

**Methodology**

Our ethnographic work started in late autumn 2006 at an ESRC-funded multidisciplinary research centre (the ‘RC’ hereafter) distributed across two locales (i.e. Wonderland and Dreamland). The RC is the first major research centre in Britain to develop a broad, empirically focused account of cultural change and its economic, social and political implications. It brings together the theoretical and methodological expertise of two UK universities in disciplines as diverse as accounting and finance, business, census and survey statistics, geography, history, social anthropology and sociology. Given such a diverse pool of expertise and a large budget, we are particularly interested in how the members of the RC collaborate to develop its broad research agenda and meet its research objectives.

A range of qualitative research methods were employed including in-depth semi-structured interviews, ethnographic observation and document analysis (of both online content and printed documents). The RC’s website was a useful starting point to collect socio-demographic data about the investigators and information about the research programme. It underwent changes during the course of the research, notably through the addition of new content and frequent updates, and it we re-visited it from time to time. These updates allowed us to follow the RC’s activities, especially through information about its numerous events and educational events.

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1 Parallel to this qualitative-based stream of research, quantitative research methods such as econometrics or statistics are also used in studying inter-disciplinarity (e.g., Schummer, 2004).
its news items. From one of our interviews, we understood that the increased rate of updates was mainly due to the arrival of a new administrator who actively collected news from the members and knew how to use a webpage editor. The role of the administrators will be discussed more fully later.

We have interviewed eight members from this Centre, and each interview lasted for around 50 minutes. The selected interviewees were the RC’s directors, theme researchers, affiliated academic members, and administrators. We took part in their seminars, workshops and social events (which both the RC’s internal members and external delegates/visitors attended). More importantly, informal discussions with the RC’s staff on the Wonderland campus contributed not only to our ethnographic data but also our relationship with them, which made engaging this prospective user community easier.

Additionally, shortly after our scoping ethnographic study, a demonstration of Digital Replay System (DRS)\(^2\), an NCeSS research tool, was arranged for interested RC members as part of NCeSS’s awareness-raising programme for e-Social Science. Field notes taken at the demonstration meeting and participant feedback received afterwards provided more information about their needs and attitudes towards new technologies and tools. Some researchers also expressed interest in working closely with NCeSS, including working together on NCeSS research projects, co-authoring papers and becoming NCeSS visiting fellows.

This participatory ethnographic research is also action-oriented because our role in this study is not merely as researchers, but as facilitators whose remit is to encourage potential users to adopt e-Research methods and tools. The fieldwork was not merely a way of collecting data, but also a mutual learning process allowing us to understand the user requirements better and keeping the RC’s members informed of e-Research technologies to date. Such participatory action-oriented research is agile and strategic in the sense that the whole research process is flexible: researchers can move fluidly from the role of a researcher to the role of a facilitator to ease the process of uptake. But apart from this convenience, we are also aware of the possible methodological and ethical challenges we might face during the course of the research. Hence, in this paper, we will take a reflexive turn, discussing the role of researchers and subjects in this process, and the advantage (e.g., the research serves as an instrument for fostering active interest by the respondents in e-research) and disadvantage (e.g., the problem of potential conflicts of interest and the distance between researchers and subjects) of such an agile and strategic user requirements study.

**Embodied inter-disciplinarity**

On its website, the RC describes its mission as follows:

\(^2\) [http://www.ncess.ac.uk/research/nodes/DigitalRecord/](http://www.ncess.ac.uk/research/nodes/DigitalRecord/)
'To provide an integrated programme of theoretically directed, inter-disciplinary empirical research on socio-cultural change in the UK, placing this in comparative and historical perspective, so that its findings can shape academic research, and can be drawn upon by users of cultural research. At the broadest level, our programme will seek to overcome current barriers between academic disciplines and between academics and users.'

The RC’s institutional structure is organised around its research agenda’s four themes: 1) cultural economy 2) transformations in media, culture and economy 3) culture, governance and citizenship 4) cultural values and politics. Each theme’s affiliated disciplines and focused research fields are summarised in Table 2.

Table 2 summarises the RC researchers' affiliated disciplinary backgrounds in each theme

<table>
<thead>
<tr>
<th>Research Themes</th>
<th>Affiliated Disciplinary</th>
<th>Field of Expertise/previous studies</th>
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<tbody>
<tr>
<td>Cultural Economy</td>
<td>business studies, anthropology, sociology, geography</td>
<td>financialisation in international firms, business models, dynamics of production and consumption, emerging and changing expertise, bureaucracy and public management</td>
</tr>
<tr>
<td>Transformations in Media, Culture and Economy</td>
<td>business studies, sociology, communication studies,</td>
<td>production in cultural and media industries, audience and producer in media industry, media policy and governance,</td>
</tr>
<tr>
<td>Culture, Governance, Citizenship</td>
<td>history, sociology, political economy, social anthropology, museology</td>
<td>governmental studies, knowledge-making in states, public schools, and museums, technologies and the public,</td>
</tr>
<tr>
<td>Cultural Values and Politics</td>
<td>social anthropology, sociology,</td>
<td>social movement, technology and expertise, social capital, cultural politics of knowledge and expertise, social cohesion,</td>
</tr>
<tr>
<td>Laboratories: The politics of method</td>
<td>sociology, statistics,</td>
<td>Qualitative Research and Cultural Statistics</td>
</tr>
</tbody>
</table>

Two of the themes are based at Wonderland while the other two are based at Dreamland. Each theme has its own theme convener, theme researcher(s), seminar series, workshops and
conferences. The RC has many associate academic members (more than its regular staff) who are also categorised into these four themes. Additionally, two laboratories, the cultural statistic laboratory and the qualitative research laboratory, have been established to complement the thematic research.

Inter-disciplinarity was embodied in various aspects in everyday practice at the RC, e.g., research methods, research tools, interactions with colleagues, research outcomes, publications, and even individuals' work habits and their interactions with the office space.

We observed different types of inter-disciplinary research in different themes. Some themes were more inter-disciplinary than the others with researchers from more diverse backgrounds. Some themes had researchers more willing to explore novel methods and research tools. The RC as a whole has engaged researchers from economics, history, management, accounting, business studies, sociology, anthropology and geography, and they use qualitative (e.g., ethnographic fieldwork, case studies, historical inquiries, interviews) and quantitative methods (e.g., statistical analyses of trends), as well as a mix of both (what was termed 'a narrative and numbers method' by a theme convenor) and (very limited) modelling methods. The qualitative data that the researchers work with includes fieldnotes, interview transcripts, physical archives (e.g., printed newspapers, printed magazines, the Mass Observation Archive at the University of Sussex) and historical materials. The quantitative data they use includes statistics about corporate business archives, OECD or World Bank data, Economic and Social Data Service (ESDS) datasets, administrative data, the European Social Survey data, and other survey data collected by themselves for some projects.

Social scientific research activities are usually carried out individually. For instance, for quantitative-based work, researchers commonly download the data (mostly pre-collected by different organisations, curated centrally and made available at some governmental depository), and run applications at their local computer terminals. Jobs are done offline and individually. For qualitative-based work, researchers usually conduct their fieldwork themselves, read and revisit fieldnotes and interview transcripts, and organise and frame the textual data manually or with the help of computer-based tools. Jobs, again, are done offline and individually. The exception to this individual work is if a survey is needed to collect new data. This is often done through team work: researchers interacting with institutional and individual partners to design questionnaires, test them, train interviewers, collect data, deal with contingent problems during the collection process, analyse the data and write up results for publication.

We have also observed what forms of knowledge exchange are influential in the social science field, focusing on the way RC members interact and the artefacts they co-produce. For instance, the most common knowledge products generated collectively, after surveys, are publications. The knowledge objects they shared were mainly textual data or written texts. In some particular projects, different visualisations or representations of data (e.g., social network analysis, sequence analysis and modelling outputs) might be shared as well. When
co-authoring a paper of an inter-disciplinary nature, it appears that each author would be in charge of a section s/he was familiar with. Even though the shared article would be smoothed in the end for submission, the collaboration along the way is more like assembling a set of sub-units that comprise the article. Even econometricians, who sometimes write ad-hoc computer programs or scripts, usually do not share the scripts with their co-authors. Once a written script is proved to work, results are collected and put down on paper, and the author sees no need to share the code. The coding experience was for the individual econometricians themselves, rather than to be shared by the RC team. This is unlike open source software communities and probably also unlike other scientific fields such as computer science, bio-informatics, or physics.

Various events were held to inspire, maintain and disseminate inter-disciplinary research. Some events were academic with external speakers from across the world, others were attended by delegates from a wider range of backgrounds included government, industry and the public. These events provided a place for academic discussion, for public engagement, and to display the RC’s work including the inter-disciplinary endeavours in which it was involved. These events were organised and advertised widely by the administrator, and managed by both the administrator and the theme researchers together. In fact, the administrator played an important role in publicising the RC’s research. As mentioned earlier, the RC’s website delivered more information and functioned more efficiently as a dissemination and outreach instrument after a new and technically knowledgeable administrator was employed who could manage the site effectively. The researchers based at Wonderland also organise small reading groups and research meetings from time to time for internal members only. These small internal group meetings serve as a more private platform to brainstorm new research ideas and explore new collaborative opportunities. The RC members based at the same locale are also likely to meet up and have a corridor chat.

In terms of communication, emails seemed to be the most effective tool for complementing face-to-face meetings; people email each other about data analysis, co-authoring papers and preparing research proposals. Some specific projects have their own mailing lists for group communication, but the RC’s announcements are usually delivered via a group email list for all its members. The website is a window for others to get to know the RC better, but it is static and does not provide interactive tools for collaboration. Face-to-face meetings remained important and the RC’s bigger projects had regular project meetings. The RC also held an annual internal workshop allowing all its researchers to meet, present their work-in-progress, and discuss other relevant matters.

Given the RC’s extensive and broad research agenda, it was not surprising that achieving the inter-disciplinarity envisioned in its original research plan was difficult. Indeed, it turned out to be extremely challenging to encourage distributed and interdisciplinary collaboration. Individual research undertaken at the RC seldom moved beyond its own theme. The members sometimes gathered at the RC's conferences or seminars or workshops. However, due to geographical constraints, they did not usually attend the events held in different places. Theme
researchers based at Dreamland did not usually participate in the events held at Wonderland, unless required (e.g., the annual RC internal workshop). There is little overlap and interaction between theme research based at Dreamland and that based at Wonderland. Geographical proximity proves to be a crucial factor shaping collaboration.

Space and habits shape the way people work as well. For some, having coffee with colleagues is an inspiring time; for others, reading at home is more productive. In the Victorian building at Wonderland where some RC members are accommodated, the place where people usually meet each other is the first-floor kitchen (next to which are the toilets) and the ground-floor reception where the RC’s administrators work. There have been discussions about providing a space dedicated to social interaction within the RC, but such a place still does not exist at the time of writing, over five years after the RC was established.

We have also observed factors that might change the social scientists’ interest in adopting new technologies. For example, UK or EU funders’ research policies (directly and/or indirectly) influence what research people undertake, the research methods people adopt, and the collaborative networks they form. The RC members showed interest in exploring the capacity of new technologies but under the condition that they got funding for conducting research using these technologies. This was a practical issue under the current UK academic circumstances.

Discussion

We present our preliminary analysis of the empirical materials below. This discussion will be divided into two parts: 1) how inter-disciplinarity is perceived and performed at the RC 2) what how e-Research tools help improve the performance of inter-disciplinarity at the RC.

Modes of inter-disciplinarity

Of the three distinctive modes of inter-disciplinarity proposed by Barry et al. (2008), the inter-disciplinary objectives of the RC fall into the integrative-synthesis mode where inter-disciplinarity entails an integration or synthesis of insights and methods from two or more disciplines, and possibly also from non-expert forms of knowledge. However, given what we have observed of the practice of the RC, it is perhaps better to characterise it as multidisciplinary. This is because, although the RC researchers manage to put their different contributions together into co-authored papers, there remains little evidence that they explore what is beyond the research frameworks that each is familiar with. The RC’s outputs seem little different from other research in the social sciences that has less integrative ambitions. Of course, an alternative interpretation is possible: that the RC is genuinely inter-disciplinary because the ‘traditional’ social scientific disciplines that it calls on, such as sociology, anthropology, economics, history, accounting, management and business studies, are already integrated around a common framework. However, given the continued active debates about the essential nature of the social sciences, especially those that focus on rival epistemologies, this alternative interpretation seems unhelpful. Similarly, a second alternative interpretation,
that the ‘cultural turn’ adopted by the RC is integrative across the social sciences, seems equally unhelpful given the continuing debates about what such a turn involves. Neither alternative account, that either the social sciences generically or cultural studies are integrative, seems to be true for the RC or elsewhere. In the terms of Barry et al. (2008), the RC does not fall into the subordination-service mode where one or more disciplines are conceived as being subordinate to, or as serving, another component discipline – such as generic social science or cultural studies. Similarly, it is difficult to see the RC becoming of ‘trans-disciplinarity’ or moving into the agonistic-antagonistic mode where inter-disciplinary collaborations spring from a self-conscious dialogue with, or criticism of, the limits of established disciplines or the status of academic research in general.

Although visions of employing mixed methods and innovative methodologies have been proposed by some leading social scientists and promoted by the British research funding councils, it takes time to see these practices being established in everyday social scientific research. Whilst we have observed that the RC’s researchers are exposed to a variety of disciplinary work (which each adopt approaches or epistemologies), few of them have experience of using different tools and methods from disciplines other than their own. They might ‘know-what’ (i.e., know what is done in other social sciences) but not ‘know-how’ (i.e., knowing how to use and integrate different research tools and theoretical perspectives). Opportunities such as a new empirical research project need to be created to motivate the researchers to actively engage in and experience interdisciplinary work.

Materiality

We have observed that the items shared amongst inter-disciplinary researchers at the RC are mostly textual data, tables and diagrams representing numerical or textual data, and written texts. Unlike natural scientists or engineers working in labs who share machines and experimental equipment, or archaeologists who share (tangible) artefacts found at historical sites, the data shared amongst the RC’s social scientists appear to be more text-based or intangible. That said, the exchange of different approaches in social scientific research is not primarily mediated by tangible artefacts (e.g., experimental equipment or historical artefacts) and facts are not produced through the usage of these (tangible and instrumental) artefacts. And the instruments they use at the RC can be easily appropriated by individuals (e.g., word processors, statistical software). This denotes that the analysis of social scientific data is more individualised and distributed (situated at the researcher’s office or home workplace). Therefore research at the RC is less restricted to a particular way of working by these artefacts. Accordingly, we can say that the RC demonstrated little of the (tangible) ‘object-oriented inter-disciplinarity’ shown in Mattila’s study of building a set of infectious-disease models where ‘interdisciplinary research is bound to its object, in accordance with which it can develop and evolve or cease’ (Mattila, 2005: 532). The exception is, perhaps, the collaborative design and implementation of social surveys, which are usually joint productions with RC as noted above. Of course, this assumes that the surveys are genuinely inter-disciplinary, or even trans-disciplinary, rather that the imposition of a particular
restrictive approach on the field, as is sometimes argued by qualitative social scientists when criticising quantitative social science.

As shown in Figure 1, textual data enables researchers to assign meanings to their data more freely; it enables a higher level of interpretative flexibility. Data produced by or (re)presented through computer-supported tools such as statistical applications, visualisation and modelling is less accessible because of the expertise that is required to understand and make sense of different forms of data (e.g., diagrams, statistics, equations). Whereas the computer-supported tools can provide different perspectives on the data, they are also black-boxes for researchers who lack the specific skills to apply and understand them. In other words, there is a danger that computer-supported tools reduce social scientists’ interpretative flexibility.

Figure 1

INCREASING DATA FORMALITY
Data produced and presented by increasingly black-boxed tools

GREATER INTERPRETATIVE FLEXIBILITY
DECREASING DATA FORMALITY

Even with lower materiality, the inter-disciplinarity at the RC, however, is still embodied and embedded in the interactions and communication between the researchers within and outside the RC. Their collaboration is less bound to any tangible research artefacts (e.g. experimental equipments for data collection or data analysis), but to an exchange of epistemologies (e.g. propositions and theoretical perspectives). Members mutually learn from each other through dialogues at the seminars, workshops, and conferences. Some themes at the RC eagerly transcended academic boundaries to engage the public, brought in a higher level of
heterogeneity into their research circle and upheld inter-disciplinarity. While we haven’t found common ‘carriers of inter-disciplinarity’ (Mattila, 2005) at the RC (as a whole) to facilitate inter-disciplinarity, we did find events serving a crucial role in engaging the RC’s internal and external members. Note that this might be a different story if we were observing archaeologists or other disciplines which require a higher level of ‘materiality’.

Organisational branding and events

In her ethnography of everyday working practices at Xerox Palo Alto Research Center (PARC), Suchman observes that ‘organisational branding’ is a salient phenomenon at PARC in order to ‘demonstrate both its comparability and its distinctiveness with respect to others’ (Suchman, 2007). The RC, like PARC, is a site for the creation of new knowledge that needs to demonstrate its distinctiveness and standing in the field. Organising events ‘successfully’ is a strategic means to brand the RC and exhibit the RC’s vibrant research activities and rich human resources. From an inter-disciplinary perspective, events also helped engage a more diverse range of researchers to contribute to the RC’s research programme, and provide a platform for a multi-disciplinary group of researchers to exchange knowledge and learn mutually from each other. The other means towards this goal is the RC’s visiting fellowship scheme, through which academics from different institutes across the world affiliate with the RC for a fixed period. Nevertheless, if events and visitors do not actively promote integration, then they support multi-disciplinarity but not inter-disciplinarity.

Moreover, as we have observed, the researchers located at different parts of the RC (i.e., Wonderland and Dreamland) seldom attend the other university’s events. This could be because they worked on different themes. Whatever the reason, the lack of communication between the researchers located at the two different sites undermines their claim that RC as a whole is engaged in inter-disciplinary work.

Technologisation

Traditionally, the large majority of social scientists work independently. Although the RC has managed to bring diverse expertise from different disciplines together (albeit at two separate locations), what we have observed at the RC does not seem to match with the ubiquitous “technologisation” described in existing literature on inter-disciplinarity. We have found there were few technological tools and services shared amongst the researchers. This low level of technologisation at the RC could be due to their specific research interests and research fields, rather than their active rejection of them. But the critical question remains whether introducing ICT to the RC’s researchers would make a radical difference in generating inter-disciplinarity.

For instance, to improve the communication between the researchers at Wonderland and Dreamland, communication tools such as Access Grid or VoIP might foster regular cross-site seminars and workshops. By adopting these tools, researchers at different sites might be encouraged to share their skills and know-how more readily. However, the success of introducing such tools will be limited if the critical process of acquiring inter-disciplinary
know how can occur only in an informal face-to-face setting (e.g. corridor chat or coffee break) and cannot be learned through these computer-supported communication tools. If so, the uptake of these tools might promote multi-disciplinarity by enabling cross-site seminars and workshops, but will fail to generate inter-disciplinarity. If multi-disciplinarity is a staging post towards inter-disciplinarity, then the introduction of communication tools will be a useful start. If however, multi-disciplinarity is instead a stopping off point, they will not.

Learning new methods is not going to be straightforward. There are visible and invisible costs involved. But the increased technologisation should allow researchers to achieve fresh insight on the researched phenomenon. If researchers were exposed to a wider range of tools and methods, they are more likely to have more ‘social capital’ and ‘professional capital’ (i.e., capacity) which subsequently allows them to enjoy higher mobility across disciplines. Besides, learning new technologies as a group work could also bring researchers closer, creating common ‘carriers of inter-disciplinarity’ between them to facilitate collaboration.

Encouraging the uptake of new research tools would also raise the profile of the RC, branded as an innovative research centre.

In the process of introducing new technological tools to RC members, NCeSS plays not only the role of ‘a researcher/user interface, and knowledge broker/facilitator’ but also that of an explorer of the development of inter-disciplinarity within the centre. Our ethnographic study has helped us to understand different needs and practices of social scientists working towards the objective of producing inter-disciplinary work. The ethnographic study is also action-oriented; the information we obtained will be contributing to the strategic planning and policy making within NCeSS as it seeks to encourage the uptake of e-science technology. The action-oriented character of this ethnographic study underlines that it is a mutual learning process through which we the NCeSS researchers and the RC subjects of the research both are engaged and shaped. If the researchers do not see the need to use e-Research tools, we will not force them on them. And if our strategies of engaging users and developing community are not effective, we would like to understand why they are not working, learning from user feedback, emerging requirements, and other institutional, social, and cultural factors embedded in researchers' existing practices.

For instance, our DRS demonstration meeting did ignite some initial interest in the tool. However, the researchers either saw a high substitution cost and steep learning curve or did not have the funding to apply the tool in their research. Given that other cheaper, more familiar and more conveniently available tools and methods are available, the enthusiasm did not last for long.

To summarise, our action-oriented ethnography of an inter-disciplinary social scientific research centre has made an empirical contribution to existing literature on inter-disciplinarity. The RC’s inter-disciplinary work, like all other knowledge creation and

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innovation activities, was not an automatic outcome of bringing together experts from different disciplines, but the result of complex symbolic and material practices. The social and organisational dynamics of inter-disciplinary research processes have not been addressed extensively in existing literature on developing and deploying e-Research tools. Whilst NCeSS, as a national research centre promoting uptake of e-Research tools, would like to agree with Kienle and Wessner (2005) who argue that computationally enabled scientific ‘communities of practice’ can be cultivated, we have to take into account the everyday practices of social scientists, which are always emerging, fluid, changing. If the introduction of e-Research technologies could not bridge existing practice with new practice, it will be difficult to shift everyday research activities onto electronic sphere. Creating an e-Social Science community thus is a contingent socio-technical process involving complicated negotiations between users themselves, between users and developers, and between humans and computers.

References


