

Work-based doctorates: professional extension at the highest levels

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Abstract

The growth and evolution of professional doctorates in Australia, the UK and other parts of the English-speaking world has been widely reported and discussed. Recently, forms of doctorate have emerged that are not geared to specific professions or disciplines and are used by senior practitioners as vehicles for professional development and for addressing complex work issues. These transdisciplinary, candidate-centred, research-and-development programmes can collectively be referred to as work-based doctorates. Although stemming from more than one tradition they are evolving towards a set of common practices that reflect the transdisciplinary model of work-based learning used in some UK and Australian universities. Evidence is beginning to indicate that these doctorates have significant value in terms of organisational benefit and individual professional development, and although they still occupy disputed territory within the university they are capable of being conceptualised and implemented in a way that is intellectually rigorous and robust.

Introduction

Since the establishment of the PhD as the principal doctoral qualification across much of the world in the twentieth century, the accepted purpose of the doctorate has been academic knowledge-production and the supply of new university staff, more recently extended to the production of researchers for the 'knowledge economy' (Usher 2002). In recent years there has been increased recognition that a majority of PhD graduates neither follow nor necessarily intend to follow an academic career (Austin & Wulff 2004, Park 2007), as well as acknowledgement of the role of doctorates in career development in professions other than academe. The latter is evidenced particularly in the rapid increase in the number and variety of profession-specific doctorates over the last twenty years (Bourner, Bowden & Laing 2000, Maxwell & Shanahan 2001), and more recently in their evolution from models that can be characterised as 'coursework plus shortened PhD' (the 'first generation' professional doctorates described by Maxwell [2003]) to those that are more closely geared to practising professionals undertaking research and development in the workplace ('second generation' doctorates [*ibid*]).

The development of professional doctorates has largely proceeded within specific professional boundaries which may be strongly discipline-based (such as engineering, medicine, psychiatry and psychology), more multidisciplinary or clustered in nature (such as education), or show a mix of both characteristics (business and management). In some professions the appeal of these doctorates is generally to recent graduates or early-career practitioners, with some programmes designed specifically for entry to particular branches of the occupation (such as EngD for research engineers or

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DClinPsy for clinical psychologists). However, there are also increasing numbers of mid- and later-career practitioners who embark on doctoral programmes for purposes that can collectively be classified as professional extension, including supporting a major development or change effort, taking forward a specific area of practice, consolidating and establishing recognition for an area of expertise, and setting out their credentials as a leading member of their profession or field (Costley & Stephenson 2008, Doncaster & Lester 2002).

These established professionals typically approach their doctoral candidature from a significantly different starting-point from the traditional target group for both research PhDs and many profession-specific doctorates (see for instance Doncaster & Lester 2002 and Stephenson, Malloch & Cairns 2006). They already have substantial experience in their fields and will often have a good evidence-base to support this, taking the form for instance of documentary outputs, organisational systems, products of various kinds and in some cases significant published works, if not necessarily in academic journals. Some will have carved out roles and careers that are to a large extent individual rather than being easily defined by occupational frames of reference, and all will have extensive bases of real-world knowledge. Most will be working across the boundaries of conventional academic disciplines, even if their core work is located within an established profession; and some, although individually 'professionals' in the sense discussed by Hoyle & John (1995), will be working in contexts where their profession is defined by their personal knowledge-base, experience and repertoire of skills rather than by any standard occupational or professional classification. Motivationally this group is much less likely to be interested in pursuing research as an end in itself or contributing to the stock of academic knowledge than to using an enquiring and innovative approach to practice and producing knowledge that has direct application to their professional endeavours (Doncaster & Lester 2002).

The increasing use of the doctorate as a vehicle for professional extension raises the question of whether a different type of doctorate needs to be distinguished: one that is neither a research PhD in the conventional sense nor a professional doctorate in the occupation-specific mould whether first- or second-generation in type. The idea of a 'practitioner doctorate' has been put forward by Lester (2004) drawing on developments in both the UK and Australia, and working from a similar base Stephenson, Malloch & Cairns (2006) discuss the emergence of a third generation of professional doctorates where individual programmes are negotiated and directed by the candidates themselves. Alongside these there are some now well-established PhD programmes that are based on action research or action learning and are designed for senior managers and professionals to take forward their practice (e.g. Perry & Zuber-Skerritt 1994, Zuber-Skerritt 2006). Finally there is an indication that some second-generation professional doctorates are evolving in the direction of one or other of these models, particularly in education (Scott *et al* 2008) and business (Morley & Priest 2001, O'Mullane 2005) where doctoral candidates tend to enter with significant experience to their credit. Taken together these developments suggest the emergence of what can be termed a work-based doctorate, as distinct from a professional doctorate designed for a specific occupational field. Without suggesting that the work-based doctorate needs to be offered in more than a proportion of higher education institutions, it is becoming established as a distinct doctoral model or paradigm at least in the UK and Australia.

Conceptualising the work-based doctorate

The work-based doctorate generally reflects the paradigm of negotiated work-based learning that has been developed in several principally British and Australian universities (Boud & Solomon 2001, Lester & Costley 2010), taking the concepts underpinning work-based, candidate-driven programmes and developing them to the highest level of the qualification spectrum (Portwood & Thorne 2000). In summary this approach to higher education takes the learner or candidate and his or her work context as the starting-point, rather than a professional or academic discipline; in a sense the 'curriculum' is work itself (Boud 2001), and in the most developed examples work-based learning sits in the university as a transdisciplinary field in its own right rather than as a mode of learning within a specific area of study (Costley & Armsby 2007a). In this tradition the individual programme, which can include relevant previous learning, modules and courses, independent study and most essentially forward-looking work-based activity, is generally negotiated through a learning agreement.

Underpinning work-based learning are a set of developmental philosophies that can be traced back at least as far as John Dewey's work in the early part of the twentieth century (Dewey 1916). More specific influences come from reflective practice (Schön 1987), action learning (Revans 1980), and action research (Lewin 1946) and some of its variants such as soft systems methodology (Checkland 1981) and participative enquiry (Reason & Rowan 1981), as well as ethnographic and insider-researcher perspectives (Costley & Armsby 2007b). Epistemologically this kind of work-based learning draws on three traditions: an action-based pragmatism that emphasises the interdependence of knowing and doing, a constructivist and to some extent phenomenological perspective that sees the learner as making sense of situations from an individual and autonomous position, and an action research or praxis-oriented philosophy where there is a concern to create and learn from change through enquiry-driven processes. Schön's reflective spiral in which knowledge and practice inform and modify each other is very much in evidence in work-based learning, as is Revans' idea of disciplinary knowledge being modified through the questioning insight that is gained from engaging with practical issues.

Taking these principles to doctoral level points to a type of programme that is candidate-driven, emerges from context-based concerns, effects professional development for the candidate, and uses an (action-oriented) research perspective to create practical development and change. In the terms of Kitchener & King (1981) this suggests developing to a point of epistemic maturity, where the practitioner is concerned with the most compelling and effective real-world 'maps' of situations and phenomena rather than with either purely theoretical or pragmatically simplified representations. At a practical level it will be concerned with working at and extending the leading edge of a professional or organisational field, with significant impacts in both the candidate's profession or community of practice and in terms of his or her personal professional development. There is also an implication that practice moves beyond a problem-solving, fitness-for-purpose level to a point where it has adequacy for the 'messes' or complex problematic situations described by Ackoff (1974) or the 'wicked problems' of Rittel & Webber (1984).

The purpose and perhaps key criterion of the work-based doctorate can therefore be described in output terms as making a significant and original contribution to practice that is of public value, and in process terms as developing or confirming the candidate as a leading member of a professional community of practice (Lester 2004). The first idea parallels the notion of making an original

contribution to knowledge in a research doctorate. While the work-based doctorate often does result in conventional academic publications its essential output is what one university describes as a 'public work,' i.e. a product, publication, system or framework that has visibility and relevance beyond the private sphere of the candidate's organisation, business or immediate client. This inevitably does involve making a contribution to knowledge, but it may be mainly in the form of Mode 2 workplace knowledge or know-how (Nowotny, Scott & Gibbons 2003) rather than formal discipline-based knowledge, and as with some doctorates in the visual and performing arts (Macleod & Holdridge 2004) the expression of this knowledge does not always need to be in written form.

The idea of recognition as a leading member of a community of practice embodies the notion of 'becoming peer' described by Boud & Lee (2005), but in relation to a community of practitioners in a field of work rather than in an academic discipline. The graduate of the work-based doctorate will have contributed to the development of a field of practice which, whether or not it is recognised as part of a formal profession, will typically provide recognition within a practitioner community as having significant value; s/he will literally have the *authority* as an originator of practice to debate matters on an equal footing with others in the field or profession. In this sense the position of the work-based doctorate in relation to professional fields can be analogous to that of a senior or higher doctorate (e.g. DSc or DLitt) in academic fields (O'Mullane 2005, Powell & Long 2005).

Practices and pedagogies

Lee and Boud (2008) describe how the idea of the doctorate as an educational process, rather than purely a research process, has come to the fore over the last twenty years. While their discussion is concerned principally with the research PhD it is relevant to the work-based doctorate in that it allows for the idea of the doctorate having a curriculum as well as a pedagogy or distinct set of practices that are based in a particular educational philosophy. The curriculum, as Boud (2001) argues for work-based learning in general, is individual and grows out of the candidate's professional context, past experience and current focus of attention. It is therefore essentially practitioner-driven and located in a specific context rather than in an academic discipline or professional field.

A generic set of principles and processes can be distinguished that apply to most work-based doctoral programmes, whether these have grown out of the action research or action learning tradition or from negotiated work-based learning. Perhaps the central principle of work-based doctorates is that they are individually practitioner-centred and structured through objectives that are identified by the candidate as central to his or her practice: the candidate becomes viewed not only as a self-organising agent (Cullen *et al* 1994) or an autonomous or enterprising self (Tennant 2004), but as the main agent of control of their programme (Stephenson, Malloch & Cairns 2006). This requires a substantially different relationship between the candidate and the university than is present both in the traditional research PhD, which can be regarded as a form of apprenticeship alongside an established researcher, and in more structured forms of professional doctorate where the shape of the programme and focus of the project or thesis are delimited by what the institution regards as the legitimate coverage of the relevant profession.

The essential principles of the work-based doctorate are that it uses the candidate's experience and context as a starting-point; it encourages reflection on and articulation of previous learning and achievement as a basis from which to take forward the doctoral endeavour, whether this is formally

recognised through a credit process or simply brought in to the programme as a foundation for the work to be undertaken and presented; it is self-organised and negotiated with the university; and it results in a practical output that meets, either directly or with the addition of a narrative or explication, the university's expectations for doctoral work (Costley & Stephenson 2008, Doncaster & Lester 2002, Zuber-Skerritt 2006). Central to this are the structural element of a learning or project agreement and its associated criteria; the productive element of the project itself; the process element of support and supervision; and critically a set of criteria against which doctoral work can be judged which, while meeting generic national and institutional expectations for doctorates, are grounded in (or at least accepting of) the principles of work-based learning discussed in the previous section.

The learning agreement or project proposal for work-based doctorates is typically entered into at some point after the candidate has had an opportunity to reflect on previous learning and experience and make a case for his or her preparedness for doctoral-level work, but before the project itself (or at least the drawing-together and narrative or explication stage of a piece of synthesis) actually starts. At this point the candidate will generally have a good understanding of relevant methodologies and perspectives, and will also be conversant with the standards applicable to doctoral work and how they apply in his or her particular context (Costley & Stephenson 2008). In outline the proposal will typically set out the starting-point and objectives of the work, explain its significance to practice and its capability for meeting doctoral criteria, and put forward a plan of action that includes timescales and anticipated resources. In many cases it will be a tripartite agreement that involves representation from the candidate's organisation, profession or work context as well as from the university.

The 'project' or practical undertaking is a consistently central feature of work-based doctorates, even if the form and focus of the project is highly varied, methodologies are diverse and products are individual if tending to be dominated either by a thesis-style output or a portfolio accompanied by a critique or reflective narrative (Costley & Stephenson 2008, O'Mullane 2005, Zuber-Skerritt 2006). Projects may vary from contextually-specific research investigations, through product or systems development and organisational change activities, to portfolios that cohere around the personal profile and professional development of the candidate. Methodologically there is a tendency for candidates to adopt approaches that they are comfortable with from their disciplinary or professional backgrounds, although the dominance of contextual factors means that even projects which draw heavily on quantitative data tend to be located in an overall frame of reference that is influenced by action research, case-study method or other principally interpretive approaches (Costley & Armsby 2007c, Perry & Zuber-Skerritt 1994). Experience suggests however that there are enough commonalities to support generic guidance processes in the early stages of doctoral candidature, though they need to be more creative than offering standardised research methodology training.

The relationship between academic staff and the work-based doctoral candidate is likely to be more one of advising or mentoring than supervision (Boud & Costley 2007). Because doctoral projects will be situated outside the university and in an area where the candidate's expertise may be greater than that of anyone in the institution, the traditional role of discipline-based supervisor to whom the candidate is in a sense an academic apprentice is unlikely to be appropriate. Some universities split the advisor role between two people, one generally a core member of programme staff who is thoroughly familiar with the doctoral programme and is principally concerned with matters of process, and the other an internal or external specialist who has insights into the professional, contextual or methodological issues with which the candidate is working. For the academic, this points to taking on

a new 'identity' as a learning consultant, facilitator and critical friend within a discourse of peer learning (Boud & Tennant 2006), and learning to work as an adviser rather than as an expert supervisor (Lester & Costley 2010). As Boud & Tennant argue this suggests a different form of academic practice to that of the disciplinary expert, but one that is no less reflexive or intellectually challenging.

Doctoral outputs: some findings and issues

An insight into how work-based doctorates actually work in practice, and some of the tensions involved in implementing them, is provided by an international programme at one of the UK's leading providers of work-based doctorates. This university was one of several that were involved in the 1990s in one of a series of government-sponsored projects to develop higher-level work-based learning (see Brennan & Little 1996), subsequently developing its work-based provision as a major part of its overall strategy. As well as offering the doctorate from its main London campus the university operates from a number of overseas centres that either take the form of regional offices or are set up in partnership with local institutions.

The introductory curriculum for this doctorate has recently been reviewed, and in addition its candidates' outputs were the subject of a small-scale study by one of the authors. The latter study was undertaken primarily to examine how professional knowledge is created in the workplace, a subject that is reported on by Lester (2012), but it also identified points and issues about the processes and products emerging from the doctorate over a period of nearly a decade. In brief, the study took place in late 2009 and involved examining 33 doctoral outputs, drawn to provide examples from across the doctorate's then lifespan and from each of the seven countries in which it is run, but without any other preselection. The examples were almost evenly split between UK-based and international projects, and candidates were 60% male to 40% female. Candidates were drawn from a broad range of professions and industry sectors and the project topics ranged across education and training, professionalisation, evaluating and improving service provision, improving communication and advice, organisational development, coaching, and single examples from general management, information systems, maritime safety, and process engineering.

These doctoral projects fell into four types. The first (27% of outputs) consisted of fairly standard research studies, variously quantitative and qualitative, that while they addressed practice-related topics were pursued from the viewpoint of a detached and largely objective researcher rather than an involved participant or insider. The second (24%) could be described as classic practitioner research projects, with research being pursued in a work setting in a way that was interwoven with practice; typically the research occupied the foreground of the project (at least when written up), with change or development taking place in the background or on a small scale prior to wider implementation. The third (30%) were essentially development or change projects that were pursued as part of (or an extension of) the candidates' work, but taken forward in an intellectually rigorous and critically reflective way. While not research projects *per se* these employed research principles (generally from an action research or soft systems paradigm) and produced insights and impacts beyond what would normally be thought of as the practice context; they can be described as practice-as-research. Finally, a fourth group of outputs (18%) were essentially syntheses, taking collections of substantial work that ranged from closely-related projects to outputs over a substantial part of career and

reflecting on them to produce material for dissemination or with which to take forward a development or agenda.

The first type of project could be completed within a PhD or first-generation framework, except possibly for the fact that the question addressed by the research typically arose from a contextual concern rather than from a gap in formal academic or professional knowledge. The second type, practitioner research, could be completed within most second-generation professional doctorates and indeed embodies many of the principles used by Maxwell (2003) to distinguish first- and second-generation programmes. It is the third type along with to some extent the synthesis projects that epitomises the work-based doctorate, where the practice itself becomes a form of research which has the potential for impact beyond the practice situation. Interestingly these research-as-practice and synthesis projects produced on average the strongest outputs in terms of their impact on practice and, more surprisingly, dissemination: some projects not only made a substantial direct impact in their fields, but resulted in quite impressive catalogues of professional and academic publications. On balance the more conventional research projects not only had less practical impact, but resulted in fewer published outputs.

From the curricular review tutors' experiences suggest that candidates coming in to the programme can need to develop their thinking and perspectives in several areas, including taking a more research-informed and research-literate approach to their work; appreciating the situated and therefore social as well as technical nature of practice; locating themselves in and reflecting on their work as an interested participant rather than an objective observer; and for students from some professional backgrounds at least to embrace views of research that are wider than the technical or quantitative approaches with which they are familiar. The role of the early part of the programme in guiding candidates to develop appropriate projects appears critical, and tensions have been observed in on the one hand aiming to develop the ability of candidates to apply research-based principles and methodologies to practice situations, and on the other moving them away from thinking of the doctorate as a discrete research project. The development of easy ways of guiding candidates is possibly hampered by the limited discourses relating to *development* methodologies as opposed to the more familiar territory of research methodologies, but the problem may also be one of individual advisors' perspectives and the conceptions of academic and research validity which exist in different cultures. While the doctoral outputs study reported above was far from conclusive in this respect there were indications that the ethos of practice-as-research had not filtered through to all the providing centres to the same extent, leading to some relatively conservative interpretations of what is permissible as doctoral work.

Critiques and issues of validity

Professional doctorates, although present in Canada and the United States for over a century, are widely regarded as a relatively new phenomenon *vis-à-vis* the well-established PhD. While the PhD itself was a radically new concept when first introduced in its present form (until then the doctorate was generally awarded for a distinguished contribution to an academic field rather than for a supervised research project), it tends now to be regarded as the benchmark for the doctorate (Evans 2001) and as Boud & Tennant (2006) comment, 'remarkably robust' (p294). This leaves the professional doctorate and by extension the work-based doctorate, particularly if not titled PhD, in a position of needing to demonstrate equivalent if different credentials. Critiques of professional

doctorates tend to centre on their departure from the format of a single large thesis, containing an insufficient focus on research to perform the function of ‘licensing researchers,’ and not requiring the mastery of a specific academic discipline (e.g. Seddon 2001). There can also be underlying suspicions particularly in internal communications and to some extent the educational press that the professional doctorate route is not as rigorous as that of the conventional research PhD (see for instance Taylor 2008). This view can also be held in parts of Europe where newer forms of doctorate are not particularly well understood and where there is an almost exclusive perception of the doctorate as a full-time programme for preparing professional researchers (Bituskova 2008). Nevertheless the evidence that does exist indicates that professional doctorates at least in Australia, the UK and Ireland are of a level with the PhD, are assessed in ways that are comparably rigorous, and meet the same standards and quality assurance arrangements (National Qualifications Authority of Ireland 2006).

A more positive perspective is provided by the level of experience, insight and perception that work-based doctoral candidates frequently bring to their candidature. Studies and discussions such as those of Boud & Tennant (2006), Doncaster & Lester (2002), Stephenson, Malloch & Cairns (2006) and Zuber-Skerritt (2006) as well as our doctoral outputs study reported above indicate that the typical candidate is a senior professional who is already in a position of some authority and autonomy, is involved in innovative or sometimes pioneering practice, generally holds a master’s degree or the equivalent level of professional qualification, and is aged from mid-thirties upwards. This contrasts with the traditional full-time PhD route, where candidates generally complete in their mid-twenties at which point they are still widely regarded as relatively inexperienced professional researchers (see Thorne & Francis 2001 for a discussion that compares these two perspectives from personal and structural viewpoints). While profile on entry is no guarantee of success on a doctoral programme, it would be surprising if the outcomes of work-based doctorates were in any way deficient *vis-à-vis* those of research PhDs given equivalent levels of attention to process and assessment.

Unsurprisingly however the work-based doctorate poses significant issues for universities; as with work-based learning more generally it represents a “disturbing practice” (Boud 2001) that challenges existing disciplinary structures as well as institutional systems and procedures that are designed principally around the needs of full-time students (Garnett 2007). Institutions are asked to view this form of doctorate as other than research training (at least in the sense of not preparing people to be professional researchers), and to accept that its contribution to knowledge will be outside of accepted disciplinary frameworks. Their role is “transformed into one of providing an enabling framework and credentialing mechanism rather than disciplinary supervision” (Boud & Tennant 2006: 296), something that may not be particularly palatable to institutions that have not already developed cultures of work-based learning. Tensions are typically encountered in gaining validation for work-based doctorates (e.g. Zuber-Skerritt 2006) or for developing variations on them (Chisholm & Davis 2007), with Costley & Stephenson (2008) commenting that “constructing a programme like the DProf is as much a feat of organisation, leadership and organisational positioning as it is of curriculum development and innovation” (p183). More positively however for institutions that wish to embrace work-based doctorates they can become a platform for the university to develop expertise outside of the traditional areas of teaching and research (Graham & Smith 2002, Lester 2004), and a source of generating new insights and practices that differs from but has an equivalent validity to discipline-based research (Portwood 2007).

Value and impact

Evaluations of work-based learning accredited at all higher education levels indicate benefits in four main areas: widening access to higher education; the direct impact on the workplace of the investigation or project; effective personal and professional growth for the candidate; and, provided the employer is able to capitalise on learners' development, resultant benefits for the organisation (Lester & Costley 2010). The evidence-base specifically for doctorates is narrower and weighted towards benefits reported by individuals, but the conclusions are very similar. The benefits in terms of access are rather different from those of enabling mature and often relatively unqualified candidates to participate in higher education, as work-based doctorates tend to attract well-qualified people who would question the relevance of a conventional part-time PhD or professional doctorate or are concerned about the time implications of carrying out research that is separated from their main professional activity (Stephenson, Malloch & Cairns 2006).

In terms of personal benefits, candidates report their doctoral programmes as providing both a means of legitimising their achievements to themselves and within the professional communities of which they are part, as well as acting as a vehicle for integrating, structuring and articulating experience, broadening and deepening understanding, and providing a platform for taking areas of practice forward and engaging with communities typically at a wider level than those affected by their immediate work (Doncaster & Lester 2002, Stephenson, Malloch & Cairns 2006). Although work-based doctoral graduates necessarily demonstrate both command of specialist knowledge and competence as applied researchers, it is the way that expertise is taken forward through enhancing more general capabilities as a developer, change-agent and author of practice that is most often valued by candidates (*ibid*). Measurable career benefits as are often reported from programmes at undergraduate and master's level are less apparent from evaluations of work-based doctorates, generally because candidates are at a later stage of their careers and focused on the more organic kind of professional extension where promotion or business growth are incidental. Evidence of how these kinds of personal professional benefits affect organisations is relatively limited for doctoral candidates, although personal accounts as well as the content of doctoral outputs examined by the authors indicate that there can be quite significant and potentially lasting impacts.

There is a limited amount of evidence that demonstrates the specific impact and value of the doctoral project or intervention. In principle the outcome of the work-based doctorate is expected to result in a significant impact on an organisation or profession, or on professional practice. Although there has not been a systematic study of outputs from work-based doctorates across universities, our study of work-based doctoral outputs suggests that projects do result in innovation and systemic change through, to cite some examples, establishing the infrastructure and principles for formalising a profession; improving the way that a major maritime safety agreement is implemented internationally; creating a new approach to training for the clergy of an international church; creating new approaches to reducing delinquency among school-age children; and developing and implementing new models for evaluating training in commercial environments. Doctoral graduates taking part in the research by Nixon *et al* (2008) and Stephenson, Malloch & Cairns (2006) confirm the value of these kinds of interventions to their organisations, clients or personal portfolios of practice both directly and through adding to intellectual or structural capital (Garnett 2007).

Issues and directions

The present vitality of work-based doctoral programmes suggests, as Boud & Tennant (2006) comment, that there is a clear need for transdisciplinary, candidate-led, work-based doctorates that are distinct from conventional professional and research programmes. In further developing this kind of programme it is apparent that there are three facets that need to be considered, which although not incompatible are sometimes articulated in ways that create tensions between them. From universities' viewpoints the most obvious requirement is to demonstrate that the work-based doctorate is of doctoral standard, which generally means that it is seen to make an original and generally public contribution to knowledge. As discussed earlier in the article this contribution will often not relate to a specific academic discipline, and it may also be articulated through an original contribution to *practice* rather than as a research output or a piece of advanced scholarship. Secondly, and most critically from the perspective of candidates' organisations or clients, the work-based doctorate needs to produce high-level practice that demonstrates impact through innovation and adequacy for complex and challenging situations. Finally as widely articulated by doctoral candidates it needs to draw together and take forward existing experience and expertise to create professional development and extension at the highest level.

To integrate these demands successfully depends on a combination of factors. The university needs to create a robust conception of the work-based doctorate that protects it from being colonised either by discipline-based criteria and modes of working or by assumptions that the purpose of all doctorates is to develop researchers. At the same time caution is also needed to avoid becoming seduced by the demands of the workplace, so that the doctoral work has a more general and public dimension than simply contributing to an organisation or a closed community of practice. The centrality of the practitioner-candidate to the work-based doctorate needs to be emphasised and problematised so that while the doctoral endeavour provides a powerful vehicle for individual professional development, this aspect does not become so dominant that the output becomes a personal story without the dimension of public contribution.

Taking these factors together suggests that those institutions that want to engage with the work-based doctorate need to create a distinctive 'space' where it is emphasised as of a level with other doctoral forms, but with a purpose and culture that are distinct from research-focused and profession-specific doctorates. This is likely to be characterised by a clear (and clearly-articulated) paradigm of work-based learning as a field in its own right (Costley & Armsby 2007a), with an epistemological basis that moves it on from being simply university involvement in workforce and professional development. Underpinning this are conceptions of intellectual and research rigour that are eminently practical, rooted in a reflective-creative paradigm rather than in a positivistic or technical-rational one, and linked to the idea of adequacy for high levels of complexity and for the 'wicked problems,' 'swamps' and 'messes' facing contemporary society (Lester 2004). To help in creating and defending this space there is also a need for more systematic research into how work-based doctorates actually create impact through professional and organisational change and how they provide intellectual capital for practitioner communities and for the university.

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