Routledge
Taylor & Francis Group

'Peer learning' as pedagogic discourse for research education[1]

David Boud* and Alison Lee
University of Technology, Sydney, Australia

Research education has been dominated in recent years by policy-driven preoccupations with doctoral completions, funding and contributions to the economy. This has led universities to focus on enhanced institutional support for research degrees, with an emphasis on supervision, in particular the training of supervisors, and provision of a richer environment for students. This article uses examples from interviews with research students to show how the provision of a rich environment is not in itself sufficient. A new discourse is needed so that students are able to take up opportunities that are available. The article questions the current emphasis and argues that a new focus on pedagogy is explicitly needed. It challenges the dominant focus on supervision and 'provisionism' and suggests that a more appropriate pedagogic discourse should draw on the familiar notion of 'peer' from the world of research. It argues that peer learning, appropriately theorized and situated within a notion of communities of research practice, might be a productive frame through which to view research education.

Overview

Policy pressures and responses

Intensified pressure from government to improve performance in research education has made itself increasingly felt within university structures and internal policy imperatives in recent years. This pressure has been manifest in many countries in different ways. In Australia, for example, the Federal Minister claimed that current research education was 'too narrow, too specialised and too theoretical, leading to graduates whose communication, interpersonal, and leadership skills require further development' (Kemp, 1999, p. 17). Problems of 'poor supervision, inadequate levels of departmental support and limited access to quality infrastructure' were identified. A 'mismatch between the research priorities of the institution and the interests of students' was noted and universities were criticized for 'high attrition rates and slow rates of completion' (p. 18).

*Corresponding author. Faculty of Education, University of Technology, Sydney, P.O. Box 123, Sydney 2007, Australia. Email: david.boud@uts.edu.au

There is clearly potential for confusion over the relationship between the various components of the government's policy agenda. In particular, the requirements of knowledge production and innovation (research) exist in tension with those of skills 'training', particularly generic skills or attributes (learning). What is clear, however, is that prevailing discourses lurch rather uncomfortably between the imperatives of 'research' and those of 'education/learning'. The term 'research education' that we use here is being increasingly adopted in Australia as a sign that what had been called postgraduate research has an explicitly educational character. This is in deliberate contrast to a government articulated discourse around 'research training'. In turn, both of these position research education/training in distinction to 'research'. There remains, however, a lack of a strong public discourse of pedagogy for research education, particularly one which accounts for the growing size, complexity and pressure for change experienced by the higher education sector in recent times. Green and Lee (1995) noted a conceptual subordination of questions of learning and teaching to those of research in research education. More recently, Pearson (1999), citing Becher *et al.* (1994) in the UK and Clark (1992) in the USA, noted a continuing privileging of a discourse of research over learning in public policy and academic debate alike.

The sector's response to the intensified policy scrutiny and intervention has been, according to Pearson (1999, p. 274), 'fragmented and conservative'. There are, however, increasing calls for attention to be paid to the provision of a 'high quality of research learning environment' (Pearson & Brew, 2002, p. 138). Pearson and Brew, developing Pearson's earlier (1999) discussion, noted the components of such an environment. These necessarily include issues of access to resources, including expertise, flexibility and choice in learning and research conditions, engagement with other students, practising researchers and a 'community of peers/experts/others', as well as attention to career goals and opportunities.

In this article we argue the need for more systematic attention to be paid to the breadth and diversity of learning activities and relationships in research education. This is to attend to what is, as Cullen *et al.* (1994) suggested, and to begin to clarify actual research/learning relationships in current times and specific locales. In their important agenda-setting empirical research into these questions, Cullen *et al.* construed students as 'self-organising agents of varying effectiveness, accessing resources, one of which is the supervisor'. In their study students presented themselves as being 'at the centre of a constellation of others' in assembling resources to meet particular research/learning needs (p. 41). Such attention is, we suggest, necessary for higher education systems to be able to respond productively to policy pressures of one kind or another for change in research education.

Environment as pedagogy

Rather than seeing these complex and dispersed relations in terms of an 'environment' which is separate and apart from 'pedagogy', understood primarily in 'vertical' terms as 'supervision', we suggest that pedagogy be reconceptualized as significantly 'distributed' and 'horizontalized', with an associated dispersal of

responsibilities and of agency. We use the notion of 'distributed' learning in the sense used by Lea and Nicoll (2002), to refer to networks of learning in which learners take up opportunities in a variety of ways without necessary involvement from teachers or supervisors. We suggest there is a need to conceptualize and investigate an expanded notion of pedagogy that attends to the whole research environment. This includes the imperatives of the emerging world of research learning as negotiated among government, universities, departments, global communities of scholars and researchers and research students. Such a conception might encompass (though will not be contained by) the notion of pedagogy in relation to 'communities of practice' as articulated in other contexts by Lave and Wenger (1991) and Wenger (1998). Notions of the research education environment as pedagogical space involving multiple and overlapping notions of communities of practice are in contrast to the conventional focus on individual supervision relationships as the privileged if not the only acknowledged site of pedagogy. Questions of 'departmental support' and 'access to quality infrastructure', noted by policymakers such as Kemp, are added to the imperatives for multi-skilling a graduate population to raise important questions of the environment of both research and learning. The actual distribution of learning relations needs to be acknowledged and better understood.

One effect of the continuing subordination of learning to research in public discourse of research education has been the at best sporadic uptake by research educators of current research into teaching and learning within higher education studies more broadly. There has been a striking lack of interest in adopting or adapting developments in higher education pedagogies, with some important exceptions (see Pearson & Brew, 2002). There are important reasons for this absence of engagement and transfer of thought from the broader higher education literature into research education, not least of which is that the activity of supporting research students is seen as research not teaching, a point we turn to later. However, we suggest that recent work in this field offers a stimulus to research education in the current policy climate. In particular, studies on the role of dispersed pedagogic systems point to moves to network, to diversify, to democratize, open and horizontalize learning relationships as integral to, rather than ancillary to, pedagogy (see for example Lea & Nicoll, 2002). In a similar vein, contemporary theories of learning, which emphasize the social situatedness of learning in communities of practice are of vital interest to this emerging field of pedagogical inquiry.

This article takes one important development in higher education pedagogic discourse as a frame for beginning this reconceptualization. 'Peer learning', construed as a 'two-way reciprocal learning activity' (Boud *et al.*, 2001), refers to networks of learning relationships, among students and significant others. Within the general field of teaching and learning in higher education, considerable investigation has now been undertaken of students working with each other and the ways in which it can be fostered in courses, mobilizing formal discourses of 'peer' or 'collaborative' learning. However, there has been little theorization of this practice and little documentation of its application to research education. We here take up a

discourse of 'peer learning' as a pedagogical discourse, which allows a particular kind of investigation of the research 'environment' as an explicitly pedagogical space. While the research environment has been typically seen in terms of 'departmental support' and resourcing of infrastructure, attention to this environment through frames such as peer learning begins the task of building a more complex and thoughtful learning ecology. The 'community of peers/experts/others' imagined by Pearson and Brew (2002) comes into being, if at all, within an environmental space that is intellectually, socially and geographically complex and dispersed. It is important to note in this regard that currently the research 'environment', however construed, consistently rates lowest in student satisfaction surveys (Barnacle, 2003). Systematic attention to the space of research learning as pedagogical space is, we argue, urgently required. Within policy discourses, whether at the level of government edict or institutional response, the environment is construed almost exclusively in terms of provision (what we later discuss as a naive 'provisionism') and is not informed by adequate accounts of students' experiences, understandings and uptakes of provision.

We further suggest, in developing our argument, that careful attention to the specific institutional ecologies of research degree communities and environments is crucial to meeting the often diverse and conflicting requirements of students, academics and policy-makers. Pearson and Brew (2002) echoed and underscored Cullen *et al.*'s (1994) call for careful empirical investigation into the learning and research relationships that obtain in specific sites. Many practices are perpetuated in the absence of precise information about student experiences, understandings, felt needs, practices and relationships within particular environments, including their peer relationships. Candidature is largely managed according to 'traditional' (no matter how recent) 'vertical' conceptions construed largely in terms of supervision of research rather than teaching. Any robust development requires grounding, we argue, in actual practices and relationships, which need to be more richly understood. Accordingly, we conclude the article with a suggestion for a critical re-reading of the discourse of peer learning as it is inscribed in higher education. We do this from the perspective of a social theory of pedagogy, critically situating the central pedagogical goal of research education pedagogy as a process of 'becoming peer' through participation in a community of research practice.

A local picture

Our current investigation into research student learning relationships in the faculty in which we work is a first attempt to map the discourses and material practices and relationships mobilized by students currently enrolled on research degrees. An action research project into the research degree programme was an explicit response to the calls in the work of Cullen *et al.* and Pearson. Our goal was to explore students' interactions with, understandings of and learning within their environment. The term environment was not taken here as encompassing solely the physical space and programme structure of formal 'provision', as is often the case in written accounts.

Rather, we were at pains to generate some sense of the experienced environment (physical, virtual and metaphorical) as students articulated it in discussions with us and as we worked with them on specific initiatives.

Two kinds of data have been produced so far in this work. The first is a series of interviews with current students who were invited to discuss their research learning with us. The second is the ongoing reflexive documentation of change strategies. For the purposes of initiating the conceptual field of learning relationships in this article, we report in what follows on material drawn from the interview study. Our particular focus in the interviews was on drawing out and emphasizing the relational dimension of students, learning experiences within their environment and, consequently, on inferring from their accounts a sense of how they perceived and indeed constituted their environment. We asked them who they learned with and from and how. A further question specifically focused on whom they regarded as their peers and how they understood their peers as a source and a site for learning. Some of the relationships identified and discussed are listed in the next section. Readings of the transcripts of these interviews yielded underlying understandings, principles and values for individual students of what it meant to them to be a research student and be undertaking a research degree. This emerged as a key principle in the way they interpreted and 'took up' learning opportunities within their environment.

What has become increasingly clear to us as we encountered often very different accounts from students was that a student's operating procedural theories of 'being a student', 'doing a doctorate' and 'doing research' were the primary factors determining their learning behaviours and experiences. These implicit theories then strongly influenced how they positioned themselves and the environment as either conducive or inhibitory, affirming or effacing, generative or constraining. It is within this emerging interpretive frame that we have sought to conceptualize particular relationships, such as those with peers, in terms of an expansive pedagogical potential. To aim for a rich practical pedagogy that fosters, among other things, peer relations as key sites of learning requires empirical and action research work surfacing and articulating operating theories of research learning. The research learning mapping we are developing in this study is intended to inform ongoing development of local faculty level research policy and management, including course development and academic professional development. Such initiatives are construed within a conception of academic development as 'local practice' (Lee & Boud, 2003). Keeping in mind Pearson's (1999) call for a coherent conceptual framework within which local research/education environments are developed and documented, we seek to develop a local practice which assists in conceptualizing research (peer) learning within local communities of research practice.

Research learning relations: notes from an ongoing investigation

For the purposes of this article we have selected two brief segments of data, excerpted here from interviews/discussions held with people who at the time of writing were enrolled as research students in the Faculty of Education in which we work. We report here selections from an analysis of tape transcripts of two of these interviews.

At the time the faculty had approximately 140 students enrolled on research degrees, with 20% of these being enrolled full-time. Full-time students were provided with shared office space in close proximity to research groups and academic staff. Over a period of 10 years various initiatives had been undertaken to enhance the quality of the research environment for research students. These included programmes of seminars and workshops, supervisor selection and training and linking of students with active research groups. More recently, new initiatives had been established involving monthly meetings of research students around topics of concern, the use of an online environment and, notably, a research student conference. These change strategies form part of an ongoing action research project documenting and reflecting on the implications of the issues we raise in this article.

Both of the students whose stories are presented here operate within very similar research environments (at least in terms of 'provision'), with formally almost identical resources and opportunities. The two stories were selected to contrast ways in which different students identify who their peers are and how they construe and differentially take up opportunities that exist to construct peer learning relations and build a research learning community.

Claire's story

Claire was completing her third year of full-time Ph.D. study and, at the time of writing, was expecting to submit her thesis within 6 months. She previously worked full-time in an academic-related position elsewhere in the university. Claire spent the bulk of her time in one of the dedicated research student rooms. She did not see herself as a member of a research group, nor had she been involved in teaching during her candidature. She had recently returned to part-time work.

The opening question of the interview asked Claire to list the forms of learning she had participated in during her candidature. She listed three things: the postgraduate room, a student-initiated reading group and a supervisor-initiated research group. She identified these as minimal contact: 'there aren't very many … probably only three things I have, really'. She spoke at length of isolation and loneliness in the day-to-day experience of on-campus candidature. She also spoke of her Ph.D. study as something quite distinct from the 'real world', which she construed in terms of the day-to-day interactions and responsibilities of her normal workplace. The small number and proportion of full-time on-campus doctoral students was clearly a factor in this sense of isolation and of being apart.

The other feeling Claire articulated at length was that of disempowerment within the broader faculty environment by virtue of her position as a student. She spoke of feeling silenced in public forums, of being 'wiped out' in the physical, social and intellectual spaces of faculty life. She spoke of the intensification of this feeling during the course of her candidature. In contrast to the way Claire construed her relationship with her environment generally, she spoke in detail of the relationships developed among the other full-time, on-campus students as a source of mutual assistance and support. She referred mostly to emotional support (in adversity, against isolation,

etc.). She saw her relationships with other students in terms of being able to mediate institutional, procedural and social protocols and know-how, as well as sharing intellectual resources.

For Claire, doing a doctorate involved 'becoming a student', which she construed in a highly verticalized, binary structural opposition to 'being an academic'. 'It's kind of weird that the minute you become a student you get positioned as a student. And everybody does it in the most subtle way'. This positioning contributed to her sense of apartness, being 'whited out, in the corridors etc., you are this strange thing coming and going'.

With regard to other students, Claire articulated many reservations about the value of peer exchange. She saw the study groups of which she had been a part as: 'you get together, it's supposed to be a dialogue but half of us are not listening to a particular person'. When students participated in a group, it involved 'putting out your own identity, and making a claim for who you are … people aren't out looking for dialogue. … It's about them (other students) not getting in your way'.

Rose's story

Rose was in her third year of full-time Ph.D. candidature. Her study formed an embedded part of a wider funded research project and for it she drew on common data collected by herself and other members of the team. There were monthly meetings of the team. Rose and a research associate were physically located in an open plan office within a research centre. She participated regularly in seminars of what she saw as her 'own' research group.

The interview started with the question: from whom do you learn as a research student? Rose launched with little prompting into approximately 30 minutes of exposition of her own contacts, networks and personal and professional relationships that she saw as connected in some way with her studies. She mentioned, in order, members of the research team, her supervisors, research staff in the centre, a research student elsewhere in the university and an informal reading group of lecturers and students focused on a particular theory. Later she added more to this list.

In the context of discussing what she was learning in the reading group, but as a separate theme she took up again later, she talked about her desire to become an academic. She looked around her for what might be the identity of an academic and exposed herself to situations in which she might see the features of this displayed and have the opportunity to engage as a neophyte academic herself:

> What I'm learning: I'm learning to talk about theoretical ideas and that is incredibly important. So it is about learning. For me, … all so much of this is about learning to be an academic.

Later, in discussing another informal group with three other research students, Rose referred to them unambiguously as her peers. With these people she could be more open and not perform as an aspiring academic. The need for this she regarded as very important to her.

> [T]hat was an important group because it was about, it's about the safety and the safe space and the sorts of things … we can just say the things that you just, like I don't feel constrained in that group in terms of being careful about what I say.

As she elaborated on the details of her involvements Rose made distinctions between those she regarded as a peer and those she did not and identified aspects of a peer relation in some relationships. In her account a peer was someone who did not have significantly more experience or academic authority than she had. Some of the groups in her descriptions were seen as peer learning activities, i.e. with little sense of hierarchy, but when disaggregated, individual members of these groups were not peers. In particular, in referring to her supervisor she commented: 'I can never think of [my supervisor] as a peer, ever!'

Commentary

The contrasts between Claire and Rose's stories could hardly be greater. Yet their provided environment had strong structural similarity. Both were in their final year of their doctoral study. Both had a realistic expectation of completing successfully within the appropriate timeframe. Both identified productive and successful relationships with their supervisor, with whom they had regular contact and who provided a variety of opportunities for learning and interaction with other researchers and students. Neither were research assistants. A principal structural difference was that Rose's research was part of a large funded research project, for which she was specifically recruited. They sat only metres away from each other in similar physical surroundings. They were afforded identical opportunities to participate in both the programme of seminars, conferences and workshops and in the informal gatherings of reading and writing groups within the faculty and beyond.

Yet Claire and Rose took up radically different positions. Claire saw herself positioned as a 'student', Rose as a 'becoming academic'. Claire read the context as rendering her invisible and being silenced; Rose construed it as providing a rich array of opportunities for interaction and learning. Claire saw her student peers as providing limited opportunities for learning; Rose regarded them as creating a 'safe space' for exploration. Claire positioned herself as 'apart' from the faculty, while Rose's story epitomized the research student 'at the centre of a constellation of others' (Cullen *et al.*, 1994), in assembling resources to meet particular research/learning needs and building and mobilizing the 'community of peers/experts/others' imagined by Pearson and Brew (2002).

Both saw limits to the notion of peer, however. Claire understood herself to be 'apart' from all but a few fellow students and Rose, even when working closely with them in a project team, could not accept her supervisors as peers. It is clear that issues of power were important in their construction of others as 'peers'. The notions of 'peer' they deployed are not the same as those articulated in the common discourse of research, in which all researchers in the same field are seen essentially as peers. Of course, both students were substantively positioned within prevailing verticalized structural and pedagogical discourses of candidature and supervision, which readily

map onto differential levels of experience and expertise to construct highly determined relations of pedagogical authority. These constrain the possibilities for dispersal and the emergence of alternative discourses and subjectivities, such as those that might be mobilized around the notion of the 'peer'. It is not surprising, then, that they reported in this way. However, signs of the emergence of an alternative horizonalized discourse can be clearly detected in Rose's views. Claire's construction of her world illustrates a significantly 'closed' view of possibilities, whereas Rose illustrates the possibility of 'openness'.

The other limit to a productive uptake of the idea of peer relations as pedagogical and learning relations involves Claire's expressed frustration with the level of expertise and effectiveness of peer learning groups. This offers a challenge to the development of an effective and genuinely productive pedagogy of peer learning, which we will take up in the conclusion.

These two students mobilize espoused and implicit theories of learning to do doctoral research. Depending on what they saw as 'learning', as 'doing a doctorate' or as 'doing research', they construed the possibilities for peer learning very differently. The issue here is not therefore limited to the provision of resources or creating a research environment in a formal sense, but it is necessarily a matter of the ways in which the two students construed and took up the possibilities for themselves.

Peer learning as pedagogic discourse

Peer learning in higher education

In higher education generally, an emphasis on students learning with and from each other has been one of the key trends over the past 20 years. Various descriptions and practices have been used. Peer group learning (Collier, 1983), collaborative learning (Bruffee, 1999), cooperative learning (Mills & Cottell, 1998) and peer tutoring (Falchikov, 2001) all encompass the idea that in undergraduate education there is considerable educational benefit in students working with each other, often apart from teachers, to teach and to learn from each other. One of the influences driving peer learning initiatives was a concern that graduates were not developing the important skills of working together desired by employers. As enterprises needed the production of graduates effective in teams, universities responded at first slowly and then more positively in identifying 'working together' as a key 'graduate attribute' and began actively fostering activities that promoted this across the disciplines (Boud *et al.*, 2001). Alongside this, moves to utilize opportunities provided by technology led to increasing use of online learning. Recognition that online pedagogy was about more than delivery and the use of discussion threads as part of courses opened up new avenues for students to collaborate with and learn from each other (McConnell, 1999). Peer learning, therefore, which started as an initiative of students to cope with an unsupportive teaching regime, became increasingly systematized as a pedagogical technology initiated by teachers. It helped them cope with a need to be student-centred in courses at a time when this could not be achieved by conventional teaching practices.

While many undergraduate and postgraduate programmes have been touched in some way by this trend, there has been relatively little critical engagement or formal uptake in the area of doctoral education, with the notable exception of professional doctorates. Those designing the coursework component of professional doctorates have, not surprisingly, looked for ideas from other courses in their field and found examples of peer learning which they have been able to deploy to support the group-based models found in many such doctorates. While these and related practices have become widespread, there is a paucity of documentation of them in terms of a general theorization of pedagogies for research education.

In relation to the still dominant conception and structure of doctoral study, the Ph.D., there has been an almost complete absence of systematic development of pedagogies which mobilize the resources of the research environment itself. While it might not be expected that Ph.D. programmes would look to non-research courses for sources of stimulation for the development of pedagogies and management structures, what is striking is the almost complete conceptual separation of the theorization of research practice from that of pedagogical practice, such as it is. As we have noted, research degree pedagogy is almost exclusively couched in terms of supervision, despite the work of Pearson and others to expand the field of discussion about these matters. Further, supervision is most commonly cast in terms of research rather than teaching (Green & Lee, 1995). The situation can perhaps at this point be best understood as the current material realization of that symbolic subordination of learning or education to research noted by Pearson (1999).

Peer learning and research education

It is into this discursive arena that we seek to intervene with our introduction of the discourse of peer learning, taken from undergraduate education and offered in something of a provocation to the still elite, still autonomous, conceptual and pedagogical space of research degree candidature. We do so strategically. First, we assert the crucial importance of a renewed conceptual and practical focus on research degree candidature as learning. Here the imperatives of policy, while they too contribute to a profaning of a space of autonomy, privacy and institutional silence, might be harnessed in the interests of an educationally robust concern to reverse the discursive systems of privilege and subordination. To insist on learning is to align the task of research education as a pedagogical task of enabling learning commensurate with, if structurally distinct from, other levels of formal education.

The second strategic move in working with a peer learning discourse is to draw pedagogical attention to the notion of the peer. To take up a discourse of peer learning, in preference to other related discourses of collaborative, cooperative, networked or distributed learning, is to pay explicit regard to the salience of the notion of the 'peer' in research and research education generally. The peer is a defining figure in research practice. The institution of peer review, for example, is both indexical and productive of what comes to be accepted as good research among licensed members of scholarly communities. A discourse of peer learning which attends to the specificity

of learning in relation to research allows us to attend to the complex dynamics of peer relations in the research environment itself, then to the relationships and the learning that obtain to developing these specific kinds of peer relationship.

Within specific research degree environments there are in practice many activities and relationships involving peer relations among research students and between research students and the academics they work with. Unlike other students, research students often have staff-like privileges and can, in theory at least, become 'normal' members of research teams. In addition, they are structurally thrown to a great extent on their own resources, to learn without the direct instruction of their supervisors. They enter formally and informally into a territory of self and of peer learning. At different stages in their candidature students may participate in a number of activities as research peers. These could include: in-house seminar presentations, reading and writing groups, conference presentations, publishing in peer-reviewed journals, reviewing journal articles and conference abstracts, writing research grant applications, undertaking research in teams (of colleagues, students, industry partners), co-authoring, jointly publishing, conference organization and journal editing. Initial vertical and pedagogically highly differentiated relationships with academic staff, including supervisors, can become dispersed and horizontalized in a process that might be conceptualized as one of 'becoming peer'.

A necessary feature of peer learning is that it is reciprocal. Peers can and do learn from each other. Supervisors also learn with and from students, through such processes as learning through teaching and being challenged, becoming aware of new literature and resources, joint investigation and through exposure to new data. In some fields of science the prime research output is from the work of students and the research performance of academics is fundamentally dependent on that of students. There is a symbiotic and co-productive relationship that can be construed on one level as one between peers, although this assertion must be tempered with due attention to the differential relations of power and authority and expertise. Reciprocity does not flatten out differences (Lee & Boud, 2003) nor does it assume or produce by itself a horizontalised pedagogical space of engagement and learning. Our discussion of the term peer here serves to highlight the complexity of a conception of a research degree pedagogy which attends to both the task of becoming a student (attending to a certain set of peer relations) and becoming a researcher (with another set of peer relations in play) and for some, though by no means all, 'becoming an academic', which requires a different peer dynamic again.

There are significant dilemmas for the reconceptualization of a research education pedagogy that explores the ramifications of peer relations and co-production (Lee, 1997). There is a major tension evident in Rose's story, in particular, between the clearly horizontal relations of students as self-evidently peers and the idea of expanding her network of people with whom she engaged in the process of 'learning to be an academic'. Students are peers in the sense, at least, of their shared structural positioning as enrolled students, subjected to the institutional regimes of candidature, supervision and examination. While Rose was not so inhibited by that as to be unable to expand her network of learning and relational resources during her candidature, she

did find it impossible to conceive of her supervisor as a peer, 'ever!'. There is much to be explored here in terms of the complex (psycho)dynamics of supervision that is glossed over only at great risk in understanding the real complexity of that relationship in currently structured research degree programmes.

There is a tension to be productively explored here between the imperatives of learning to become a research student and learning to become a researcher or academic. Using the term 'peer' for both positionings has the potential for confusion. However, we suggest that this confusion is implicit and powerfully operative in the multiple positionings and trajectories that have to be negotiated by actual students, just as the term 'peer' is multiply and ambiguously deployed within the circulating discourses of research programmes in specific sites. In the terms deployed in this paper, the peer relations obtaining among students are symbolically horizontally coded, despite major differences among actual students. In contrast, the implications of 'becoming peer' in terms of trajectories of thesis production, graduation, publication and so forth are vertically coded in the sense that 'becoming peer' involves a change in status. In the absence of a public pedagogical discourse that attends to these complexities and ambiguities, it is students' own operative tacit theories which will either generate relative openness and flexibility for them or, alternatively, produce significant stress and contradiction. For Rose, attending to the desire to learn to become an academic and become 'authoritative' involves both emulation and a desire for increased status. Claire, on the other hand, experienced a loss of status from academic to student within a strongly coded, vertical binary symbolic hierarchy. The ramifications of that for pedagogical practice construe the 'environment' in complexly coded relations of power, knowledge and desire.

Within current dominant accounts students are relentlessly individualized. Almost exclusively emphasis is placed on supervision and improving supervisory practices or providing resources to research students, placing them in active research environments and reporting on their performance. The external policy pressures are multiple and contradictory, focusing on completion, but also on preparation for actual research practice postgraduation. The individualizing of research students that has been sedimented into institutional practices for many years, including in institutionally governed competition for places and scholarships, in individual achievement, in working one-to-one with one's supervisor and in unease with collaborative projects. These practices configure the student as a separate individual, a discrete unit and not a member of a group of peers or a research community. Of course, there have been counter trends, especially in the sciences, with the more common use of research teams and collaborations, but increasingly across the disciplines, in response to research policy and funding changes. There is increasing stress in these older patterns, as the newer discourses of research position and produce the effective researcher as a team member and effective collaborator. In this sense Rose's story can be read as a new story of research degree candidature, one not simply produced out of Rose's predisposition towards and resourcefulness in generating social learning networks, but as an institutional artefact of policy change, positioning her as a recipient of an 'industry-linked' scholarship and a member of a team of researchers.

Within a theorization of the research education environment as pedagogical space, and especially in changing conditions of research management, research learning can be usefully construed in terms of entry into communities of practice, where peer learning becomes one powerful tool for describing and developing a rich understanding of the learning resources available. In Lave and Wenger's (1991) sense pedagogical events offer 'situated opportunities'. Students can engage in presenting research articles, learning to present research articles and becoming writers and presenters of their own research. The idea of 'legitimate peripheral participation' in a research learning environment takes on a literal materiality here. In structured pedagogical events students can learn from their peers, learn to be peers of a particular (new) kind, acquire a greater degree of peer proximity to academics with whom they co-produce events and rehearse the peer relations of more formal public conferences and publication practices.

Here, Claire's and Rose's stories are telling. Their accounts of their experiences can be read in terms of entry or lack of entry into communities of research practice. A simple provision of opportunities was insufficient to take up positions in communities academics believed they had made available for them. For example, a student-organized, faculty-wide research conference was held during the last year of candidature of both students. Almost predictably, Rose was a member of the organizing committee, a presenter at the conference and an active participant in the production of the online publication of the conference proceedings. Claire, on the other hand, did not participate in the conference, believing that the event presented a hurdle to the imminent completion of her thesis. In the interview, however, Claire's position on events such as the conference and the research forum was to declare that she never felt a part of such developments.

Finally, in this section, we signal the need for an expansion of the conceptual resources for working with peer learning. While the notion of peer learning is becoming established in undergraduate educational practice, it has been subject to little theoretical scrutiny. In the currently available literature elaborating accounts of peer learning, 'peer' is taken uncritically to refer to other students either in the same cohort or otherwise part of the same programme. On some occasions the term encompasses 'advanced' students who act as various types of surrogate tutors. A common assumption behind much of the discourse of peer learning in coursework settings is that the position of peer allows more readily for what might be loosely construed as an 'ideal speech situation' (Habermas, 1984). That is, barriers of power and difference are assumed to be reduced when peers speak with each other, compared with when students and teachers interact. In these circumstances more open communication can therefore occur, allowing for fuller engagement and potentially greater opportunities for learning (as distinct from teaching). This can be seen as one important move to disperse and horizontalize pedagogical power and authority.

For the discourse of peer learning to be useful in developing an expanded conception of research degree pedagogy in the ways foreshadowed here, however, it must be developed to account more rigorously for research learning as a social practice. In currently available accounts of peer learning practice (see, for example, Boud *et al.*,

2001) students are little more than aggregates of individuals, brought together by nothing other than their enrolment on a course. Questions of power and difference are conceptualized only in terms of a reduction in top-down imposition of pedagogical authority. For this work to be useful as a resource for informing developmental work in research degree pedagogy, it must be supplemented by a theory of learning that is situated, positioned, socially differentiated, intellectually heterogeneous and geographically dispersed. To imagine a pedagogy of peer learning within research degree programmes would be to engage in this complexity. Learning with and from fellow students as peers, learning to participate in faculty-based seminars alongside academics and visiting scholars, learning to participate in the research, presentation and publication practices and learning to network internationally with fellow researchers, for example, all involve complex notions of 'becoming peer'.

Conclusion

An argument for an expanded conception of research education pedagogy has been advanced here. We have identified the need for more distributed and horizontalized conceptions of pedagogy which pay attention both to the actual material practices and relationships deployed by students, as well as to the differential uptake by different students of learning opportunities for relationships within the public environment. We have further identified the need for careful empirical investigation into how students construe and experience their environment, understanding this differential uptake as being intimately connected with their underlying theories of the meanings of research practice and of candidature.

Peer learning as a pedagogical discourse in this specific context of research education has been taken up and re-articulated in two main ways. The first involves learning with and from peers, fellow students first and foremost, but also co-workers, co-researchers and collaborators within and outside the university. The second concerns learning to become a research peer in the various and complex ways indicated above. Each of these involves both formal, structured and also informal practices, events and relationships that make up a complex pedagogical space. Reciprocity has been identified as a key component of peer learning, alongside a horizontalizing of the pedagogical space and an expanding of the conceptual resources mobilized by students as 'self-organizing agents' in their own research learning.

A point of concern in the development of the discussion begun here involves the need to attend to questions of what aspects of explicit pedagogy might be conducive to the development of an environment rich in opportunity for peer learning. On the assumption that pedagogy is more than a laissez-faire provision of resources, however conceptualized, but involves an articulation of a theory of learning, many important questions arise which require investigation. For example, Claire's frustration when she relates unsatisfactory learning experiences with peers in situations such as reading or writing groups raises questions concerning the necessary conditions for effective learning in informal gatherings. While such student-initiated groupings are probably universally regarded by supervising academics as a pedagogical 'good', little attention

has been paid to investigating the relationship between self-direction and guidance from more experienced academics. Notions such as 'self-direction' themselves need interrogating for the assumptions of binary oppositions between the life-world of students and the interventions of academics. There is a general need to surface assumptions of the 'good' in pedagogical discourses such as peer learning and to be vigilant in relation to the dangers of idealizing which accompany horizontalizing moves in pedagogy. Peers do not necessarily learn as a natural outcome of their being peers. Reciprocity or 'equivalence' in standing, on a horizontal plane assumed to be produced by shared studenthood, does not by itself guarantee learning. Pedagogical imperatives here involve examining questions both of power and of competence and the need to imagine different kinds of pedagogical authority in designing and supporting opportunities for more or less formal or informal peer learning.

Our aim here has been to elicit some key points of principle in theorizing a pedagogy of peer learning as a way to reconceptualize research education pedagogy as a set of distributed practices and relationships. Such principles take account of and address the needs and pressures of current policy pressures, as well as the requirements of building an intellectually sustainable research/learning environment and culture in specific sites while acknowledging and rendering visible the points of tension and potential conflict between these different imperatives.

We have explored the value of a discourse of peer learning as a way to expand the conceptual resources for imagining and developing research education pedagogy. There are, we suggest, powerful tools for conceptual and developmental work within a broad theoretical position which seeks to construe the total learning and research environment itself as pedagogy, learning with and from peers and learning to become a peer in a community of research practice. Further work needs to be undertaken to elaborate ways in which learning and research environments can be generative of these possibilities and conditions that inhibit their development. It is likely that work will need to proceed on ways of bringing researchers and students together in new forms of engagement with each other and to develop strategies that might support such joint enterprises. Recent work on new forms of contextualized collective, rather than individualistic, reflection might be productive here (see, for example, Boud *et al.*, forthcoming). Accompanying this conceptual development is a need for an agenda of empirical research on the impact of new peer learning strategies on the experiences of research students (see, for example, Conrad & Chipperfield, 2004). This would include consideration of issues such as: in what ways might a research environment support a pedagogy of peer learning and to what extent do research students take up opportunities to act as peers? The shifting dynamics of becoming peer within research communities and the notion of co-production are productive means for such reconceptualist work.

Note

1. An earlier version of this paper was presented at the Quality in Postgraduate Research Conference, Adelaide, 22–23 April 2004.

References

Barnacle, R. (2003) Transforming doctoral expectations, paper presented at *Defining the Doctorate, Mini-conference of the Australian Association for Research in Education*, Newcastle, Australia, October.

Becher, T., Henkel, M. & Kogan, M. (1994) *Graduate education in Britain* (London, Jessica Kingsley).

Boud, D., Cohen, R. & Sampson, J. (Eds) (2001) *Peer learning in higher education: learning from and with each other* (London, Kogan Page).

Boud, D., Cressey, P. & Docherty, P. (Eds) (forthcoming) *Productive reflection at work: learning for changing organisations* (London, RoutledgeFalmer).

Bruffee, K. A. (1999) *Collaborative learning: higher education, interdependence and the authority of knowledge* (2nd edn) (Baltimore, MD, Johns Hopkins University Press).

Clark, B. R. (1992) Graduate education and research training, in: T. G. Whiston & R. L. I. Geiger (Eds) *Research and higher education: the United Kingdom and the United States* (Milton Keynes, UK, Open University Press).

Collier, G. (Ed.) (1983) *The management of peer-group learning: syndicate methods in higher education* (Guildford, UK, Society for Research into Higher Education).

Conrad, L. & Chipperfield, J. (2004) The role of research higher degree students as learners, paper presented at *Re-imaging Research Education, Quality in Postgraduate Research Conference*, Adelaide, Australia, 22–23 April.

Cullen, D., Pearson, M., Saha, L. J. & Spear, R. H. (1994) *Establishing effective PhD supervision* (Canberra, Australia, Australian Government Publishing Service).

Falchikov, N. (2001) *Learning together: peer tutoring in higher education* (London, Routledge).

Green, B. & Lee, A. (1995) Theorising postgraduate pedagogy, *The Australian Universities Review*, 38(2), 40–45.

Habermas, J. (1984) *The theory of communicative action* (Vol. 1) (Cambridge, UK, Polity Press).

Kemp, D. A. (1999) *Knowledge and innovation: a policy statement on research and research training* (Canberra, Australia, Commonwealth of Australia).

Lave, J. & Wenger, E. (1991) *Situated learning: legitimate peripheral participation* (Cambridge, UK, Cambridge University Press).

Lea, M. R. & Nicoll, K. (Eds) (2002) *Distributed learning: social and cultural approaches to practice* (London, Routledge).

Lee, A (1997) Working together? Academic literacies, co-production and professional partnerships, *Literacy and Numeracy Studies*, 7(2), 65–82.

Lee, A. & Boud, D. (2003) Writing groups, change and academic identity: research development as local practice, *Studies in Higher Education*, 28(2), 187–200.

McConnell, D. (1999) *Implementing computer supported cooperative learning* (2nd edn) (London, Kogan Page).

Mills, B. J. & Cottell, P. G. (1998) *Cooperative learning for higher education faculty* (Phoenix, AZ, Oryx Press).

Pearson, M. (1999) The changing environment for doctoral education in Australia: implications for quality management, improvement and innovation, *Higher Education Research and Development*, 18(3), 269–287.

Pearson, M. & Brew, A. (2002) Research training and supervision development, *Studies in Higher Education*, 27(2), 135–150.

Wenger, E. (1998) *Communities of practice: learning, meaning and identity* (New York, Cambridge University Press).