CHAPTER 8

REPOSITIONING ACADEMIC/FACULTY DEVELOPMENT OF UNIVERSITY TEACHERS

Adaptive Expertise, Pedagogic Frailty, and Exaptation

INTRODUCTION

Until relatively recently, the idea of systematic and formalized professional development for university teachers would have been unheard of. The accepted qualification for becoming a teacher at university was an expert-level knowledge of the content, demonstrated by possession of a degree, and preferably a PhD in an appropriate subject. However, in an evolving university context that has developed from an elite system to become a mass market system in the past few decades, that view is no longer fit for purpose. It is recognized that a PhD is not a teaching qualification, and many of us will remember from our own undergraduate days, academics that were very clever, but apparently unable to connect with their student audience or to adequately explain the subject.

Academic professional development was introduced to induct new entrants to the profession into the discourse of teaching (e.g. Gosling, 2009). Typically this was through generic courses that took participants through the major concepts of higher education theory (Kandlbinder & Peseta, 2009). This generally included ideas considered core to current practice in university teaching including reflective practice (Schön, 1983), constructive alignment (Biggs, 1996), and deep and surface learning (Marton & Säljö, 1976). However, academic development programmes have not always made appropriate connections with participants, sometimes failing to link with their subject knowledge and research orientation of academics on one hand, whilst academics, expecting to receive 'tips for teachers', seemed to fail to grasp the relevance of anything beyond their immediate practical needs in the class room on the other hand (e.g. Cameron, 2003). The 'scholarship of teaching', appeared as little more than an aspiration for many, and has therefore been a 'hard sell' in a number of instances (Boshier, 2009). Academic development has evolved since its introduction, becoming increasingly scholarly, professional and discipline-sensitive over the years (Gibbs, 2013), with a number of identifiable factors being shown to elicit positive responses from participants (Steinert et al., 2006).

Generic workshops that failed to connect with the academic audience were likely to result in surface learning about teaching (Rowland, 2001) where academic engagement with the programme may have been seen as non-agentic and this could

reinforce the naive notion that teaching was a purely practical activity that did not require a scholarly approach. Support for academic development among senior academics was often even harder to obtain. Many long-serving teachers (many, but not all, of which are excellent classroom practitioners) tend to become routinized experts when it comes to teaching, '*learning merely to perform their teaching skills faster and more accurately, without constructing or enriching their conceptual knowledge*' (Crawford et al., 2005: 5). Encouraged by an increasingly consumerist higher education agenda, these colleagues typically value efficiency over innovation in order to release more time for the high stakes activities of research that offer greater reward and prestige (Young, 2006; Cretchley et al., 2014). Such a routinized view of teaching may achieve a level of success within a stable university environment. However, universities have undergone considerable change in the past thirty to forty years (a situation that shows no sign of settling down), and in such an unstable environment there is a danger that routines that once worked well eventually become obsolete. Established routines of traditional university teaching have therefore been challenged, to move away from the '*stand-and-deliver lectures by god-Professors that would make Friere weep with despair*' (Hay, 2015: 1), to more creative and engaging forms of teaching.

ADAPTIVE EXPERTISE

Bohle Carbonell et al. (2014: 26) have commented on how '*The frequent changes in the current work environment driven by task and knowledge volatility calls for experts who possess the required domain expertise and can quickly overcome changes. Such experts are known as possessing adaptive expertise*'. Whilst it clearly makes sense to have experts teaching within universities, some attributes of expertise can create problems within the teaching arena. Many experts find it difficult to remember the novice state of mind to pitch their teaching at the appropriate level (Fontaine, 2002), and process information and solve problems so quickly that their actions are not visible to students who are trying to emulate their expertise. Gauder and Jenkins (2012) have found that when undergraduates visualize a problem using concept maps, it can offer insights into how students view information sources and connections in ways that experts do not see. Access to these perspectives can be a useful route into teacher-student dialogue.

Academics tend to separate teaching and research in their minds so that the expert thinking that is evident in their research is not always seen as part of the teaching discourse (Kinchin, Hatzipanagos, & Turner, 2009). With disciplinary experts not always applying their notions of personal learning through their research to their students learning in the classroom, it can be difficult for students to develop the skill of thinking in the same ways that experts do (Sternberg, 2003). In order for novice university teachers to become adaptive experts it is clear that '*teacher educators [academic developers] must learn how to leverage discourse to promote development of adaptive teaching expertise*' (Soslau, 2012: 768), so that we may

at least help guide students to '*learn like experts*' (Klein, 1998: 104). We must also acknowledge this will take time and effort.

Salmon and Kelly (2015) offer a very clear explanation of how adaptive expertise can be developed among teachers by using concept mapping. However, active engagement in the mapping process is essential for it to have any value. Simply producing a map as a one-off exercise would be akin to surface learning about teaching (Rowland, 2001). As Salmon and Kelly (2015: 59) point out, "*active monitoring, reflection and revision of the concept map in relation to practice, is an essential component*." These map revisions are aimed at increasing the conceptual coherence of the map, developing from simple spokes and chains towards more complex networks that exhibit greater explanatory power (Kinchin, Hay, & Adams, 2000). Salmon and Kelly (2015: 134) consider '*the generative nature of the network structure [to be] one of the characteristics that aligns with the knowledge bases and thinking of adaptive experts*.'

PEDAGOGIC FRAILTY

To add conceptual coherence to reflections on teaching and to maintain a simultaneous focus on key elements of the teaching ecology, Kinchin (2015) has introduced the concept of pedagogic frailty. There are concepts from other disciplines that can sometimes be helpful in making useful analogies in the field of educational research – to help illustrate and develop emerging ideas within education. Just such a concept that has gained recognition in the medical care of the elderly in recent years is that of 'frailty' (e.g. Heuberger, 2011; Xue, 2011; Zaslavsky et al., 2012). There is currently no internationally agreed definition for this concept, but a consensus view is emerging in which frailty is considered to develop as a consequence of a decline in a range of factors which collectively results in an increased vulnerability to sudden adverse actions triggered by relatively minor stressor events (Clegg & Young, 2011). As an analogy, some of the characteristics and definitions of clinical frailty that have been proposed in the literature have powerful resonance with difficulties that academics experience when trying to grapple with the scholarship of teaching – such as inability to integrate responses to change in the face of stress (Rockwood et al., 1994); loss of adaptive capacity due to loss of complexity (Lipsitz, 2002); 'wear and tear' that results over time by efforts to adapt to change and persistent stressors (Seeman et al., 2002). So in the context of higher education, one might observe a concept of *pedagogic frailty* when hassled colleagues find the cumulative pressures of academia (persistent stressors) eventually inhibit their capacity to change and respond to an evolving teaching environment, leading them to adopt what they consider a 'safe' and sustainable pedagogic approach (Canning, 2007). This can result in the convergence of teaching around traditional practices that seem contradict contemporary research findings. There may be a combination of personal and institutional factors that may lead towards pedagogic frailty. This is summarised in Figure 41, showing degeneration in the 'components level' from a rich network to

a relatively impoverished chain structure. Simultaneously, behavioural levels move from a rich and varied repertoire to a more stable and less innovative regime that corresponds to a transition from 'scholarly' to 'frail'. That is not to say that the 'frail' profile cannot be efficient, but increased efficiency (i.e. routinization) comes at the expense of reduced variety and reduced adaptive expertise.

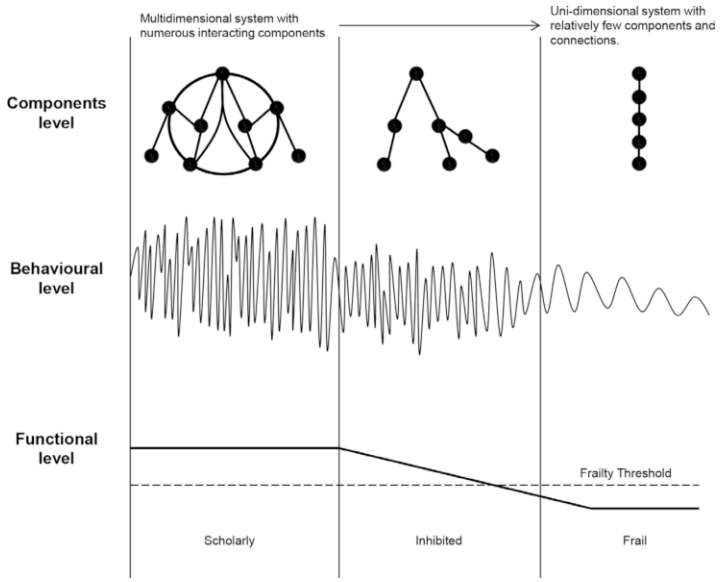

Figure 41. Dimensions of frailty (an interpretation developed from Lipsitz, 2002; Sleimen-Malkoun et al., 2014)

When there is convergence on a traditional view of teaching in which the transmission of content is seen to dominate, a linear view of teaching persists and makes the evolution of practice more difficult. As Salmon and Kelly (2015: 128) point out, "*a chain structure presents more constraints than opportunities for new thinking*". Linear models of teaching do not invite reflective practice and leave no room for academic/faculty development (Kinchin, 2011). In addition, the adoption of innovative technologies into such a restrictive model means that any transformative potential is often corrupted to perform utilitarian tasks, maintaining the *status quo* of non-learning (Kinchin, 2012), described as the domestication of technology (Salomon, 2002). Within such an environment, it is not difficult to see why colleagues may find the idea of the 'scholarship of teaching' to feel like an unhelpful distraction from their daily tasks (e.g. Boshier, 2009).

New academics who may have their horizons broadened through introduction to a variety of research into teaching and learning (e.g. Kandlbinder & Peseta, 2009) may succumb to the conventional wisdom of the dominant group.

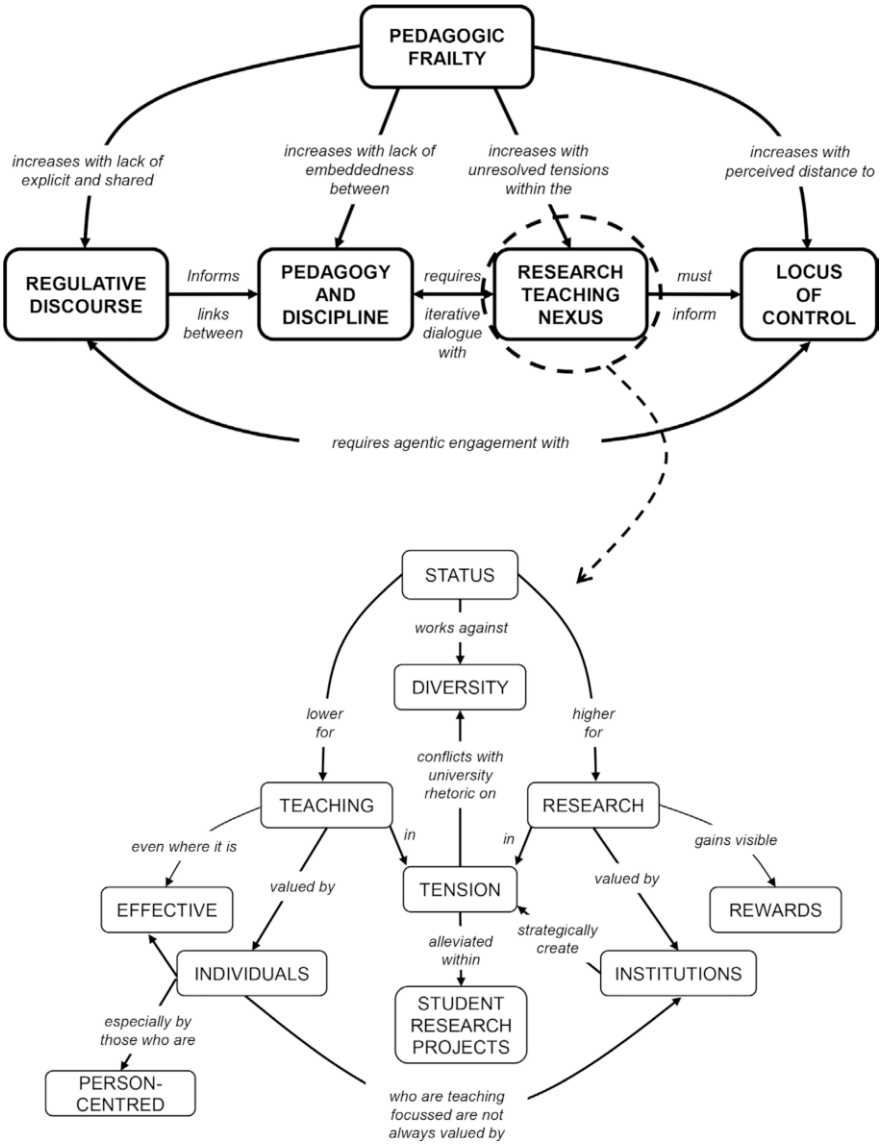

Figure 42. Dimensions of pedagogic frailty with (inset below) one academic's view of the elements within the research-teaching nexus dimension. (After Kinchin et al., 2016)

Where this 'wisdom' is seen as counter-productive (supressing innovation and change), it has been referred using the colourful acronym, COWDUNG by Waddington (1977). This may result in the erosion of new academics' emerging

dynamic and progressive teaching frameworks by the stresses of the job and the indifference (or active negativity) of jaded senior colleagues. This allows academics to settle into a comfortable cycle of non-learning (Kinchin, Lygo-Baker, & Hay, 2008), with the aim of giving them more time to focus on their research activities. In turn, this leaves the institution open to a state of pedagogic frailty. This frailty will result in institutions having a limited repertoire of responses to demands of the teaching and learning environment, such as the impotence of universities to address students' on-going dissatisfaction with assessment feedback practices (Evans, 2013). The institutional response to student complaints about the quality of feedback has been typically 'just do more and do it faster', as if increasing the dosage of an inappropriate medicine will eventually become a cure for the underlying ailment.

The overall model proposed for pedagogic frailty (see Figure 42) summarizes connections between the key dimensions: the lack of an explicit regulative discourse to promote a shared values literacy; a perceived separation of pedagogy and discipline; the tension caused by the asymmetry between teaching and research; and the distance between teaching practice and the locus of control within the university (Kinchin et al., 2016). We need to be clear that pedagogic frailty is not considered to be an internal quality or capacity of an individual. Indeed, such a personal characterization would be unhelpful in promoting openness to support academic development. Rather, pedagogic frailty results from the quality and degree of interaction within and between aspects of the professional environment (Kinchin et al., 2016). When considering the impact of frailty, it may be viewed at different levels of resolution, from the individual, to the departmental and the institutional. In extreme cases it will lead to the maintenance of conservative methods of teaching (e.g. Bailey, 2014) even where these can be seen to be less than ideal. The organisation of elements within the major dimensions is a crucial factor in promoting adaptive expertise within the overall profile, where chains will be found to be inhibiting interactions and promoting frailty. The organisation of the structures within the four main dimensions can be explored through academics' concept maps that reveal much about colleagues' perceptions of teaching.

SEPARATION OF INSTITUTIONAL AND INDIVIDUAL GOALS

Academic life is generally full of tensions and compromises. The author of the map in Figure 43 has emphasised the importance of a number of oppositional binaries, with a focus on the tensions between the institution and the individual, and the tension between teaching and research. The potential clash between the values system expressed by an institution (for example through investment in staff development) is seen to be something that is not always reflected in the indicators of a successful career in academia (seen to be measured through the traditional markers of publication and funding). The question is then raised whether the intellectual curiosity that might encourage someone to embark upon a career in academia remains an asset in career development, or if it is in tension with the expectations of the university? The outputs

generated through the production of an MA dissertation (as indicated in the map) might be seen as one way of straddling this apparent divide. This map emphasises the difficult choices that academics have to make when considering whether or not to make an investment in time to studying for an MA in Higher Education as a route for their professional development; taking their career more towards the teaching perspective than the research perspective, where an additional publication or grant application may be seen as more valuable.

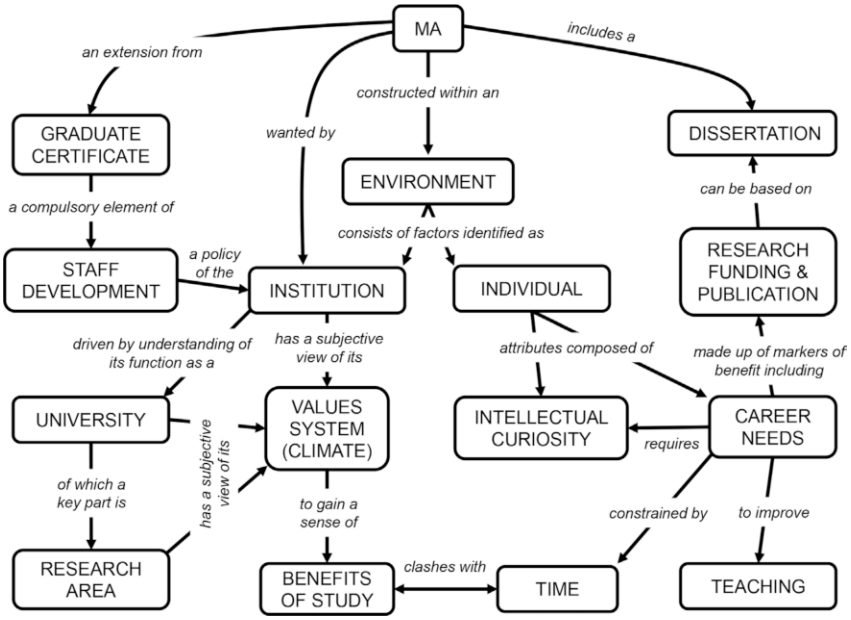

Figure 43. Map showing an academic's personal perspective on the conflict between institutional and individual goals (After Kinchin et al., 2015)

There can also be a tension between an academic's aspirational view of their discipline and the teaching as practiced within the practical constraints of a university. The two main clusters of concepts within Figure 44 (the section to the left starting with 'pedagogy' and the chain to the right starting with 'professionalism'), indicate a structural divide that suggests a conceptual component and a procedural component that also reflects a difference in semantic gravity. The pedagogy section that considers 'fundamental principles' indicates a low semantic gravity (*sensu* Maton, 2014), whilst the professionalism chain indicates a high semantic gravity (a close link to practice). The challenge for teacher development programmes is to build a bridge between these opposing elements that provides an indicator of expertise (Kinchin & Cabot, 2010).

It is important to note that the amount of space afforded to a certain idea within a concept map may not always indicate the degree of significance to the author. It is possible that the author is unsure of the vocabulary to express their thoughts about a certain point, and this is why it is always preferable to discuss the meaning of the map with the author to further probe their understanding. In the case of Figure 44, the small cycle at the top left of the map (between pedagogy and discipline) is of great significance to the author of this map who explained that for them the pedagogy of the discipline needed to be embedded in the discipline rather than being perceived as an external construct that was imposed on the discipline from the outside. Indeed, the links between pedagogy and discipline provoked more discussion than the rest of the map.

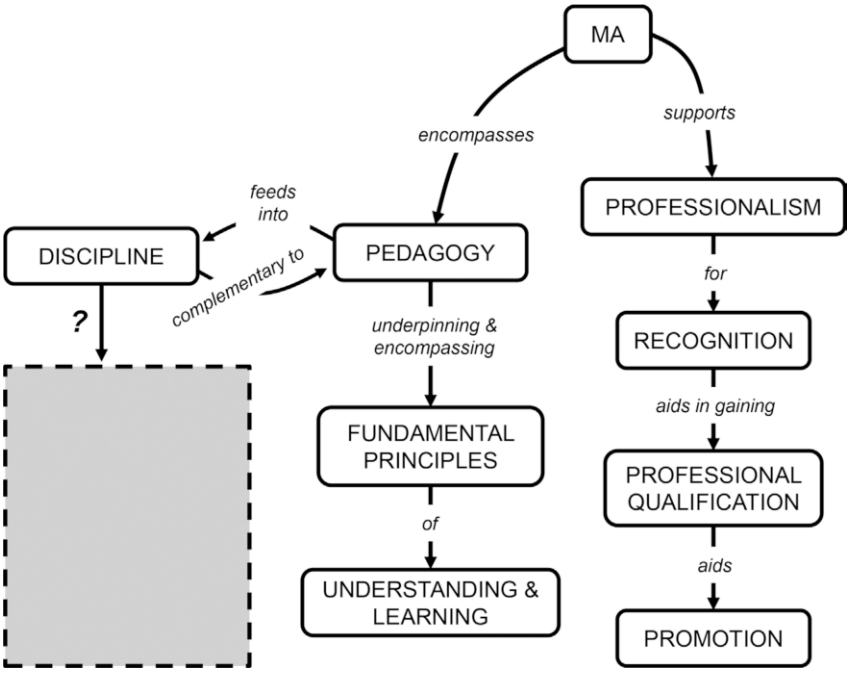

Figure 44. Map showing a n academic's perceptions of the link between discipline and pedagogy within an MA in Higher Education. (After Kinchin et al., 2015). Here the structure of the discipline (bottom left) has been left blank as an invitation to the reader to insert their own disciplinary knowledge structure

The map author saw this as a major obstacle in getting academics to see teaching as an integral part of their role within the university, rather than something that is in conflict with their role as researchers. This view resonates strongly with the position outlined by DiCarlo (2006) when he stated that '*biology should be taught*

as science is practised', and also with the study by Aydeniz and Hodge (2011) who found that the identities of a professor as a teacher or a disciplinary expert can be in tension with structural elements of the workplace that discourage the enactment of teacher identity. A similar phenomenon has been noted in the Arts where tutors report experiences of '*being in two camps with tension and separation between them*' (Shreeve, 2011: 89). Therefore, whilst the dynamic tension illustrated between 'pedagogy' and 'discipline' is framed in a very positive and mutually beneficial manner in Figure 44 (e.g. 'complementary to', 'feeds into'), if this relationship becomes more negative, it may put the enactment of the whole pedagogy network (on the left hand side of the map) under threat.

The culture of the workplace could be seen to favour 'discipline' in a manner that is detrimental to the development of reflection on the fundamentals and principles that are seen to underpin learning, with research productivity perceived to be of higher value than teaching productivity (as described by Young, 2006; reiterated recently by Alpay & Verschoor, 2014). It is exactly this sort of tension that has been seen to drive institutions towards reliance on 'non-learning outcomes' (*sensu* Kinchin, Lygo-Baker, & Hay, 2008). Procedural foci of non-learning (such as number of hours spent teaching or average results achieved by students) are easy to quantify and measure for accountability and management purposes and so may be preferred to the less tangible indicators of meaningful learning (such as the quality of student understanding or the reciprocal benefits between teaching and research). Novice university teachers have been shown to view teaching and research within the same discipline to be epistemologically separate (Kinchin et al., 2009), with conceptions of their own learning through research activity to be dominated by the discourse of cumulative learning, whilst that of the students under their guidance being dominated by the discourse of segmented learning – memorization and rote learning through repetition. Unless this issue is addressed, and the pedagogy of the discipline is recognized as being a fundamental *part of the discipline* (as described by DiCarlo, 2006), the structural separation of teaching and research is likely to persist. The author of the map in Figure 44 appears to be suggesting that if an academic is not an expert in the pedagogy of his/her discipline, they are not expert in the discipline.

Whilst academics might be able to articulate the relationship between teaching and research, or between pedagogy and discipline, it is clear that students often find the relationships between the activities of a university difficult to untangle. In an undergraduate research project that was designed to reveal research-teaching links from the student perspective (Kandiko & Kinchin, 2013), it was evident that in the absence of any sort of institutional pedagogic framework, the students uncovered a whole spectrum of academics' beliefs and activities. Cleary (2013: 19) makes the observation that universities tend to be '*self-proclaimed research-led teaching centres*', with no real way of evaluating the veracity of the claim, or even what the claim means. Whilst some academics appear to be using their students in a one-way relationship '*My PhD students are making my research … they are generating all of*

my data.' (Cleary, 2013: 25), others see it as an increasingly reciprocal arrangement as students move from undergraduate to postgraduate studies '*I collaborate with students ... they have more part to play within my research and I in theirs*' (Hall, 2013: 85); whilst others see a clear relationship between their teaching and research at all levels: '*I learn through teaching… [it] is actually quite important to me in terms of my own research*' (Abrahamsson, 2013: 94).

EXAPTATION

Concept map-mediated reflections on teaching can highlight concepts from the practitioner's own discipline that may confer a degree of pre-adaptation [or to use a more widely accepted term, exaptation] towards pedagogic change. The term exaptation was originally coined by Gould and Vrba (1982). It is used to describe instances in evolutionary biology where useful attributes '*did not arise as an adaptation for their present role, but were subsequently co-opted for their current function*' (Gould, 1991: 43). The classic example from biology is often considered to be the evolution of feathers in birds. Their original function is assumed to be for thermal insulation, with flight only evolving later, after the characteristic had been acquired. In such exaptive instances, function follows form, rather than form following function as is normally observed in adaptive evolution. The concept of exaptation has been successfully translated into social systems (e.g. Larson et al., 2013; Bonifati, 2015) and in particular to the ways in which technologies have been co-opted for uses that were not originally intended. Garud et al. (2016) consider the human capability of *inducing exaptation* as a distinction from biological evolution, as humans have the power to attribute new functionalities to elements under their control. Concept map-mediated reflections may offer a mechanism to '*sensitize us to exaptive possibilities, which in turn enhance the possibilities of capitalizing on their occurrences*' (Garud et al., 2016: 19). The dialogic concept mapping approach to visualising the elements of pedagogic frailty highlights the connections between facets of the academic role and increases the likelihood of occurrence of exaptive events. Hence, the practitioner is able to re-purpose disciplinary knowledge and apply it to social systems so that concepts may take on a new function in the field of pedagogy.

This has been observed in a number of instances where reflection upon the structure and content of a concept map can sensitize the observer to potential for exaptation. The re-purposing (or exapting) of disciplinary knowledge to forge active links with the pedagogic frailty model may offer a general route into the professional development of university teachers. The framing of narrative reflection with concept mapping is likely to draw upon the academic's personal knowledge of their discipline and may highlight disciplinary concepts that may be exapted to enhance and frame professional development. For example, the profusion of 'ecological models' in educational research (e.g. Kinchin, 2000; Keiny, 2002; Biesta & Tedder, 2006; Stelma, 2011; Priestley et al., 2015) demonstrates that in some instances,

exaptation is occurring widely at the disciplinary level. Framing reflective narrative with concept maps could help provide the benefits of exaptation for professional development at the level of the individual teacher (Kinchin & Francis, 2016).

RESILIENCE

One of the concepts that has emerged repeatedly from the visualisation of pedagogic frailty is 'resilience' (Kinchin et al., 2016; Kinchin & Francis, 2016). This has arisen from disparate disciplinary origins and has been interpreted in personal ways that have owed provenance to the mappers' home disciplines. An academic from psychology summarised her view of pedagogic frailty in the map given in Figure 45, and went on to discuss her personal perspective (Kinchin et al., 2016: 18):

> If academics continually feel that they have no control over events (such as institutional change), they are likely to experience learned helplessness (Seligman, 1975). It is resilience that supports individuals in remaining optimistic, rather than helpless, as an outcome of events (Seligman, 2011). Resilience, defined as "The capacity of individuals to cope successfully with significant change, adversity or risk" (Lee & Cranford, 2008, p. 213), matters because the same event can be reacted to very differently amongst individuals. Small issues can be catastrophic for some, whereas others thrive on an intensely challenging environment (Fletcher & Sarkar, 2013). Resilience is important beyond our own wellbeing. It also becomes an important aspect of the learning environment, that we model (or fail to model) to students. It is not simply the case that if academics are less resilient, students suffer. Crucially if academics are less resilient, they are not supporting students in positively developing resilience for their future careers.

The academic from geography who produced the map in Figure 46 reflected:

> Resilience of the department depends on redundancy of expertise and role in particular. My disciplinary background in ecology gives me a predilection to examine a university department through the lens of system resilience, seeing the department as the functional unit rather than individual academics.

Within the geographer's map of pedagogic frailty (Figure 46), the concept of resilience is central and highly connected to other key concepts such as sustainability, change, integration, ability, diversity and redundancy of expertise. The interactions between resilience and other concepts therefore appears very important to this colleague's overall conception of frailty. As stated by Mansfield et al. (2012: 361), it is not helpful to simply list attributes of teacher resilience and expect academics to be able to construct an appreciation of their situation from a selection of disconnected elements, as '*on their own, they do not account for resilience as a dynamic process of interactions*.' Pedagogic frailty here provides a higher order framework that

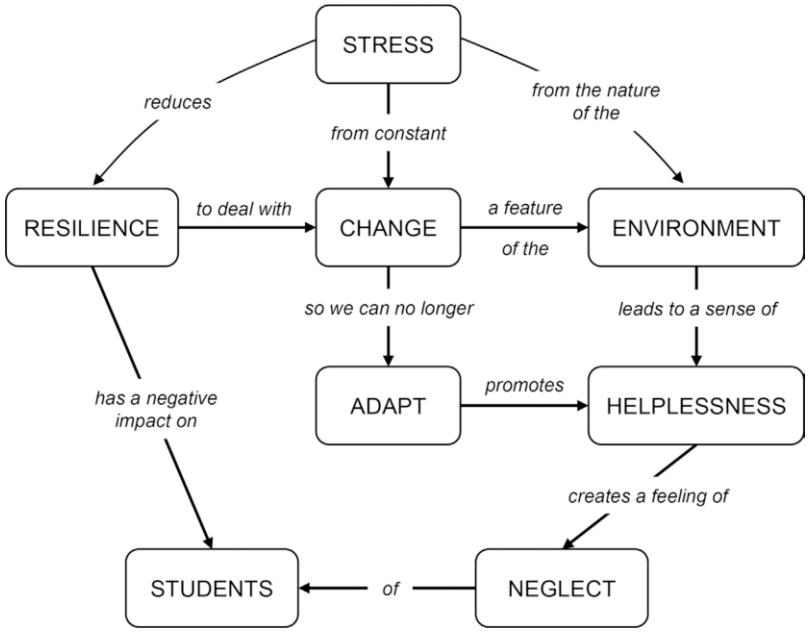

Figure 45. One academic's view of pedagogic frailty from the perspective of psychology (After Kinchin et al., 2016)

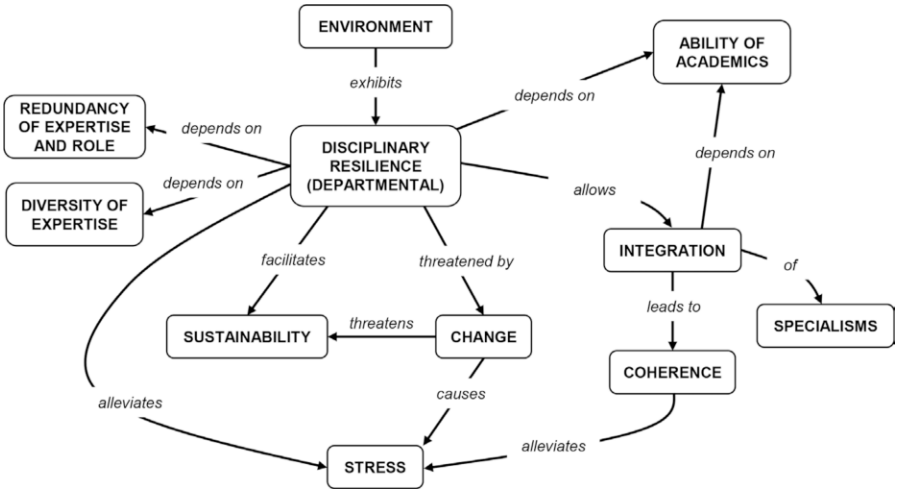

Figure 46. One academic's view of pedagogic frailty from the perspective of geography (After Kinchin & Francis, 2016)

offers the '*capacity to show the overarching and overlapping dimensions of teacher resilience*'. We can see in Figure 46 that the interactions are explicit in the mind of the academic.

Drawing from the map author's home discipline of ecology, we can draw some analogies with the concept of resilience within higher education. In their consideration of the importance of ecological resilience, Mumby et al. (2014: 22) state:

> Ecosystem management is fundamentally charged with maintaining desirable levels of ecosystem function in a cost effective and socially responsible manner. The ability of an ecosystem to function depends on its state and the processes that support it.

We can see here that classroom management could be substituted in this text for ecosystem management to confirm the analogy. By selecting concepts that facilitate analogy with their home disciplines (e.g. resilience), academics can strengthened their links with the pedagogic frailty model and allows them to engage in a level of reflection that would be difficult if it required acquisition of alien (educational) jargon. The concept map-mediated interview provides the prompt and helps in the deconstruction that then supports reflection to help colleagues to articulate their understanding. The ability to articulate skills in teaching is important for senior teaching colleagues who may be charged with mentoring and supporting junior colleagues through their early years of teaching:

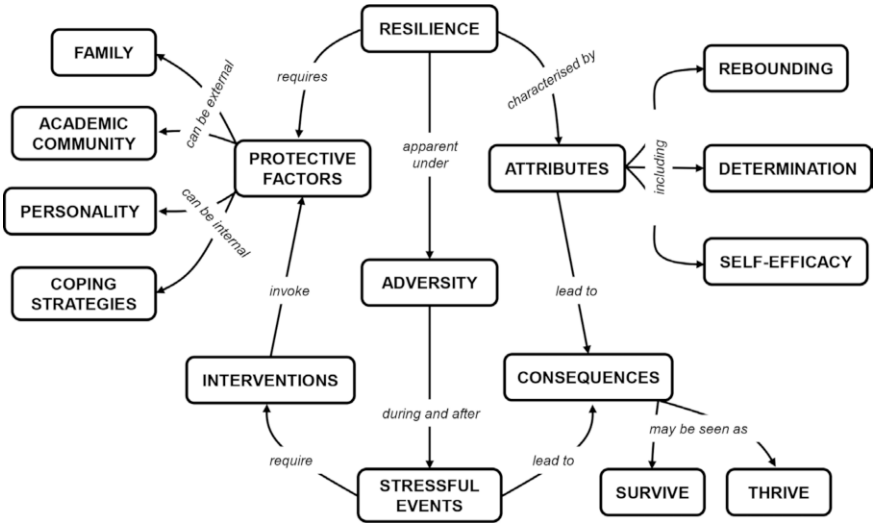

Figure 47. A generic concept map of 'resilience' (Simplified and redrawn from Garcia-Dia et al., 2013)

> teachers can express a generalised, generic concept of resilience in their own words but it takes prompting, reflection, and deconstruction before they can identify the explicit skills that they themselves possess. Nevertheless, they display tacit knowledge as they talk about their resilience where tacit knowledge is taken to mean an ability to perform skills without being able to explicitly articulate them. (Vance et al., 2015: 5)

Accessing personal narratives has been found to be of value in developing supportive relationships within an academic community as a step towards building teacher resilience (e.g. McDermid et al., 2016). Whilst the production of personal and context-specific concept maps to act as frames may be the optimum way of releasing powerful personal knowledge, the use of a generic concept map as a starting point to highlight the dynamic nature of the interactions between the concepts involved may also be helpful in initiation dialogue. Figure 47 is a generic concept map of the concept of resilience, highlighting links between some of the protective factors and attributes involved.

IN CONCLUSION

Ecological perspectives on educational change (Keiny, 2002), teacher agency (Priestley et al., 2015) and even the commentary on departmental resilience (Figure 46) all suggest that a focus on individual teacher excellence may be counter-productive in attempting to raise the overall quality of teaching experienced by students (Madriaga & Morley, 2016). A focus on isolated individuals does little to generate a shared values literacy (*sensu* Barnes, 2014: 179) that would '*result in a shared direction for resilient behaviour*' that is a key factor in the avoidance of teacher burnout (Howard & Johnson, 2004) and pedagogic frailty (Kinchin et al., 2016).

The final factor that needs to be mentioned here is the intention of the learner, whether we are considering the development of the expert student or the development of the teachers who will mentor the emergence of student expertise. Expertise does not typically emerge by accident. Without the explicit intention to learn and the acceptance that it will take time and effort to negotiate a number of threshold transitions in teaching and learning (Rattray, 2016), then the *status quo* of non-learning is likely to persist.

Consideration of pedagogic frailty, adaptive expertise and the process of exaptation of disciplinary concepts to support teacher development may help to reposition academic/faculty development. These concepts will help to make teacher development more learner-centred and discipline-sensitive. The avoidance of pedagogic frailty and the development of teachers' adaptive expertise (the structures of which are both revealed by concept mapping), are likely to foster the higher order teacher-student dialogues that facilitate engagement with the students' evolving knowledge structures. This offers a mechanism for teachers to support the manipulation of students' knowledge structures and the development of the expert student.

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