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Advancing theory on knowledge governance in universities

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Advancing Theory on Knowledge Governance in Universities: A Case Study of a Higher Education Merger

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Abstract

The deep structure of university knowledge governance systems is uncharted. In an exploratory case study of a university merger with an art college, this study inductively examines how knowledge governance structures in universities affect (and are affected by) the creation and passing on of knowledge. We found the university governance system to provide advantages primarily for the management of core academic activities of knowledge creation through *articulation* and for the passing on and dissemination of knowledge through *replication*. It is also conducive to the coordination and *integration* of specialized administrative expertise. However, despite insistent calls for more interdisciplinary research, it tends to discourage the pursuit of innovative, interdisciplinary *combinations* of knowledge. These findings shed light on the characteristics of the deep structure of university knowledge governance systems in academic work, namely academic staff identification with, and allegiance to, individual disciplines, as well as the independence of academic work from its particular organizational setting.

1. Introduction

Universities provide one of the most prominent governance structures for the creation and dissemination of knowledge.[1] As in the case of other institutions, their characteristics and governance structures have differed both geographically and over time (Bleiklie and Henkel, 2005; Kogan and Hanney, 2000), in response to the demands and expectations of many stakeholders, including rulers and governments, organized religion, private patrons and, to varying extent, their academic teachers and students (Martin, 2012). The belief that relatively autonomous, collegially managed universities provide optimal governance structures to safeguard Mertonian norms of scientific teaching and research (Merton, 1942) only became widely accepted in the latter half of the 20th century and was soon challenged (Henkel, 2005; Martin, 2012). Fuelled by constraints on public expenditure, universities in many parts of the world have in recent decades faced increasing demands on accountability and effectiveness (Stachowiak-Kudła and Kudła, 2015), sometimes leading to the implementation of more 'managerial' elements of governance, patterned on those believed to ensure the efficiency of business firms (Deem, 2004; Macdonald and Kam, 2007; 2010). However, in spite of considerable variation (Deiaco, Holmén and McKelvey, 2009; Deiaco, Hughes and McKelvey, 2012; Hughes and Kitson, 2012), most universities share certain archetypical general features, that have evolved in response not only to the demands of external selection environments but also to the nature of the knowledge processes going on within them (Becher and Parry, 2005; Bentley, Gulbrandsen and Kyvik, 2015; Henkel, 2005; Weingart, 1997; Ylijoki, Lyytinen and Marttila, 2011).[2]

The governance and organization of knowledge processes in knowledge intensive organizations have been core topics in much recent organizational scholarship. However, most theoretical developments and empirical research have focused on knowledge creation and knowledge exploitation in business firms, often benchmarked against those that occur in arms-

length market transactions.[3] Other institutional contexts have received much less research attention, including those of universities, institutions quintessentially characterized by the production and dissemination of knowledge.

Some aspects of university knowledge governance have been explored in studies of intellectual property and technology transfer policies in academic communities and their research activities (Ambos et al., 2008; Siegel, Wright, and Lockett, 2011), and of universities' business development and technology transfer activities (Lockett, Siegel, Wright, and Ensley, 2005; Siegel, Veugelers, and Wright, 2007; Zucker, Darby, and Brewer, 1998). However, despite these and other efforts (Bleiklie and Henkel, 2005; Becher and Parry, 2005; Henkel, 2005; Trakman, 2008), the deep structure of university knowledge governance structures remains largely uncharted.[4]

This study contributes towards the closing of this research gap. Its aim is to provide a broader understanding of knowledge governance in universities by inductively analysing the 'natural experiment' offered by the merger of two British higher education institutions – an institutional setting that differs considerably from those that have informed most previous research on the creation, sharing and exploitation of knowledge. The organizational processes following a merger offer an opportunity to study how knowledge governance structures affect the formation (or not) of boundary-spanning organizational communities capable of bridging the cognitive gaps between specialized functional and professional expertise.

The main objective of the study is *to describe and analyse how governance systems in universities affect, and are affected, by the characteristics of the knowledge processes undertaken within them.* To this end, it explores differences and similarities between knowledge governance in universities and that in other forms of organizations; on the premise that such comparison not only helps to elucidate the nature of the knowledge processes

undertaken in universities but may also contribute to a better understanding of knowledge governance more generally.

The findings show that the impact of the merger on the organizations examined varied greatly between their 'academic' (teaching and research) and their 'administrative' functions. Governance structures in the university administrations were in many ways similar to those in other public service organizations and related to those in private firms. The problems encountered parallel those frequently observed in mergers of business firms. By contrast, academic teaching and research were undertaken under distinctly different knowledge governance structures than those found in other institutional settings. Their primary function was to guide and promote the creation, passing on and dissemination of knowledge within individual disciplines. This focus on extra-organizational domains (disciplinarity) contrasts with the emphasis on intra-organizational integration and combination of specialized expertise characteristics of other public service organizations and business firms. The extra-organizational, intra-disciplinary focus minimized the organizational disruption caused by the merger, but it also thwarted attempts to exploit synergies through inter-disciplinary cooperation across the boundaries of the formerly independent institutions.

The case study, hence, sheds light on the characteristics of the 'deep structure' of university governance systems in academic work. These include the identification of academic staff with, and allegiance to, individual disciplines, alongside the relative independence of academic research and teaching from particular organizational settings. The propositions advanced offer an extension to the extant theory of knowledge governance structures in terms of their application to knowledge governance in modern universities.

The rest of the paper proceeds as follows. Following a background overview, sketching the evolution of the higher education sector in Britain, the next section describes the empirical

setting for the case study. Section three details the methodology and the analytical approach adopted. The empirical findings are presented in section four, which is divided into two parts: the first presents the effects of the merger on administrative functions and their personnel, the second focuses on the effects on academic teaching and research. Section five presents our analysis of the emergent findings. Section six presents the main theoretical contributions and managerial implications. The concluding section summarizes the study, outlining how its findings may contribute to the development of a more general theory of knowledge governance in different institutional settings. It also discusses the limitations of the study and offers suggestions for future research.

2. Research Setting

The higher education sector in Britain

Like their peers elsewhere in Europe, elite, research-based universities in the UK have traditionally been organized into single-discipline schools or departments. With the aim of securing a large student body, budget allocation systems have long favoured the offering of single-discipline programs attracting large student numbers (Locke, 1989; Clark, 1998). The single-discipline structure is reinforced also by the so-called Research Excellence Framework (REF), linking public funding to publications in peer-reviewed discipline-based journals (Henkel, 2005; Lee, 2007).

These organizational practices and regulatory regimes have been criticized for nurturing narrow, 'needle-shaped' teaching and research, detrimental to the ability of universities to address modern-day challenges, believed to require multi- or inter-disciplinary approaches (Becher and Parry, 2005; Mosey, Wright and Clarysse, 2012; Taylor, 2013). In response, UK governments have in recent decades promoted the establishment of multi-disciplinary research centers to develop a new breed of 'T-shaped' professionals capable of working across disciplinary borders (Lee, 2007).

To attract discipline-based academics to the new multi-disciplinary institutes, these were granted various privileges, including more financial autonomy, flexible time schedules, better physical infrastructures, industry contracts and consultancy, as well as access to research students (Mosey et al., 2012). Alternative, matrix-type organizational structures were set up to nurture boundary-spanning academics and to facilitate knowledge transfer across disciplines (Becher and Parry, 2005; Wright et al., 2009). According to some critics, however, the overall impact of these initiatives has been limited. Long-held norms and traditions have conspired with extant systems for both financial and reputational rewards to dissuade researchers from undertaking the investment necessary to engage in risky inter-disciplinary work (Boardman and Corley, 2008; Kraatz and Moore, 2002) – a conclusion echoed in the present study.

The organizational context

The findings of the case study need to be understood also in its organizational context, the merger of two British academic institutions, a large, research-intensive and internationally recognized university and a smaller but well-acknowledged art college. The art college emphasized teaching and was well known for its pedagogical methods, including practice-based and media-and-methods in speculative and self-reflective contemporary art. The university tended to take a more historical, literary and theoretically-informed approach, with a more even balance between research and teaching.

A history of collaboration between the two institutions created the backdrop for the merger; the impetus for which was fuelled by the art college's difficult financial situation. Cooperation had commenced in the 1940s, with the offering of a conjointly taught program (Figure 1). In the new millennium, the university became the awarding body for the college's degrees, followed by the creation of an 'academic federation'. On the eve of the merger, a joint school of architecture and landscape architecture was established. Following the perceived

success of this and other collaborations, a merger proposal was successfully advanced, and in 2011, the art college became formally a part of the university.

INSERT FIGURE 1 ABOUT HERE

The overall objective of the merger was to obtain maximum synergy, with as little disruption as possible to academic activities. Key administrative tasks were centralized for cost-saving purposes, and new systems and procedures were implemented in the art college. In parallel, new joint programs and cross-disciplinary research centers were created. Drawing from the most successful disciplines in each institute, the flagship of the merger was a new cross-disciplinary 'Design and Informatics Centre', established with strong executive patronage from both institutions, as well as governmental funding support.

3. Methods

Data collection

Adopting an exploratory case study research design (Eisenhardt, 1989; Yin, 2003), we pursue a grounded theory approach (Strauss and Corbin, 1990). Data were collected mainly through a large number of in-depth interviews, and were corroborated by roughly 18 months of non-participant observation, and in the form of other primary and secondary document analyses (see Figure 1).

We conducted 35 in-depth interviews with key leaders of the process and with affected academic and administrative staff (Table I). Three interviews were done before the merger, the remaining in the post-merger era. They varied in duration from 30 minutes to two hours, with an average of around an hour. All but three were recorded and transcribed verbatim.

Initial interviews included broad questions which helped to draw a big picture of the merger, the intentions behind it, and the changes in knowledge processes following the merger, probing topics such as the interviewees' day-to-day activities before, during, and after the merger. Following a theoretical sampling approach (Strauss and Corbin, 1990), secondary interviews were more structured and focused, targeting the main challenges identified in post-merger integration processes and their underlying causalities and effects. Sampled at the level of individuals and aggregated to organizational levels, informed by theoretically grounded micro-foundations (Foss, Husted, and Michailova, 2010), the secondary interviews centered on knowledge governance processes including issues such as the centralization of administration and operations, collaboration across academic disciplines in cross-disciplinary centers and joint teaching and research programs. A final, third round of interviews was conducted, structured around stability and change in dominant knowledge processes. They served to achieve the theoretical saturation necessary for a grounded, analytical approach (Strauss and Corbin, 1990).

Field note observations from meetings of the merger integration working groups supplemented the transcribed interviews, along with the minutes of all meetings of the integration working groups, public merger documentation, and published news, articles and relevant university bulletins. These data sources were principally used to corroborate interviewees' statements about knowledge processes, both academic and administrative, and provided further details for triangulation purposes.

Data analysis

We inductively analysed the collected data adhering to case study research design techniques (Eisenhardt, 1989; Yin, 2003), constant comparison techniques (Strauss and Corbin,

1990) and analytical techniques for qualitative content analysis (Miles and Huberman, 1994). Data analysis - as well as data sampling and collection - was conducted at the individual level which allowed for aggregation to organizational level, while enabling also examination of individual level micro-foundations (Foss et al., 2010). The data analysis was conducted in an iterative fashion, moving back and forth between the extant literature, collected data, and emerging findings (Locke, 2001).

The coding process was started by writing a thick story of the merger (Langley 1999). It covered the pre-merger collaborations, merger preparation, and post-merger integration processes. In light of our research questions, the case story was analysed in terms of how the governance systems in the university and the art college affected and were affected by the knowledge processes undertaken within them pre- and post-merger, managerial and policy implications, and the possibility of advancing theory on knowledge governance. We performed both 'first-order analysis' to capture actors' understandings of the research issues at first hand and 'second-order analysis' which enabled us to move to a theoretical level (Gioia and Chittipeddi, 1991). The rich data resulting from this approach, accompanied by comprehensive line-by-line open coding and memoing, formed the basis of the findings. Comparisons of multiple respondents over time allowed the detection of similarities and differences. As outlined in the following section, this enabled us to identify conceptual patterns from our massive bulk of qualitative data (Strauss and Corbin, 1990).

4. The Merger Process

As our observation of the merger progressed, it became increasingly evident that the merger was perceived very differently by administrative and academic staff. For most academics, the merger implied only minor changes and was often seen to present opportunities of various kinds. For the most part, cost savings through shared and more efficient utilization of

infrastructure and administrative services could be obtained without much disruption of day-to-day academic work, preserving the structure and relative autonomy of existing teaching and research units.

By contrast, for the administrative staff in the art college, the merger led to big adjustments and was perceived as a threat to careers and job security. Most of the changes were a consequence of centralization and standardization of processes and routines with the aim of reducing overheads and increasing productivity. With very few exceptions, the procedures implemented were those in place at the university, reflecting an integration approach of 'forced assimilation' (Haspeslagh and Jemison, 1991), at least in the eyes of the art college's administrative personnel.

To reflect these differences, we present the emergent findings separately for the administrative and the academic sides of the merger (Figure 2, Table II). [5]

INSERT FIGURE 2 ABOUT HERE

INSERT TABLE II ABOUT HERE

Merging administrations

On the administrative side, the post-merger integration focused on *centralization*, *specialization* and *standardization*, mainly to achieve economies of scale, but also to ensure that administrative practices met both the university's own and other legal requirements in terms of transparency and equitable treatment (see data categories A, B, and C). The financial difficulties of the art college were widely recognized, and the merger was seen as an opportunity to ease the financial constraints that had limited its development. As high-level

managers from both institutions mentioned in interviews, there were strong economic justifications for the readjustment of the administration of the art college:

> *College*: Art colleges are incredibly expensive to run. You can't have a high staff-student ratio. It is very intensive teaching, big studio spaces, you need the latest equipment. All those sorts of things can be shared in a larger university. That sort of investment is far easier to make. Then you can open up to other uses (If9/In1/C).

> *University*: I also think that as a small independent institution, the focus of the old art college, because of circumstances, was on difficulties with finance…They were trying to expand but didn't have the capacity to expand; they didn't have the economies of scale to be able to make their development sustainable in a way, which is why they ran into trouble (If8/In1/U)..

As a result of these centralizations into a far bigger institution, the merger led to a redefinition of work tasks that tended to become narrower and less interesting for the administrative staff of the art college. An HR manager from the college explained this in an interview:

> Registry staff was very disappointed to be moving into very defined roles where in the college they had a broader remit. More of the same for what happened in other areas such as HR…I am going from being a free range hen to a battery hen. You had the run of the place but all of a sudden you are in this very small defined area and that's all you are going to do from then on (If3/In2/C)!

As a result of the difficulties that the art college had been facing (including the financial ones), the university's staff perceived almost all of its administrative routines as 'bad practice' that should be terminated (see data category D). Although endeavouring to maintain good personal relations with their new colleagues, the attitudes of the university administrative staff were reminiscent of the so-called 'conquering army syndrome' (Datta and Grant, 1990):

> The art college was being run so badly that we can't let those practices come in here, but we're trying not to say that, because at the personal level we're trying to be respectful of individual skills. 'There is nothing wrong with you, but the way you've been told to do things for the last ten years was so bad and you can't do it like that anymore.' But we're not going to say that because that is a bit embarrassing (If2/In1/U).

Because of the art college's financial difficulties, the greater size of the university and the need to gain scale economies through centralization, specialization and standardization, the integration approach pursued in administration was one of '*absorption'* (Haspeslagh and

Jemison, 1991), where the university's systems and procedures were imposed with little or no adaptation.

Differences in organizational culture, a long recognized obstacle to successful post-merger integration, were big enough to create a 'culture shock' for administrators moving from the art college to the university (see data categories E and F). As a high-level manager from the college explained:

> We had a village mentality. The college was like living in a village; everybody knew everybody, and all of a sudden, we were moving to a metropolis; just massive, you don't know anybody! And I think that's a huge culture change (If7/In1/C).

The organizational culture of the art college is described as being along 'traditional, academic' lines, with a 'results orientation', emphasizing high quality teaching with little regard for economic efficiency, systems and procedures. The university, by contrast, had developed a culture of 'public management' (Ferlie et al.,1996), a 'process orientation' emphasizing efficiency, accountability and quality control. As a head of administration from the university explained (see also data category E):

> … [in the university] there is a very, very clear understanding of the norm… I think that's the biggest contrast from what I can see; [in the art college] there was less shared understanding of the normal, correct procedures. It doesn't sound as if there were normal processes and practices for things! You always have to have deviations from the normal; you are always going to have someone very difficult. But there was not that sense of saying: 'Look, this is the normal run of business and every one may get a deviation'. It was like everything was a deviation (If2/In2/U)!

Following the merger, the non-academic staff (administrators and managers) from the art college was required to manage according to defined university procedures within their areas of expertise, as well as across those lines (see data categories E and F). In this regard, the computerized management information system served as a pervasive 'boundary object', linking the various communities of the university in the '*assimilation*' process. As one manager in the university registry described:

> We have many members of staff who are coming in to see our STUDSYS (a pseudonym) student system for the first time and it is very daunting. They have been used to a system which was partly electronic, partly paper. Coming to a system which is mainly electronic and completely different… and as we know, it's not totally intuitive the way it works, and there has been no training set up (If8/In1/U).

The university had developed an 'umbrella mind-set' including a set of common codes and systems to ensure administrative cohesion. Being unfamiliar with the terminology, the acquisition of this common understanding presented an initial hurdle for the art college staff. This was pointed out by a high-level manager in the university describing a meeting with their counterparts (see also data category F):

> We sat at one meeting, for instance, just with the year budget to talk about. 'What would be the assumptions for going through the budget? What does each of the headings mean? What room for manoeuvre have we got?' The terminology is difficult! …Because it certainly seemed that the two schools within the independent art college had not seen a budget before! …And they were like, 'Could we vary that? Could we move that?'…there was lots of very, very basic explaining and answering questions (If6/In1/U).

Merging academic teaching and research

Teaching and research were generally not strongly affected by the merger, as these activities were undertaken in discipline-based departments with quite distinct characteristics (see data categories G and H). The high quality of teaching and research in both institutions was generally recognized and, in line with the autonomy traditionally afforded individual disciplines, the prevailing integration approach was one of '*preservation*' (Haspeslagh and Jemison, 1991).

For the most part, therefore, the academic merger involved few changes to on-going activities. This was mainly due to the unique academic culture nurtured in the art college, its acknowledged academic capabilities, and the small overlap between its teaching and research with those of the university (see also data categories I and J, '*separation*'). By and large, its academic staff could continue teaching as before, and those engaging in research carried on without much disruption.

In a few areas, a more '*symbiotic*' integration approach (Haspeslagh and Jemison, 1991) was pursued. Its explicit aim was to achieve synergies through innovative combinations of knowledge across disciplines (see data categories K, L, and M). Foremost among these was the attempt to combine design (from the art college) with informatics (from the university) – an endeavour that became something of a 'flagship' project. In the mobilization of political support for the merger, the benefits of such a combination had been highlighted early on by the leadership of the two institutions, who also provided financial support (see data category M):

> The merger was obviously a large political exercise and was certainly pushed strongly by the principal of the university and the head of the art college at that time. And in the document that they originally wrote to explain why it would make sense to have this merger, the idea of design and informatics collaborating was actually pushed quite hard (If20/In1/U).

The combination of design and informatics proceeding into a new center was also seen as a way to attract external funding, partly because the combination of design and informatics was 'in the air' at the time. This was explained by one of the co-heads of the joint research center:

> It was also timely, because at the same time that the merger was going on, you have to look at the broader picture and the broader picture was quite a lot of interest in things like digital media and so on in the UK and internationally (If21/In1/C).

Partly for this reason, the setting up of the new inter-disciplinary center obtained the active support of the two heads of school affected, who provided executive support and acted as project champions. Moreover, the initiative could build on existing collaborations (see data categories K and L):

> We had a lecturer… who is half and half, half in architecture and half in informatics. He got involved with the design and informatics actively… And then, there are people inside architecture who were very well acquainted with informatics ideas. So that was all very handy, because those guys had already made bridges (If24/In1/U).

In spite of these favourable conditions, the attempt to create an inter-disciplinary, innovative combination of design and informatics in both teaching and research did not meet expectations:

> So, we thought we would have this research program [design and informatics] which I kind of agreed to try to get working. And it worked for a while and there were keys

which are still there. And we had some meetings and discussed various things. And it was quite good, but it sort of petered out after a while as these things often do. It became more and more difficult to get people to come to the meetings and we ended up with quite small groups discussing things. That's still interesting but it is just difficult to keep the momentum going really. So as a [joint] research program, that kind of faded out to a large extent (If21/In1/C).

A range of factors and circumstances conspired to thwart the initiative (see data categories I and J). Foremost of these were the nature of career patterns and reward systems, which both failed to provide incentives for individuals to engage in inter-disciplinary cooperation. In fact, institutional pressures and governance systems at times created strong disincentives (see data category J):

There are only a few mechanisms that the university has for incentivizing people. You know you can't pay them any extra! It is very hard even to give them more time or fewer other responsibilities. I mean you can to some extent, but it is very difficult. Because everything is so autonomous and devolved! Within the school, people may or may not agree to shift workloads around to create some kind of space for creating a new program. But if one person is going to do less work, it means everyone else is going to have to do some more and they are not necessarily very keen on that. And the system is usually democratic enough that it is very hard to get them all to agree (If22/In1/U).

The most obvious obstacle was the university career system, in which promotions and salaries were largely based on the REF contributions, with its emphasis on publications in top-tier disciplinary journals (see data category J):

People have their own research interests and they want to push their own research interests. …there is no point in trying to get people to do something they don't really want to do. They won't produce lots of publications that way! Informatics, like many other parts of the university, is very much driven by things like the REF…So they want to get more research publications. Well if you can convince them that creating a new collaboration is going to generate more and better publications then that could attract them. But otherwise why should they be interested (If18/In1/U)?

A few years into the process, the initial objectives for a creative synthesis combining design and informatics were revised downwards, with some staff members resigned to the hope that in the future students exposed to both disciplines would be better positioned to bridge the two disciplines (Feldman and Rafaeli, 2002):

Very often their [the designers'] understanding of anything in informatics is somehow kind of superficial in the same way there is a superficial level of understanding of design in informatics. So actually getting these things to meet at a deeper level is quite difficult and is going to get quite a lot of time and will probably really happen only through the students if it happens at all… Most of the academics are already too entrenched in what they do. But if you can get students to come together that's where there is the possibility (If19/In1/C).

5. Analysis

The contrasting approaches to integration after the merger and its very different outcomes in the administrative and the academic parts of the organizations were directly related to, and highlight, differences in their respective knowledge governance systems.

Administration

As is commonly the case, administrative tasks were organized in specialized work groups – human resource management, finance, accounting, registry, etc. Efficient day-to-day operations required – as in business firms – *integration* and *coordination* across professional areas of expertise (Boland and Tenkasi, 1995; Grant, 1996a; Lawrence and Lorsch, 1967). This was accomplished by means of organization-specific integrating devices, such as university-wide information systems, common vocabularies and understanding of procedures, codification of rules and regulations, and definition of interfaces between departments. The objective was to ensure efficient and reliable handling of administrative matters in a standardized fashion across the entire university.

The administrative systems and procedures of the larger university were imposed on the art college with little or no attempt to identify the potential value of the latter's capabilities. The approach taken parallels the forced cultural assimilation associated with an integration strategy of 'absorption', sometimes observed in business mergers (Haspeslagh and Jemison, 1991). Since inherited work practices form an important element of organizational culture and employees' sense of identity, the art college's administrative staff

generally perceived the integration process as demotivating and painful (Evans, 2015). Many decided to seek other employment – probably not an entirely unwelcome outcome, given the aim to reduce costs through the streamlining of administrative routines.

Teaching and research

Both institutions adhered to the traditional practice of organizing academic work according to disciplines. Departments, institutes and research centers were formed around single 'epistemic communities' – groups of individuals engaged in a common practice and sharing mastery of the codes, theory and tools of that practice, as well as the associated tacit skills and experiential knowledge (Håkanson, 2007; 2010; Holzner, 1968). Research and knowledge creation involved articulation – the explication of the tacit knowledge informing practical and artistic skills – and 'puzzle-solving' – the elaboration and refinement of existing knowledge within defined disciplinary frameworks and paradigms (Kuhn, 1962/1970). The knowledge base of the discipline, in combination with the experience of engaging in its practice, provided the basis for the passing on of less well-articulated knowledge, as in the master-apprentice relationships between supervisors and PhD students.[6]

With few exceptions, research and teaching were intra-disciplinary. Interaction across departments and functions – such as those with other disciplines or administrative functions – was mostly of a routine character and facilitated by well-defined interfaces. In consequence, for most of the academic personnel, the merger entailed only marginal changes. The integration subsequent to the merger, or rather the lack thereof, resembles that observed in conglomerate business mergers, where there is little scope for synergetic gains and where a 'preservation' integration strategy is matched by the employees' general desire to maintain their autonomy and identity (Haspeslagh and Jemison, 1991; Henkel, 2005).

In spite of insistent calls for more 'inter-disciplinarity' in order to address real-world problems that refuse to be organized around the lines of traditional disciplines (Becher and Parry, 2005; Clark, 1998; Mosey et al., 2012), knowledge creation through *combination* of knowledge across disciplines is the exception rather than the rule. The merger case provides a vivid illustration of the incompatibility of prevailing knowledge governance systems with inter-disciplinary research.

The most evident indicator of the university's problems in sustaining inter-disciplinary research is the failed attempt (at least in the short term) to establish a center combining design and informatics. In spite of extremely favourable conditions, including top management support, dedicated project champions and government funding, the initiative petered out after an initial flurry of enthusiasm, as – on second thought – prospective participants more carefully weighed the required investment in new learning against rather uncertain potential benefits and the reality of prevailing career systems.

6. Theoretical Contributions and Managerial Implications
Knowledge governance of academic work

The observed knowledge governance structures of the two institutions mirror an historical transition (Martin, 2012). During a large part of the 20th century, European universities were typically characterized by vague and broad societal missions and the ideal of autonomous scholarship. During recent decades, these have increasingly been replaced by an emphasis on more narrowly defined technocratic objectives, coupled with the popular conviction that scholarly autonomy is wasteful and that academics need to be managed. A pervasive aspect of current practice is the evaluation of academics and institutes of higher learning by their research output, primarily in terms of publications in top-tier peer-reviewed journals. These evaluations permeate the career and reward systems in universities and shape the incentive structures facing individual academics. The low prestige and impact factors of the few inter-disciplinary journals

available, the difficulty of finding reviewers capable of appreciating inter-disciplinary research and the personal investments necessary to acquire sufficient mastery of another field make such endeavours exceedingly unattractive (Lee, 2007; Mosey, et al., 2012). Somewhat paradoxically, therefore – given the simultaneously professed desire to promote inter-disciplinary research – the introduction of managerial approaches to university governance has tended to strengthen their traditional discipline-based focus.

These observations indicate a critical difference between knowledge governance in universities and that in firms. In the latter, the ability to integrate knowledge across different areas of expertise and to accomplish and exploit innovative combinations of existing knowledge is a distinguishing feature. In several influential accounts, the very rationale for the existence of hierarchically organized business firms is their superiority in accomplishing the integration and combination of knowledge across different areas of expertise (Galunic and Rodan, 1998; Grant, 1996b; Kogut and Zander, 1992; Nahapiet and Ghoshal, 1998; Nickerson and Zenger, 2004).

These differences between universities and firms point to more fundamental differences in their governance structures than can be ascribed only to overt incentive structures and other '*surface regulations*' that govern day-to-day work. They seem to reflect fundamental and contrasting characteristics in '*deep structure*' or '*habitus*', the partially tacit understanding of the principles and 'meta-rules' that provide the premises for decisions and actions, ensure cohesion to organizational practice and provide meaning and identity to being in their employ (Bourdieu, 1990; Nelson and Winter, 1982; Nooteboom, 2008; Simon, 1976).

In universities, identification with and allegiance to individual disciplines are reinforced by the training and recruitment processes in place. Much of the former resembles the learning processes described by Lave and Wenger (1991) as 'legitimate peripheral participation'. As

Lave and Wenger (1991) emphasize, these involve more than the mere acquisition of skills (see also Handley et al., 2006). As summarized by Nicolini (2012, p.84):

> …novices do not just acquire the necessary knowledge to perform the activity, but also absorb a moral way of being; that is, a model of excellence specific to that practice that determines at once an ethic, a set of values, and the sense of virtues associated with the achievement of the high standard of conduct implicit in the practice. …A novice who cheats, who is unwilling to embrace the goods and try, at least to some extent, to achieve them, will simply not become part of that practice.

The moral imperatives and the sense of identity associated with membership of a particular discipline obtain special significance since oftentimes a period of apprenticeship as a junior academic (e.g., a doctoral student or a research fellow) is followed directly by an academic career within the same discipline (Henkel, 2005). Engagement with colleagues from other disciplines is typically limited, as is often the identification with the university itself.

Employee recruitment in business firms and public service organizations (including university administration) differs from that of academics in that new employees are hired with the explicit purpose of working together towards a common aim, regardless of their epistemic backgrounds and prior experience. Organizational goals can only be achieved through integration and combination of diverse competences. This requires investments – on the part of both employers and employees – in the creation of common understandings, common codes and supporting infrastructure, which – if successful – may establish the firm itself as an epistemic community in its own right (Håkanson, 2010). On entering the employment of a business firm or university administration, newcomers obtain – whether they like it or not – a significant *new* epistemic identity, next to or superseding that of their professional training or prior employment.

Through the acquisition of the knowledge and skills of an organization-specific epistemic community, employees in both firms and public service organizations obtain capabilities of greater value inside the organization than elsewhere. This reduces the likelihood of employees

being attracted away by other employers, thereby decreasing the mobility of the workforce. By contrast, intra-disciplinary academic teaching and research are largely independent of their organizational settings. Like other professionals working within the realm of their own epistemic communities – lawyers, architects or medical doctors, for example – the productivity and 'market value' of academics are largely independent of their current employment. As in professional service firms, the resulting mobility is a key factor in an individual's bargaining power vis-à-vis her employer not only for financial rewards but also for autonomy and lack of restriction from external constraints.

Managerial Implications

The issues raised in this article have also empirical and managerial relevance. Modern universities face great pressures to make higher education more affordable and more effective. The universities' success in attracting resources and high-calibre staff and students has become essential for long-term survival. In the face of increasing global competition, cost pressures and demands to increase research output and services to students, a wave of mergers have affected the university sectors in the United States, Canada, the UK and many other countries in Europe (Eastman and Lang, 2001; Lang, 2002). These pressures have affected the organizational systems, managerial practices and organizational cultures of individual universities and colleges to different degrees. In response, many universities the world over have abandoned the traditional scholarly and collegial approach in favour of professionalized managerial systems (Clark, 1998; Deem, 2004; Mosey et al, 2012; Deiaco et al., 2012).

The importation of managerial practices from business firms has led to some familiar consequences, such as the tendency to focus on performance indicators (number of articles in specified prestigious journals) rather than on actual performance (quality, novelty or usefulness of new ideas), leading to an emphasis on orthodox, methodology-driven and consensus-seeking research (Macdonald and Kam, 2007, 2010; Cadez, Dimovski and Groff, 2015). An inadvertent

consequence has been the further strengthening of its disciplinary focus, suggesting that effective managerial intervention in the practice of academic teaching and research needs to consider the epistemic characteristics of academic communities and the governance structures that shape their members' identities, motives and aspirations.

As the case study illustrates, knowledge processes *within* the confines of an individual epistemic community are subject to a very different logic from those taking place *across* epistemic boundaries. The former are facilitated both by shared mastery of the theory, codes, and tools of a common practice and by the moral obligations associated with community membership and professional identity. In the case of the latter, both the ability and the motivation to engage in collaborative knowledge exchange need to be ensured through governance structures superseding those of individual disciplines. This involves not only the creation and maintenance of a common infrastructure – including, for example, shared organizational culture, common vocabulary, and boundary objects – but also the provision of an incentive structure encompassing both intrinsic (identity) and extrinsic (money, prestige) rewards.

7. Conclusion

Since its genesis, the so-called knowledge-based theory is based on the idea that firms are in a privileged position to manage knowledge-intensive processes. In line with its origin in a critique of transaction cost-based explanations of the existence and boundaries of firms, this stream of research has allotted its exclusive empirical and theoretical focus to the governance properties of 'business firms' as compared to those of arm's-length markets. The lack of attention to other forms of governance raises concerns regarding the validity of its claims. By applying insights from the knowledge-based theory of the firm and the literature on post-merger integration to an analysis of an academic merger, this paper has explored similarities

and differences between the knowledge governance properties of firms and those of universities.

It suggests that universities may be superior to firms in governing knowledge processes involving the transfer of tacit knowledge in master-apprentice types of relationships, and in knowledge creation through articulation, often too time consuming and expensive for profit-oriented firms in competitive environments. At the same time, universities seem often able to match business firms in their ability to exploit existing knowledge through integration and replication at the administrative level in a fashion fairly similar to that of business firms.

Conversely, it appears that universities are relatively disadvantaged in the governance of processes involving combination of knowledge across epistemic boundaries. Both research and teaching, of course, are vital to the societal mission of universities to produce and disseminate useful knowledge; the value of which is difficult to appropriate in the market. However, it appears that inherited and proven knowledge governance structures conducive to high quality intra-disciplinary academic teaching and research are inappropriate and possibly counter-productive when it comes to the tackling of problems requiring integration and combination of knowledge across epistemic communities. At the same time, the introduction of managerial approaches to university governance has tended to strengthen the traditional intra-community focus, not only in traditional disciplines but also in research areas originally formed to address specific societal and other applied problems across disciplinary boundaries.

The conclusions sketched in the preceding paragraphs are, of course, tentative at best. However, they demonstrate the need for and potential inherent in expanding the scope of research on knowledge processes beyond the institutional conditions of business firms. To

overcome the weaknesses inherent in an exploratory case study of this kind, two lines of further enquiry seem especially relevant and promising:

The first concerns the extension of the study to a wider range of higher educational contexts. There can be no doubt that the processes observed before, during and after the merger were heavily influenced by the particular organizational contexts in which they occurred. Although the governance structures of both institutions had – to varying degrees – been influenced by the 'new managerialism' introduced into the UK university system during recent decades, both had an administrative heritage of autonomous, collegially-managed institutions and retained a strong traditional discipline base. While these characteristics may have been helpful in isolating and identifying important 'archetypical' aspects of knowledge governance in universities, they raise questions as to the empirical validity of the findings to other types of university contexts. On both theoretical and empirical grounds, the comparative study of knowledge governance systems should be widened to include younger, 'non-elite' institutions of higher education, where organizational structures have often deliberately obscured the traditional boundaries between disciplines. Has the introduction of managerial forms of governance, patterned on those believed to be characteristic of successful business firms, facilitated the pursuit of inter-disciplinary research and teaching? Or have the research groups formed around applied problem areas crossing traditional disciplinary borders evolved into epistemic communities in their own right, thereby reinforcing traditional forms of knowledge governance?

The second potential line of enquiry would extend the empirical study of knowledge processes and governance structures to other types of institutional environments, such as public administration or professional service firms. By comparison and contrast, analyses of knowledge-intensive activities in such wider institutional contexts could contribute towards the formulation of a 'general theory of knowledge governance', a theory that would explicate and

explain how knowledge governance structures affect the processes in which knowledge is

created and exploited both within and between different epistemic communities.

Endnotes

[1] Here, and in the following we use the term 'governance' in the broad sense common in the literature on knowledge governance and strategic management. Following Michailova and Foss (2009, p. 8), it includes the choice of "governance structures (e.g. markets, hybrids, hierarchies)… and governance and coordination mechanisms (contracts, directives, reward schemes, incentives, trust, management styles, organizational culture, etc.) so as to favorably influence processes of transferring, sharing, integrating, using , and creating knowledge … The governance mechanisms can be both formal, such as goal setting, planning, directives, rules and regulations, and residual rights of control … and informal, such as trust, management styles, organizational cultures, communication flows, and channels".

[2] These are found not only in elite universities with reputational standings based on excellence in discipline-based research (Becher and Parry, 2005). Salient features of a general university governance model can also be observed in newer universities, where institutional structures encourage 'practice-oriented', applied research and vocationally-oriented training programs around new, often transdisciplinary fields, such as tourism, sustainability, sports management or journalism. In pursuit of societal recognition and academic legitimacy, these new fields of study tend over time to develop their own distinct social and cognitive characteristics, professional identities and methodological orthodoxies. As Henkel (2005, p. 155) notes: "…the socio-epistemological structure of the discipline, the idea of an epistemic community defining its territory, the problems it will address and the main conceptual, theoretical and methodological frameworks which it will deploy, and organising its review systems and publication outlets, is reproduced by emerging inter-disciplinary communities."

[3] This literature is too large to review here but includes, for example, Dosi, Faillo, and Marengo (2008), Felin and Hesterley (2007), Foss (1996a,b), Galunic and Rodan (1998), Grant (1996a,b), Håkanson (2010), Kogut and Zander (1992, 1993, 1996), Nahapiet and Ghoshal, (1998), Spender (1996), Szulanski (1996), and Tsoukas (1996).

[4] Differentiating between actions, surface regulations and deep structures, Nooteboom (2008) describes *surface regulations* as systematic rules that concern and shape specific actions within organizations and *deep structures* as underlying more fundamental notions, logics, principles or cognitive categories that form the basis for the surface regulations. Other scholars also differentiate between a more accessible level of systematic controls and a deeper cognition that shapes those control systems. For example, Simon (1976) acknowledges that an organization controls not only the decisions made by its employees but also the premises shaping those actions. Is a similar vein, Nelson & Winter (1982) make a distinction between routines and 'meta-routines' which control and guide the development of organizational routines. Nooteboom's notion of *deep structure* is traceable to Bourdieu's (1990) notion of *habitus* of organizations or communities.

[5] These abbreviations are used here in order to better indicate the triangulation of our data sources (If = Informant; In = Interview; U/C = from University/College). The numbers are derived from the chronological order of the interviews and they are not in accordance with the ordering in the tables indicating interviews and interviewees.

[6] The governance of such relationships requires specific institutional regulations due to the moral hazards of undue exploitation of the apprentice's services on the one hand, and the misappropriation of the knowledge imparted, on the other. In professional service firms, similar problems have traditionally been resolved in the master's favour through 'tournament career systems' and 'up or out' systems of

promotion (Baden-Fuller and Bateson, 1990; Becker and Huselid, 1992). Parallel patterns can be found in many universities.

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Table I: Interviews and Interviewees

	Organizational or Merger Project's Role*	Organization (U for University or C for College)	No. of Interviews	Duration (in minutes)	Mode**	Timing (Pre- or Post-Merger)
1	Project Manager	U	2	60/60	P/P	Pre/Post
2	Project Officer 1	U	2	120/--	P/E	Post/Post
3	Project Officer 2	C	2	60/105	P/P	Pre/Post
4	HR Manager	C	1	70	P	Post
5	Head of HR	U	1	60	P	Post
6	Head of HR	C	2	60/--	P/E	Post/Post
7	Head of Registry	U	1	70	P	Post
8	Head of Registry	C	1	70	P	Post
9	Staff Union Member	C	1	60	P	Post
10	Head of PG Office	U	2	75	P/E	Post
11	Operating Officer	Ext. Temp. for C	1	60	P	Post
12	Principal	C	1	50	P	Post
13	Vice Principal	U	2	40/--	P/E	Post/Post
14	KM Vice Principal	U	1	70	P	Post
15	College Registrar	U	1	70	P	Post
16	Head of Admin.	C	1	70	P/P	Post/Post
17	Dir. of Crp. Services	U	2	90/70	P	Post
18	Head of SALA	C and U	1	60	P	Post
19	HoS of Art	C	1	90	P/P	Post
20	HoS of Design	C	2	70/20	P	Post
21	HoS of Informatics	U	1	30	P/E	Post/Post
22	Head of ACE	U	2	90/--	P	Post
23	Head of College	U	1	60	P	Post
24	Joint Program Dir.	U	1	50	P	Post
25	Join Center Co-Dir.	U	1	55	P	Post
26	Join Center Co-Dir.	C	1	70	P	Post
Total			35	1985		

* Human Resources (HR), Postgraduate (PG), Knowledge Management (KM), Administration (Admin), Director (Dir.), Corporate (Crp.), School of Architecture and Landscape Architecture (SALA), Head of School (HoS), School of Arts, Culture and Environment (ACE)

** Personal interview (P) and Email (E)

Table II: Themes, Categories, and Representative Quotations

Overarching Theme: Streamlining of Administrative Routines

1. Integration approach: Absorption

A. Centralization	A.1. It worked on all levels in that way; I mean a far more efficient body now, the new art college …like cleaning, you know, it had been incredibly expensive to clean a college like this. Now, you are buying into the university's kind of cleaning arrangements (If11/In1/C).
	A.2. The job of the heads of school in the art college was an enormous administrative load because you would be doing everything at every level. I always laughed and said that "we were even ordering the milk". In the university, all these sorts of activities are more efficiently centralized (If8/In1/U).
B. Specialization	B.1. They used to have a broad range of applicable capabilities and a broad range of things to do. Now, they come into a bigger, incomparable organization with what they used to. Now, instead of doing so many things, they are more focused. So instead of pushing them to the edge of their capabilities, they have been limited, or delimited, to a core of their capability that sometimes is not their favourable core (If12/In1/U).
	B.2. I was more involved at strategic level at the art college. That has become more operational now [in the university]. In the art college, I dealt more with senior management and the executive of the college, taking an overall approach, if you like, to HR. Many of the small or individual problems would be taken on by the staff in the HR team. Here, I've become part of that team! So I'm dealing with the day-to-day problems (If7/In1/C).
C. Standardization	C.1. What we wanted to do in those few weeks was to get a real sense, for each of those art college heads of school, of something that they could interact with, interrogate, discuss as second nature. Because it certainly seemed that the two schools within the independent art college had even not seen a budget before! They did not (If2/In1/U).
	C.2. No maintenance [in the art college]; changing light bulbs nothing else! …health and safety practices that all were out of date or just non-existent. …budget, staffing, student records are areas that I think were just completely inadequately managed. And those are the core things of running any institution (If18/In1/U).
D. Need for continuity	D.1. I think a lot of the merger depends on not too much fresh air and newness. I think of the things you have to… the sort of language being used is more about continuity, continuing good practices (of university) (If3/In1/C).
	D.2. We tell the new art college how they need to adapt their old processes and adopt our processes…overarching all of that is training, linking together and making sure that people can understand how to do their business when it's a new business, a business that we have been involved in for some time so that we can say 'we can help you' (If10/In2/U).

2. Acculturation outcome: Assimilation

E. Norms and practices	E.1. Everything was at really kind of individual levels…if something cropped up and needed changing, someone would have gone to the old principal, to the old secretary, to the old somebody in management and said: 'Oh, we have got a problem; someone is being very difficult, this professor wants to do such and such'. And there would always be an exception made, or a one-off bespoke model created for that issue... it was kind of a deal with a one-off basis (If4/In1/U).
	E.2. The operational side, the support staff, the administration of the new art college, that's where the biggest stress has been, because […] people had to make a huge leap into new systems. And I am finding that's where staff are most concerned about adapting to new systems (If15/In1/C).
F. Common language	F.1. The head of the business school, with the head of divinity, the head of history, the head of the LLC, the head of the art college, the head of education…. on one level, we all talk with different languages even within the same college; but on the other level, there is a sort of understanding of the jargon, the kind of management speak we have to engage with internally and in the kind of national debates in higher education. That common language exists (If3/In2/C).
	F.2. We need to ensure that the new college is well embedded and integrated with the university and that five disciplines […] speak together and make a kind of cohesive unit, engage with all the university has to offer, become a full part of the university… (If18/In1/U).

Overarching Theme: Conservation of Academic Practices

3. Integration approach: Preservation

G. Good academic capabilities	G.1. Academic skills (in the art college) are great, and we will bring them in and we can do things with them and they are lovely though they are different (If10/In1/U).
	G. 2. Because the students are great, the staff are really great at doing the academic side of what they do, the technical practical academic stuff, whether it is teaching or research, is really very good quality (If2/In1/U0).
H. Little intervention	H.1. Most academics do not have [a] clue what institution they are in; their mind is in their discipline. And that's what they're bothered about. OK if an institution comes along, tells them to do things differently, they moan about it, and then probably they do it eventually a bit (If4/In2/U).
	H.2. The university is basically quite a light touch institution. And lots of people on the ground, lots of academics on the ground, actually just do their thing. There is not a huge army of bureaucracy behind it. There are policies but they are quite light touch. And there is a lot of tolerance of devolution and different approaches… The academics and students [from the art college] have not had to make the changes as they feared. They haven't had that kind of cultural backlash (If7/In1/C).

4. Acculturation outcome: Separation

I. Unique academic culture	I.1. That is one of the very distinctive elements of an art college, of an art and design college, that people come from different sorts of foundation courses into the university with all sorts of qualifications that don't necessarily fit the university's criteria (If7/In1/C).
	I.2. Even within the new art college, the school of music has its own culture (and as a result, its own practices), and the sort of people involved… Art historians, they have a very particular kind of culture, and even within the old art college, there were many different cultures, graphic designers, film makers were completely different than sculptors. So, I think people may be clinging on to this sense of uniqueness (If12/In1/U).
J. Needle-shaped academics	J.1. The idea was that we would hire a lecturer in informatics and design; he [sic] would be facilitating the design and informatics thing, the joint program. So they had this kind of recruitment exercise to recruit people for this. But it became evident to me… that most of the people in informatics really saw this as a possibility to get someone who is in their area. They could make the case that this person had something to do with design but what they really wanted was just a person in their area. …I think it was inevitable that there would be limited support within informatics for really getting involved with designers and really trying to understand what designers were doing and how you could work with them (If25/In1/C).
	J.2. Academic performance, in general, definitely arrowed the narrow specialists! There can be no doubt about that; from the publications' point of view, publishing in a narrow field is much more likely to have an impact than publishing in a broad field (If24/In1/U).
	J. 3. This is the advice I typically end up giving to PhD students: if you want to get a job in academia you've got to identify for your PhD which is the primary subject that you want your PhD to be visible to, because this is a very unusual academic department that has the luxury for inter-disciplinarians (If20/In2/U).

5. Integration approach: Symbiosis

K. Complementary knowledge	K.1. The interesting thing was that they were interestingly different from us. So, if you go to the design school in the art college, they are not doing anything like the sort of things that we do in Informatics and they don't think the same way, they are very different and interesting in a complementary way (If20/In1/U).!
L. Interdisciplinary tradition in the university	L.1. In a bigger institution like the university you bump into different disciplines easier. For people who work at the edge of their field, actually quite close to other areas, the university makes it easier for them to move and cross the boundaries by making them connected. Indeed they're now one body
	L.2. A moderately good example of that is what happened in the CHCR [a pseudonym] around the map task corpus, because that was a resource, a big resource, about people communicating about a collaborative task. There are lots of different layers you can analyse which is actually a stretch from pure psychology to pure phonetics to semantics to: "Could you build a computer that could play this task?" So, all kinds of different problems could be thought about around this resource. And building that resource required people to understand each other to the point that they can actually seem that they were building the same thing but then they will be taking a different perspective on that same thing.
M. Managerial support	M.1. The Principal has a background in informatics and he is interested in design. So he was quite keen for his own kinds of reasons to push that idea, I think. He was certainly the strongest support of the move to try to get money for the Design and Informatics Center as a concept… there was money which effectively was made available by the Principal (If22/In1/U).
	M.2. …there was the idea of creating a center for design and informatics which would be a more substantial thing that would get funding from the Government Funding Council somehow, and would be a kind of flagship to foster research but also teaching between design and informatics (If5/In2/C).

Figure 1: The Merger Timeline and Previous Collaboration History

Independent collaboration era

Dependent cooperation era

Pre-Merger   Merger period   Post-Merger

University   1946   2004   2007   2009   Feb 2010   Sep 2010   Mar 2011   Aug 2011   (Sep 2012)

Art College

First agreement

Formal agreement and proposal submission

Parliament approval

Conjointly taught MA in fine art

Academic federation

Merger took effect

University became the awarding body for Art College

Joint school of architecture and landscape architecture
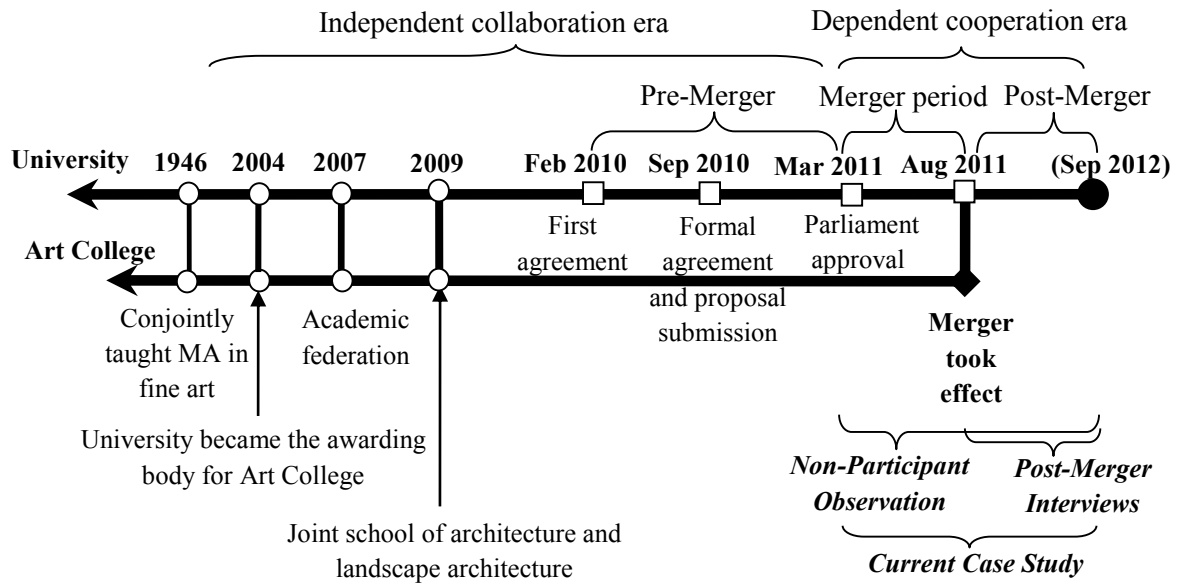
Non-Participant Observation

Post-Merger Interviews

Current Case Study

Figure 2: The Merger Process