Redefining & leading the academic discipline in Australian universities

Damien G. Harkin
Queensland University of Technology & Queensland Eye Institute

Annah H. Healy
Queensland University of Technology

Disciplines have emerged as an alternative administrative structure to departments or schools in Australian universities. We presently investigate the pattern of discipline use and by way of case study examine a role for distributed leadership in discipline management. Over forty per cent of Australian universities currently employ disciplines, especially within faculties of sciences, engineering and medicine. No trend is observed according to institutional age, state, or historical origins. Effective planning, retention of corporate knowledge and good communication are important during the transition period. Moreover, it is vital that professional staff continue to work closely alongside academics as extended members of the discipline. Distributed leadership encourages this interaction. The duties of a discipline leader can be similar to those faced by a head of department. Universities should therefore establish clear policies, position descriptions and appropriate remuneration packages in order to recruit, train and retain staff within this emerging academic management role.

Introduction

An academic discipline is well understood as a branch of knowledge or field of study within universities and other institutes of higher education (Trowler, 2012). Historically, the term originates from the Latin nouns *discipulus* (pupil) and *disciplina* (teaching) and was introduced during the Middle Ages for training within the professions of theology, law and medicine (Krishnan, 2009). More academic disciplines have evolved over time in order to accommodate new areas of knowledge, initially within the physical and life sciences (19th century) and later within the social sciences (20th century). Indeed it can be argued that academic disciplines display characteristics similar to those of living organisms as they grow, reproduce and evolve into new areas of study, while others may disappear altogether due to obsolescence.

In the modern era, it has been argued that academics should be prepared to move away from a discipline-based model of universities and embrace a broader, more integrated view of their activities to the benefit of their students and corporate clients (Coaldrake & Steadman, 1999). For some academics, however, the term academic discipline remains closely aligned with one's sense of academic identity and provides an important link to colleagues beyond the walls of their home institution. Subsequently, disputes can arise over the future direction of academic disciplines, with debates sometimes reaching the general public (Rowbotham, 2013). From the viewpoint of the corporate institution, academic disciplines, in the form of study areas, are displayed prominently on

website home pages for the purpose of recruiting students within an increasingly competitive market. In addition, codification of disciplines has become an integral part of information provided by universities to government bodies for the purpose of recording and measuring activities in teaching and research (Pink & Bascand, 2008; Trewin, 2001). We presently consider the term discipline, however, as an emerging organisational structure within universities.

An historical view reveals that groups of closely related disciplines (e.g. organic chemistry and inorganic chemistry) have been traditionally organised into departments or schools (Friedman, 2001) (although the term school has also been used as an alternative to faculty depending upon the field of study). Departments are typically led by a chair or head who is responsible for managing the daily operation, as well as the strategic direction of the academic unit. As the number of academic disciplines increased, so too has the number of academic departments. Nevertheless, the creation of each new academic department carries a significant cost to the university that may not always be matched by the associated income (Friedman, 2001). This problem has especially been an issue in Australia's publicly funded institutions where the income received per full time equivalent student has been generally in decline for more than twenty years (Coaldrake & Steadman, 1999; Miller, 1995). In the wake of the global financial crisis, the cost of running a modern university is likely to be under even tighter scrutiny. Therefore, while departmental mergers and faculty restructures are not new (Friedman, 2001) it seems likely that they will become more prevalent in the years ahead and that innovative approaches to academic management will be explored. The emergence of disciplines in Australian universities is a good example of this.

Pattern of discipline use within Australian universities

A review of public web sites for Australian universities (between August and November 2012) reveals that 16 out of 39 institutions employ disciplines (as defined by a named organisational unit with appointed discipline head or leader), with use being evident across multiple faculties in at least eight institutions (Table 1). No pattern of use is evident according to Australian state, historical origin or age of the institution. A clear trend, however, is observed toward use of disciplines within faculties of sciences, engineering and medicine (16 out of 16 cases where used). In a few institutions, a mixture of both disciplines and departments are used and information displayed on some discipline web pages indicates that these academic units formerly existed as departments (e.g. Discipline of Physics at the University of Adelaide) (University of Adelaide, 2012). It should be noted that substantial variation is also observed with respect to higher order structures where the terms faculty, college and school appear to be used interchangeably according to field of study (e.g. faculties of business generally referred to as business schools), perhaps often to follow examples set by prestigious institutions (e.g. Harvard Business School). In the case of Swinburne University of Technology, reference is made to academic groups that could presumably operate in a similar manner to schools, departments, or disciplines in other institutions.

The name given to an academic unit is no doubt less important than its actual functions and responsibilities. Likewise, a head of discipline may well have the same responsibilities and duties as a head of school. The decision to use new terminology, however, suggests a desire to create something new that is intended to improve the overall performance of the institution. For example, creation of disciplines might be used as a way to reduce operational costs, improve efficiency and facilitate outputs in areas of teaching or research focus of strategic importance to the university. Such changes may in fact have very little impact on most managed academics (Winter, 2009) since the weekly coal-face activities of teaching and research still need to be conducted irrespectively of whether they reside within a discipline, department or school. Significant questions arise, however, for the academic manager (Winter, 2009) placed in charge of leading a discipline and principally, how does their job differ from that of a traditional academic leader? The former departmental head is also presented with significant questions as they must now either acquire an alternative leadership role or return to life as a managed academic (Smith, Rollins & Smith, 2012). As illustrated in the following case study, the transition to a discipline-based structure can impact significantly on both academic and professional staff members. Moreover, we propose that the model of discipline leadership is a critical factor for success.

Case Study: The Discipline of Medical Sciences at QUT

Historical Perspective

The Queensland University of Technology (QUT) has a relatively long history in higher education by Australian standards having been formed from over a dozen former colleges and schools of adult education dating back to

Table 1: Summary of academic structures used within Australian universities

Based upon information obtained from publicly available documents on each university's web site between August-November 2012. It should be noted that many universities include additional research focused structures including institutes and centres. All institutions are 'public' unless otherwise noted.

Institution	*State or Territory*	*History*	*Academic Structure*	*Discipline use*
Australian Catholic University	National	Est. 1991. Former colleges of education	Faculty →School	
Australian National University	ACT	Est. 1946. Formerly Canberra University College (1930)	College →School →Division or Department	
Bond University	QLD	Est. 1989. Private, not-for-profit	Faculty or College →School →Department/Discipline	Limited use (e.g. School of Medicine).
Central Queensland University	QLD	Est. 1992. Former technical institute	Faculty →School	
Charles Darwin University	NT	Est. 2003. Former community college	Faculty →School →Discipline	Limited use within School of Environmental and Life Sciences.
Charles Sturt University	VIC & NSW	Est. 1989. Former agricultural and teachers colleges	Faculty →School	
Curtin University	WA	Est. 1986. Former technical college	Faculty or School →School or Department →Discipline	Limited use (e.g. Discipline of Applied Physics).
Deakin University	VIC	Est. 1974. Former technical college	Faculty →School	
Edith Cowan University	WA	Est. 1991. Former teachers college	Faculty →School	
Flinders University	SA	Est. 1966	Faculty →School →Dept or Discipline	Extensive use across multiple faculties.
Griffith University	QLD	Est. 1971. Sections formerly teachers colleges	Faculty or School →School or Department	
James Cook University	QLD	Est. 1970. Former annex of the University of Queensland (1961)	Faculty →School →Dept or Discipline	Extensive use across multiple faculties.
La Trobe University	VIC	Est. 1967	Faculty →School →Department	
Macquarie University	NSW	Est. 1964	Faculty →School or Department	
Monash University	VIC	Est. 1958	Faculty →School or Department	
Murdoch University	WA	Est. 1973	Faculty →School	
Queensland University of Technology	QLD	Est. 1989. Former technical and teachers colleges	Faculty →School →Discipline	Limited use within Science & Engineering Faculty.
RMIT University	VIC	Est. 1992. Former technical college	College →School →Discipline	Extensive use across multiple colleges.

Institution	*State or Territory*	*History*	*Academic Structure*	*Discipline use*
Southern Cross University	NSW	Est. 1994. Former teachers college	School	
Swinburne University of Technology	VIC	Est. 1992. Former technical college	Faculty →Academic Group	
University of Adelaide	SA	Est. 1874	Faculty →School →Discipline	Extensive use across multiple faculties.
University of Ballarat	VIC	Est. 1994. Former adult education and teachers colleges	Schools →Discipline	Predominantly within School of Health Sciences.
University of Canberra	ACT	Est. 1990. Former adult education college	Faculty →Discipline	Extensive use across multiple faculties.
University of Melbourne	VIC	Est. 1853	Faculty or School →School or Department	
University of New England	NSW	Est. 1954. Former college of the University of Sydney	Faculty →School →Discipline	Limited use (e.g. School of Science and Technology).
University of New South Wales	NSW	Est. 1949. Former technical college	Faculty, College or Academy →School →Department	
University of Newcastle	NSW	Est. 1965. Former technical college	Faculty →School →Discipline	Prevalent within schools of science, mathematics and engineering.
University of Notre Dame	NSW & WA	Est. 1989. Private Catholic university	School	
University of Queensland	QLD	Est. 1909	Faculty →School	
University of South Australia	SA	Est. 1991. Former technical and teachers colleges	Divisions →Schools or Colleges	
University of Southern Queensland	QLD	Est. 1992. Former technical college	Faculty →Department or School	
University of Sydney	NSW	Est. 1850	Faculty →School →Discipline	Extensive use within Business School, Sydney Medical School and Faculty of Health Sciences.
University of Tasmania	TAS	Est. 1890	Faculty →School →Discipline	Limited use (e.g. School of Medicine).
University of Technology Sydney	NSW	Est. 1988. Former technical college	Faculty →School	
University of the Sunshine Coast	QLD	Est. 1994	Faculty →School →Discipline	Prevalent within Faculties of Science, Health, Education and Engineering
University of Western Australia	WA	Est. 1911	Faculty →School	
University of Western Sydney	NSW	Est. 1989. Former agricultural college	School →Discipline	Limited use (e.g. School of Medicine).
University of Wollongong	NSW	Est. 1975. Former part of University of New South Wales	Faculty →School	
Victoria University	VIC	Est. 1990. Former technical college	Faculty →School	

1849 (Kyle, Manathunga, & Scott, 1999).The university in its present form originates from two major reforms: the Binary System introduced in the mid 1960s under the Menzies Federal Government that produced the Queensland Institute of Technology (QIT; 1965), followed by the Unified National System introduced under the Hawke administration that saw a newly created Queensland University Technology (1989) merged with the Brisbane College of Advanced Education (1990).

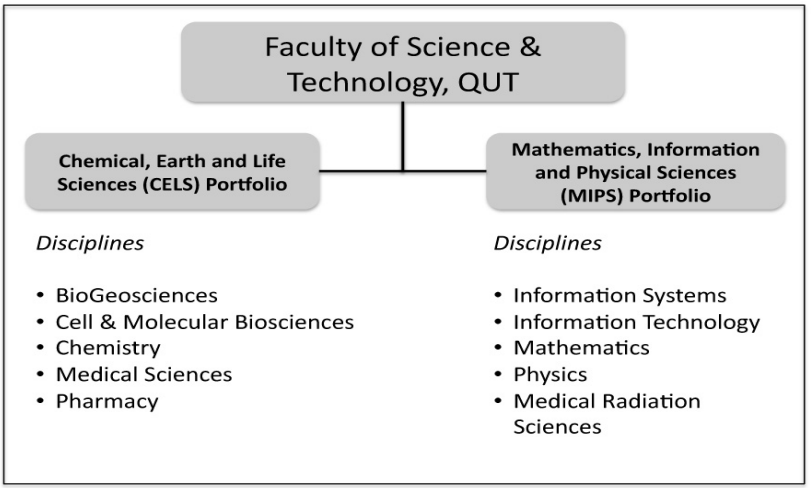

Figure 1: Operational structure for the Faculty of Science and Technology (FaST) at the Queensland University of Technology (1 January 2010–31 December 2011).

The origins of medical science as a teaching discipline at QUT date back to the days of the Central Technical College (1908), but the first bachelor's degree course in medical laboratory technology commenced in 1973. Various academic units have been charged with the responsibility of developing this discipline over the years including the Department of Medical Technology within the School of Health Science (1978). In addition to producing graduates in medical laboratory science, the teaching duties of the discipline have developed to include majors in biotechnology, microbiology and biochemistry. Moreover, the unit has been responsible for provision of numerous foundation units in anatomy, physiology and pathology for several health-related degree courses.

With the introduction of a faculty-based structure in 1985, the academics responsible for the discipline's development were originally placed within the Faculty of Health Science, but were subsequently transferred as members of the School of Life Sciences to the Faculty of Science in 1990 at QUT's Gardens Point campus in Brisbane. At this same time, a strong emphasis was placed upon the development of a research culture at QUT. Within the School of Life Sciences, research development was driven primarily within the Centre for Molecular Biotechnology (1988). Notably, this research centre was located within the same building as the majority of school academic staff thus facilitating access to research infrastructure.This relationship was maintained until creation of the Institute of Health & Biomedical Innovation (IHBI) in 2005 that resulted in relocation of the school's biomedical research facilities to a dedicated research facility across town at QUT's Kelvin Grove campus.

Discipline creation

The Discipline of Medical Sciences was established in January 2010 as part of a broad faculty restructure that resulted in the Faculty of Science merging with the Faculty of Information Technology.The new faculty structure (Faculty of Science & Technology or FaST) consisted of two large academic units called portfolios, each led by a director charged with the responsibility of managing five disciplines (Figure 1).The Discipline of Medical Sciences resided within the Portfolio of Chemical, Earth & Life Sciences alongside the disciplines of Cell & Molecular Biosciences (CMB), Pharmacy, Chemistry and Biogeosciences. Each discipline consisted of approximately 20 members of academic staff led by a head of discipline. During this transition phase, the academic staff members of the former of School of Life Sciences were distributed between the disciplines of Medical Sciences, Cell & Molecular Biosciences and Pharmacy. In doing so, the school's traditional teaching discipline areas of anatomy, physiology and pathology moved to Medical Science, with microbiology, biochemistry and molecular biology going to Cell & Molecular Biosciences.Thus, these two disciplines can be considered to be as multi-disciplinary in composition as many departments or schools at other institutions.

Owing largely to historical affiliations, the majority of research active academics along with their research staff and students were relocated to the Discipline of Cell & Molecular Biosciences. In contrast, the Discipline of Medical Sciences contained relatively few research active staff with only 3 out of 20 staff members having published papers based upon original research within the 12 months prior to the faculty restructure.At the same time, the high

demand for foundation units in anatomy, physiology and pathology throughout the university, resulted in a teaching workload for academics in Medical Sciences (average of 11 hours per week) that was approximately double that for academics in Cell & Molecular Biosciences.

During discipline creation, all professional staff members were reassigned to a centralised operational group of technical (Technical Services) and general professional staff. Thus instead of a head of school supported by a team of administrative staff (e.g. personal assistant to head of school, financial officer, timetabling officer, admin support officers and facilities manager), each discipline was administered by a head of discipline supported by a few administrative staff (portfolio hub) shared between all disciplines within a given location. In the case of Medical Sciences, this arrangement resulted in the assignment of 1.5 full-time equivalent (FTE) administrative staff shared between academic staff from up to four separate disciplines within the same building. The duties assigned to these local admin staff were quite basic (e.g. room bookings) with more extensive tasks being referred to a specialist within an off-site centralised pool (e.g. staff appointments).

Significant changes were also experienced with respect to financial operations. While the former head of school had the responsibility of managing income attributed to both teaching as well as research activities, heads of discipline were only assigned a research budget. All teaching-relating income was therefore managed at the level of faculty thus facilitating cross-subsidisation of disciplines in need of financial support. Each head of discipline was however provided with $85K of discretionary funds by the faculty, notionally with the view that it could be used to hire a postdoctoral scientist to maintain the activities of his or her research programme while managing the discipline. Heads of discipline also received a management loading above their base salary.

A final feature of the newly created discipline-based structure worth noting is the creation of a more diverse combination of discipline backgrounds within the reporting structure. For example, within the former school-based structure, the academic staff member responsible for managing staff within the disciplines of anatomy, physiology and pathology (a cell biologist), had previously reported to a biochemist (head of school), who in turn had reported to a food scientist (executive dean). In contrast, under the new discipline-based structure, the head of discipline (the same cell biologist) now reported to a geologist (portfolio director), who in turn reported to a computer scientist (executive dean). Such diversity may not be uncommon in large university departments and faculties, however, it requires those in higher positions of authority (dean and portfolio director) to rely more upon the advice from those managing discipline specific areas of teaching and research. Likewise, the discipline head may be required to work much harder to explain the purpose and value of initiatives of strategic and operational importance to the discipline.

Basic issues such as access to photocopying facilities or class timetabling issues could no longer be quickly addressed by directly contacting someone familiar with the discipline and located within the organisational unit. Instead, staff members were required to send their requests for information to generic e-mail addresses assigned to separate areas such as travel & finance or timetabling.

Immediate impact of discipline structure

As Medical Sciences staff returned to work from their summer vacation in January of 2010, many things remained unchanged. For example, classes still had to be prepared for and grant submissions to major funding bodies written. With respect to research, the prior establishment of a dedicated research facility (IHBI) provided a significant buffer, in the short term, for research active staff from each discipline. Indeed, research-intensive staff and their students were largely unaffected by the faculty restructure and in fact generally identified themselves as members of research programmes rather than belonging to a discipline *per se*. For teaching academics, however, it quickly became apparent that the operational environment had changed substantially. Basic issues such as access to photocopying facilities or class timetabling issues could no longer be quickly addressed by directly contacting someone familiar with the discipline and located within the organisational unit. Instead, staff members were required to send their requests for information to generic e-mail addresses assigned to separate areas such as travel & finance or timetabling. In some cases, a familiar person was the immediate recipient of such e-mails, however, a voluntary early retirement scheme prior to the faculty restructure resulted in significant loss of corporate knowledge. The few professional staff assigned locally to each admin hub were invaluable. However, they were

largely limited to dealing with basic issues such as stationery requirements and printing, and so sometimes bore the brunt of frustrated academics accustomed to dealing with 'good old Jim!' An added complication was that since the local admin staff were managed by a centralised portfolio office, the actual faces behind the desk often changed on a weekly and sometimes daily basis according to needs elsewhere within the wider portfolio.

While this new operating environment initially caused a significant degree of frustration, most staff eventually adjusted their work habits and accepted the change as a matter of fact, replacing old contacts with new as sources of vital information pertaining to their weekly activities. Heads of disciplines, however, were now faced with the longer-term challenge of how to build teaching and research within the new operational structure.

Building the discipline

Despite adjusting to the daily realities of new faculty structure, academic staff within Medical Sciences retained the general concerns regarding access to resources and career development that are typical of most academics working within any academic structure such as: 'How do I build my research?, How do I improve my teaching?, How do I manage the balance between teaching and research?', and ultimately, 'How do I get promoted?' Such questions would typically be raised directly with the head of discipline by either e-mail or face-to-face meeting, but the relatively small size of the group afforded the opportunity to discuss core issues as a combined group through regular discipline meetings. At the same time, the head of discipline was charged with the responsibility of building research through increased number of higher degree students, research grants and publications. A critical element in addressing the goals of the academic manager and managed academics alike was to adopt a management style based primarily on a distributed leadership model.

While there has been recent interest in studying the potential benefits of distributed leadership in higher education (Jones, LeFoe, Harvey, & Ryland, 2012), it is in our experience rare to find this approach being proactively used within academic departments. In brief, the model is based upon the individuals within a group ultimately sharing responsibility and ownership for goal setting and decision-making. Alternatively, the model can be considered to recognise the value of knowledge distributed within and between operational groups. Ultimately, the model encourages respect for the contribution of individuals to the daily operation and strategic direction of the combined group. An orchestra provides a practical example of this leadership model since, despite the requirement for leadership roles, the performance of the group is dependent upon the coordinated knowledge and input of all members of the group. In this sense, while overall responsibility for the performance may ultimately reside with the conductor, it is critical that all members of the group play their part to the best of their abilities. This compares with a more traditional academic culture where authority and power is more closely aligned with one's level of seniority with key decisions regarding the group's direction being made by a less collaborative and less transparent 'top-down' approach.

The decision to adopt a distributed leadership model within the Discipline of Medical Sciences at QUT owes as much to the practicalities faced following removal of traditional academic support structures as to a conscious decision made by the head of discipline on behalf of the group. An analysis of leadership style, however, for the head of Medical Sciences immediately prior to commencing duties using the Life Styles Inventory™ (LSI) survey tool (Human Synergistics) (Cooke, Lafferty, & Rousseau, 1987), revealed a primary trend towards the 'blue' or 'constructive' styles 'humanistic-encouraging' and 'affiliative' which are consistent with a distributed leadership model (Figure 2). As a consequence, the academic staff assigned to the discipline met regularly as a group to discuss the overall direction of the academic group. Importantly, any professional staff with whom the academics were required to work with on a daily or weekly basis were also invited to attend these meetings and were effectively regarded as extended members of the discipline, essential to creating the 'orchestra's performance'. Notably, the head of discipline only made important decisions regarding the discipline's direction after engaging in focused group discussions to consider all available evidence and to ensure collective ownership of the group's direction. The aim behind this strategy was not necessarily to achieve group consensus, but to encourage a collaborative, transparent and evidence-based approach to decision-making.

Risk analysis

Having established a model for managing the discipline, a risk analysis was conducted to identify key priorities for the group's development. For the purpose of this exercise, the level of risk was defined as a combination of:

- An event or operating environment that either presently or in the future would be considered to negatively impact on the ability of the discipline to achieve its goals.

- The current or predicted probability that this event or operating environment would occur.
- The severity and nature of consequences associated with the event or operating environment.

The outcomes of this risk analysis are summarised in Table 2, with risks to discipline success being classified according to broadest goals in research, teaching and service.

In summary, the primary events or operating conditions that posed the greatest threat to discipline success were:

1. Relatively high teaching and administrative loads (average of 11 contact hours per week with average class size of 150 students).
2. Lack of research funding, especially for emerging programmes.
3. Lack of exposure to potential higher degree research (HDR) students.
4. Lack of research active staff.
5. Lack of adequate teaching staff.
6. Lack of access to teaching income.

In response to the above risks, the discipline implemented a number of counter-measures aimed at risk remediation over the following six to twelve months.

- In response to 'high teaching loads' – A thorough review of teaching loads across the discipline was conducted and wherever possible staff reassigned to assist in areas of highest need. Moreover, a formal request for additional staff was made to faculty in accordance with teaching load and the associated discipline income that was managed by faculty.
- In response to 'lack of research funding' – The entire discipline research budget combined with most of the head of discipline's discretionary budget was used

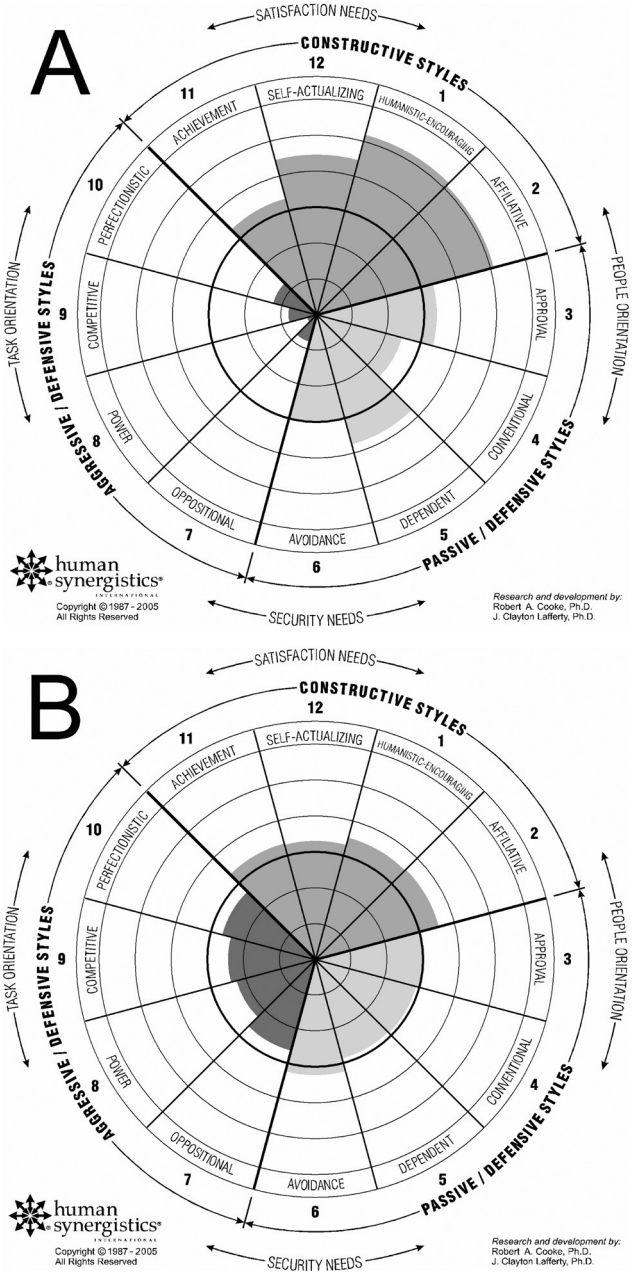

Figure 2: Circumplexes that display outcomes of Human Synergistics' Life Styles Inventory™

Figure 2 shows circumplexes that display outcomes of Human Synergistics' Life Styles Inventory™ surveys completed for: (A) head of Medical Sciences Discipline at the Queensland University of Technology (2009) compared with (B) averaged data for staff in leadership positions within the Australian and New Zealand higher education systems (company data as of December 2012). Both results are derived from the combined opinions of the subject's immediate line manager, a sample of peers and a sample of direct reports (N=9 for Part A and N=9976 for Part B). In sharp contrast to the industry data, both primary and secondary styles for the head of Medical Sciences were assessed as residing more strongly within the 'blue' or 'constructive' segments that are considered to:

> *'Reflect a healthy balance of people- and task-related concerns and promote the fulfilment of higher-order needs. Styles associated with this orientation are directed toward the attainment of organisational goals through the development of people. Constructive styles account for synergy and explain why certain individuals, groups, and organisations are particularly effective in terms of performance, growth, and work quality' (Human Synergistics, 2012a).*

Moreover, scores within the 'red' or 'aggressive/defensive' styles are considerably lower than average that suggests a significant shift away from styles that:

> *'Emphasise tasks over people and are driven by underlying insecurities. In the extreme, these styles lead people to focus on their own needs at the expense of those of the group. Though sometimes temporarily effective, Aggressive/Defensive styles may lead to stress, decisions based on status rather than expertise and conflict rather than collaboration' (Human Synergistics, 2012b).*

Table 2: Outcomes of risk analysis for Discipline of Medical Sciences at QUT – May 2010

Goal	*Negative event or environment*	*Incidence/probability*	*Consequence*	*Level of risk*
Research	High teaching loads.	High – Average weekly contact hours for Medical Sciences staff is 11 hours.	High – Lack of time to conduct research.	High
	Lack of research funding.	Moderate – Only 3 out of 8 research programmes are currently well funded.	High – Inability to conduct research.	Moderate to high
	Lack of exposure to potential higher degree research (HDR) students.	High – few Medical Sciences staff currently teach into research career oriented degree programmes.	Moderate – Reduced ability to recruit HDR students.	Moderate to high
	Lack of research active staff.	Moderate – 4 staff lack formal training in research and the research careers of 6 other staff have stalled due to high teaching loads.	High – Reduced capacity to conduct research.	Moderate to high
	Lack of access to research infrastructure.	Low – Most staff have access to facilities albeit at another campus in most cases.	High – Inability to conduct research.	Low-moderate
Teaching	Lack of adequate teaching staff.	High – One unit without a unit coordinator and two additional units taught by staff on temporary appointments.	High – Inability to run teaching units. Potential loss of staff to other institutions.	High
	Lack of access to teaching income.	High – Disciplines currently receive no income related to teaching.	High – Inability to respond quickly to increasing demands posed by internal and external (inter-faculty) clients.	High
	Lack of teaching qualifications or experience.	Low – 50 per cent of staff have over 10 years teaching experience. New staff to undertake formal training in higher education.	High – Poor quality of teaching.	Low-moderate
	Lack of discipline expertise.	Low- Currently maintain good knowledge of unit content including within the professional medical science degree programme.	Moderate – poor quality of teaching units. Failure to receive course accreditation.	Low
Service	Failure to engage with professional bodies and industry.	Low – Currently maintain a good level of engagement especially with respect to pathology industry.	High – Lack of relevance and industry support for teaching and research programmes.	Low-moderate
	Poor rate of staff participation.	Low- Currently maintain a good level of staff participation in service activities including faculty committees and involvement in professional societies.	Moderate – Reduced profile for discipline within and external to QUT.	Low

to establish a Discipline of Medical Sciences Small Grants Scheme. This scheme resulted in distribution of between $5,000 to $20,000 to each of the research programmes relative to performance, but recognising the need for seed funding by small and emerging groups as well.

- In response to 'lack of exposure to potential HDR students' – All staff were encouraged to provide details of potential honours and HDR projects for promotion by faculty, and to attend faculty open days for potential honours degree students. Potential students were also directly invited to attend an informal presentation of the discipline's research interests over free pizza. Further incentive was provided via a limited number of vacation research experience stipends and 'top-up' scholarships for students who had successfully applied for postgraduate research scholarships. As a more long-term plan, a formal submission was made to the faculty curriculum review committee to increase the availability of medical sciences teaching units within QUT's

Table 3: Statistics for academics within Discipline of Medical Sciences at QUT (2010-2012*)

	Year		
Description	*2010*	*2011*	*2012*
Staffing			
Number of full-time on-going staff	17	16	
Number of full-time contract staff	2	4	
Total staff	19	20	
Teaching			
Number of teaching units per semester	18 18	18 18	
Mean number of students enrolled per unit	~150	~150	
Average face-to-face contact hours/week	~11	~11	
Research			
Percentage of staff engaged in research	50%	85%	
Number of research higher degree students (includes honours, masters and PhD students)	13	30	
Number of original research publications (i.e. excluding reviews)	6	15	16

**Details for publications extended to 2012 to allow for delay between work being completed and date of publication.*

Bachelor of Applied Science degree programme which at this time was the main feeder course for undergraduate students progressing to research higher degrees in science.

- The remaining priority areas involving staffing and funding could only be addressed by direct application to faculty via the portfolio director. A written case in support of these measures was therefore submitted for faculty consideration in June 2010 along with details of the completed risk analysis.

Discipline performance

Strategies for research student recruitment led to remarkable increases in the number of higher degree research students between 2010 and 2011 (Table 3). The number of original research publications by discipline staff also increased and was sustained into 2012 (taking into account the delay between undertaking experimental work and eventual publication). Two new nationally competitive grants were also awarded to the discipline over this period (National Health & Medical Research Council project grants) resulting in approximately $1m in research income. These achievements were accompanied by an overall increase in the number of staff engaged in research from 50 per cent to 85 per cent. It should be noted, however, that this increase was assisted in part by a university-wide academic staff recruitment programme aimed at early career academics (Early Career Academic Recruitment and Development or ECARD programme). Medical Sciences recruited two new academic staff via the ECARD programme during the period of review.

With respect to teaching, most academics within the Discipline of Medical Sciences routinely received student evaluation scores that were well-above the institutional average. At this same time, several academics within the discipline made a leading contribution towards redesigning the university's courses in medical laboratory science and biomedical science according to emerging regulatory requirements for academic institutions in Australia. Importantly, the new biomedical science degree programme, which is principally tailored towards undergraduate students interested in pursuing research as a career, contains majors in anatomical sciences and physiology, built upon existing and emerging Medical Science units.

Discipline fate

Despite the apparent, albeit short-term, success of the Discipline of Medical Science, a further faculty restructure in the later half of 2011 resulted in this academic unit being reunited with academics from the Discipline of CMB to create the School of Biomedical Sciences within the Faculty of Health. The new school structure is somewhat similar to the former School of Life Sciences with the exception that all professional staff members have been retained within a centralised faculty pool. Since the main faculty office, however, is located on another campus, a team of approximately a dozen professional staff have been assigned to manage the daily operations of the School of Biomedical Sciences as well as the needs of staff from a newly created Clinical School which is split between two campuses. Each school is led by an academic head assisted by a small group of academic directors who are responsible for managing and developing the teaching and research interests of the school. The notion of disciplines continues in the traditional sense (teaching areas), but no longer serve any formal management role. Instead, academics within the school are now largely managed through policies developed by the faculty-based professional staff, administered via the head of school and academic directors. Naturally, this has been quite a difficult change to endure for former Medical Sciences staff after

having experienced the benefits afforded by a distributed leadership model.

Discussion

The short duration of the Discipline of Medical Sciences at QUT naturally makes it difficult to measure effectively the impact of the group's initiatives and the true value of disciplines in general. Nevertheless, the experience gained through two major faculty restructures in quick succession enables a number of important observations to be made. We discuss these observations with the intention of assisting other academic and professional staff in the process of planning or implementing similar changes to faculty operations.

Managing the change

The concept of change in higher education is far from new (Coaldrake & Steadman, 1999; Miller, 1995) and indeed the events described presently with respect to academic structures are no doubt just the 'tip of the ice berg' for what is to come given the emergence of an increasingly globalised higher education market and rapid development of on-line knowledge content. Irrespective of the size and nature of changes to come, the present case study has taught us a number of important lessons about change management in high education. First and foremost, effective planning around maintenance of core functions is essential. As mentioned above, basic teaching and research activities for the most part should continue to operate as usual, as long as support structures are quickly established and clearly identified. In particular, it is essential to define quickly and clearly staff members responsible for key operational processes (e.g. class timetabling, travel requests etc). Having found the new person to deal with, it is naturally equally important for this person to have the knowledge necessary to fulfil the request. To this end, retention of corporate knowledge by retaining as many former school staff as possible in equivalent roles post restructure is highly desirable. Moreover, prior to restructuring every effort should be made to carefully document prior procedures for the purpose of training new staff if required. Such efforts can be significantly hampered, however, when restructures are immediately preceded by voluntary early retirement or redundancy rounds.

Impact of research institutes

While there is often concern raised regarding the widening gap between undergraduate teaching and research activities of universities, the increasing relocation of research to within university research institutes does offer considerable short-term advantages during faculty restructures. Thus in the present case study, research only staff from the former School of Life Sciences who had relocated to IHBI, were relatively unaffected by the creation of disciplines. Research active teaching staff also benefitted by being able to use institute-based support staff, while faculty processes remained unclear. The relocation of research infrastructure to stand alone research institutes does however raise significant questions about the future role of academic units and even faculties themselves in research management. For example, in the present case study where the Discipline of Medical Sciences initially contained few research active staff and had no control over research infrastructure, it is questionable whether research outputs should have been included as key performance indicators for the group. Irrespective of what indicators are used for disciplines, significant complications can still arise when it comes to recruiting new academic staff if there is misalignment between the requirements of faculty-based academic managers and institution-based research managers. In short a partnership must be forged between academic managers with access to teaching income which pays academic staff salaries, and research managers who control access to research infrastructure. Such an arrangement was initiated in the present case study, but there was insufficient time to implement necessary measures prior to the second restructure.

Role of professional staff and distributed leadership

In the present case study, all but for a small contingent of professional staff (other than technical support staff) were both operationally and physically relocated to a centralised faculty pool and this practice has largely continued within the present faculty. The physical disappearance of most professional staff from within the same building as academic staff had a significant impact on the working environment, but most academic staff adjusted to the change in time and normal operations continued albeit for the occasional teething problem. While we have not examined faculty financial records for evidence of savings arising from this change it stands to reason that a shared arrangement of professional staff across multiple disciplines may well have translated to a significant reduction in operating costs. In the absence of hard evidence, however, we cannot assume that the centralisation of professional staff was ever intended to reduce their numbers.

In fact, centralisation may have improved the efficiency of faculty operations and freed up a number of professional staff to engage in new areas of strategic importance to the university. The relocation of professional staff to outside the traditional academic unit does however pose a challenge to academic-professional staff communication. To this end, we credit a significant component of the discipline's success to employment of a distributed leadership model. As predicted by Jones, *et al.* (2012), the distributed approach facilitated communication with professional staff and fostered a positive level of engagement by staff, both within as well as outside the discipline, including academic staff from other disciplines and professional staff providing technical support for laboratory classes. This broader community of academic practice was not only important for maintaining existing teaching efforts, but also facilitated the discipline's leading role in redesigning two undergraduate courses. In contrast, use of a more traditional top-down or centralised leadership model (i.e. using 'aggressive/defensive' leadership styles outlined in Figure 2), by another discipline over the same time period, caused significant friction both within and between disciplines and contributed to a number of staff members resigning or relocating to another faculty. The other discipline also failed to effectively engage as a group in curriculum reform, which posed a significant risk to the future financial viability of the academic unit.

Future of disciplines and discipline heads

The prevalence of disciplines within Australian universities (greater than 40 per cent) suggests that these new academic units are likely to be a feature of the national higher education sector for some time to come. Indeed, several recruitment advertisements have appeared over the last twelve months for positions of head of discipline or discipline leader at Australian universities. It is very likely that the duties and responsibilities of these roles will vary according to institution and so it will be interesting to see if a more generic interpretation evolves over the next few years. The University of Adelaide for example broadly defines the role of discipline head as a leadership position in a support role to a head of school (University of Adelaide, 2013). In the present case study, heads of discipline reported to a portfolio director, but given the number (five), size (approximately 20 academic staff) and diverse nature of disciplines within each portfolio (Figure. 1), the head of discipline was effectively required to function in a similar manner to a head of department or school. Responsibility without an appropriate level of authority is, however, a frustrating and ineffective way to manage academic units and does little to encourage retention of academic staff in management positions. Interestingly, similar conclusions have been drawn from a recent survey of staff employed in middle management positions ('programme leaders') within universities in the UK (Murphy & Curtis, 2013) with 'role confusion' being identified as a major issue of concern. Universities should therefore establish clear policies, position descriptions and appropriate remuneration packages in order to recruit, train and retain staff within these emerging types of academic management roles. Based upon the present analysis of leadership style using the Life Styles Inventory™ (LSI) survey tool (Human Synergistics) it is tempting to speculate that this tool might be useful for screening potential candidates for leadership roles including heads of disciplines. The primary purpose of this tool, however, is to aid in the development of managers by assisting reflective practice and thus should be used to coach rather than select leaders.

Conclusions

Academic disciplines have emerged as a significant management structure within Australian Universities and seem likely to remain so for the foreseeable future. This practice is especially evident within faculties of sciences, engineering and medicine, but is not restricted to these study areas. The former Discipline of Medical Sciences at QUT, based on a distributed leadership model, provides a positive model for future disciplines to follow. There is insufficient published literature at this time to conclude whether the Discipline of Medical Sciences can be regarded as a typical example, and similar levels of success might yet be achieved using a variety of alternative management models. Caution should be taken however against following a more centralised leadership model, as this can significantly hamper sufficient levels of engagement and collaboration with the broader university community required for institutional performance and growth.

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Associate Professor Damien Harkin is former head of the Discipline of Medical Sciences at the Queensland University of Technology (QUT), Brisbane, and currently serves as an associate professor within the School of Biomedical Sciences (Faculty of Health) at QUT. He is also currently appointed as a visiting senior scientist at the Queensland Eye Institute.

Associate Professor Annah Healy is employed in the QUT Chancellery Learning and Teaching Unit to develop, trial and implement a systemic and robust course design framework applicable to all QUT academic courses.

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