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KNOWLEDGE QUESTIONS AND DOCTORAL EDUCATION

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INTRODUCTION

This chapter reviews some of the developments in doctoral education over the past 25 years and suggests that multiple agendas on the part of policy makers, theorists of higher education, and practitioners in the form of supervisors and other teachers have converged to produce changes in doctoral practice and understandings. This shift has occurred, in part, in response to an increasingly diverse range of research students' interests and aspirations alongside the development of newer forms of doctoral programmes. It can be broadly summarised as focusing on doctoral pedagogy (Boud & Lee 2009; Lee & Danby 2012). As a result, doctoral education has come to be understood as being about much more than the production of a thesis and a rite of passage into academia. The first part of the chapter will tease out some of these strands and argue that, while there are tensions between them, nonetheless the direction of travel towards the emphasis on pedagogy and away from conceptualisation of the doctorate as simply research is clear. The second part of the chapter will focus on knowledge questions in doctoral education and suggest that these require greater attention. In doing so I take inspiration from the Brechtian maxim that we 'should not build on the good old days, but on the bad new ones'; in other words, in taking the theme of the book of 'pushing the boundaries', I do not wish to take us back to an unreflexive view of the doctorate as an extension of research. Rather, I want to embrace the new diversity and complexity and suggest that theorising this space requires a greater attention to knowledge questions and to how knowledge is constituted. In doing so, I will make the case that the doctorate has a different relationship to discipline-as-research and indeed practice-as-research. When we examine a research degree, we are invited to evaluate not only whether the student has extended her knowledge (learning is always about

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knowledge making for the individual), but also whether the thesis/practice/artefact makes an 'original contribution to knowledge'. Knowledge in doctoral education is privileged in different ways than in other areas of the higher education curriculum.

It also has to be borne in mind that governments increasingly look to knowledge to transform the economy. The idea of the 'knowledge economy' has in many respects become a truism. I want to suggest, however, that what is meant by 'knowledge' in this context and its relationship to disciplinary knowledge is much less clear, and to take a critical look at the claims for knowledge-rich jobs. These are important questions in a context where concerns with social mobility and individual enhancement have become dominant discourses in framing questions about the benefits of higher education, including doctoral education, both for the individual and for nation states in what are seen to be more globally competitive times.

The intention of the chapter is not to provide firm answers. Rather, I am consciously going to stand back and paint a broad picture, as we have travelled far both in terms of developing newer practices and in researching doctoral education. I think it is timely, however, to take stock and to refocus on knowledge questions. This involves some attention to the sociology and philosophy of science as well as to curriculum and pedagogy.

THE DISTANCE TRAVELLED: THE ROUTE TO PEDAGOGY

The traditionally accepted picture of the research degree was of the apprentice scholar working with the 'master' (gender intentional) producing a piece of original research. Academics on this model treated supervising their doctoral candidates as part of their research time and as continuous with their own research activity. This model privileged a light touch notion of supervision as the coming into being of someone who was already capable of doing a doctorate (Johnson, Lee & Green 2000). Supervision here can be understood as 'looking over' – what Alison Lee and Bill Green (2009) describe as the panoptics of 'enLIGHTenment' – with vision being the dominant metaphor for knowledge and truth. Now of course this depiction is always likely to have elided multiple practices. One of the problems is that we do not have many detailed empirical studies for earlier periods of doctoral education. We do, however, have anecdotal and personal accounts of benign and sometimes not so benign neglect and we can point to the dominant and highly gendered discourse of autonomy that legitimated the supervisory model (Johnson *et al.* 2000).

The perceived wrongs of the traditional model began to trouble a number of actors and it is to these that I am going to turn. Firstly, I am going to describe how governments began to see the doctorate as not fit for purpose, using the UK as my

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example. Secondly, I am going to describe how concerns with quality of supervision, timeliness of completion, and the sorts of people being produced meshed into whole new regimes of governance, audit and increasingly a training model for both students and supervisors. Finally and, at least as importantly for researchers and theorists of the field, I want to argue that changes in practice were emergent from critiques by radical educators and theorists and their engagement with both students and supervisors. These contributed both to the ways the newer regimes of training were mediated into practice and to the blossoming of research into doctoral education. I am not suggesting that there is a causal sequence here, since the different temporalities of policy, practice and critique run alongside one another. Moreover, emergent tendencies and dominant concerns come to the fore at different times in different locations internationally, so while the trends I am describing are international they are always locally inflected and understood.

The concern with the quality of research degrees and their fitness for purpose has increasingly been understood in terms of post-doctoral employability. In the UK in particular, there has been ongoing anxiety over international standing and competitiveness and the ability to continue to attract financially lucrative overseas students. These concerns were articulated in a number of reports starting in 1990 with the Parnaby Report about the engineering doctorate (Parnaby 1990). This report was critical of the fitness of post-doctoral researchers for industry and proposed that the sorts of projects undertaken as part of the doctorate should be more like those in the engineering industry rather than a single in-depth study. A government White Paper, *Realising our Potential*, set the framework for science policy in 1993 and again focused on science and engineering and the needs of the economy (HMSO 1993). The government-commissioned Harris Report of 1996 also raised issues of quality and international competitiveness in doctoral education (Harris Report 1996). New quality assurance, training and other regimes followed on from these early expressions of disquiet and in particular the central concerns about the ability to exploit research and to produce employable post-doctoral researchers. So while, as Diana Leonard and Rosa Becker (2009) note, researchers have paid considerable attention to supervision in the arts and social sciences, government policy has overwhelmingly been driven by views of the economic contribution of science and engineering.

What followed has been a plethora of reforms and a bewildering number of initiatives involving a range of agencies designed to improve the efficiency and fitness for purpose of the research degree. In the UK these have included initiatives across research councils including financial penalties to reduce time to completion

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for full-time students; the Joint Skills Statement from all the research councils in 2001 outlining the training requirements for research students with a heavy emphasis on generic training designed to improve employability (RCUK 2001); the Roberts Report in 2002 which reiterated the focus on employability, the importance of science and engineering, and continued to drive the training agenda forward including the provision of funding to support research training (Roberts 2002); and the activities of the so-called 'Rugby Team' who produced, among other things, a report entitled *Employers' Views of Researchers' Skills* (Rugby Team 2007). The initiatives are multiple but the direction of travel and the underlying concerns are consistent: doctoral study should be more efficient and we should be equipping students with the skills necessary for employment and for the benefit of the country. In 2004, the Quality Assurance Agency produced a code of practice which covered process, environment, and the need for supervisor development opportunities, and which further increased scrutiny of university practice producing a major shift away from a focus simply on the individual supervisor towards institutional arrangements (QAA 2004). The list goes on, but the point I want to make is that both what we understand doctoral education to be and the environment in which it takes place have shifted considerably from pre-1990 understandings. This does not mean that there are not continuities at the level of practice and professional judgment but the context within which these are made has been reconfigured.

In the UK there has been a steadily increasing number of doctoral students from the late 1960s, and an increase in the diversity of students and the programmes they have followed. The increase in the number of doctoral scholars is an international phenomenon. The projected targets for increasing numbers in Malaysia, for example, is for an eight-fold increase over 15 years (Kumar 2011:25). Scale has other effects. Universities now have directors of research degrees and graduate schools and offices, and doctoral education has become a central site of performativity and risk management, as Erica McWilliam (2009) writing in the Australian context has so ably documented. So, while I have taken most of my examples from the UK, these developments are not unique.

It is also important to note that these developments have not taken place behind academics' backs. Academics have been actively engaged, although not always under terms they would have chosen because, as Karl Maton (2005) reminds us, academics have retained considerable positional autonomy. While relational autonomy has weakened, meaning that universities are responding to external imperatives not of their own making, it has been academics not outsiders who have implemented these policies. In the sphere of doctoral education, this has been for

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good reasons as I have already indicated. Over the period I have been describing, there have been important attempts to theorise doctoral education as pedagogy that have brought about significant advances in our understanding and in practice. Alison Lee and Susan Danby (2012), in their chapter 'Framing doctoral pedagogy as design and action', use the term 'pedagogy' to point to the relationship between learners and teachers in producing knowledge and argue that doctoral pedagogy involves not only "coming to know" but also "coming to be" (Lee & Danby 2012:4). A considerable amount of work has been done in looking at the research seminar and research lab, understanding them as sites in which "what counts as academic work is represented and authorised" (Green & Lee 1995:41). Scholars such as Liezel Frick (2012) have been doing important work on cultivating creativity in science doctorates, while others such as Claire Aitchison, Barbara Kamler and Alison Lee (2010) have analysed 'publishing pedagogies' that play an increasingly important role in doctoral education, especially under the pressure of research selectivity which has swept up doctoral scholars in its wake. For the minority of doctoral scholars who do go on to become academics, publication is now a necessity. Researchers such as Angela Brew and Tai Peseta (2009) and Barbara Grant (2003) have given us greater insight into the passions and complexities involved in supervision and into courses designed to support them. As a consequence, some of the most creative elements of support for doctoral pedagogy are now underpinned by critical inquiry and research.

My position is that what we are witnessing is a tremendously exciting period for doctoral education globally. The doctoral programme supporting higher education research at Rhodes University (2013) is an excellent example of innovation, as is Doctoralnet, an international collaboration to build a virtual graduate school (Dahlgren, Grosjean, Lee & Nyström 2012). But it is also the case that in many of its enactments, change to doctoral education is hedged about by audit and scrutiny and procedures and practices that are panoptic in their effects on both supervisor and student. Even so, the idea of doctoral *pedagogy* is now firmly enshrined.

THE VIEW FROM KNOWLEDGE

In the light of the above, the question that could be asked is why we should pay more attention to knowledge practices given that the view from pedagogy has proved so illuminating. Let me be clear: I am not suggesting that the turn to pedagogy in the research literature has totally ignored knowledge questions. As the definition by Lee and Danby (2012) suggests, pedagogy pays attention to the knowledge production of learners. In this section, however, I am going to address knowledge questions directly, including those in the policy arena, as there are important issues

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that are brought into sharper focus through the knowledge lens. Firstly, I am going to question the policy deployment of knowledge and in particular the seductions of science and engineering and the 'knowledge economy'. Secondly, I will take up the now commonplace idea that there have been shifts in the forms of knowledge production and interrogate rather more closely the idea of Mode 1 and 2 knowledges to suggest that this is too crude a conceptualisation. Thirdly, drawing on Bernstein (2000), I will explore the relationship between discipline-as-research and curriculum and pedagogy and the processes Bernstein describes as regionalisation, looking out from the academy and to the market. Finally, I want to conclude with some reflections on Michael Young's (2008) thesis about 'bringing knowledge back in'. I will ask whether some of the differences in pedagogical practice might be related to the different sorts of stuff we are studying and the question of natural kinds, recognising that these questions are broader than just disciplines. This is because the ways that disciplines are formed is more complex than the ontological properties of the kinds being studied.

To start with policy: As we have seen in the first part, governments (and not just the British one) are keen to stress the importance of the knowledge economy, but it is not at all clear what the relationship to 'knowledge' is. The knowledge economy is used to capture a number of things that are not straightforwardly related. One of the claims is that knowledge is now central to jobs where complex judgments are called for and that these jobs are growing in number and are central to the economic prosperity of nations. However, as Phillip Brown, Hugh Lauder and David Ashton (2011) argue in *The Global Auction: The broken promises of education, jobs and income*, the competitive logic of accumulation breaks jobs down and routinises them. So, while there is competition for global talent (and huge salaries) at the very top, the promised benefits of education for the middle class are increasingly hollow and so-called knowledge-rich jobs have become routinised and no longer guarantee large salaries nor indeed job security. It often seems that what is meant by knowledge-rich jobs simply means non-manual and, while professional jobs should embody professional discretion, in many instances these jobs have become more regulated, not less so. One of the ways of understanding the expansion of postgraduate education in general and research degrees in particular is as an attempt to secure benefits in this global world. But even research degrees do not guarantee knowledge-rich jobs.

Knowledge is also deployed by governments in relation to science and engineering and the creation of new technologies and applications. But again, the relationship between even doctoral-level work and this aspiration is not so clear. Scholars

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are increasingly being exhorted to define impact and utility for their work but the connection between utility and research is more complex than these exhortations suggest. Moreover, as noted by Brown *et al.* (2011), research and development is not confined to a limited group of advanced countries but is increasingly dispersed, so national governmental claims have to be read with a degree of caution. They detect a trend towards the globalisation of knowledge with even very highly skilled jobs being 'offshored' and a major shift in STEM subjects to Asia and away from the USA. At the very least then, the equation of the knowledge economy and competitive advantage looks increasingly complex and uncertain.

If knowledge is problematic in policy terms, I would suggest that some of the attempts at reformulating knowledge questions have also been somewhat simplistic. Perhaps the most popular of these formulations is by Michael Gibbons (2003) who argues that knowledge production is being cut loose from disciplinary structures. He points to the increase in research centres, institutes and think tanks although analytically these are not the same thing, nor do they share common features. The features of Mode 2 knowledge, according to Gibbons, are as follows: "1. knowledge is produced in the context of application; 2. transdisciplinarity; 3. heterogeneity and organisational diversity; 4. enhanced social accountability and reflexivity; 5. a more broadly based system of quality control" (Gibbons 2003:232). These are processes that have some face validity. However, Gibbons's account is too simplistic since it assumes that the processes he describes fit together, an assumption that is contestable. Many of the features he attributes to Mode 2 knowledge are also characteristic of developing Mode 1 disciplinary knowledge, where transdisciplinarity has been one of the distinctive ways in which disciplinary knowledge has extended itself. Moreover, many of the developments he describes are taking place within traditional universities as well as outside them. Distinguishing two separate modes is, therefore, more difficult than it appears. Gibbons also operates with a unitary notion of discipline and transdiscipline, which is unhelpful particularly in the context of doctoral education where the relationship between traditional disciplines/practices and transdisciplinary study is coming under more detailed scrutiny.

In this respect Bernstein (2000) is altogether a more useful thinker and, moreover, one whose work has been drawn on in debates about doctoral education (e.g. Scott, Brown, Lunt & Thorne 2009). So what is it that makes Bernstein good to think with? Firstly, he has a sophisticated way of thinking about disciplines and the ways they structure knowledge. Bernstein distinguishes horizontal and vertical forms of discourse and hierarchical and horizontal forms of knowledge. Vertical forms of knowledge have a strong grammar; that is, arguments that go from the concrete

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to the abstract, and a capacity to generate empirical correlates which allows for disciplinary progression: physics is the paradigm case. Horizontal knowledge forms have a weak capacity to generate empirical correlates and a weak grammar and their development tends to be through the proliferation of different theories and frameworks: sociology would be a good case in point. So, while universities and doctoral education have been traditionally organised around disciplines, what this means varies in terms of their knowledge practices. When we think about the doctorate as disciplinary knowledge making, therefore, we need different languages of description for different areas and we need to understand how these different disciplinary practices relate to underlying knowledge structures.

Secondly, I want to suggest that Bernstein has much to tell us about the formation of new fields and trans- or interdisciplinary fields and knowledge that look outwards towards the field of practice and the market. Bernstein describes traditional university disciplines as singulars with “their own intellectual field of texts, practices, rules of entry, examinations, license to practice, distribution of rewards and punishments” (Bernstein 2000:52). These are protected by strong boundaries and hierarchies in which the traditional doctorate plays an important role. Crucially, however, he also describes a process of regionalisation whereby new areas are created. Regions are constructed by recontextualising singulars (that is, traditional disciplines) into larger units both in the intellectual field of practice and in the field of external practice. Traditional examples of regions he gives are engineering, medicine and architecture. Contemporary regions, he suggests, are cognitive science, management, business studies, communication and media. Which disciplines enter a region depends on the recontextualising principle and its social base. What we need, therefore, particularly in the area of doctoral knowledge making, are concrete studies of the process of regionalisation because, depending on the initial structure of the singular, there will be different outcomes. Regionalisation weakens the internal classificatory principles and produces greater external dependency, including the possibilities for external regulation. This is of enormous importance when discussing newer forms of doctoral work including project- and practice-based doctorates and professional doctorates such as the EdD or EngD. David Scott and his co-authors (2009), for example, have argued that disciplines with weak horizontal structures such as education are particularly vulnerable to state intervention on the side of one of the competing positions within the discipline. They show how there are different tensions between the sites of knowledge production – research, the pedagogic, and the workplace – in different professional doctorate programmes.

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The final area where I think Bernstein is helpful is in the way he distinguishes between the field of knowledge production, the field of recontextualisation (curriculum) and the field of reproduction (pedagogy). The doctorate is unique in that, unlike the rest of education, the candidate is required to work in the field of knowledge production and the recontextualising rules for the curriculum are not necessarily known in advance of the project. Some recontextualisation is already there: the new norms for research training are an example of a curriculum and a developing pedagogy. However, there is an important sense in which we can think about the doctoral curriculum as the specification of the research project itself. The curriculum is the following through of the project and the assembling of the intellectual and practical tools required to carry this out. This will mean different things in different areas depending on whether the discipline is vertical or horizontal and whether the area of study is a region looking out towards the field of practice and the market as many PhDs and professional doctorates now do. While I would not describe myself as a Bernsteinian, I would suggest that Bernstein gives us a nuanced set of concepts to work with and that we can see the different pedagogical arrangements, for example in some laboratory sciences, as related to the distinctive structures of the field of knowledge. Similarly the sorts of PhD by project explored by Allpress and Barnacle (2009) in their work on research 'through' design (not just 'about' design) relate to the distinctive knowledge field of architecture, which is a region drawing on a number of disciplines, some of which are horizontal and some vertical. Work through design is distinctive by virtue of the practices in that region and exploring this involves theorising the field of knowledge production itself, not just the recontextualisation rules.

There is additional empirical support for the idea that the form of knowledge production relates to practices from the now-classic study of *Tribes and Territories* by Tony Becher and Paul Trowler (2001), who note that the "ways in which particular groups of academics organize their professional lives are related in important ways to the intellectual tasks on which they are engaged" (Becher & Trowler 2001:23). So, for example, in some areas scientists are more gregarious (although not necessarily less competitive), reflecting the realities of lab-based work and the cumulative nature of knowledge production. The social organisation of academic work crucially involves work with doctoral scholars where, for example, the organisation of the laboratory, the development of research programmes and the nurturing of the next generation of scholars form a distinctive part of disciplinary practice. Thinking about the relationship between knowledge production practices and their social organisation is, therefore, a crucial part of doctoral pedagogy.

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Other theorists have also been important in foregrounding knowledge and in breaking with a purely social constructivist understanding of knowledge. These theorists have paid particular attention to the ontological dimensions of knowing, that is that our knowing is about 'something', a something that is distinct from our knowing. Michael Young (2008), a sociologist of education, has built on Bernstein and others to argue the case for 'bringing knowledge back in' and for making a retreat from the relativism of social constructivist positions. He argues that the recognition that knowledge is socially produced (which of course it is) does not dissolve the distinctiveness of knowledge claims to be about something and about which we can make (always fallible) judgments of validity. Young (2008:28) argues:

A social theory that seeks to link knowledge to social interests has to distinguish between two types of interests. These are 'external' or contextual interests, which may reflect wider divisions in society, and the 'internal' cognitive interests that are concerned with the conditions for the production of knowledge itself.

This argument rests on a critical realist conception of knowledge. A critical realist approach has something to say about the sorts of knowledge that we come to have of the social and natural worlds and, hence, that the practices and processes whereby we come to fallibly know the world are dependent on distinguishing between ontology and epistemology. The vertical and cumulative nature of science relates to the natural kinds that we are studying and so the practices we see in knowledge making, including in doctoral work, are distinctive. Indeed the philosopher Roy Bhaskar (1978), when arguing for the importance of ontology, starts with the beguilingly simple question of what the world must be like in order for science to be possible. He argues for a depth ontology in which structures and mechanisms, not just events, are real and he develops an account of experimental method based on a recognition that while regularity is produced through human activity the knowledge that is produced involves understanding the structures of independently existing real things.

I am not arguing here that one needs to be a critical realist to think about different knowledge practices (although I think it helps). The idea of signature pedagogies, for example, links pedagogical practices to disciplinary ways of knowing in the discipline. However, if we take the knowledge question seriously, I think it helps us think about what might be common across doctoral education but also what might be distinctive and how this distinctiveness might relate to the different sorts of stuff we are studying. The practices of the laboratory, the seminar, and the studio are material embodiments of the knowledge practices of the field and these arrangements have an ontological dimension as well as epistemological ones.

A CODA

In coming to my conclusions I have a final coda to make which relates to different sorts of knowledge and brings the body of the student back in. The people doing doctoral work are more diverse (even if, in numerical terms, traditional candidates and traditional disciplines still dominate), and knowledge-making practices are also more diverse, particularly in the newer regions. This raises the question of voice and how ideational diversity relates to knowledge. We have seen, for example, that as newer actors have come into education, new questions are asked and criticisms have been developed for example of the masculinist, colonial and post-colonial biases in knowledge production. This is a complex story that cannot be rehearsed here. Over the last decades, however, we have seen the development of powerful critiques across the social sciences and humanities and to a lesser, but significant, extent in the sciences. Women, and other minorities historically on the margins of universities, were able to attack the knowledge claims of the privileged and show them to be lacking – in effect producing newer, better knowledge claims. Doctoral studies have played an important role in the developments and some of the most exciting innovations in doctoral writing, for example, were produced by feminists. I want to suggest, therefore, that looking at new voices in doctoral education is important. It is also important to distinguish between different theorists of ‘voice’. Mine is a sociology of knowledge position that does not automatically privilege particular voices (Clegg 2011). There are other positions which do. One is ‘standpoint’ theory, which in its strongest version in feminism claimed that women, by virtue of their distinctive experiences and through the development of a feminist stance, could have insights that others could not. Truth in this version is therefore (partially) relativised to social group and made context dependent. These arguments are of course much more fiercely contested in the social sciences and humanities because of their weak grammar and horizontal structures. The issues of standpoint and voice are likely to come to the fore in doctoral supervision and my argument is that, as well as looking at cultural diversity and recognition, there are also important knowledge questions: we should be open to the ways in which newer and better (although always fallible) knowledge claims can emerge. The birthing of these newer ideas is not always easy and there are entrenched interests including – we should recognise – our own. It is worth reminding ourselves that Brecht not only suggested we embrace the bad new days but that also, in his play *The Life of Galileo*, he forces us to confront the power struggles that not infrequently herald the adoption of new and better knowledge. If one rejects judgmental relativism (which I do) while accepting epistemic relativism, then how we judge contribution to knowledge in doctoral work has to wrestle with these issues. Voice does not foreclose the matter, it opens it up.

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In summary: this chapter has encompassed a whistle-stop tour of developments in doctoral education to show there has been an important shift to a focus on pedagogy. It has also argued that knowledge questions are important and that a focus on knowledge lets us think about the research nature of the doctorate and 'the contribution to knowledge'. Knowledge, curriculum and pedagogy are related but in the research degree that relationship is closer and knowledge questions are to the fore. So, to borrow from Michael Young, I have been pushing at the boundaries to argue for the advantages of 'bringing knowledge back in' and for theorising the diversity of knowledge practices which are constitutive of doctoral education.

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