



The impact of the internal economy of higher education institutions on interdisciplinary teaching and learning

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Chapter 1: Executive summary and recommendations

The majority of interdisciplinary programmes investigated for this research project are operating under dysfunctional macro-, meso- and micro-structures. Much could be done by HEIs to address this quite straightforwardly. Faculty and students would both benefit from such structural improvements.

The internal economic structures of most HEIs operate along disciplinary lines as departments and school-based disciplinary clusters.

Innovations in interdisciplinarity seek to interrogate disciplinary domains, creating new fields of inquiry through productive attention to liminality, crossing and contesting current intellectual disciplinary boundaries. As a result, most interdisciplinary programmes operate across institutional “silos”, that is, across different kinds of management and financial structures (which in this report are described as the internal economic features of HEIs). For the most part HEIs are yet to recognise the infrastructural blocks faced by proponents of interdisciplinarity and have not found adequate ways of facilitating effective cross-institutional working, particularly at meso- and micro-levels.

Interdisciplinary programmes are too often shoehorned into pre-existing internal economic structures, which were primarily established to support disciplinary work. If HEIs want to foster more favourable conditions for interdisciplinarity, then they are advised to re-examine their internal economies, with the following issues in mind.

The most commonly reported issues, with the greatest negative impact, were:

- difficulties providing time for colleagues on an interdisciplinary programme to develop a shared vision and understanding
- problems for programme leaders managing staff across different departments
- funding models that effectively encourage departments to recruit single-honours students
- a lack of recognition of the extra costs in managing the development and bureaucracy of interdisciplinary programmes
- faculty feeling that their research and career prospects are not well served by teaching on interdisciplinary programmes
- lack of training and support for faculty in interdisciplinary teaching
- students on interdisciplinary programmes experiencing a sense of institutional “homelessness”.

Chapter 2: Introduction

This report presents the findings of an investigation into the “internal economy” of (mainly) English HEIs (Higher Education Institutions), and the impact this has upon interdisciplinary teaching and learning. The phrase “internal economy” refers to the organisational, managerial and financial structures of HEIs. To this list has been added some consideration of the pedagogical beliefs and practices in different HEIs, because it has become very clear that these also impact significantly on interdisciplinary education.

HEIs' internal economies operate on a number of different levels: the institutional macro-level; the meso-level of the school or faculty; and the micro-level of the programme and the experiences of students and members of faculty. These levels are interconnected, and operate in a broadly hierarchical fashion, with decisions at “higher” levels forcing or restricting the decisions that can be made at more local levels. This hierarchical structure is, generally, the intended design of senior managers. However, many of the respondents to this survey report imaginative – and they claim necessary – local forms of subversion and resistance to higher level decisions.

At each structural level, thinking about the effects of the internal economy requires us to consider a number of different, but interconnected, elements. In this report, as part of a deliberate decision to avoid an excess of management jargon, these elements have been straightforwardly labelled:

- vision and values
- structures
- people
- processes
- finances and facilities
- the student experience.

From the outset, a number of things need to be understood about how the elements within which internal economies operate. These are listed below.

- They are interconnected. Changes to one element within the system will impact on other elements within the system. For example, changes to how programmes are internally funded will have an impact on faculty behaviours.
- Individual elements do not always have the same levels of importance and impact, but are context-dependent within different systems. In some internal economies, Faculty or School finances clearly rule. In others, staff reward systems and career progression hold sway.
- A corollary of this is that while it is often remarkably clear to see whether an HEI's internal economy is, in general, helping or hindering their provision of high-quality interdisciplinary education, the reasons for this vary quite considerably, and require careful thought. Within any internal economic system, each of the elements can be seen as positive (supporting), negative (hindering), or neutral with regard to interdisciplinary education. How much this matters in any

particular case is a question both of the relative significance of the element within the overall system, and the degree of its helpfulness or unhelpfulness.

- If HEIs want to improve their interdisciplinary education, they need to analyse their internal economies in order to identify which possible changes will exert the greatest leverage on the internal economy as a whole, and/or which are the most significant infrastructural blocks to be removed.

Given the importance of context, and the range of ways in which systems comprising the same set of elements can nevertheless operate, this report does not deal in generalisations or make across the board recommendations. Short case studies are used throughout the report to illustrate the different operations and impacts of the wide variety of mechanisms and structures that exist. Instead of presenting a set of universal recommendations for change, attention is drawn to common problems, and readers are invited to consider how these might best be overcome within their own contexts.

The report focuses on undergraduate interdisciplinary education. It quickly became obvious that postgraduate interdisciplinary programmes generally operate more smoothly than undergraduate ones. This appears to be related to the fact that postgraduate programmes often emerge from well-established research groups. Whatever the case, the focus on undergraduate programmes in this report is quite deliberate as their problems are more widespread. Taught postgraduate interdisciplinary programmes will form the focus of a future report from the Interdisciplinary Teaching and Learning Group.

Gordon Brown likened the formation of his new cabinet to playing three-dimensional chess. Thinking about HEIs' internal economies within the context of this report also involves three dimensions:

- the macro-, meso- and micro-levels of the economy's operation and impact
- the different elements that comprise the internal economy, and their interrelationships
- the differential impacts of the internal economy on different types of programmes (single and joint honours and interdisciplinary programmes, for instance).

Trying to describe such a three-dimensional matrix within a linear report structure risks the creation of an indigestible mess. So in the end, a choice was made to focus on the elements as the organising structure of the report, because that leads to the least repetition. However, it is still worth trying to keep the three-dimensional structure at the back of the mind as the report is read.

Each section of the report follows a similar structure with an introduction to the section; a discussion of the main issues and findings; and a number of short, illustrative case studies.

This report would not have been possible without the support of the Interdisciplinary Teaching and Learning Group of the Higher Education Academy. I would like in particular to thank Dr John Canning for his support and patience during the writing of this report.

I would also like to thank all those respondents who took time to answer my rather direct questions with both patience and candour. In talking to these colleagues, you cannot help but be struck both by their extraordinary personal commitments to the interdisciplinary programmes with which they are involved and by the often difficult institutional contexts within which they work. Time and again, colleagues shared their “war stories” – their tales of institutional interdisciplinarity more honoured in the breach than the observance – in spirits of humour, resignation, wryness or anger, but never despair. Not one of them wanted to give it all up, no matter how tough their circumstances. Some of their institutions do not deserve them. To honour their contributions and their openness, this report preserves their anonymity and the anonymity of their institutions.

Chapter 3: Vision and values

The step from an appealing idea to an operational method is large indeed.
(Anders Karlqvist)

Introduction

In general, the internal economies of HEIs have not been designed with the primary purpose of supporting interdisciplinary education. Indeed, in many institutions, it is arguable whether internal economies have been “designed” at all. Rather, they have grown and developed through various combinations of rational intention, happenstance, opportunism and compromise. Whatever their chequered histories, internal economies nevertheless exert strong influences on institutional and individual behaviours, and interdisciplinary programmes need to weather the often unintended consequences of developing within internal economies that were really designed for other purposes – such as supporting disciplinary staff groupings, or creating effective research clusters. By definition, interdisciplinary programmes both cut across and fall in between institutional structures, and the most significant question is that of whether or not those structures are flexible enough to allow for productive crossings.

Discussion

In her report in this series (*Interdisciplinarity: A Literature Review*), Angelique Chettiparamb discusses some of the contested ways in which disciplinarity and interdisciplinarity are both understood and practised (see especially Chapters 1 and 2). She points out that interdisciplinarity can be understood across a number of domains. As Deborah De Zure (citing Klein) notes, interdisciplinary teaching can take many forms:

interdisciplinary initiatives are often described by the form or structure they take (e.g. team teaching), the motivation behind them (e.g. to serve societal or employment needs), how the disciplines will interrelate (e.g. math will be taught in the service of chemistry), or by labelling the level of integration (e.g. from borrowing to synthesis). It is sometimes used loosely to refer to cross-functional groups, but the mere presence of individuals from different disciplines does not signify interdisciplinary collaboration. Thus the term *interdisciplinary* is used variably as a concept, a methodology, a process, a way of knowing, and even a philosophy. ('Interdisciplinary Teaching and Learning'. Available from: <http://teaching.uchicago.edu/pod/dezure.html> [accessed 5 October 2007])

Pragmatically, it seems entirely reasonable for HEIs to adopt different – or even a number of different – attitudes and approaches here. However, HEIs and interdisciplinary programmes do need to make an explicit claim as to the nature of their interdisciplinarity. They need to identify and articulate their vision and values. Otherwise, what is offered to students may amount to little more than a relatively arbitrary group of courses (and staff) without genuine interdisciplinarity of any kind.

Case study I:

Developing a shared understanding of interdisciplinarity

Dr. H and Dr. T both joined their respective HEIs in September 2005. They also both found themselves teaching courses on interdisciplinary degrees. Their experiences of being introduced to the programmes were, however, markedly different.

Dr. H comments:

I have been teaching [this course] for two years now. I do feel anxious about it, yes. I have students from four different degree programmes attending my course. There's three lots doing single or joint honours – and that's fine. I understand them. But one group are taking [an interdisciplinary degree], and I really wonder whether or not I'm meant to be doing something different for them. They complain about being put in with the others. I have sympathy – they certainly don't have the same amount of background – but I don't really understand the ins and outs of [the interdisciplinary degree], and most of it lies outside my area anyway. No one has ever talked to me about it, so in the end I just do the same stuff for everyone and kind of just hope for the best.

Dr. T's experience stands in stark contrast:

I really enjoy teaching on [this interdisciplinary degree]. Actually, it's the most interesting teaching I do. I think because we've got such a good group of people teaching on it. The Head of the Course came and chatted with me before I started teaching, and we discussed what the interdisciplinarity was all about. We have an annual away day and, well of course we have a nice lunch, but we honestly do talk about our different disciplines, and have some quite intense discussions about how and where [our degree] is interdisciplinary. I can see how these ideas have developed even in the time I've been here, which is really exciting as well.

The majority of programmes examined for this report did, in fact, have some explicit statement about the nature of their interdisciplinarity included in their documentation and this is obviously very much to be welcomed. However, it was less evident that this interdisciplinary vision was widely shared and understood by staff and students involved on the programme. In the minority of cases where a high level of shared understanding did exist, this appeared to be down to the fact that there had been widespread discussion about a programme's interdisciplinarity, and the interdisciplinary vision was arrived at as a result of this, rather than being the work of an unfortunate individual who had been required to produce copy for the programme handbook.

Two other significant “vision and values” factors emerged during the research. They both correlate strongly with whether or not a programme has a clearly understood and widely shared articulation of its interdisciplinarity, but are not a consequence of this. The first issue is whether and/or where explicit attention to questions of interdisciplinarity is built into a programme's teaching. The second is what explicit ideas of disciplinary and interdisciplinary pedagogies have been developed and shared by programme staff, and what teaching practices then arise.

Interdisciplinary programmes operate under a huge variety of structures, but a common factor in many programmes identified as successful by respondents is that they all find explicit ways of enabling students to understand and interrogate the interdisciplinarity specific to the programme. It might sound obvious that interdisciplinarity should be a teaching topic on an interdisciplinary programme, but it is absolutely not always the case. A comparison of three programmes is illustrative here.

Case study 2:

A comparison of three interdisciplinary programme structures

Programme A is an example of a highly planned, faculty-led structure. There is very little student choice of courses to follow.

It is an interdisciplinary degree in the Arts and Humanities. Students are required to follow four programme “strands” over three years. Three of these strands are discipline-specific, and the fourth is an “interdisciplinary” strand. Term by term, students study thematically linked courses across the three discipline-specific strands. For example, they might simultaneously study children’s literature, children’s television and the history of childhood. During the first two years of the degree, the fourth strand covers topics such as epistemology and representation, and faces students with questions about the nature and limits of the three disciplines that make up their degree. In the final year, the interdisciplinary strand is taken up with a compulsory dissertation, which must explore a topic chosen by the student from the points of view of two disciplines. The dissertation is co-supervised by two supervisors, one from each of the chosen disciplines.

The programme succeeds in its interdisciplinary aims. The majority of students are able to discuss interdisciplinarity, and are articulate about the interrelationships of their three disciplines.

Interestingly, the greatest challenge faced by the programme leader is in finding staff to teach on the interdisciplinary strand. Despite a clear institutional commitment to the programme, staff are much keener to teach in their own disciplinary areas than on the interdisciplinary strand, which covers areas in which most staff lack confidence – the course on epistemology being a good case in point. As a result, five of the six interdisciplinary courses offered in Years 1 and 2 are taught by hourly-paid, external staff.

Programme B could be described as offering a kind of “contextual” interdisciplinarity, and is an example of a more loosely planned structure than Programme A, with students having many more routes through the programme available to them. Students in a large, mixed Arts and Social Sciences faculty choose to study a major course alongside a set of “contextual” courses. Students take their major courses in largely discipline-specific cohorts (though many courses at Levels 1 and 2 are actually also offered to non-discipline specialists), and then all come together to take contextual courses. The intention is that interdisciplinarity will be addressed through the interactions of students and staff with different disciplinary backgrounds coming together to address cross-disciplinary issues. Where this works, it makes for a vibrant

learning community and an intellectually stimulating course. It was also true that here again the majority of students were able to discuss interdisciplinarity intelligently, and had well-formed views about the nature of their own primary disciplines. A wider range of views about interdisciplinarity was expressed by this group of students than had been expressed by students taking Programme A.

The programme leaders reported two significant challenges. As with Programme A, they found it difficult to staff the non-discipline specific courses, and the majority of these were taught by hourly-paid externals or by postgraduate teaching assistants. The second problem was in ensuring the interdisciplinarity of the contextual courses. There was a tendency for some contextual courses to drift back towards being delivered through the discipline-specific lens of the teacher.

Programme C is an example of a course where the interdisciplinarity is not purposefully built into the course design, and where students are essentially left to make intellectual connections between disciplines for themselves. As one respondent put it, the interdisciplinarity is *supposed to happen in the mind of each individual student*. The degree – a mixed Social Sciences programme – involves students choosing from a large number of courses, some of which are compulsory, but the majority optional. The programme specifications claim that *interdisciplinarity is secured through the final year, interdisciplinary dissertation*, but I would take issue with this. Given the lack of attention to disciplinarity, let alone interdisciplinarity, throughout the course, it is unlikely that any other than the most able students would be able to produce interdisciplinary work relatively unaided and unsupported.

This programme is a good example of programmes that lay too great a weight on claims that certain forms of assessment in and of themselves lead to interdisciplinary work being produced. Final year “cap-stone” projects and dissertations are the most usual example of this.

Several members of faculty involved with the programme were also highly sceptical about its interdisciplinary claims. As one put it: *Multi-disciplinary, certainly. Cross-disciplinary, maybe. But not interdisciplinary – at least not in any sense with any credibility – not in a million years. I don't know. I suppose that calling it interdisciplinary somehow makes it sound modern and sexy, does it?*

The final issue to be considered in this section is also the one in need of the most work and development: disciplinary and interdisciplinary pedagogy.

One of the most welcome pedagogical developments in recent years has been the rise of the Subject Centres, which have begun some excellent work on exploring discipline-specific pedagogies. However, these conversations on discipline-specific pedagogy have only partly reached most institutions. Even well-functioning interdisciplinary teaching teams appear to spend little time discussing discipline pedagogies, leave alone exploring the possibilities of interdisciplinary pedagogies. Most HEIs offer an initial lecturer-training programme, generally one accredited by the Higher Education Academy, but again these tend to be largely generic in nature, with few paying sustained and convincing attention to questions of disciplinary and interdisciplinary pedagogies. This is clearly an area ripe for development and one where the Interdisciplinary Teaching and Learning Group could make a significant impact.

Chapter 4: Structures

The hallmark of revolution is that the goals of the revolutionaries cannot be contained by the institutional structure of the society they live in.

(Clay Shirky)

Introduction

This section considers the ways in which interdisciplinary teaching is variously served or constrained by the institutional structures within which it operates. Different HEIs use different nomenclature to describe their organisational units. For the sake of simplicity, this section uses the terms “school” and “department” as generic catch-all terms to describe typical meso- and micro-organisational levels respectively.

This section focuses on meso-level, and to a lesser extent micro-level, structures because these operate as the most powerful determinants of the possibilities for interdisciplinary teaching and learning within HEIs. It is clear that diverse structural arrangements at these levels present different opportunities and problems, and, crucially, require proponents of interdisciplinarity to adopt different strategies and tactics.

Discussion

The majority of respondents to this report have indicated that when their HEIs set out to create new interdisciplinary programmes, they did so within pre-existing institutional structures. Sometimes, old structures have been somewhat modified, but they are not commonly redesigned with the needs of interdisciplinarity uppermost in mind. Although some institutional variation is to be found within each of the categories below, a useful working typology of these structures can still be established. This section of the report will discuss the five most common structures; will provide an example of each; and will outline the main advantages and disadvantages reported by staff working within each, as well as any tactics they have found useful for furthering the cause and practice of interdisciplinary education.

The five structures are:

- interdisciplinary schools
- interdisciplinary departments
- departmental interdisciplinarity within a school
- departmental interdisciplinarity across schools
- matrix structures.

Interdisciplinary schools

Even the simplest search of interdisciplinary activity in British HEIs reveals an immediate, simple fact about how such work is institutionally structured: there are far more interdisciplinary research groups in place than teaching groups – though, of course, many of the research groups also have graduate teaching interests.

Perhaps the most radical way in which a minority of HEIs (in the UK and overseas) have chosen to structure their interdisciplinary education is through the establishment of interdisciplinary schools. Some of these have been new, often flagship, developments, and have received substantial start-up funding. Such schools do not however form a significant focus of this report for two reasons. First, they are relatively few in number, and do not provide a model that many HEIs seem likely to follow. Indeed, one HEI, which from its foundation had interdisciplinary teaching at its heart, abandoned its interdisciplinary school structure a few years ago amid some controversy. Second, internal economic issues in these schools tend to be more straightforward manifestations of issues that appear in the other structures discussed below.

Interdisciplinary departments

For fear of beginning this sub-section with what sounds like a tired joke, a question I found myself asking time and again when speaking to respondents was “When is a discipline not a discipline ...?” This leads to the allied question, “And when is a department not a department ...?”

Disciplines have developmental trajectories. New kinds of questions and problems come into focus; novel intellectual approaches to these issues are developed; and, eventually, newly constituted disciplines may come into being and become institutionalised. Over time, disciplines need to adapt to survive. Some make the change; others wither away.

This is relevant to thinking about interdisciplinarity in that what might begin as an interdisciplinary enterprise may, over time, if enough energy gathers around it, acquire the status of a “new” discipline. There are some interesting examples of areas in the social sciences – such as gender studies and cultural studies – that currently occupy a contested institutional as well as intellectual space, between interdisciplinarity and disciplinarity. Crucially, from the point of view of this report, the processes of carving out an intellectual space in the academy are inevitably linked with the processes of creating structural space within different institutions; of acquiring resources, staffing and students – or, in the robust terms of one respondent, *credibility, kudos and cash*.

How an institution treats an “interdisciplinary” intellectual area – what space it creates for it – has a marked impact on the possibilities there will be for delivering innovative, interdisciplinary education. The following case study offers a clear example of this.

Case study 3:

A comparison of the institutional spaces occupied by Gender Studies in two different HEIs.

Both the Universities of Rutland and Cumberland* offer degrees in Gender Studies. Rutland University established a Gender Studies department several years ago. Cumberland University has not set up a Gender Studies department, and its degree is staffed by faculty drawn from a number of departments (literature; Politics; Sociology and so on).

The Head of the Gender Studies degree at Cumberland University has a number of serious management problems that her colleague at Rutland has been able to leave behind since forming her own department. These are listed below.

- She does not control her own budget. The amount of money made available to her programme changes unpredictably from year to year because there is no ring-fenced programme budget. Rather, the programme is funded from within the overall school budget, which is under the control of the Dean. There is little transparency over how the budgetary allocation is arrived at year to year. Interestingly, departments do have a much greater degree of control over their own budgets, so single honours programmes have much more predictable funding streams year on year. These direct funding arrangements for interdisciplinary programmes were established to stop departments squabbling over money from interdisciplinary programmes to which they contributed – something that had caused problems in the past. To that extent, the arrangements help protect the programme and its head, but they also disempower her.
- She does not have any line management responsibility over the staff who teach on the degree, and yet she is held accountable for the management and quality of the programme.
- Each member of staff contributing to the degree is line managed by their own Head of Department. The Head of the Gender Studies degree has to liaise with seven different Heads of Department – not all of whom are, in her words, *sympathetic to the aims, or even the existence, of the degree*.
- Unsurprisingly, these institutional structures cause her a number of serious difficulties. She explains:

Well, for one thing, I don't have the same status as heads of department. I don't get the same pay uplift as them. I don't get invited to School management meetings. All that. Every year it's really, really hard to get the lecturers we need. Even the ones who are personally committed to the degree. I have to go and ask all the departmental Heads their permission for "their" faculty to come and teach on "my" programme. There's never any guarantee, even if people have taught on the degree before. It depends on what else is going on in the departments; what the Head sees as their priorities; if I've pissed them off the previous year [laughs]. Every year it's a fight – I mean that, a real fight – to get enough teaching faculty. And I always end up begging and pulling what I call my "desperate girly" act [laughs wryly]. I don't really need to point out the irony of that, do I?

- In the absence of effective structural arrangements and authority, this Head of Programme has well-developed negotiation, networking and persuasion skills. She is also very determined. But it is striking that she has to behave in ways, and has to overcome difficulties, that colleagues who run single-discipline degrees located within a department never do.

By contrast, at Rutland University, the Head of the degree programme also runs the department that hosts the degree. She does not face the same year-on-year insecurities as her colleague at Cumberland. She line manages her staff and controls her own budget. She describes herself as *having the same problems as any other head of department – fighting over resources and student numbers*, but freely acknowledges that she has an easier situation than her Cumberland counterpart.

* A note for readers who are not familiar with British HEIs: these are fictional university names chosen to protect the anonymity of the respondents.

It would be depressing indeed for the future of interdisciplinary education to conclude that the internal structures of HEIs are so inflexible that they make the delivery of interdisciplinary programmes exceedingly difficult, and that the most productive strategy for proponents of interdisciplinary areas would be to agitate for the formation of a new department, but this is precisely the conclusion that both the Heads of the Gender Studies programmes discussed above have come to.

In the example above, the most significant difficulties come from the need to negotiate – and overcome – boundaries between departments. It is difficult having to negotiate finances and staffing with a number of heads of department who all have different interests, and who are often competing for resources. Yet, of course, the programme's intellectual content depends precisely on the creative potential of negotiating disciplinary (and hence departmental) boundaries, making these at once visible and permeable.

At the moment, responsibility for negotiating and crossing structural boundaries lies in the wrong place in many interdisciplinary programmes, because the person with the responsibility does not also hold the power. Many interdisciplinary programme heads made it clear that their greatest challenge was in overcoming infrastructural blocks such as those described above, and that in the absence of better macro- and meso-level organisation, it became by default their personal responsibility to overcome these. Given that most heads of interdisciplinary programmes also reported a lack of formal institutional status and power (lacking effective line management responsibilities, for example), then their tactics inevitably become informal. Of necessity, they build good working relationships with those in power – the gatekeepers to their access to staff and other resources; they become negotiators, bargainers, pragmatic compromisers. As one programme Head put it:

Yeah, just call me master of the lunch and the coffee break. My programme runs because I'm seen as pleasant and good fun to work with. Absolutely. And I see other programmes in trouble, because their heads somehow don't seem able to behave how they need to get on. ... If Staff Development wanted to help us all, then they could buy us that How to Win Friends and Influence People book [laughs], 'cos that's really what it comes down to. ...

It does make me angry, yes, because this shouldn't be my job, should it? Sorting out the mess that management make by not supporting what are supposed to be our most exciting degrees. It's really nuts.

Another respondent described her situation very succinctly: *they rely on super people, because they lack super processes.*

Departmental interdisciplinarity within a school

The most common structural model underpinning the interdisciplinary programmes studied for this report is that of drawing on the resources of two or more departments within the same school. Some of the most frequent problems associated with this model have already been identified in the previous section.

- Heads of interdisciplinary programmes do not always manage the staff teaching on their programmes. There are a variety of practices in this area. At one end of the spectrum, some heads of programmes have absolutely no management authority whatsoever. At the other end, some HEIs have set up joint management schemes, whereby staff are line managed by their head of department for the majority of their work, but are fully under the management of the programme heads for their interdisciplinary teaching work. These schemes often seem complex and confusing; appear unpopular with staff; and do not necessarily do away with the “turf wars” described above. Most HEIs have arrangements that fall somewhere in between these two extremes, with management-sharing (or, as one respondent put it, *power sharing*) arrangements of varying degrees of formality. These systems tend to be messy and open to uncertainty (and, possibly, abuse). They are often perfectly functional during periods of institutional success and stability, but because they rely essentially on open communication, good will, and positive working relationships, they tend to fall apart when put under any kind of pressure. They also lack transparency and can be manipulated by individuals.
- Many heads of departments and/or programmes discussed their endemic problems with planning blight. As the wider contexts of higher education have changed so markedly over the past ten years, so too have institutional plans often shifted rapidly. There is clearly a fine line between responsiveness and rudderlessness. However, the effects of uncertainty are not evenly spread within HEIs: some parts of institutions come under greater pressure than others; are more affected by changing priorities; and find forward planning harder to secure. A clear conclusion of this report is that interdisciplinary programmes – precisely because they both involve different parts of HEIs *and* test the links and lines of communication between these – bear a disproportionate amount of the cost of uncertain planning and the vagaries of institutional change. This is exacerbated by the fact that heads of interdisciplinary areas do not always manage their own budgets.
- Another common factor here is that many HEIs report that there is a faster degree of staff turnover involved on interdisciplinary programmes than on other programmes. This is not just a result of staff leaving the HEI, but is also a result of heads of department not always being willing to let their staff teach on interdisciplinary programmes, or changing the availability of their staff from year to year. This can have a negative impact on interdisciplinary programmes in two ways: having a relatively rapid turnover of programme heads; and having staff called in to teach courses at short notice, often as a result of a last minute

panic just before the start of the academic year. The two case studies below illustrate the impacts of these happenings.

Case study 4:

Problems associated with the rapid turnover of interdisciplinary programme heads

Programme A at Dover University is an interdisciplinary sciences degree. It draws on faculty from four departments co-located in one school. The programme has had three heads in five years. Being Head of the programme is seen as a thankless task – *donkey work to be avoided at all costs*, in the words of one respondent who had avoided taking on the role. It involves a great deal of administrative work and is not properly supported either institutionally (there is no secretarial support, for example) or from within the school (the Head does not receive sufficient abatement from other duties to cover his or her responsibilities). There is little personal incentive for the Head – there is a minimal rise in pay, but this is made in the form of an additional “allowance” and is not pensionable. Taking on the headship is not seen as a career-advancing move. Indeed, if anything, it is seen as personally disadvantageous because the time taken by the role impacts negatively on research time and opportunity.

Unsurprisingly, individuals only take on the role unwillingly – and for a maximum of two years. Departments also actively seek to avoid having one of their members become Head, because they end up carrying some of the “hidden” cost of a role that is not properly funded. The four departments that contribute to the course have therefore come to an informal agreement that they will take it in turns to provide the programme head.

This is an interesting example of a programme being run on individual faculty effort and (grudging) good will, in the face of fundamentally dysfunctional institutional structures. It is also interesting that the management structures fail in different ways at both institutional and school level. The final result is that the programme is only barely managed; there is a considerable lack of management continuity; no head has ever seen through a cohort of students from recruitment to graduation; and the programme has never been revised or redeveloped, because it too has fallen victim to a form of planning blight.

Case study 5:

A case study illustrating a typical experience of an early career academic being required to teach on an interdisciplinary programme

Dr. K is a newly appointed lecturer in Human Geography coming to the end of her first year at Wimbledon University. Towards the end of the academic year, she was told which courses she is to teach next year. One of these is a course on Race and Migration on an interdisciplinary Cultural Studies degree. Her PhD was on migration, and this remains her primary research area. However, the course she is to teach next year was originally written by a historian. Her HEI will not allow her to change the

course's learning outcomes or assessment for next year (because the HEI's quality assurance processes require an 18 month cycle to approve and implement curricular changes). Consequently she feels strongly that the current format restricts her from being able to teach the course to her own best ability, and requires her to try to teach from a perspective well outside her interests and expertise.

It is not, alas, uncommon to find new colleagues being required to teach courses outside their areas of expertise. For many, this is even seen as a kind of "rite of passage" into teaching in higher education. However, the problems associated with this are exacerbated in interdisciplinary contexts such as this, particularly when the course was originally designed by a colleague from an alien disciplinary background.

Thus far, then, the situation and outlook for interdisciplinary education appear gloomy. But this is to focus only on HEIs' predominantly dysfunctional formal structures. By and large, these do not support interdisciplinary endeavours as well as they support single- or joint-honours programmes. However, it is useful to think of two kinds of structures co-existing within HEIs: the formal, "official" structures, enshrined in bureaucracy and organisational diagrams; and the informal, "operational" structures that exist in practice, and that both mirror and cut athwart official structures. A common feature of those interdisciplinary programmes that function most effectively is not so much that they are located within better "official" structures, but that they have built around themselves usefully functioning operational structures – generally through the efforts of enlightened deans and/or highly effective programme heads. In particular, they have created kinds of "shadow" quasi-departmental groupings of colleagues involved on the programmes: teams of people who meet regularly; who make decisions about their programme's future and act on these; who have effective routes of communication; and who have clear (if informal) agreements about roles and divisions of labour, responsibility and resources. (The matrix structures described below represent one attempt to formalise these informal operational structures.) The potential problem with this entirely pragmatic approach has already been mentioned above, but bears repeating here. Informal arrangements based on good will work effectively in times of institutional stability and financial security, but come under great pressure if times are hard, and often fall apart, sometimes amid great acrimony. There was also evidence from several HEIs that these informal arrangements also crack in times of uncertain institutional forward planning.

Departmental interdisciplinarity across schools

The issues here are broadly the same as those discussed in the previous section, but with the added complication that now school as well as department boundaries need to be crossed. For the vast majority of respondents, this made operational problems significantly more difficult to overcome. It seems that in the majority of HEIs, operating and negotiating between schools adds not merely an additional layer of difficulty, but creates a set of problems of a different order of magnitude from those of working across departments co-located in a single school.

Sad to say, one of the most frequently reported issues was that of deans fighting over resources and territories, and not being prepared to work co-operatively to support

interdisciplinary endeavours. In a number of HEIs, cross-school activities had been abandoned.

Matrix structures

A small number of HEIs studied for this report had tried to develop innovative structures designed to promote some of the effective informal features of successful interdisciplinary programmes described above in the section on *Departmental interdisciplinarity within a school*.

Case study 6: matrix structures at the University of Hastings

The University of Hastings has an entirely conventional internal structure, consisting of two Arts / Social Sciences Schools; a Professional Studies School; and two Science / Medical Schools. Schools contain on average about six departments.

Two rather different interdisciplinary teaching patterns have emerged. In the Science areas, undergraduate interdisciplinary programmes either draw on staff from just two departments, co-located in the same school; or emerge from active interdisciplinary research groups, where productive personal working relationships already exist. (It might also be noted here that in these Science departments, faculty often fall into more clearly defined and delineated sub-groups than they do in the majority of Arts and Social Sciences departments. In this way, some of the programmes offered within single departments – but drawing on staff from distinct sub-groups – could also be regarded as interdisciplinary, even though they are entirely staffed from within a single department.)

In the Arts and Social Science areas, undergraduate interdisciplinary programmes tend to draw on teaching staff from more than two departments, and also cross schools. Some of these programmes operate on the basis of the models described above (*departmental interdisciplinarity within a school / across schools*), but some operate according to a slightly different structural principle. A number of what can be best described as quasi-departments (or, perhaps, “interdisciplinary faculty groups”) have been developed, which provide recognisable institutional spaces for faculty and programmes. (It should be noted here that some early readers of this report wondered whether any implied criticism was intended by the use of the term “quasi-department”, which might possibly be seen as having some kind of negative overtone. To be absolutely clear: no negative judgement whatever is implied. These are often excellent and effective initiatives, and the term is merely intended as a neutral label for a particular institutional structure.)

No faculty members are directly appointed to one of these quasi-departments: they are all appointed to “conventional” disciplinary departments, and managed by their Heads of Department. Membership of a quasi-department is therefore additional to membership of a “conventional” department, and is essentially optional – though some faculty members did report being “strongly encouraged” to join one.

Interestingly, at Hastings no undergraduate programmes are either owned / managed by any of the quasi-departments, nor are any programmes wholly taught from within a quasi-department. Rather, all programmes are managed from within a “conventional” disciplinary department, with a proportion of the courses (generally about 50%, and never more than 75%) being delivered from within quasi-departmental groups. Of course, some of these courses will themselves be delivered to students by members of faculty of their own department.

The system appears to run quite successfully. There are some complaints from within the quasi-departments that they are not afforded the same status as disciplinary departments. Furthermore it remains awkward for heads of quasi-departments to manage faculty providing courses as they remain responsible to their heads of department. Nonetheless the establishment of collegial groupings within quasi-departments seems to be an effective way of ensuring that faculty delivering courses are committed to their interdisciplinary areas, and feel a sense of shared responsibility for them. One complaint that was voiced, however, was that the optional nature of quasi-departmental membership meant that within disciplinary departments, those faculty members who had joined a quasi-department felt they carried a significantly heavier burden of work than those who had not, even though in theory their allocations of teaching duties were the same.

Most of the quasi-departments considered for this report did, in fact, have responsibility for managing one or more interdisciplinary programmes. The degree of evolution of the quasi-departmental structures varied somewhat. They were always more than simply informal groupings of interested faculty (those were considered above), and all had at least a nominal “head” (the language varied here, and revealingly so – there is a marked difference between a “head”, a “manager” and a “co-ordinator”). In some cases, the quasi-departmental head and the interdisciplinary programme heads, who were also members of the group, did indeed have properly recognised institutional status, but this was not always the case.

The effectiveness of these “matrix” structures appears to vary quite considerably. At best, they are an effective way of (semi) formalising the otherwise informal effective operational arrangements that need to be developed between individuals and departments to facilitate interdisciplinary programmes. However, they can also just serve to add an extra, and rather complicated, unclear bureaucratic layer. The most significant difference seems to lie in whether the quasi-departments are afforded an appropriate degree of genuine autonomy; whether the work done by colleagues within the quasi-departments is recognised and fully counted against their work allocation; and whether heads and programme managers are afforded equal status with heads of departments and managers of single-honours programmes. If these conditions are not met, then matrix structures do not work, despite the positive intentions behind them.

As noted at the beginning of the report, five elements have been identified as making up the internal economy of the university: vision and values; structures; people; processes and finances and facilities. For this report, a sixth element has been added, which is to consider the student experience. Because the elements are significantly interrelated, many of the issues about the impact of the internal economy of the

university on interdisciplinary teaching and learning could (re)appear in a number of sections. To avoid repetition, then, the following three sections are somewhat shorter than the two previous ones, and consider only those issues that have not already been discussed above.

Chapter 5: People

People are the University's most important resource.
(University Mission Statement)

*... it is a custom,
More honoured in the breach than the observance.*
(Hamlet)

Introduction

One of the most striking features of many interviews conducted during the course of this research was the high degree of deeply personal commitment many colleagues felt towards the interdisciplinary areas and programmes with which they were involved. Motivations for this commitment may differ – many Science programmes are linked to exciting new research fields and many Arts programmes have their origins in emancipatory political movements – but its strength appears remarkably common. This is all the more remarkable in the face of the institutional obstacles to interdisciplinary work discussed above, and the sense of personal and career cost discussed in this section.

Discussion

In discussing the personal impact of involvement in interdisciplinary teaching with colleagues, four themes emerged that are described below.

- On a positive note, many colleagues found their interdisciplinary teaching refreshing, challenging and stimulating. Unsurprisingly, this perception was closely linked to whether the individual had chosen freely to teach in an interdisciplinary context, or had felt coerced into this by their manager.
- Even those colleagues who felt positive about their interdisciplinary teaching experience did, however, agree that such teaching is more challenging and more time-consuming than disciplinary teaching. It required more preparation and reading time; they often felt less secure in the classroom; and more communication was required with colleagues to make programmes work effectively. A sense of feeling a relative lack of confidence in interdisciplinary teaching as compared to disciplinary teaching was quite widespread, and some otherwise interested colleagues felt very inhibited when it came to taking on interdisciplinary teaching that moved not just outside their research area, but also outside their discipline. Colleagues reported a sense of anxiety about being seen as *amateurs* or *dilettantes*. There did not seem to be much by way of support for new colleagues starting to teach in interdisciplinary areas – they were very much left to “sink or swim”, and some had endured miserable, and in the worst cases confidence sapping, teaching experiences.

- Some early career colleagues reported that they had been warned off interdisciplinary teaching by more senior colleagues (sometimes including their line managers), because this might damage their career progression. Two reasons were given for this: the teaching is more time-consuming, so takes from research time; and teaching in a wide variety of areas prevents the development of a track record in a clearly defined specialist area, which is perceived as desirable, and even necessary, for career advancement.
- Interdisciplinary teaching is often seen as having a more problematic relationship with research than disciplinary teaching. Several colleagues reported that they had not been allowed to include “interdisciplinary” research papers in their RAE submission (the UK’s Research Assessment Exercise), and had been “advised” (for which read “required”) to work in relatively conservative disciplinary areas as part of their department’s RAE strategy. This pull made several colleagues feel that the extra effort required for interdisciplinary teaching was not worth the limited reward.

A fundamental incoherence lies at the heart of the problems many HEIs face with their interdisciplinary provision. While the HEI – or schools / departments within the HEI – might say that interdisciplinary programmes and teaching are important, and while senior managers might also be absolutely genuine in their personal support for interdisciplinarity, it remains the case that many of these programmes are hard to staff and manage because the effect of institutional reward systems is to discourage faculty from working on interdisciplinary programmes. The personal cost is simply perceived as too great. A result of this can be seen in those interdisciplinary programmes that wither on the vine, and eventually close down, after their “founding mothers” or “founding fathers” leave, because in reality the programmes had been sustained by the drive and personal commitment of one or two individuals, and not by the well-functioning internal economic structures of the HEI itself.

Chapter 6: Processes

A camel is a horse designed by a committee.

(Sir Alec Issigonis)

Introduction

The five main themes identified under this heading are: creating teams; costing time; course design; collaboration and communication.

Many of these issues have already been touched upon above, and the main focus of this section is to look at equitable models for costing time that might genuinely reward the effort put into developing and delivering interdisciplinary education, and thereby more effectively promote it.

In Chapter 4 of Chettiparamb's *Interdisciplinarity: A Literature Review*, a companion report in the series commissioned by the Interdisciplinary Teaching and Learning Group, a case study is provided of a well-developed interdisciplinary programme in the School of Interdisciplinary Studies at Miami University, Ohio. It is worth citing a reasonable section of her case study again here, to illustrate the amount of necessary work that is undertaken by well-functioning, mature interdisciplinary teaching teams.

Case study 7:

Undergraduate interdisciplinary education: School of Interdisciplinary Studies, Miami University, Ohio*

Integrative courses[^] are normally team-developed by staff from different disciplines. Initial exposure to perspectives from other disciplines comes through committee meetings in which the course is designed, and reading material that other team members propose. Typically, however the agreement of the reading reflects faith in other staff members and respect for other disciplinary perspectives. Much of the command over other perspectives is developed as the course is taught. There is also a weekly staff seminar, where staff discuss common readings for their individual sections of the same course or separate courses that are designed to meet the same requirement. Depending on which discipline is represented in the week's discussion, different staff members will lead the discussion. Newell thus argues that "interdisciplinary general education requires an informed appreciation of the perspective of other disciplines, not expertise in their full range of concepts, theories and methods" (p. 215). It is willingness and preparedness to learn other perspectives that is most important. "We want staff who have a sophisticated understanding of a discipline at the same time as they chafe under its limitations, so that when they turn to the task of learning about other disciplines, they will not content themselves with a superficial understanding of the aspects of the discipline they utilise in their courses." (p. 215)

Staff from other disciplines in the university are also drawn upon either to provide lectures for students or to help staff in the School of Interdisciplinary Studies understand key readings and theories on a topic in their particular field. (Chettiparamb 2007, citing Newell, W. H. (1992) *Academic Disciplines and*

Undergraduates Interdisciplinary education: Lessons from the School of Interdisciplinary Studies in Miami University, Ohio. *European Journal of Education*. 27 (3), 211- 221.)

* As this case study is drawn from another source, it is the only one not to be anonymised in this report.

^ The term “integrative education” is commonly used in the US where “interdisciplinary education” would be used in the UK.

It is informative to compare this situation with the following case study:

Case study 8:

Developing an interdisciplinary programme at the University of Rochdale

The University of Rochdale developed an interdisciplinary programme in the Social Sciences, drawing mainly on faculty from Geography, Politics and History.

The programme was developed somewhat opportunistically, and at short notice – or, as one respondent robustly expressed it, *on the cheap*.

The process for developing the programme was that the Head of Geography, who was also appointed the programme manager, drew up an overall programme outline and specification, without any time to consult other faculty members. This was passed by the School Curriculum Management Committee, which has the power to approve new programmes. The programme manager then contacted faculty members in the relevant departments, and asked if they either had a pre-existing course that they would like to offer on the degree, or if they would like to design and offer a new course. A number of courses were offered by individuals, again with no overall coordination. The programme manager felt obliged to accept everything that was offered, and then tried to retrofit the courses and their specifications into the overall programme specifications. In this way, some courses that appeared to deliver core programme outcomes became compulsory; others were put on the options list. Only after the event, when the list of courses too had been approved, was a three hour meeting held, to which all authors of courses on the degree were invited. In the event – because this was not seen as a high priority – less than half of the course authors attended.

Entirely unsurprisingly, the course had terrible teething problems. The first semester went very badly: courses and timetables had to be altered at the very last moment; students were not kept in contact with changes; the programme manager reported that staff spent most of their time that semester *fire-fighting on the course and reacting on a day-by-day basis to whatever was coming up*. As a result, staff were forced to neglect their other duties, which created high levels of stress. There were no course team meetings during the whole of the first year, and the programme manager was left to carry the burden of trying to cope with a completely disorganised programme. Students were extremely dissatisfied, and were very vocal both inside and outside the university about their poor experience.

The final result of this debacle was that a great deal of time and effort had to be spent over the summer vacation at the end of the first year reviewing the course, unpicking the tangle of problems, and almost completely redesigning it. A course team was finally established, but faculty members on the team would only commit to one meeting a year. Some members of faculty who had taught on the programme during its first year refused to teach on it again.

It is tempting – and entirely likely – to think that more time was eventually spent on this course than would have been spent if a supposedly “time intensive”, “costly” programme team had been established in the first place. Part of the ostensible reason why such a team was not established was that the programme was put together at such short notice (this was a pattern that was repeated for other programmes being developed at the same HEI, which at the least suggests a serious flaw in the planning process), but it also seems likely that from the point of view of the HEI, all the time and effort spent (and wasted) on the programme was “invisible”. It was time and effort spent by a small number of overworked and overburdened individuals – not time that, for example, appeared on the committees and meetings timetable of the HEI.

This is clearly an egregious example of unsupported interdisciplinary programme design and initial delivery, and is not typical in its entirety of how these processes are being conducted across the sector. Nevertheless the separate elements of poor practice illustrated by the case study are unfortunately widespread individually, if not in combination.

Discussion

The vast majority of HEIs have shockingly inadequate models for allocating and costing faculty time. It is not uncommon for models only to factor in teaching time: other activities – primarily research – tend to be assigned targets, but no specified hours (despite the fiction of offering faculty “research days” during the week).

If we focus on time allocated to teaching, then, it tends to be allocated according to very crude measures. Often, only face-to-face teaching time is counted. Issues such as the mode of teaching, the number of students in a group and the amount and type of assessment required are sometimes factored into the formulae for allocating teaching duties; factors such as whether the course is new are less often acknowledged; and the interdisciplinary nature of teaching is, it seems, never addressed.

Case study 9:

A potentially useful model for allocating teaching hours in an equitable way

The University of Newton has a very well-established reputation as a successful research-intensive HEI.

The Department of Engineering recruits internationally – especially at postgraduate level

– and rests its high reputation, in part, on the currency of its courses. Courses are not allowed to run for more than 6 years, and faculty are strongly encouraged (verging on expected) to produce new courses (both graduate and undergraduate) relating to their specialist research interests at regular intervals. Given this expectation, the department has devised an effective system to support faculty in delivering its course renewal strategy. The first year a course is delivered, the faculty member is credited with six-times the normal teaching load allocation for teaching a course. In the second year of delivery, a one-and-a-half times weighing is applied. After that, faculty are credited with a standard amount of time per course against their allocation of duties.

This is a very popular system, widely regarded both as fair to everyone, and as properly recognising the extra work involved in planning and delivering a course for the first time.

If HEIs want to promote interdisciplinary developments in teaching and learning, then one of the most effective strategies would be to undertake an internal research project to cost out the amount of time required to develop and deliver interdisciplinary courses over and above that required for discipline-based teaching, and factor that into the formula used to allocate teaching duties. At the same time, it would also be desirable to develop formulae that cost out the end-to-end teaching process (from design through delivery to assessment) and allocate teaching duties transparently and fairly according to this. Work allocation formulae should also account for the extra administrative time required to deliver a course collaboratively with colleagues from other departments / schools. If faculty come to perceive delivering interdisciplinary courses as less disadvantageous than is currently the case, then very positive developments will occur.

Chapter 7: Finances and facilities

Money is better than poverty, if only for financial reasons.

(Woody Allen)

An issue that was raised – but only by a relatively small number of HEIs – was that ill thought-through financial systems can inhibit departments from seeking interdisciplinary student numbers if they are disproportionately better rewarded (and have less administrative bother) for recruiting single and joint-honours students.

Interestingly, in most HEIs, financial mechanisms for allocating money to departments on the basis of taught FTEs (full-time equivalent students) were largely seen as transparent, obvious and fair by respondents. A number of different financial problems were mentioned, but these were to do with grumbles and disagreements over general financial allocations and top-slicing as money filters down from HEI to school to department. However, none of these issues related specifically to interdisciplinary teaching, and this aspect of the internal economy did not largely influence interdisciplinary teaching either positively or negatively.

The two exceptions occurred where internal money transfer systems were perceived as slow-acting, cumbersome and administratively heavy, and where departments took a top-slice from interdisciplinary programmes. In the first case, the relatively small amount of money a department might make for offering one or two courses to an interdisciplinary programme was perceived as disproportionately bureaucratically complex to claim, and as one Head of Department put it (who had withdrawn a number of courses offered by departmental colleagues to interdisciplinary programmes): *it's simply not worth tying up several people for several days getting the money, which takes months to arrive anyway. I've discovered we're much better off getting in the single honours students we need, and I control the finances that way, and can plan on the basis of knowing what and who I've got.* In the second case, while respondents acknowledged the fairness of the principle that HEIs and schools should take a top-slice of the money they are handing down through the system, as a way of paying for central functions (although, of course, there was inevitable grumbling about the proportion of income taken in this way), it was not seen as reasonable for a host department responsible for an interdisciplinary programme to top-slice money being passed on to other contributing departments. Where no top-slicing is permitted departments are inhibited from hosting interdisciplinary programmes, because they do, in fact, carry an administrative cost. This can lead to a lose-lose situation where host departments are hard to find, and other departments are unwilling to contribute.

Territorial squabbling between departments was more evident when it came to sharing teaching facilities, mainly lab-space, computer technology, and specialist equipment. Here (as will also be seen in Chapter 8) it was mainly interdisciplinary students who were most vocal about feeling that single honours students got preferential treatment in accessing facilities and equipment, but that sentiment was echoed by faculty respondents as well.

Chapter 8: The student experience

You cannot understand anyone till you have walked two moons in their moccasins.
(Trad. Native American)

Discovering what students think about their interdisciplinary learning adds a different, and rich, dimension to our understanding of our interdisciplinary programmes and teaching efforts. During the course of researching this report, I was able to talk with a number of students from different HEIs. Several themes emerged from these conversations, and it seems right and appropriate to record these as a way of giving the final word to our students and highlighting a number of challenges that arise from their perspectives.

- The vast majority of students I met were very positive about their courses. They found them intellectually challenging and stimulating. They generally had interesting things to say about interdisciplinarity and their disciplines – and were very often, in my experience, sharper about the nature, scope and procedures of their disciplines than single-subject students. However, they reported a number of problems that seem peculiar to interdisciplinary study.
- Students often felt that they had not really understood properly in advance what their interdisciplinary courses would entail; what level of demand would be placed on them; and how interdisciplinary work is different from taking three different subjects at A-Level.
- It is not enough simply to ask whether students “understand” the courses on offer to them. More attention should be paid in the early stages of courses to exploring with students the *range* of ways in which they understand the course, its disciplines and its interdisciplinarity. This is an effective way of identifying misconceptions early on, and helping all students to deepen and develop their understanding.
- The flip side of faculty spending time thinking about developing specific disciplinary and interdisciplinary pedagogies and teaching methods is for students to be helped to think about their learning in specific disciplinary and interdisciplinary contexts as well.
- Students often felt that they lacked an institutional “home”. This has both affective and practical dimensions. Students described a sense of *not belonging to any department*, and thought that this sense of *being a bit lost and ignored* was not one experienced to the same degree by single-honours students. In practical terms, students talked about not knowing who to turn to when they had questions or problems; being given conflicting advice by different departments; and feeling that single honours students were given priority in accessing space, resources and equipment. In one discussion group, one student described his sense that interdisciplinary students were *tacked onto the department*, and this observation was strongly endorsed by the whole group.

- Students frequently felt that they were at a disadvantage compared to single honours students. There was a widespread perception that interdisciplinary programmes are more challenging than single honours ones, and that it is harder to get a good degree. There was some soreness about the fact that interdisciplinary students often take courses alongside single honours ones, and feel that they are disadvantaged by studying with peers who have more prior experience, and that their own particular learning needs are neither properly recognised nor met by many of these “shared” courses.
- Just about every HEI studied for this report had a stated aim of developing students as *independent learners*. Interdisciplinarity offers particular opportunities and challenges in this regard. On the one hand, studying across and between disciplines seemed to have developed in many of the students with whom I spoke a flexibility of mind and a wide range of intellectual interests. The very best students were taking the opportunity to explore their own interests, and were combining their disciplines in a number of strikingly interesting and imaginative ways. On the other hand, many of the less able students lacked confidence in themselves and their abilities, and it was not uncommon to hear them describe themselves as “good” at one discipline, and “bad” at another, as if their learning experience were quite fragmented; and to see them being very reliant on faculty to give them the lead in what interests they might be able to follow.

Chapter 9: Conclusion

Aristotle maintained that women have fewer teeth than men; although he was twice married, it never occurred to him to verify this statement by examining his wives' mouths.
(Bertrand Russell)

The conclusion to this report is almost embarrassingly simple. It is abundantly clear that the majority of interdisciplinary programmes investigated for this research project are operating under dysfunctional institutional macro-, meso- and micro-structures. A wide range of different issues – and different, local versions of generic problems – have been found in how the internal economies of HEIs both support but, more often, inhibit interdisciplinary teaching. The most common inhibiting factors are those of making institutional structural boundaries hard to cross; not fully recognizing the time faculty put into planning and delivering interdisciplinary programmes; not creating simple and transparent financial structures; not developing a shared vision of interdisciplinarity; and not aligning institutional rhetoric with practice.

What many of the respondents found more frustrating than anything else is that local solutions to these problems are generally not hard to find. Much could be done immediately by most HEIs to address their particular blocks to effective interdisciplinarity quite straightforwardly. Faculty and students would both benefit from such structural improvements.

The data HEIs need to identify the impediments to interdisciplinarity are not hard to find. Faculty and students know exactly what hinders their work. If HEIs would only hear this, then appropriate local levers for change will become quite evident. It might be that redesigning teaching allocation formulae will be the best way forward for Institution A, whereas Institution B would benefit most from giving interdisciplinary programme managers more line-management responsibility over faculty delivering courses on their degrees. As colleagues from different HEIs read this report, different elements will no doubt resonate more or less strongly with their experience – and this, of course is quite how things should be, for different HEIs have different missions, structures, strengths, histories and futures.

The report began by explaining why it would not be appropriate to make across-the-sector recommendations for changes to HEIs' internal economies to provide better support for interdisciplinary undergraduate teaching, and this remains the position here. However, two very broad areas for future developmental work are strongly recommended in conclusion:

- The first, echoing Bertrand Russell above, is to urge HEIs to “examine their own teeth”: to conduct a local research project to identify infrastructural strengths and weaknesses relating to interdisciplinary educational delivery – at macro-, meso- and micro-levels – with the aim of being able to make a well-informed decision about which levers for change would be most supportive and effective, and then committing to taking at least one action at each level.
- The second is for the emerging Interdisciplinary Teaching and Learning Group – which is an excellent initiative – to work with Subject Centres and, in the first instance, a small number of HEIs to explore what might be meant by “interdisciplinary pedagogy”, and to develop and trial materials to support faculty development in interdisciplinary pedagogy / pedagogies.

The impact of the internal economy of higher education institutions on interdisciplinary teaching and learning

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