

Developing the capacity of researchers for collaborative working

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Abstract

Purpose – The complexities and challenges inherent in research often require collaborative rather than solitary or team-based forms of working. This paper seeks to open new perspectives onto the nature of collaborative research and onto strategies to develop the capacity of researchers to engage in it.

Design/methodology/approach – This paper outlines a speculative model of collaborative working in higher education that is rooted in critical realist perspectives, using it to ground a conceptual analysis of a stage model of expertise for collaborative working taken from the Researcher Development Framework (RDF) developed in the UK by the organisation Vitae.

Findings – We highlight the contribution that theory can make to the practice of researcher development, drawing out the relevance of personal engagement, professional dialogue and collaborative vehicles to support shared practice in pursuit of mutual goals. In this way, we identify gaps within the stage model that pertain to relational, disciplinary, situational and other elements. We articulate insights for the development of the capacity of researchers for collaborative working that prioritise dialogue that is situated within given contexts for research. Our analysis draws out implications for the development of collaborative capacity of such notions as corporate agency and collaborative reach.

Originality/value – This paper articulates a novel approach to conceptualising capacity for collaborative research and offers a theoretical critique of a given descriptor taken from the RDF. As such it assists in developing the scholarly basis for the field of researcher development.

Keywords Collaborative research, Critical realism, Professional development, Researcher Development Framework, Scholarship of researcher development, Research work, United Kingdom.

Introduction

Research comprises work to extend the boundaries of what is known or possible. It represents a form of activity that is inherently challenging. Kuhn (1996), for instance, earlier argued that many disciplines are characterised by controversy over what is to be regarded as fundamental to a field. But Barnett (1999) effectively suggests that this now applies to research quite broadly, in arguing that the frameworks for understanding the world that researchers use to make sense of their data are increasingly contestable. As such, Walsh and Kahn (2009, p.29) suggest that research represents a form of activity that we can identify as troublesome to those who pursue it (see also Perkins (2006)).

What then are the processes that assist researchers in meeting such inherent challenge within their work? On one level, a demanding task can involve a division of labour, along with the associated tasks of planning and coordination. We may term this an approach to research that is rooted in teamwork, where the emphasis is on combining specialist roles in the service of a specific goal (see Belbin, 2010). But if a group of people interact with each other only on the basis of the immediate products they are working on, then the scope to generate new ideas and possibilities will be limited. Barnett (1999) proposes that researchers should seek to generate uncertainty rather than to close it down. Habermas (1984), meanwhile, argues that democratic forms of communication are required for mutual understanding and insight to develop. Research thus often requires collaborative forms of working, taking one beyond solitary working and teamwork as narrowly conceived. Collaboration here is characteristically taken to refer to shared activity in which two or more

parties from different settings work together in order to achieve goals that pertain to their practice.

Indeed, it is clear that the forms of research pursued in the 21st century increasingly necessitate collaborative approaches. Karlsson *et al.* (2008) suggest that collaboration across disciplines is rapidly becoming an integral feature of research. Haythornthwaite (2006) argues that many academic challenges are not confined to a single discipline, as with global environmental or health challenges. It is true that in the arts and humanities, scholars may not regularly co-author articles, but even here they work together in less formal ways. Cronin (2004, p. 558) draws attention to the way that researchers in these fields utilise and reinterpret each other's ideas: 'sole authorship is not synonymous with intellectual solitary confinement'. Universities are also increasingly looking to commercialise their research to exploit its economic potential, and this requires collaborative relationships that extend to industrial and private partners. Technology provides a further means to both facilitate and drive collaborative forms of research. This is evident in the emergence of the digital humanities (Siemens, 2009) and in the establishment of the internet alongside research in particle physics. But other examples abound, as with the use of virtual research environments or web-based social networking (Hepworth, 2007).

Moreover, the collaborative basis for research is now widely recognised in policy settings, as is evident in the current excellence framework for assessing research quality in UK institutions and the recent report from the Department for Business Innovation & Skills (2010) on the allocation of science and research funding. This report argues for an 'increased emphasis on bringing people together to develop creative solutions' (p. 3) given constrained public finances. Furthermore, the Research Excellence Framework in the UK (Higher Education Funding Council for England, 2012), has devised specific metrics to quantify quality and impact of research output. Evidence of demonstrable collaborative practice with industry or the public sector through knowledge exchange partnerships and contracts is a key indicator of success, as is interdisciplinary reach.

Despite this substantive growth in collaborative research, however, our understanding of how researchers work together remains limited. Wide-ranging research on collaboration typically relates to corporate settings (Kanter, 1994) and where a focus on higher education is retained then the scope is usually restricted. We see specific studies on scientific collaboration that focus on the production of co-authored papers (Lee and Bozeman, 2005), collaborations between universities and other bodies (Soska and Butterfield, 2005), the development of learning communities (Cox, 2004) and so on. Even within the relatively widely-researched area of scientific collaboration, Beaver (2001) argues that the number of open research questions is vast. Katz and Martin (1997) suggested earlier that little attention has focused on understanding the notion of 'collaboration' itself. Indeed, it remains the case that while the terms 'collaboration' and 'collaborative working' are widely used in characterising specific forms of practice, even within the scholarly sociological literature, they do not belong to the standard lexicon of social theory; as seen in their omission from the Sage Dictionary of Sociology (Bruce and Yearley, 2006).

Conceptualisation is important, however, if we are to support researchers in developing capacity to engage in collaborative research. Evans (2011) specifically argues that, as an emerging field, researcher development needs to embody higher levels of academic rigour if it is to realise a more secure position within academia. There is a need for practitioners engaged in researcher development to recognise concrete ways in which scholarship can helpfully assist their work. But there is value also in engaging with tools and approaches that are employed in the practice of researcher development. This enables one to enhance the practical relevance of any contribution from theory.

Capacity for collaboration in the Researcher Development Framework

One specific tool that has been developed for the practice of researcher development within the UK is the Researcher Development Framework (RDF) (Vitae, 2010). This framework was established as a tool for planning, promoting and supporting the personal, professional and career development of postgraduate research students and research staff in higher education. It outlines a range of skills and personal qualities that are broken down into four domains: *knowledge and intellectual abilities*; *research governance and organisation*; *personal effectiveness*; and *engagement, influence and impact*. This last domain outlines ‘The knowledge and skills to work with others and ensure the wider impact of research’, and as such focuses on capacity for collaborative working. Collaboration is specifically addressed under a sub-domain *working with others*, as outlined in Table 1. As such, the RDF essentially offers a competency model of research expertise, with each descriptor comprising four distinct levels of capability. The framework was created on the basis of a literature review and a series of interviews with successful researchers in order to articulate common attributes.

<i>Phase 1</i>	<i>Phase 2</i>	<i>Phase 3</i>	<i>Phase 4/5</i>
Aware of the value of working collaboratively to benefit research and for maximising the potential for impact.	Builds collaborative relationships with a range of colleagues within own and adjacent disciplines/research areas and with stakeholders and users of research to co-produce research outputs.	Manages and negotiates collaborations and external relationships; contributes to development of discipline/research area.	Builds collaborative relationships with a range of external organisations and bodies; negotiates at national and international level.
Co-produces research outputs with supervisors/research leaders.	Actively participates in and contributes to collaborations and external relationships.	Works in multi- or cross-disciplinary contexts; thinks comparatively.	Actively builds capacity in collaborations and external relationships nationally and internationally; contributes to reputation and vibrancy of department/institution.
Recognises common/conflicting interests within own and adjacent disciplines/research areas.			

Table 1: Descriptor for *collaboration* under the sub-domain *working with others*, from the Vitae RDF, presented at four distinct levels of expertise.

It is clearly possible to use this descriptor as the basis for mapping the profile of one’s collaborative capacity as a researcher, and then to plan and report on associated development activity, as Bray and Boon (2011) propose. A face analysis of Table 1 suggests that as expertise develops, the researcher takes on greater responsibility for collaborative work. The reach of the collaborative work also increases as phases progress, taking one beyond working internally within an organisation to include external, national and international engagements. Consequently, one moves from an awareness of both shared and conflicting interests to an ability to engage in cross-disciplinary working.

But it is not necessarily a straightforward matter to plan a shift from one stage of expertise to the next, as with moving from co-producing research under the direction of a supervisor to actively building collaborative relationships with colleagues and other stakeholders. In fact, while research collaboration is highly valued and practised by staff, early career researchers in particular express concern over lack of leadership in fostering collaborative work (Morrison *et al.*, 2003). But other issues are also likely to be relevant, as with the extent to which further aspects of collaborative work might be particularly important in given research domains. It is evident at the outset that the picture that may be gained from such mapping of collaborative capacity is likely to be partial. To raise these questions is to

question both the nature of the capacities that are to be developed and the process by which such development occurs.

A theoretical account of capacity for collaborative research

In this paper we undertake a broad analysis of the stage model of an individual's capacity to collaborate, as provided through the descriptor for *collaboration* under the sub-domain *working with others* from the RDF. This focus on the RDF helps to ground our account of collaborative capacity and its development in the practice of researcher development, given the growing use of the framework. Our focus is also determined partly by a prior interest in the topic of collaboration and by our professional roles as authors that include running a programme of doctoral education, staff and educational development, and the development of post-doctoral research staff. It is important at the outset, though, to be clear about the substantive basis for our analysis. In focusing on a single descriptor from the RDF, our approach enables us to sustain a high degree of analytical depth. It is helpful in this analysis to separate out the two broad notions of responsibility and reach in collaborative research. Furthermore, our account is grounded in a range of theoretical perspectives, which we introduce in their own terms as well as employ in analysing the descriptor itself. This extended attention to theoretical perspectives assists in illuminating characteristics of collaborative research.

We base our analysis of the RDF in significant part upon a speculative model of collaborative working in higher education outlined in Walsh and Kahn (2009) and Kahn *et al.* (2012). While this model has not been tested empirically, it is based on perspectives from critical realism, an increasingly influential paradigm originating from the philosophy of science that provides an alternative to both positivism and postmodernism. The rigour of the model depends to a degree upon its connectedness to this substantive body of theory. Critical realism argues that social phenomena are underpinned by sets of causal mechanisms and events which escape our subjective experience. As such, social phenomena are constituted as open systems, subject to a wide range of interacting influences (Archer *et al.*, 1998). Bhaskar (1998) further argues that these mechanisms and events belong to different strata or levels of reality. While factors from different strata may interact with each other, the strata remain irreducible to each other. We pay particular attention to the most immediate levels of social reality: the individual considered as an entity, interactions between individuals, and social structures. Archer (2000), meanwhile, specifically identifies physical and practical dimensions to natural reality, in addition to the social. She argues that practice is pivotal in any interaction between these spheres, providing as it does a focal point for human activity; in our case collaborative research itself constitutes the practice concerned.

Figure 1 presents our stratified model of collaborative working in higher education. It posits that shared activity in pursuit of research goals is a focal point for mutual interactions between personal engagement, professional dialogue and the underlying vehicles that support a collaboration. We use the term 'collaborative vehicle' to refer to underlying infrastructure that can support a collaboration whether this is social or physical in nature. Collaborative vehicles can thus include a piece of equipment or a scholarly society. In this way, we highlight specific aspects of natural reality that affect collaborative research. These factors affect the way that shared activity unfolds, and thus the extent to which research goals are realised. Rather than separating out an individual from a research environment, with individual capacities conceived independently of the context in which someone researches, the model conceives the contribution of the individual as intertwined with the social and structural context for research. It thus builds in factors that pertain to each of the three strata and dimensions of natural reality identified above. We explore the characteristics of this theoretical model as an integral element of our analysis of the given descriptor from the RDF, while structuring our account in the first instance on the basis of the agenda set by the RDF in

terms of responsibility and reach in collaborative research. This then provides a basis to consider implications for the professional development of researchers, helping us to draw out the practical relevance of our contribution.

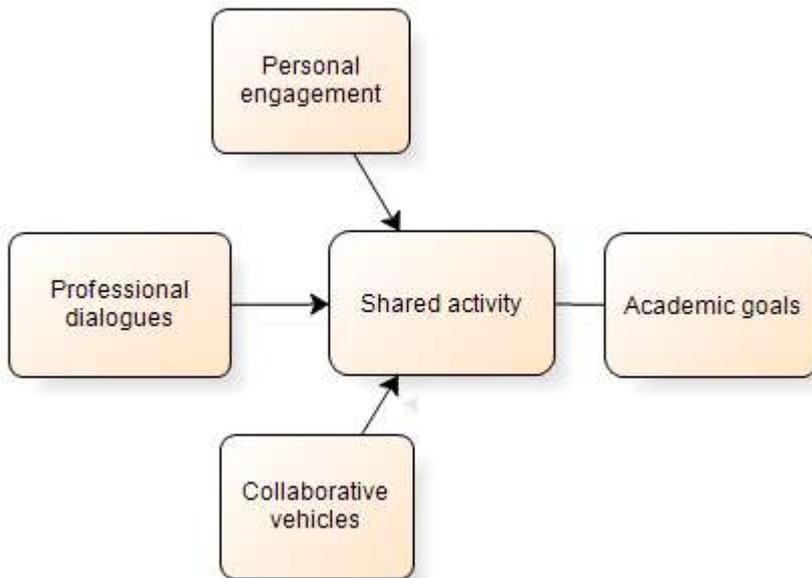


Figure 1: A stratified model for academic practice as collaborative working, adapted from Walsh and Kahn (2009).

Responsibility for collaborative working

The RDF suggests that researchers shift from an awareness of the role that collaboration plays in research, to actually working collaboratively with others, and then to taking responsibility for developing existing collaborative ventures or initiating new collaborations. Archer (2000) uses the term ‘corporate agency’ to refer to the capacity of a group of people to act together in pursuit of a common agenda, with significant overlap thus present with our notion of collaboration. Primary agency, meanwhile, refers to the agency that an individual exercises in their own right, in relation to one’s particular position within a given social context. Archer, though, argues that the shift from primary agency to corporate agency does not occur automatically; it is only in finding ways to work with others that primary agents become corporate agents, and begin to transform society (Archer, 2000, p. 60).

Yet, what are the means by which corporate agency is expressed? How does one articulate mutual interests, and organise for joint action? This is not something that it is easy for a stage model of collaborative research such as the RDF to articulate so directly. By contrast the elements of our stratified model help to explain such an emergent notion as corporate agency. While Archer gives a central place to an individual’s own reflexive deliberations in the way in which the agency of an individual is realised (Archer, 2007), social interaction is required for a group to identify, prioritise and act on mutual concerns. We thus suggest that *professional dialogue*, or the discourse that occurs around practice, constitutes a critical influence on the way in which shared activity unfolds. We connect here to fundamental insights from the theory of hermeneutics, which argues that understanding emerges in significant part from dialogue (Gadamer, 1989). If we conceive research as troublesome activity, then we must also privilege in some way the search for understanding. There is scope here to pursue goals pertaining to collaborative research that are of differing

importance to those involved, so that a process of exploration and negotiation is required to explore the possibilities.

But this does assume that individuals are working to align their own goals with those of others. O'Byrne (2011) identified how one set of researchers actively worked towards such mutual goals, establishing new research groups or networks in the process rather than relying on existing groups. The troublesome nature of research suggests that significant space remains for the *personal engagement* of individuals, as researchers make a significant contribution to the direction of their work. While principal investigators might have significant power over those engaged in their research teams, the creativity required for research cannot be commanded at will. But, equally, a supervisor also needs to engage in order to support a research student or early career researcher in writing for publication. This aspect of the stratified model draws out the agency of the individual, even as it is pooled with that of others, characterising it in this case as engagement with the shared practice.

The structural factors that are present within any given context can thwart or support collaborative research, whether these be departmental roles designed to facilitate research activity, research groups, memoranda of understanding between institutions, the infrastructure of publishing and so on. But, equally, there are aspects of natural reality that extend beyond the social but which also support collaborative work, as with technology, equipment or estates. Universities are increasingly ready to adopt more strategic approaches to research funding, given the role now played by research assessment exercises and the desire to attract large-scale research funds. Specifically in the UK, one of the first countries to introduce performance-based funding in the early 1980s, the sector has experienced significant investment in staffing, technology and equipment in preparation for external scrutiny of quality of research output (Hewitt-Dundas, 2012). *Collaborative vehicles* play an important role in the success of collaborative research.

Furthermore, it is important to consider how these different elements of the stratified model interact with each other. Professional roles provide one example of such interaction, Archer (2000) argues similarly that roles provide a point of contact between structure and agency. Roles that are undertaken in collaborative work affect the extent to which one is likely to adopt concerns that are relevant to joint rather than solitary forms of action. For instance, a role that is focused on coordinating links with industry opens up access to new knowledge, engenders related concerns, and allows scope for action. Roles can also relate to the care and use of equipment, something that is more likely to draw colleagues together where the cost or scarcity of the equipment increases. Practice that is associated with equipment or technology is a good entry point into shared work with others, allowing as it does for interaction and dialogue. Familiarity with particular settings for research is also relevant, as with archival research.

An orientation towards building capacity for future collaboration is pertinent here, something that is relevant to junior researchers as also to experienced ones. Spending time taking on a role that includes developing relevant practical expertise could pay dividends in enabling an individual to engage with subsequent collaborative work, as could work to develop specific collaborative vehicles. We see, for instance, how 'social sharing of cognitive achievements presupposes *trust* ... the central characteristic of [which] ... is anticipated collaboration' (Kramer, 1999). Trust is indeed part of the social capital that Putnam (2000) argues is essential for civic engagement more widely. Prior professional interaction is particularly helpful in building trust, as with work to organise a conference together or with discussions held while operating research equipment. The descriptor for Phases 4/5 in Table 1, 'Actively builds capacity in collaborations and external relationships' need not be seen as a final stage of expertise. Nonetheless, it is helpful that the RDF views such capacity building for collaboration as an ongoing focus for a researcher, rather than as a response, say, to a given funding call or policy shift.

Finally, the stratified model draws our attention to the situated basis for collaborative research, drawing out also the complexity of its personal and social dimensions. There are

similarities here with the findings of Solomon *et al.* (2001), who highlight the multi-layered nature of relationships in collaborative research. The given RDF descriptor, by contrast, offers a relatively simplistic notion of collaboration, one that is detached from the contexts in which collaboration occurs. It is perhaps not surprising that practical capacities are also downplayed in the RDF as a whole. Practical expertise, for instance, extends beyond the limited focus within the RDF around the execution of research methods. A practical focus is relevant in many disciplinary settings, particularly where the use of equipment or where applications are entailed. It is clearly difficult for a competency framework which is designed to incorporate distinct stages of expertise to reflect such complexity, as with the way that expertise varies from one discipline, or even field of research, to the next.

We see here an inherent weakness stemming from the narrow focus on individual competency. Bolden and Gosling (2006) offer a critique of the competency agenda within the related domain of leadership, highlighting how an exclusive focus on competency prioritises individualistic notions of expertise that sidelines, amongst others, the situational and relational dimensions. Based on a review of literature around the use of competencies within organisations, they argue that a focus on competency can fragment understanding of a role and promote conformity instead of diversity amongst individuals. They suggest that it downplays situational aspects, qualities that cannot easily be measured, and the new capacities that might be required in the future.

Reach in collaborative research

It is perhaps no surprise that interviews conducted during the development of the RDF with a set of excellent researchers have identified that collaborative research can involve working with external partners. We can use the term ‘reach’ to refer to the extent to which a collaboration is constituted by those who are different from each other. It is important to acknowledge the full range of ways in which partners must cross boundaries in working together. Reach may be specified first of all in geographical terms, to refer to physical proximity. The terms ‘remote’ and ‘distributed’ collaboration are also commonly used in this regard, as Ponds *et al.* (2007) indicate. Cultural reach, including civic engagement activities, is of further importance. This reflects the extent to which partners are rooted in different regional and national cultures. And we can also identify collaboration across institutions, disciplines and sectors. There is an increasing tendency for collaborative work across industrial and academic settings, as across governmental boundaries (Ponds *et al.*, 2007). There is clearly overlap between these different characteristics. In many cases, institutional reach is implied when partners are located at a distance.

While the term ‘collaborative reach’ characterises the extent to which a collaboration draws together varied partners, it also implies that collaborations with extensive reach may be able to attract funding and create research outputs that would otherwise not be possible. Bozeman and Corley (2004) argue that where researchers collaborate with others beyond their own work group they tend to have larger grants, an arrangement that is particularly relevant in the sciences. They refer to such researchers as ‘cosmopolitan collaborators’. There may be greater scope for pursuing mutual goals that have different value to the partners when working across such patterns of difference. But it is also the case that it may be necessary to work with external partners or develop external relationships even in the very early stages of a research career, something that is left to Phase 2 in the RDF descriptor. Fowler *et al.* (2009) argue that junior researchers may be working in institutions where few, if any, colleagues are engaged in similar research, so that it becomes essential for them to collaborate with experienced researchers in other institutions. They point out that this is particularly true for the discipline of education, given that teacher training is often separated from its research base. But it is also the case that there are significant discontinuities between other domains of professional education and their respective research bases in higher education.

Collaborative vehicles are important in addressing many of the challenges that arise in collaborations with extensive reach. Technology takes on particular importance in supporting collaborative work that is carried out between partners at a distance; and it thus can be used as a collaborative vehicle. Indeed, the use of technology may explain why collaboration at a distance need not be harder than collaborations between partners who are co-located, as Ponds *et al.* (2007) argue. One also needs to attend to the structures that underpin collaborations with extensive institutional reach, as with a memorandum of understanding, in that many vehicles to support collaborative working are located at institutional level. Our analysis suggests, though, that those who possess capacities that articulate with structural elements that help bridge differences between the partners are particularly well placed to undertake collaborative research. For instance, those with specific technological expertise may be able to gain experience of collaborative working at an earlier point than might otherwise be the case or may be able to contribute at a higher level to shaping a collaboration.

It is important to be able to judge the extent to which the pursuit of any given research goal would benefit from a collaboration incorporating varied perspectives or expertise. Walsh and Kahn (2009, p. 30) suggest that a multifaceted dialogue can encourage emergent working to occur, in which shared activity is not completely planned from the outset but unfolds over time. At the same time there will be a need for partners to make concerted efforts to understand each other's vantage points. Structures may be needed to provide space for such *professional dialogue*, or to ensure that it retains a critical edge. And we can see ways in which such structures might enable a more junior researcher to work in multi- or cross-disciplinary settings at the very earliest of stages, as within a PhD focused on an interdisciplinary research problem with joint supervisors from the respective disciplines.

Yet, maintaining a constructive dialogue is difficult when working with partners who display different mentalities. Davies (2009), indeed, argues that it is challenging for partners in an interdisciplinary initiative to come to realise the limitations of their own disciplinary perspectives. Attentiveness towards values that differ from one's own is required if one is to catalyse the *personal engagement* of others. Carroll *et al.* (2008), though, suggest that the competency discourse downplays the importance of awareness and consciousness in focusing on what is measurable. Experience of operating in a given country or fluency in the relevant language could again lead to earlier experience of collaborative work or to a more substantive contribution in the dialogue that accompanies shared practice.

Implications for the professional development of researchers

Our analysis here has exposed some of the complexity evident in what constitutes capacity for collaborative work. There is clearly a challenge entailed in promoting researcher development in relation to such complex capacities. Putnam (2000) suggests that bridging capital, which allows people to reach out to those who are different to each other, constitutes an especially challenging form of social capital to develop. The stratified model does, though, offer one way to expose some of this complexity.

It may help for a researcher to be aware that corporate agency is grounded in a dialogue that takes into account each other's aspirations, or to appreciate potential advantages that can accrue from a collaboration with extensive reach. Bozeman and Corley (2004) suggest that researchers are not all that cosmopolitan in the collaborations they choose to set up, rather preferring to work collaboratively within the same research group. One could look to promote dialogue that incorporates a range of perspectives. The RDF itself could be used in this way, rather than as the basis for autonomous forms of profiling, planning and reporting. Indeed the integration of more communal forms of reflective practice offers one important way forward. But this will depend on establishing 'local spaces which facilitate communicative encounters', as Mutch (2010, p. 254–55) proposes. Such spaces cannot be assumed in collaborations with extensive reach. Solomon *et al.* (2001, p. 281) highlight a

'discomfort in collective reflexivity' for researchers from two different contexts. Establishing spaces for communication could be as important as any more formal means of researcher development. One might see project meetings that incorporate open conversation around future collaboration, physical spaces in which to hold regular informal discussions, the use of technology to encourage a range of perspectives in project communications and so on. In this way, a community of practice can become as much a space for learning amongst the 'expert' researchers involved as for those 'novice' researchers whose learning is characterised by legitimate peripheral participation (Wenger, 1998). We see ways here in which collaborative vehicles help to give shape to professional dialogue, and thus improve the extent to which a group of researchers are able to act as a social learning system (Wenger, 2000). Forms of development such as action and mentoring similarly open up space for a more communal approach to understanding or advancing one's practice.

Relationships, have wide relevance in professional development. One might consider forming supervisory teams on the basis of readiness to undertake specific developmental roles in relation to the student, rather than simply focusing on splitting the work of directing the student's research. This is to take advantage also of structural elements in shaping the dialogue that emerges in relation to professional development rooted in collaborative research itself. Halse and Malfroy (2010) discuss the role of the supervisor in initiating connections for their doctoral students. The use of the expert's (supervisor) professional network provides a trusted and realistic entry point for the novice (doctoral student) into collaborative work. There is a recognition here that research expertise is located within social networks, and the 'networked expertise' (Hakkarainen *et al.*, 2004) of competencies that arise from such social interaction, rather than remaining isolated from the individual or rendered only in text or other formal academic outputs. An emphasis on cohort-based training during doctoral education may, though, leave less scope for a research student to establish relationships with researchers in other contexts to support or establish future collaborations with extensive reach.

It is evident that collaborative capacity need not develop in the linear fashion proposed in the RDF, with the staging and 'clear trajectory' for a researcher's development that Bray and Boon (2011) note. Indeed, Bray and Boon (2011) include a quotation from a participant arguing that one can be 'at different levels at the same time'. We have specifically seen how different 'levels' of collaborative capacity might be present at the same time. We would thus emphasise the distributed nature of responsibility for collaborative working. We have seen, too, the importance of individual researchers capitalising on their capacity to engage in professional dialogue, or the extent to which they are directly connected to specific collaborative vehicles. Experience from beyond the immediate setting of research can play a key role here, as with earlier experience of working in industry or professional practice in such fields as medicine, management or architecture. Research in the arts and humanities often benefits from incorporating a reflective awareness that is grounded in one's own prior experience. Differences open up here between researchers based in pure and applied contexts (and thus also between research students on professional doctorates or PhDs), as also between sciences, and the arts and humanities. Bolden and Gosling (2006) suggest that competency models have a tendency to promote formulaic approaches to professional development, as when targeting a descriptor, identifying one's stage of development and picking out activity that will support moving up to the next level. It is clear in relation to the descriptor we have considered in this paper that professional development need not follow a path that can be fully laid out in advance.

In an increasingly complex world, it is hard to sustain linear notions of competency, in which an individual progresses in a straightforward fashion from 'novice' to 'expert' (Benner, 1984). One challenge occurs as a result of the different cultures that are associated with becoming an expert. Boud and Solomon highlight this when they explore how members of a research team examined their own learning (2003, p. 330):

One of the key points made is that to name oneself as a learner suggests incompetence or lack of expertise in performing one's tasks. A key finding was that experienced researchers and adult educators had difficulty legitimising a focus on their own workplace learning.

Solomon *et al.* (2001) similarly suggest that it may not be in the best interests of researchers to relinquish the expert role and position themselves as learners. But the study by Karlsson *et al.* (2008) shows the power of relinquishing the expert role of the academic; researchers can learn how to learn and gain deeper understandings about their own professional learning process, which can have continuing positive implications for their workplace learning. Hakkarainen *et al.* (2004, p. 215–6) also consider the benefits which can be realised by movement across boundaries. Establishing spaces for dialogue in a collaboration, or incorporating specific roles into a research group to promote mutual learning need not, though, carry a stigma if the focus is also on opening up new avenues for research. Indeed, there is scope for funding bodies to realise the value that a focus on learning can bring within a research project. This would be true not only in terms of increased research capacity, but also for improved research outcomes.

Conclusions

Developing the capacity of researchers to engage in collaborative activity represents a substantive challenge for professional development. We have shown in this paper that it is helpful to approach these issues from the vantage afforded by a theoretical approach, enabling us to draw out the relevance of underlying patterns of personal engagement, professional dialogue and collaborative vehicles in both understanding and developing capacity for collaborative working. The use of such a model can enable one to focus attention on key areas that influence collaborative working, and this in itself may be relevant in framing one's own professional development or activity aimed at assisting the development of others. In this way, we have been able to see how the academic rigour for which Evans (2011) calls can yield insights for the field of researcher development. Part of the challenge here is to ensure that researcher development retains a broad focus rather than narrowing itself to competency alone, with space reserved for the adoption of new perspectives and socialisation within a research environment (see also Evans, 2011, p. 77). Such a focus is particularly important when considering collaborative research with extensive reach.

Bray and Boon (2011) argue that the RDF has significant potential for use within researcher development, and indeed the establishment and use of the RDF has helped to raise the profile of researcher development across the sector. They suggest that the minority of dissenting voices identified within their study 'may well reflect variations in learning styles and preference regarding personal reflection' (p. 110). Our analysis highlights a set of inherent limitations to the framework that need to be explicitly acknowledged. While it is clearly possible to use the RDF in supporting the development of researchers, we suggest that such use should be accompanied by an awareness of these limitations.

Our analysis of a specific descriptor from the RDF suggests that the framework downplays the social, disciplinary and contextual basis for conducting research. There is clearly scope for a wider critique of the RDF as a whole. In focusing on a fragmented and staged set of competencies, our analysis suggests that the RDF does not address some of the substantive complexity that is entailed in conducting research. An appreciation of the need to engage in dialogue with others, and to capitalise on ways in which (often local or disciplinary) structural factors support collaborative research is, however, essential in realising corporate agency. Bolden and Gosling (2006, p. 159) propose more generally that the competency discourse acts as a restraint, 'restricting the kind of talk that most contributes to effective collaboration and collective engagement'. We would suggest that the field of

researcher development should not sideline the varied practices and contexts that are integral to conducting research.

We highlight the benefit of forms of professional development that are rooted in social practices. It might be said that an approach which prioritises such elements as dialogue and future potential for collaboration offers an inefficient approach to researcher development. But efficient approaches are not necessarily effective in generating the breakthroughs that help to sustain the intellectual basis of the academy or in facilitating the relationships that enable mutual understanding to develop. We contend that our analysis offers a means by which to help shape holistic and thriving approaches to developing the capacity of researchers to engage in collaborative working.

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