This is the published version:


Available from Deakin Research Online:

http://hdl.handle.net/10536/DRO/DU:30064483

Reproduced with the kind permission of the copyright owner

Copyright : 2014, Sun Press
INTRODUCTION

This chapter considers the tension between candidates being ‘disciplined in the discipline of the discipline’ and producing significant original knowledge to earn their doctorate. That is, learning about the disciplinary boundaries within which their doctorates are conducted, and learning how to ‘push’ those boundaries with sufficient originality in order to be ‘doctored’. For the purposes of this chapter, ‘doctoral work’ embraces all those forms of work and their workers that contribute to doctoral process. Supervisors (advisers) and candidates (students) are the obvious workers, but then there are those whose work it is to support doctoral work (see Edwards & Mackey 2012); in particular, administrators, counsellors, postgraduate students’ associations, and those ‘scholarly friends’ the librarians (Macauley & Reynolds 2012).

BOUNDARIES AND DOCTORAL BOUNDARIES

We tend to think of boundaries as ‘natural’ physical geographic entities, but really all boundaries are socially constructed. Physical features, such as rivers and mountains, become political, cultural and geographic boundaries when we interpret and name them as such. The Limpopo River became part of the boundary between Botswana and South Africa when powerful interests decided such; it was not ‘naturally’ a boundary between two ‘natural’ entities: Botswana and South Africa. In other circumstances where the environment does not provide a notable marker for a boundary between one territory and another, people in power construct physical boundaries – such as, walls, fences – where they want the territory to be bounded. Notable examples are the (now demolished) Berlin Wall, the gated barriers between some Catholic and Protestant communities in Belfast, and the walls separating Israeli
and Palestinian territories. Boundaries are surveyed, mapped and demarcated to formalise and communicate them to others, and to defend them when contested. Sometimes, certainly during earlier times of manual warfare, physical boundaries possessed inherent defensive characteristics – see Minard’s graphical cartography of the losses to the French army during the Russian campaign with each river crossing (http://en.wikipedia.org/wiki/File:Minard.png).

In some respects, disciplinary boundaries are more obviously socially constructed in the sense that knowledge, even reality itself, is socially constructed (Berger & Luckmann 1967). Some may believe, however, that there are ‘natural’ differences between one discipline and another (mathematics and literature); others, such as Dawkins (2006), argue that in some disciplines (theology) there is no such thing and they should not exist in the academy. So, rather like the geo-political world’s boundaries, there can be some marked distinctions between disciplines and some contests about them.

Universities – and the academy more broadly – demarcate disciplinary boundaries with physical and institutional features (such as buildings, departments and journals). There is often defence of these boundaries, too, over matters such as their names, locations, facilities and budgets. Disciplinary boundaries are potentially more dynamic than geographic boundaries because the ‘intellectual landscape’ has to be learned by each rising generation of its scholars and teachers. The scholars’ quests for new knowledge provides a dynamic imperative to each discipline so that it is reshaped and reformed by new knowledge and ideas, some of which revise and reconstruct the past. Sometimes, as Kuhn (1970) profoundly argued from the early 1960s, disciplines undergo radical revision in the form of ‘scientific revolutions’ or ‘paradigm shifts’ as successive ‘anomalies’ erode the foundational epistemology and methodology of the discipline. He illustrated that scientific disciplines operated with their own paradigmatic worldview that ruled the way knowledge was understood (theorised) and produced (empirically researched) in the discipline. He saw disciplinary histories as ‘peaceful interludes’ interrupted by ‘intellectually violent’ revolutions where one worldview is displaced by what becomes the new theoretical and methodological paradigm constituting. Later it will be argued that new members of the discipline, such as doctoral graduates, may be seen as likely to produce some of the anomalies that lead to the revolution or shift. Kuhn (1970:12) argued that “successive transition from one paradigm to another via revolution is the usual developmental pattern in science”. In this sense, doctoral candidates may be essential to the ‘usual developmental pattern’ in any discipline.
Mulkay (1970) drew on Kuhn’s work cited above and that of Merton (1970) in the 1930s on science and technology in 17th century England. He argued that there was a normative view of science that sees each discipline as constituted by its own rules, values and resources. Disciplines are guarded by ‘gatekeepers’, that is, those with powerful positions in the discipline, such as professors and journal editors. The gatekeepers guard the ‘gates’ of a discipline to admit only those people (for example, doctoral candidates), ideas and knowledge that conform to the discipline’s interests. Mulkay argued for a broader cultural interpretation of science that took account of the social and political influences shaping its disciplines. In terms of this chapter, therefore, the disciplinary boundaries and what is bounded therein are dynamic and contestable.

Doctoral work can be seen as an activity that operates broadly within disciplinary boundaries, but which also incorporates institutional, national and global conceptualisations of doctoral work (see Nerad & Heggelund 2010), much of which might be seem as pedagogical. Arguably, there is a doctoral discipline – more in the sense of ordered training, although there is an emerging scholarly discipline – that transcends disciplinary doctoral work and gives it a common regulated form. This form is constituted by common features (such as theses and dissertations), practices (such as supervision, advising and examining) and values (such as evidence, argument and originality). Doctoral work, therefore, works not only within (at least) a discipline’s boundaries, but also within the boundaries of doctorateness. This suggests that boundary crossing between disciplinary and doctoral boundaries is a fundamental feature of doctoral work.

Giroux (1992:22) was not thinking about doctoral pedagogy specifically when he theorised ‘border pedagogy’, but his words are apposite:

… students should engage knowledge as border-crossers, as people moving in and out of borders constructed around coordinates of difference and power. These are not only physical borders, they are cultural borders historically constructed and socially organized within rules and regulations that limit and enable particular identities, individual capacities, and social forms. In this case, students cross over into realms of meaning, maps of knowledge, social relations, and values that are increasingly being negotiated and rewritten as the as the codes and regulations that organize them become destabilized and reshaped.

In the case of doctoral work and the discussion of disciplinary boundaries above, it may be argued that supervisors and examiners are ‘boundary riders’ who teach and reinforce the boundaries, but who also aid and legitimate candidates’ boundary
breaking in their pursuit of significant and original contributions to knowledge. This is further explained below.

**SUPERVISORS’ WORK AS DISCIPLINARY BOUNDARY RIDERS**

The boundaries of a discipline are not demarcated by physical phenomena such as the Limpopo River or the Berlin Wall. There are no maps with the boundaries marked to navigate their ‘rides’ to and along the boundaries to show their candidates where their discipline ends and foreign disciplines begin. Experienced supervisors know the boundaries and know how to teach their new candidates the scope of the territory, its major landmarks, its battlegrounds and places of safety. Before this occurs, however, prospective supervisors act like Mulkay’s ‘gatekeepers’ and exclude potential candidates who are not well-qualified to cross the boundary into their disciplinary doctoral community. This includes ensuring that they have sufficient institutionally legitimated disciplinary knowledge (for instance, degrees) to be a potential new member (as distinct from student) of the discipline. They also deliberate on the applicant’s (assumed) personal qualities for doctoral study in the discipline.

Once candidates have been accepted into their doctoral programme, their supervisors begin boundary-riding with their candidate. Historically, boundary-riders were people who rode the boundaries of large farming properties (ranches, stations etc.) on horseback to check that the boundary fences were secure and the stock was safe. Deploying this notion as a metaphor in the doctoral context when supervision commences with new candidates, supervisors are likely to establish what their candidates know of the disciplinary territory and what they need to learn about it. Perhaps most importantly, supervisors need to establish what their candidates propose to investigate, that is, to contribute as significant new knowledge to their disciplines. Thereafter the supervisors can ‘shepherd’ their candidate to stay within the disciplinary boundaries so that they ‘graze’ on ‘nourishing’ texts to prepare them for their research and theses. In other words, they help them produce the sort of critical literature review expected of a doctorate in their discipline.

The supervisors’ boundary-riding soon ventures into teaching and reinforcing the rules and conduct of research and scholarship in the discipline. They help the candidates avoid the ‘badlands’ where navigation is difficult and where productive data and scholarship are hard to obtain. They help their candidates produce new knowledge that will be seen as legitimately produced by the examiner boundary riders. This means understanding and practising appropriate research methodology, research design and analyses for their discipline. Supervisors eventually help the candidates
to ensure that their theses or dissertations, and any associated publications, are structured and written to conform to good disciplinary practice.

Boundary-riding doctoral work involves weaving various doctoral activities together during candidature. Figure 1 shows the percentage of candidates working on different types of doctoral work by year of candidature. This figure was produced from a national survey of doctoral candidates in Australia undertaken by Pearson, Cumming, Evans, Macauley and Ryland (2008, 2011). The data represent the percentage of candidates who, during the previous week, undertook one or more of the doctoral tasks: writing, data gathering, data analysis, research design and literature reviewing. This implies that their supervisors were boundary-riding these activities for their candidates during these times. It shows that such boundary-riding may require travelling interconnected tracks (interrelated tasks), and that tracks become more or less travelled as candidature progresses. For example, writing becomes more travelled and research design less travelled during candidature. It is noteworthy that, of the 5,935 respondents spread across a maximum of eight years of candidature – in Australia, most full-time candidates complete in four years and most part-time candidates do so in seven years – all the tracks are being traversed by some candidates irrespective of their point of candidature.

![Figure 3.1](image)

**FIGURE 3.1** Percentage of candidates working on types of doctoral work by year of candidature (n=5,935)

In boundary-riding, supervisors clearly need to be responsive to candidates’ ‘back-tracking’ and to be mindful that there are examiner boundary riders who will need to verify that the candidate has not strayed (nor been allowed to stray) from appropriate disciplinary practice tracks. In most cases, supervisors influence the selection of examiners through recommending potential examiners. (In some cases, notably in
the USA, the advisers (supervisors) are also examiners.) The examiners attest to the worth (or not) of the thesis for inclusion within the disciplinary boundaries.

These supervisory and examining boundary-riding processes help to ‘produce’ and legitimate new scholars (doctoral graduates) for their bounded discipline. In effect, the doctoral graduates are the main source of those who become the next generation of boundary riders for the discipline. The above-mentioned boundary-riding work also includes boundary-riding in another important respect for this chapter: doctoral boundary-riding.

SUPERVISORS’ WORK AS DOCTORAL BOUNDARY RIDERS

Doctoral supervision is also about riding the boundaries of doctorateness, that is, what it means to complete a research doctorate within global, national and local (institutional) rules and values about the doctorate. Arguably, disciplines are global entities whose lines of communication are deeply rooted in contemporary globalising communications technologies, but which have long histories of oral and written communications transcending national boundaries. Likewise, the emergence of the PhD, or the research doctorate, in modern universities has become a global phenomenon with some common characteristics, some national differences, and some local nuances (see, for examples, EUA 2005; Nerad & Heggelund 2008; Unesco 2008). In essence, supervisors boundary-ride their local (university’s) representation of the globally understood doctorate with occasional excursions further afield, for example, to show their candidates other theses, or to find examiners or potential postdoctoral locations.

In an everyday sense, supervisors’ boundary-riding includes shepherding their candidates through the procedures and obligations (such as candidature confirmation, ethics applications, progress reports, thesis submission and oral examination) as they are codified and managed at their particular university. They show candidates the doctoral boundaries: the appropriate substance and effort required for a PhD and the quality of work required, especially in the thesis, to pass examination. Supervisors and their candidates ride the doctoral boundaries together to show how far the candidates must travel and the time they need to take to earn a doctorate. Often ‘journey’ is used as a metaphor for the doctoral experience in publications designed to help doctoral candidates understand their ‘travels’ through their future studies (see, for example, Edwards & Mackey 2012). Some boundary-riding is undertaken by others in the particular university. This typically occurs in the form of, for example, workshops, seminars, writing retreats and summer schools. Online media may be used, again by the particular university, but also by others in the virtual world (see,
for example, http://phdchat.pbworks.com/w/page/33280234/PhD%20Chat and thesiswhisperer.com).

Eventually candidates, by the time they complete their doctorates, are expected to ‘ride the boundaries’ for themselves; to become ‘self-disciplined’ or self-regulated in the sense that they have internalised the rules and values of the discipline and of doctoral work, and can practise them without their supervisors’ boundary-riding.

The discussion in this section as well as the previous one has an important limitation that is addressed below. This limitation is that both disciplinary and doctoral boundary-riding are portrayed in rather functionalist and normalising terms. As was noted previously from Kuhn’s seminal work, disciplinary life may exist like this for a period, but “successive transition from one paradigm to another via revolution is the usual developmental pattern in science” (Kuhn 1970:12). Further, one may argue that these ‘revolutions’ may involve shifts, not only in what occurs within the boundaries, but also in the boundaries themselves.

SHIFTING BOUNDARIES

For Kuhnian ‘scientific revolutions’ or ‘paradigm shifts’ to occur, there must those who become the ‘revolutionaries’ or, in the terms of this chapter, the ‘boundary breakers’. Arguably, the politics of the doctoral process militate against an inductee or novice (candidate) leading a revolution, but the ‘significant and original’ demands of a doctorate do lead to some boundary-prodding or boundary-crossing. Supervisors, during their boundary-riding, may point to places in their disciplinary (or doctoral) boundaries that are weaker or susceptible to ‘significant and original’ (doctoral) breaches. Two recent studies of Australian PhD thesis records by Macauley, Evans and Pearson (2009, 2011) illustrate that there are changes within and across boundaries perpetrated by doctoral candidates. They showed that there were marked discrepancies between 1987 and 2006 in the growth of PhD theses in particular disciplines. This indicated that disciplines’ research (in terms of theses produced and, consequently, their related publications) and research capacities (in terms of the graduates’ embodied disciplinary research expertise) shifted considerably in relation to each other. For example, the four disciplines in Australia with the highest PhD thesis growth rates for the period 2002-2006 expressed as a percentage of their PhD theses for 1987-1991 are: Tourism 4 550%, Nursing 1 867%, Biomedicine 1 867% and Information, Computing and Communication Science 1 700% (Macauley et al. 2009:15). In contrast, the lowest growth rates for the same periods were Veterinary Science 94%, Librarianship 100%, Atomic, Molecular, Nuclear and Plasma Physics 102% and Classical Physics 102% (Macauley et al. 2009:16). It
should be noted that 100% means that thesis numbers remained the same between these two periods; therefore, Librarianship maintained its numbers, but Veterinary Science declined by 6%. Furthermore, between 1987 and 2006 the numbers of PhD graduates in Australia increased by approximately 500% (Macauley et al. 2009:9). Therefore, the four lowest disciplines shrank relatively by about 80%, and the four highest disciplines increased relatively by between about 330% and 910%.

Macauley, Evans and Pearson’s research in 2008 provides an indication of the actual and relative growth and decline within disciplinary boundaries for research and research capacity in Australia. It suggests that in some disciplines there are many PhD applicants seeking entry past the disciplinary and doctoral gatekeepers or boundary riders, and in others there are relatively few. These trends may be a source of joy for some and anguish for others. In their later study Macauley et al. (2011) show, however, that these trends may be more complex. Their research in 2008 was based on PhD theses being allocated to a single discipline code, but their coding work showed that often theses spanned more than one discipline; indeed, the discipline of the research may be different from the discipline of the topic. For example, a thesis undertaken within the history discipline may be on the topic of industrial relations in a nation and/or industry. Such a thesis would have been coded as ‘History’ but it could also relate to the disciplines relating to Industrial Relations and the Sociology of Industry. Consequently, their 2011 work allocated one to three codes to each thesis as appropriate. Their research showed that 47.6% of PhD theses were best coded by two codes, 26.8% by one, and 25.6% by three (2011:8-9). Therefore, 73.2% of PhD theses related to more than one discipline.

The research by Macauley et al. (2008) suggests that the boundaries of disciplines may be seen to be shrinking or expanding if one accepts theses as being related to a single discipline and that these numbers indicate expansion or shrinkage. Perhaps more significantly, their later (2011) study shows that most doctoral candidates are working within two or three disciplinary boundaries and that, therefore, the supervisors (as individuals or as a team) either have to ride these boundaries, too, or accommodate them in some other way. It suggests that boundary-crossing or boundary-breaking is part of most supervisors’ work.

SUPERVISING BOUNDARY-BREAKING AS MANAGING RISK

Cross/trans-disciplinary doctoral work represents forms of boundary-breaking that are both risky and potentially rewarding by being particularly and doubly/multiply significant and original. The risks are greater if the boundary rider(s) do not (seek to) know the epistemological and methodological practices of those in the other
disciplinary boundaries. In many nations, universities are becoming increasingly risk aware and even risk averse; doctoral management is entrapped within universities’ risk management practices (Evans, Lawson, McWilliam & Taylor 2005; McWilliam, Sanderson, Evans, Lawson & Taylor 2006). These practices often seem to deter or limit cross/trans-disciplinary work by making a particular ‘home’ department or school responsible for the candidature and marginalising the recognition and authority of doctoral workers in other departments and schools from whom the candidate benefits. Team supervision with the appropriate cross/trans-disciplinary expertise may well be lauded rhetorically, but it is often problematic to institutionalise fairly.

Methodological boundary-breaking is also risky, but potentially rewarding. Candidates need to understand the methodological boundaries and resolve or accommodate the epistemological anomalies between them if they are to produce a thesis that has methodological significance and originality. This may well challenge the research paradigm in the field and represent the beginning of a ‘new wave’ for the discipline, one that may well displace the old. Kuhn’s notions of ‘scientific revolution’ or ‘paradigm shift’ occurring as a consequence of increasing anomalies arising from research and scholarship suggest that doctoral candidates may be a source of such anomalies. Kuhn (1970:151) alludes to this when he refers to Max Planck’s own scientific autobiographical reflection published in 1949: “[A] new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar (with the new truth).”

Boundary-breaking is also occurring within doctoral boundaries. Some of this concerns doctoral work that spans the academy and industry (Enders 2005). The ‘professional’ and ‘practice-based’ doctorates have created debate and change related to doctoral work (Barnacle & Dall’Alba 2011; Fell, Flint & Haines 2011). This boundary-breaking is more at the programme level rather than the individuate doctorate level. That is, it is doctoral programme leaders who are pushing the boundaries, rather than the individual candidates, although the candidates do play their part. Candidates using new representations of doctoral work for examination (and publication) constitute new boundaries for supervisors to understand and shape. These new representations arise largely from the new media and also from the new territories (e.g. professional and community) in which doctorates are undertaken. There are risks associated with candidates ‘pushing the boundaries’ of how they represent their work for examination, especially if examiners are unfamiliar with the media or are unreceptive to the new representations. The risky, boundary-breaking thesis, however, may satisfy examiners if the explanation (that is, the thesis
as argument) is sufficient: it conforms to this doctorateness boundary in justifying its boundary-breaking form.

CONCLUSION

The ASSAf report (2010) argues that doctoral work is important for South Africa’s future across a range of disciplines. Other reports have argued likewise for their national interests (Australian Government 2008; EUA 2005; Unesco 2008). This chapter has argued that doctoral work can be understood to occur within both disciplinary and doctoral boundaries that shift and change over time. Supervisors and examiners, in particular, act as boundary riders and boundary breakers for their candidates. Boundaries help to make sense of doctoral work, but sometimes they contain anomalies that frustrate this work and provoke change.

A tension exists in doctoral work: if candidates remain comfortably within the boundaries, they may limit their capacities to perform and display their significant originality. This implies that supervisors need to be prepared to teach about, and manage, the risks of boundary-breaking to ensure that their candidates graduate, and that their disciplines undergo the revolutions and paradigm shifts that sustain them into the future.

ACKNOWLEDGEMENTS

Peter Macauley and Margot Pearson provided useful comments on a previous version of this chapter that are incorporated into the final version.

REFERENCES


