Institutionalising Interdisciplinary Work in Australia and the UK

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Abstract

This study adopted Jarzabkowski's (2005) qualitative, activity-based strategy as practice method to investigate leadership and management of interdisciplinary work. Interviews were conducted with 10 academics in Australia and the United Kingdom. Challenges raised by leaders of academic work can be grouped at various levels according to which problems arose. First, faculty in both countries spoke of the influence of national policy context on facilitating and impeding interdisciplinary research, particularly how interdisciplinary research is quantified under assessment schemes. At the institutional level, policies related to promotion and tenure greatly affected researchers' attitude towards interdisciplinary research, particularly for junior academics. Third, leaders at the department level and in research centres had a significant influence on the ability to create management structures to foster and promote interdisciplinary research. This study provides indicators of effective practices, suggests a number of key institutional challenges and proposes a future research agenda.

Keywords: Interdisciplinarity, Interdisciplinary Research, Leadership

As universities engage increasingly with 'mode 2' knowledge, with a focus on application and use, and highly applied 'third stream' research, modes of inquiry cut across traditional boundaries (Gibbons et al., 1994; Molas-Gallart et al., 2002). Furthermore, higher education is being called to action to answer problems in society, ranging from poverty to climate change, for which interdisciplinary approaches are needed. Interdisciplinary work has become the norm in many health and science fields, and numerous institutions offer students interdisciplinary courses.

As both teaching and research are increasingly interdisciplinary, how do universities successfully lead and manage this complex process? While there is a developing literature on interdisciplinarity, there is a dearth of research on institutionalising interdisciplinary work. Effective collaborative working relationships are often hard to establish. There are usually structural problems to surmount. There may also be sociocultural and epistemological differences that are unacknowledged, but that may be powerful in their effects. These present a challenge for leaders and managers, whether they are members of academic departments and research centres or of a university's support services. A Leadership Foundation for Higher Education-funded

research project aimed to identify factors that promote effective leadership of institutionalising interdisciplinary work, with a focus on the key challenges that arise in interdisciplinary work.

Literature Review

Disciplinarity is fundamentally about knowledge — how it is conceived, organised, produced, and disseminated — functions that have conventionally been mediated through academic disciplines. Overall, disciplinarity 'has attained enormous influence over the organization and production of knowledge' (Klein, 2001, p. 273). However, relationships between knowledge and disciplines are constantly changing. Disciplines are not static; they adapt, grow, merge and divide over time. As strong as the cognitive and social dimensions of disciplines may be, internal and external forces are constantly blurring and blending disciplinary boundaries.

There is a growing scholarship on academic disciplines, from both epistemological and sociocultural perspectives. It has been suggested that 'a discipline can be conveniently defined as any comparatively self-contained and isolated domain of human experience which possesses its own community of experts' (Nissani, 1997, p. 203). Thus disciplines organise both knowledge and people. Geertz (1983) termed a discipline 'a way of being in the world' and a 'cultural frame that defines a great part of one's life'. Petrie (1976) refers to a discipline as the professional's 'cognitive map', covering the whole cognitive and perceptual approach in a field of professional activity.

There are various forms and practices of disciplinarity: basic characteristics, shared theories or ideologies, common techniques and sociocultural characteristics (Becher, 1990). Becher and Trowler (2001) developed axes of disciplinary difference using epistemological and sociological dimensions. The cognitive aspects of disciplines and specialties are organised into gradations of hard/soft and pure/applied; social aspects of disciplinary communities and networks are on continua of urban/rural and convergent/divergent characteristics (Becher & Trowler). A discipline-specific world view is taught and reinforced through the socialisation processes of educational experiences (Hall & Weaver, 2001).

Interdisciplinary work is constantly breaking down the boundaries of disciplines through borrowing tools and concepts, combining methodologies and reconceptualising epistemologies. However, there need not be a strict dichotomy between disciplines and interdisciplinarity. It has been claimed that: 'The relationship between disciplinarity and interdisciplinarity is not a paradox but a productive tension characterized by complexity and hybridity' (Klein, 2000, p. 7). Interdisciplinarity is not anti-disciplinary or non-disciplinary, for 'to be interdisciplinary you need to be disciplinary first — to be grounded in one discipline, preferably two, to know the historicity of these discourses before you test them against each other' (Foster, 1998, p. 162). Klein (1996) highlights the need for a balance of depth, breadth and synthesis in interdisciplinary work, for both the epistemological and sociocultural elements.

Challenges that arise in interdisciplinary work contain epistemological, sociocultural and practical/administrative elements. The literature points to five key issues: recruitment, motivation, communication, reward systems and management. Regarding recruitment, it has been

claimed that there are four common instigators of interdisciplinary work: a charismatic leader, a senior leader, a common enemy and a common subject or client (Mar, Newell, & Saxberg, 1976, p. 651–652). Recruiting individuals involves both internal and external motivations. Scientific inquiry often motivates academics to begin interdisciplinary work (Mar et al.). However, motivation to participate varies by stage of career. It can be difficult to start time-consuming interdisciplinary research, which also may be difficult to publish, when under pressure to complete academic probation.

Communication with individuals involved in interdisciplinary work is essential throughout a project. Discipline-specific vocabularies and terminologies often hinder communication in interdisciplinary work (Klein, 1990; Petrie, 1976). Some disciplines have such specialised terminology that an outsider cannot understand the nomenclature, much less the concepts (Mar & Newell, 1973). The difficulty in communicating during interdisciplinary research projects often continues in the dissemination of findings and publication of results. Interdisciplinarity involves more than synthesising cognitive aspects of disciplines; there are also administrative and external issues to manage. The traditional reward systems are located in disciplines (Klein, 1996), and disciplines provide the link with job markets and internal student markets that some large-scale interdisciplinary work must confront (Turner, 2000).

As discussed above, although funding agencies often promote interdisciplinary work, there can be problems in actualising it (Klein, 1996). Leadership is needed to move an interdisciplinary group through the various phases of a project, while accounting for epistemological and individual differences (Hall & Weaver, 2001). Many academics involved in interdisciplinary work find it 'more difficult and even painful than it first appeared, encountering not only administrative obstacles, but problems to do with the "disciplinary cultures" involved' (Squires, 1992, p. 208). It takes careful leadership to keep the quality of the research high (Mar et al., 1976), to make the research transformative rather than just additive (Klein), and to manage the roles of those involved. In the Australian context, there have been movements towards incorporating interdisciplinarity in the restructuring of the curriculum and increasing interdisciplinary teaching and research opportunities (Davies & Devlin, 2007). These changes are likely to have far-reaching implications for students, academics and particularly academic leaders.

In interdisciplinary work it can be difficult to separate administrative, personal and scientific problems. Leaders may try to manage the project tightly, to keep all of the participants on the same track, but this can produce difficulties: Klein (1990) notes that large-scale projects in particular may need this approach but 'the more project leaders steer, the less opportunity there is for innovation by participants' (p. 63). Furthermore, academics in general often see their work as over-managed (Deem et al., 2001). Therefore interdisciplinary research involves 'an improvement in *human relations* to overcome the intolerance, bigotry, and barriers not only among individuals, but within and among disciplines' (Mar et al., 1976, p. 650).

Administrative, personal, and scientific issues arise in all three major phases of interdisciplinary work, where different elements of leadership and management are needed (Klein, 1990):

- Planning (importance of definition and clarification)

- Implementing (need for a 'bridging person')

- Concluding (including methods of publishing and evaluation).

Naiman (1999) claims that strong leadership is needed particularly at the start-up and publication/end phase of interdisciplinary work. However, various kinds of leadership and management are needed throughout interdisciplinary projects.

Methodology and Data Collection

The role of leadership and management is essential to all of the key issues in interdisciplinary work noted above. This investigation took the view that it is important to study what people actually do in leading and managing interdisciplinary work. This study adopted Jarzabkowski's (2005) activity-based strategy as practice method to investigate leadership of interdisciplinary work as it is practiced. This view allows for analysis of interdisciplinary work as practice, as a set of practices and of practitioners of interdisciplinary work. The project takes an appreciative inquiry approach, exploring cases where professional and disciplinary groups work effectively together.

Solicited interviews were conducted at two major world-class research institutions, one each in the United Kingdom (UK) and Australia, involving academic leaders and managers, to identify suitable cases of effective interdisciplinary leadership for further exploration. Overall, 10 in-depth interviews were conducted, 5 in each institution. Selected leaders represent a variety of schools and disciplines, and are involved in both teaching and research aspects of interdisciplinary work. Semistructured qualitative interviews of effective leaders of interdisciplinary work were then employed to generate in-depth case studies. A thematic analysis, using categories drawn from the literature and adjusted through an iterative process in the light of the interview data, identified what worked in each case and enabled a tentative identification of principles for effective practice in interdisciplinarity and its support.

Results

Many of the challenges that leaders spoke of can be grouped at various organisational levels. These include national policy contexts, institutional structures and management, and department policies and practices. The study also identified various ways that interdisciplinary work can be promoted throughout universities. The results conclude with some of the key challenges that academics face in conducting interdisciplinary work.

National Level

Particularly in the British context, issues of funding and quality assurance at the national level affect interdisciplinary work. Although interdisciplinary research is often requested by granting agencies, many interdisciplinarians noted that grants incorporating many diverse disciplines often did not make it past initial review stages. The Research Assessment Exercise (RAE), the national research evaluation system in the UK that determines government funding

for individual institutions, was another obstacle to interdisciplinary work. With a focus on publications that are assessed by discipline-based panels, it is believed that the RAE standards create a disincentive for scholars and departments to pursue interdisciplinary work, even though the panels encourage interdisciplinary work.

Several interviewees in both countries noted difficulties in fitting interdisciplinary projects into the proposal requirements of funding councils. This issue was also faced at the department level where, under national assessment schemes, departments are required to develop areas of strength and show research themes. Academics doing interdisciplinary work often faced difficulty connecting their work with their colleagues conducting more traditional research within their discipline. Overall, Australian academics indicated that their assessment schemes allowed for more flexibility, but they noted greater concerns at institutional level. Linking interdisciplinary work with national policy initiatives, such as healthcare and diversity issues, assisted several academics in navigating through the grant application process.

Institutional Level

Interdisciplinary work often fails to fit into traditional discipline-based reward systems. There are many issues with trying to publish interdisciplinary work, particularly because differing practices have developed across disciplines. These include: mode of publication, for example writing a government report rather than a journal article or book; location of publication, such as a generalist rather than specialist journal; time frame, as interdisciplinary work often takes years to develop; and publication in peer-reviewed journals, particularly when the work draws on distant disciplines (Klein, 1996). These movements away from traditional disciplinary culture can weaken the reputation of interdisciplinary work, as 'the bottom line of legitimacy is the reward system' (Klein, p. 232).

The reward system in academia often influences how faculty members pursue interdisciplinary work, and is related to academics' stage of career. It can be difficult to start time-consuming interdisciplinary research, which also may be difficult to publish, when under pressure to complete academic probation. Research supports belief that senior faculty are most likely to engage in and may be best suited for interdisciplinary work (Klein, 1990). Some academics move towards interdisciplinary work as part of a mid-career change in their specialty (Becher & Trowler, 2001).

Several interviewees noted the importance of thorough grounding in one discipline before crossing into others. The difficulty of finding cross-appointments in junior-level positions further hinders early career interdisciplinary work, particularly when multiple schools and faculties are involved. Several senior interviewees noted that it is easier to take risks on interdisciplinary work post-tenure. However, in Australia the broadening of tenure and promotion criteria to include knowledge transfer and societal benefit was opening up opportunities for academics to pursue interdisciplinary work earlier in their careers.

School/Faculty/Department Level

As discussed above, although funding agencies often promote interdisciplinary work, there can be problems in actualising it (Klein, 1996). On the epistemological and cognitive side,

there needs to be a balance of diversity of disciplines and specialties; depth of each area and diversity of talents; and integration, involving the frequency and intensity of interaction (Hollingsworth & Hollingsworth, 2000). Klein (1990) notes the lack of common identity of many of those engaged, so that they are 'homeless, in a state of social and intellectual marginality' (p. 13). Many academics involved in interdisciplinary work find it 'was more difficult and even painful than it first appeared, encountering not only administrative obstacles, but problems to do with the "disciplinary cultures" involved' (Squires, 1992, p. 208). It takes careful leadership and management to keep the quality of teaching and research high (Mar et al., 1976).

Although many of the management challenges of interdisciplinary work may appear trivial, added together they can present a major obstacle. It is not only academic disciplines that can be tribal; there are administrative silos as well, including financial departments, course registration and timetabling, and computer systems. As one interviewee noted, 'It is quite difficult to teach interdisciplinary courses, or at least the sheer diffusion of people into different departments, with different timetables, for instance, or different habits, different expectations, different cultures, perhaps of contact, or different entry level requirements'.

Faculty members with joint appointments or teaching courses across the university noted the difficulties in organising their teaching loads, getting proper reimbursement across schools and faculties, and splitting time and resources between offices. While the idea of interdisciplinarity can be appealing, some academics noted that the implications were often more than the traditional management structure could handle. Suggestions for improvements included dual course listing and call numbers and computer systems that could recognise academics as having more than one disciplinary home.

Conclusions

The following conclusions detail some of the challenges and cover key aspects of promoting interdisciplinary work, as well as provide some suggestions for how institutional researchers can ease and encourage interdisciplinary work. Many of the issues surrounding interdisciplinary work cross administrative, structural and intellectual boundaries. Although this is not surprising, as interdisciplinary work is often at the intersection of theoretical and practical work, it means that promoting interdisciplinary work takes the concentrated efforts of the entire university community.

Challenges of Interdisciplinary Work

There are numerous aspects of universities that hinder interdisciplinary work. Many academics noted that there was no culture of going outside one's own department and a general lack of knowledge of other fields. Even when interdisciplinary research centres are developed, over time they can lose their direction and focus and impede related interdisciplinary work from moving forward. Many university-wide initiatives focus on something new, so ongoing interdisciplinary work is often bypassed in favour of current academic fads and trends. And, because much interdisciplinary work is done on short-term grants and soft money, it is the first to go when there is financial difficulty.

Much of the administration of universities is organised on disciplinary and departmental lines. This includes financial and prestige awards, course scheduling and computer systems. Interdisciplinary courses often require extra administrative support, particularly for joint-degree and cross-school and faculty programs. Computer systems are often set up with each faculty member locked into one school or department, so even if an academic has a joint appointment he or she will only be on one email list or invited to one departmental meeting. These issues pervade the university at all levels, from difficulties marking interdisciplinary PhDs, to getting lab benches delivered to a science-oriented humanities lab. It is worth dealing with the challenges: one academic noted the best architects, mechanical engineers, humanities experts working independently on a building project can lead to failure if they do not work together.

Promoting Interdisciplinary Work

Several academics noted the difference between university structures that allowed for interdisciplinary work and deliberate encouragement and incentives for cross-border teaching and research. The university incentive structure is especially important for early career academics, who are often heavily tied to promotion and tenure criteria. For mid-career academics, the ability to take flexible study leaves, often in different disciplines, can be a springboard for innovative research. For all academics, the ability to go sideways in the university and maintain status is crucial.

On a more basic level, many academics noted the importance of a social space for faculty to meet and interact, whether it is strategic placement of offices, themed buildings, or even a centrally located coffee shop or pub. More managed methods of encouraging collaboration include staff research meetings, electronic databases of academics' areas of expertise and wider media promotion of interdisciplinary work.

Future Directions

As noted above, interdisciplinary work can be encouraged and hindered at several levels. There are examples of strategic and directed leadership efforts for promoting interdisciplinary work within existing structures. Others create new organisational schemes to facilitate interdisciplinary work and ways institutional researchers can help universities move beyond traditional disciplinary and school/faculty boundaries, to encourage and promote interdisciplinarity.

Questions for university staff, including administrators, academics and those in leadership positions include:

- How can researchers recode, reclassify and reorganise departments, divisions and centres to promote interdisciplinary working within existing university structures?
- Are there new methods of accounting for and allocating faculty time, including research output, teaching loads and university service commitments?
- What can be done on campus and electronically to connect researchers across the university?
- How can faculty members be keyed into databases to reflect their positions, including multiple appointments in departments, research centres, schools and faculties?

- How can interdisciplinary teaching be promoted throughout the university, including faculty reimbursement, timetabling, cross-listing courses and requirements from students?

Significance

This study provides a more developed understanding of interdisciplinary working and how it may be facilitated, to enable more effective practice in interdisciplinary work. Interdisciplinarity is a key issue for leaders and managers who need to understand the effects on the role and identity of academics, as well as the place of structure and agency. As one academic noted, disciplines can either be seen as a handrail or a handcuff. Much of the work done between disciplines is highly applied, linked with current social issues, and relevant for key university stakeholders, including funding agencies, government and students. It is up to the university community, from senior leaders to managers and administrators to stay confined by disciplinary silos or to create bridges between them, bringing knowledge together in new ways, without losing sight of disciplinary differences.

Acknowledgement

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