The development of lecturer research expertise: Towards a unifying model

Brian Hemmings and Doug Hill
Charles Sturt University, Wagga Wagga campus

The authors of this paper discuss selected literature pertaining to the development of research expertise in university lecturers. Subsequent to this discussion, the authors argue that a model is required to pull together the disparate parts of the literature. They propose that this unifying model draw on three key elements or facets: *selective affinity*, *maximal grip*, and *at the edge of chaos*. These facets are aligned with three broad dimensions of giftedness (namely functional, temporal and developmental) as described by Dai and Renzulli (2008) in the context of the development of gifted individuals. The authors conclude the paper by showing illustrations of the unifying model and noting implications for further investigation, theorising, and practice.

Introduction

Recently there has been a renewed interest in the debate about quality and quantity of research output and the factors which influence output of university lecturers (see, for example, Goodyear, 2006; Hemmings & Kay, 2007; Yates, 2005). At the same time, an intensification of the work of lecturers has made the decision to balance research, teaching, and service activities for many of these lecturers more difficult (Blackmore & Sachs, 2007). This is particularly critical in the case of early career academics who usually face weighty teaching loads (Lucas & Turner, 2007), undergo close surveillance by their senior colleagues (Baron, 2000), carry their own high expectations and those of others, their students for instance (Bellas & Toutkoushian, 1999), and may have restricted access to resources (Bazeley, 2003). These competing pressures make balancing research, teaching, and service a very perplexing task and, within the busyness of university work, leave little time for academics new to *academe* and even some with more experience, to make a considered decision about their own professional development. Furthermore, the recent overriding emphasis on the quality and impact of research (Bai, Millwater, & Hudson, 2008; Goodyear, 2006) has made the decision more complex. Increasingly, universities, or at least their managers, are being rewarded for research output, innovation, and application and, as a result, this 'reward' climate is placing a further strain on university lecturers.

While quality research is highly esteemed within the academic world, day-to-day satisfaction in teaching and service may be perceived by new lecturers with substantial teaching workloads as their (short-term) career priority and, hence, more important than (long-term) research output. Arguably, what is needed is a model which helps to interpret these multiple dimensions and constraints in a meaningful way. As a starting point, the authors of this paper have chosen to focus on the development of research expertise. Accordingly, their aim is to draw together the selected literature relating to the development of research expertise in university lecturers and to propose a unifying model which accounts for this development. Such a model has the potential to guide the

management of newly appointed lecturing staff during the transition of the junior staff from novice to expert. This management process is critical for senior university managers who have the task of creating a work environment which favours the productive use of talent along with the well-being and retention of staff.

Studies of the development of lecturer research expertise

The career development of professionals has been described by Dalton, Thompson, and Price (1977) in terms of a four-stage model. More recently, Laudel and Gläser (2008) have customised this model for academic researchers in the following terms.

1. An *apprentice* who learns research knowledge and skills under the guidance of expert researchers;
2. A *colleague* who is able to carry out and report research independently;
3. A *master researcher* who is also a mentor for neophyte researchers;
4. An *elite researcher* who influences the nature and direction of research endeavours in their community and field.

As documented by Laudel and Gläser (2008), one of the most significant developmental changes is the transition from a dependent apprentice to an autonomous colleague. This transition covers the range from a dependence on others to help generate research questions and design investigations to answer these questions, to a state where the researcher is able to freely analyse the data collected and report on that analysis to an appropriate audience. Achieving this state is a milestone in the career development of university lecturers and one which is both recognised and rewarded in terms of individual status and acceptance into the wider research community.

A study by Hemmings and Kay (2008) focusing on lecturer self-efficacy covers similar developmental issues. The investigation was based on survey data from lecturers employed at two large Australian universities with a useable sample of 357. A survey was used to obtain responses to questions framed around the core work of lecturers. Some of the survey data were subjected to factor analysis, resulting in the identification of four research factors, two teaching factors, and two service factors. The research factors were labelled as follows: 1) reporting and supervising research; 2) skills related to the conduct and management of research; 3) writing major works and reviewing articles/books; and 4) having a broad view of a research area.

A proportion of lecturers in their early years in *academe* gravitate strongly towards research, whereas some are more attracted to other areas of academic work, namely, teaching and service (see, for example, Bellas & Toutkoushian, 1999; Blackburn, Bieber, Lawrence, & Trautvetter, 1991; Debowski, 2006; Lucas & Turner, 2007). The research by Hemmings and Kay, mentioned above, identifies two groups of lecturer: those with refereed publications and those without. Subsequent analyses, contrasting these two groups, showed that those who had not made the shift to an independent researcher, at the time of the survey, lacked confidence in their ability to perform a set of tasks related to the

conduct and publication of research. Univariate tests revealed significant differences ($p<.001$) between the two groups for such tasks as reviewing literature for research projects, gathering data, analysing research results, delivering research findings at staff seminars, and attending research conferences. This finding is consistent with the results reported by Hemmings and Kay (2007) that demonstrated those who research and publish, compared with those who do not, have higher levels of confidence and are more likely to hold higher academic qualifications and be in more senior academic appointments.

Major and Dolly (2003) provide an account, based on interview data, of the development of lecturer research expertise in a North American tertiary institution. They highlighted the importance of context, organisational culture, support by mentors and other experts, previous and new training, and the opportunities to engage in research in a low threat environment. These findings reflect the perceived barriers faced by lecturers, particularly in an early career stage. Hemmings, Rushbrook, and Smith (2007), writing within an Australian context, recognised similar barriers if lecturers were wishing to conduct and publish research. The barriers they identified included workload, lack of support, and an under-developed research culture. Interestingly, the study considered a range of intrinsic and extrinsic personal factors and their interaction with gender. It was found that personal characteristics, opportunities, supports, issues relating to time and time management, and training influenced motivation to engage in research and subsequent publishing. For example, female lecturers were largely influenced by extrinsic rewards such as grant funding and the importance of being seen as a known publisher. Furthermore, female lecturers tended to give greater prominence to a work-life balance. On the other hand, males attributed more social significance to their work environment compared with their female counterparts. That is, being part of a vibrant research group was perceived as contributing to personal well-being.

Towards a unifying model

While the research literature pertaining to the development of expertise of researchers working within a university setting is relatively extensive, it is disparate and in need of a unifying model for career development. A model of this form would be expected to be consistent with contemporary accounts of human development and encompass the key factors found to influence researcher development that have been identified in extant research studies. This means that the model should have the following aspects.

1. Recognition of the importance of the context in which research expertise is developed, for example the affordances and constraints in the context of initial training and apprenticeship and associated opportunities.
2. Acknowledgment of the roles that nurturing and encouragement play in the emergence of a strong interest and growing competence in research, eg, mentoring and exposure to a research culture.
3. The highlighting of the dynamic nature of the development and deepening exploration of different contexts whereby new insights and skills provide a platform for further

growth in self-efficacy, achievement, and influence, eg, from presenting conference papers to reviewing journal articles.
4. Allowance for the impact of critical incidents, uncertainties, and chance situations along the way in the development and confirmation of mastery in the field that engender the capacity to engage fully in the research process over a sustained period.
5. Account made for the interaction of personal characteristics and growing expertise to the point where the individual is able to contemplate innovative ideas and to create new knowledge in the field.

Models of human development take into account *personal characteristics* such as gender, cognitive skill, and personality (see, for example, Graber, Brooks-Gunn, & Warren; Munakata, 2006: Shiner, 2005), *environmental contexts* in which development unfolds (see, for example, McLoyd, 1998; Powell, 2006; Shiraev & Levy, 2007), and *interactions* of personal characteristics with the environment (see, for example, Bronfenbrenner & Morris, 2006; Cairns, 2000; Rutter, 2002). Additionally, the proposers of the models seek to account for the dynamic nature of growth, whereby development begets further development (see, for example, Collins & Van Dulmen, 2006; Gariépy, 1996; Spencer & Schöner, 2003).

The authors of this paper reviewed a number of models which incorporate the key concepts described in the paragraph above. One model which addressed these concepts and aspects 1 to 5 noted above had been developed by Dai and Renzulli (2008) who proposed a model for the development of gifted and talented individuals. These authorities in the field of giftedness drew primarily on the work of Libbrecht (2004) to construct a model with three basic dimensions, namely functional, temporal, and developmental. The *functional dimension* "refers to the person-environment functional relations and the nature of an individual as an open, self-directed, adaptive system, constantly exchanging energy and information with its environment, capable of changing itself as well as its environment" (Dai & Renzulli, 2008, p.115). A *temporal dimension* is characterised by behaviours that have a time perspective, that is, a perspective or trajectory that recognises an evolution from a past state to a future state. Finally, a *developmental dimension* is contingent upon the individual interacting with, and understanding, his or her environment over time. Or, in other words, development incorporates qualitative changes which occur as a consequence of ongoing person-environment interactions.

Dai and Renzulli (2008) claim that the three dimensions are underpinned by five tenets or organising principles: flexible agency, differential development, self-organisation and temporal emergence, self-directedness, and balancing stability and instability. These principles emphasise the importance of individual creativity, self-regulation, different pathways to development, and emerging competence and complexity. According to Dai and Renzulli (2008), the development of gifted individuals can be explained in terms of three dynamic facets which are critical in determining the level achieved. Together these facets, namely, *selective affinity*, *maximal grip*, and *at the edge of chaos*, are central to the basic dimensions and provide a working account of the organising principles. Selective affinity refers to an individual's preference for participating in specific kinds of activity. The

preferences change as a result of experience, level of performance, feedback from self and others, and environmental fit. The second key facet, maximal grip, is concerned with adapting to and taking charge of particular actions, ideas, and attributes associated with growing mastery. It "includes seeking outer resources such as enlisting social and technical support as well as seeking opportunities and learning experiences to enhance competence and optimal development" (Dai & Renzulli, 2008, p.119). The third and final facet, at the edge of chaos, deals with the capacity to manage balancing competing tensions arising from the known and unknown, generating innovative ideas, as well as tolerating and resolving issues and dilemmas.

The mean IQ of persons completing a PhD is in the range normally associated with intellectual giftedness (Matarazzo, 1972). Most elite researchers have attained a PhD or the equivalent. Arguing by analogy, the Dai and Renzulli (2008) conceptualisation of the development of giftedness is appropriate for explaining the ongoing growth of research expertise in university lecturers. A test of this claim could include an examination of the extent to which the facets apply to university lecturers employed with a research classification.

To be credible, a unifying model would need to give guidance in the way the three facets of development may be influenced and predictive of the subsequent outcomes. To expand, a researcher is likely to need to have an abiding interest in a field and apply his or her research skills to that field in a sustained fashion (previously referred to as selective affinity). A developing university lecturer has to make a decision about how that interest and capability will be exploited. Commonly, lecturers in early career stages make a decision about whether, and to what extent, and in what manner, to direct their effort primarily towards teaching, research, service, or a combination of these activities under highly constrained conditions. This decision will be affected by the other two facets.

The second facet, maximal grip, influences development in a range of ways. For example, post-doctoral work in a well-regarded research team not only provides the individual with both expertise and confidence, but also directs his or her attention to research. Likewise, mentoring from an independent researcher and engaging in activities with a wider research community, will heighten the importance of, and proficiency in, research in the university context. The third facet, at the edge of chaos, is an overarching one in that intellectual rigour and critical reflection interact with success in research. This interaction may promote further engagement with complexity or deter the individual from cutting-edge or near cutting-edge research where such thinking may require long periods of incubation.

A depiction of the unifying model

A developmental cube as presented in Figure 1 is used to depict the model, such that the x-axis represents 'selective affinity', the y-axis 'at the edge of chaos', and the z-axis 'maximal grip'. These three axes represent the three facets described by Dai and Renzulli (2008). As noted earlier, these facets incorporate three dimensions: functional, temporal, and developmental. The model is represented as a cube so that development can be

described in terms of the three axes over time. This enables the depiction of contrasting trajectories as shown in Figure 2.

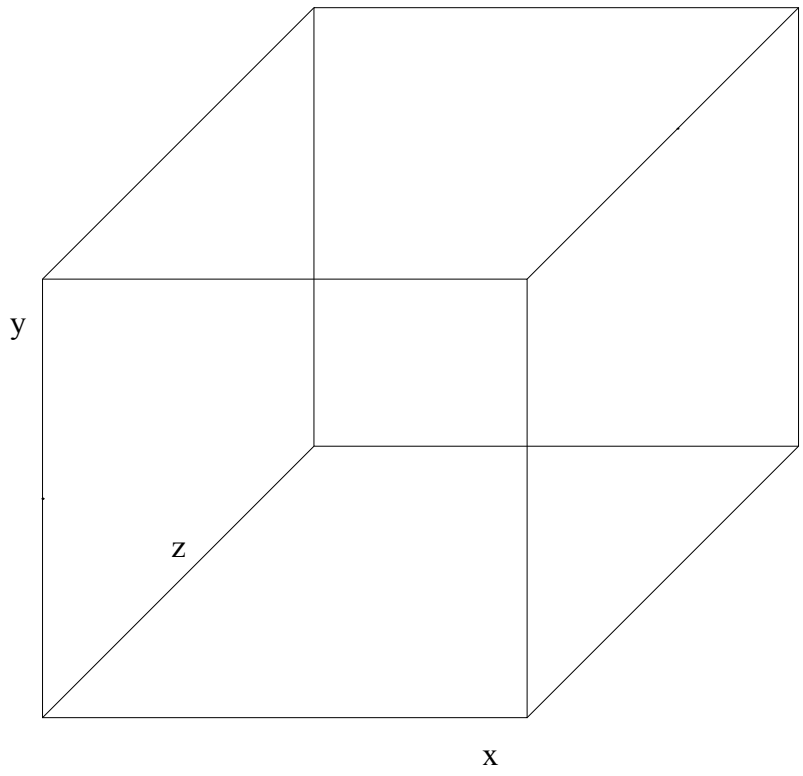

Figure 1: The proposed unified model of the development of lecturer research expertise

Figure 2 shows the hypothetical developmental trajectories for three lecturers over the same period of time. Within the cube, developmental growth is represented by the real length of the trajectory. Trajectory A corresponds to a 'gifted' researcher who develops evenly on all three facets to a high level. Trajectory B shows the development of a researcher with maximal grip increasing to a greater extent than on the other two facets. In reality, this individual is likely to conduct more conventional research and publish in journals of lower rank. Trajectory C is a relatively common pathway for a lecturer who does not develop as a researcher but maintains an interest in his or her field. Typically, this lecturer will draw on research findings in his or her teaching and engage in professional and service activities. From the reader's own experience, he or she could probably draw a number of other typical trajectories.

It needs to be noted that all three trajectories have been drawn with the same origin for purposes of simplicity. In reality, lecturers may differ considerably at the point of entry.

The actual entry point and ongoing trajectory, for any lecturer, is dependent on his or her initial training, early support and availability of developmental activities, opportunities and successes, and decisions made by others. The lecturer's personal circumstances and capacities intersect with these factors to determine the course of the trajectory. Such a trajectory would accord with the five tenets or organising principles described by Dai and Renzulli (2008).

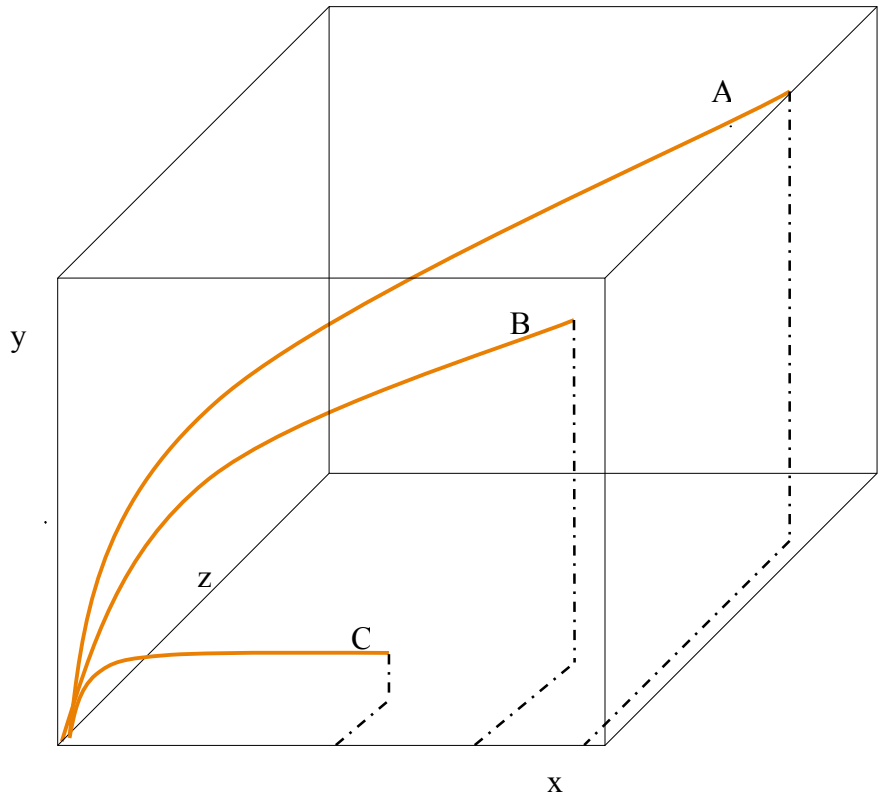

Figure 2: Examples of lecturer trajectories

Operationalising the model

In its current form, the unifying model is conceptual and not readily testable. However, it would be possible to take measures of the three facets and use these to predict the quality of research output once the facets of the model have been refined to the point where they can be operationally defined as independent variables. The dependent variable would be a measure of the quality of research output. Measures could be derived from ranking systems which rate journals in terms of prestige. There are many such rankings in the various fields of research endeavour and some of these rankings have emerged, in part, due to the recent emphasis on quality research.

Implications

The implications of the unifying model will be discussed in terms of further investigation, theorising, and practice. Future studies might involve a series of quantitative studies taking measures of the three facets and using both the quality and quantity of research publications as the dependent variables. It would be particularly interesting to conduct such research at various points in the career trajectory of university lecturers who engage in research. In operationalising the independent variables, it should be recognised that the facets of development are not abilities per se but rather preferences in the way in which the individual's abilities are used. It would also be important to investigate the relationship between research and the other two broad dimensions of university work, namely, teaching and service. Complementary qualitative studies could reveal the ways individuals interact with their respective university environments and tasks associated with research, teaching, and service. These studies would need to be undertaken in a range of disciplines to capture the variations in organisation, culture, and unique features of the disciplines.

From a theoretical perspective, the model needs not only to be descriptive, explanatory, and predictive, but also needs to incorporate critical factors that are related to the university environment. For example, selective affinity is concerned with maintaining interest in, and engagement with, the research process and the research field while executing other required tasks. The decision to devote time and energy to research is influenced by factors such as the research culture, peer group, expectations of supervisors about other tasks, advice from mentors, school and faculty priorities, and reward schemes. These factors have been identified by Hemmings et al. (2007). Factors such as these may be important in the model because the original conceptualisation by Dai and Renzulli (2008), on which the unifying model is based, was concerned primarily with the intellectual development of persons younger than university lecturers.

Another aspect of lecturer career development may need to be considered. According to LaRocco and Bruns (2006), significant numbers of professionals move into universities without the background normally associated with a research-based higher degree, and therefore have not experienced a research apprenticeship. In many Australian universities, such academics may enter at a relatively senior level, because of their professional and experiences and recognition, and not feel that research training is either necessary or appropriate.

As reported by Debowski (2006), little is known about the research leader or the elite researcher and the factors that contribute to their development. The paragraphs that follow seek to address the broader and practical issues of career development in researchers among university lecturers and the means by which university managers can institute programs to support and develop research expertise.

University managers need to recruit, develop, and retain lecturers with a high level of research activity. Watty, Bellamy, and Morley (2008) pointed out the importance of job satisfaction, being part of a community of scholars, and having relative autonomy and

flexibility in the way they work. These same researchers also highlighted that committed researchers give higher priority to research than their other work-related tasks. Similarly, committed teachers demonstrate a stronger affiliation to teaching than other tasks. University managers would benefit from a more thorough appreciation and understanding of the factors that influence such career decisions. The unifying model has the potential to address this matter.

Hugo (2005) considered the issue of recruitment, retention, and return of university lecturers in an environment characterised by an ageing work force and an increasing rate of staff attrition. He suggested a number of actions that address these staffing issues, including early recognition of new talent, incentives for 'high fliers', bringing back former research leaders, and better promotional opportunities for key researchers. The model, when fully explicated, could assist in planning such actions.

It can be inferred from the model that a range of enhancing strategies could be employed at the department, school or faculty level. These strategies include:

1. providing adequate time and opportunity to mull over, think through, and sound out ideas with other individual researchers and research groups;
2. giving systematic support through coaching and mentoring programs;
3. accessing research forums and encouraging attendance at research-oriented conferences;
4. tailoring research training to the needs of the individual researcher and thus ensuring a diversity of newer research techniques and methods are made available;
5. reducing the effect of outside forces that distract from research endeavours; and,
6. incorporating discussion of the model's elements and implications in performance management meetings and future career planning.

These enhancing strategies are important in an age in which knowledge generation and management are seen as the key functions of the modern university and staff members are free to change institutions. The senior managers of universities choose to concentrate research expertise in certain areas and, as a consequence, need to retain staff members and nurture their development. These actions will be especially critical as an ageing university work force is being replaced.

The model is particularly useful in directing attention to the need to assist lecturers to achieve an appropriate balance among research, teaching, and research. In addition, the model highlights the need for lecturers to be exposed to a set of developmental activities and meet the challenge of creating new knowledge that will enhance both their own status and that of their university.

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Dr Brian Hemmings is a Senior Lecturer in the School of Education, Charles Sturt University, Wagga Wagga. Email: bhemmings@csu.edu.au

Dr Doug Hill is a former Associate Professor in the School of Education, Charles Sturt University, Wagga Wagga. He is currently working part-time with CSU Training. Email: dm_pihill@bigpond.com