

# A Literature Review on Models of the PhD

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### **Acronyms and abbreviations**

GEI	Graduate Education Initiative
TTD	Time to degree

## 1. Introduction

It is common knowledge that the 1990s brought an upsurge of interest in the doctorate (see, for instance, Golde & Dore, 2001). A number of initiatives have been launched to examine doctoral education and training more closely, with the aim of reforming it in some yet to be determined ways. In Europe, the policy changes instituted via the Bologna Declaration of 1999 and the Lisbon Strategy of 2000 are perhaps best known, with their harmonisation of the higher education landscape to create a European Research and Innovation Area. In North America, a number of investigations were launched, such as the US Council of Graduate Schools' PhD Completion Project, the Woodrow Wilson National Fellowship Foundation's Responsive PhD Initiative, the Carnegie Initiative on the Doctorate (Golde & Walker, 2006) and the Graduate Education Initiative, funded by the Andrew W. Mellon Foundation. Indeed, Pearson (2005: 119) has called doctoral education an "emergent field of study", characterised by great vigour and a breadth of interest.

With the increasing numbers of doctoral graduates – many of whom produce very ordinary dissertations – recognition has dawned that induction into fully-fledged, independent competence does not necessarily accompany graduation, and that a postdoctoral period is also needed to round off the apprenticeship. While this is probably becoming essential for those hoping to enter academia, it is increasingly being seen as appropriate across the board. Yet informed knowledge about what an adequate postdoctoral programme constitutes is even sketchier than it is for the doctoral phase. Hovering over all of this uncertainty is a supervening anxiety over where the next generation of competent inductors is to come from and what it will take to produce them.

The reasons for this growing interest in the doctorate, particularly in Europe and the USA, but increasingly worldwide, are not particularly clear. General opinion appears to believe that more is better, but again, the reasoning behind this is not particularly clear. It certainly cannot be as a result of anxieties about the capacity to produce the next generation of academics in the developed economies.

One might think that concerns are associated with research capabilities for the knowledge society and innovation economy, since the link between doctoral graduate production and the economy is well established. However, debate seems focused on the humanities and the social sciences, which are the subject of large scale investigations (most recently Ehrenberg, Zuckerman, Groen & Brucker 2010). In this respect, the harder disciplines – such as the sciences, medicine and engineering – the clamour for advanced research skills is oddly muted, despite the fact that we may not have enough doctors or engineers.

It would appear that the major drivers behind the upsurge of interest in the doctorate are concerns about:

- Sustaining the supply chain of researchers;
- Preparation for employment of graduates; and

- Internationalisation, including, to a large degree, global competition for doctoral students.

While rates of increase in the production of doctoral graduates have been tapering off in most countries – South Africa included – they are still on an upward trajectory (Academy of Science of South Africa, 2010). Perhaps in order to sustain this, new models of doctoral study – broadly, alternatives to the stand-alone thesis – have proliferated. We will discuss this further below. Together with this trend, a new anxiety has appeared, around the quality of the end product. The terrain of writing on doctoral education has two preoccupations: the first is to augment the production of doctoral graduates, however this may be accomplished; the second displays apprehension about the consequences of augmentation, particularly fears about a drop in quality.

The production of reports on doctoral education has become a donor-funded cottage industry. There is something singular, too, about virtually all of this literature. Very little, if any of it, is what we would consider research-based. Most of it is what might be called *practitioner advocacy*: writers presume that a particular arrangement or innovation works, and they engage in selling it to the reader. We could find virtually no evidence base for this approach. This report is thus unable to present a list of evidence-based silver bullets that we can, with any confidence, propose to enhance either productivity or quality, or that might be further tested.

Without this, the best alternative we identified was to map the field of supposed issues that could make a difference, to arrange these logically in sequence and to present representative excerpts from reports under each. This strategy is feasible because so many of the reports report similar approaches and are based, to a large degree, on common sense.

## 2. Policy matters

Eggins (2008) has indicated how matters of doctoral education have found expression in public policy in several countries. For instance, Estonia's Higher Education Strategy (2006–2015) was a consequence of a perception that the output of doctoral students did not match the needs of its society. It included a number of measures, such as:

- The evaluation of research, measuring the effectiveness of doctoral studies;
- More effective involvement of research institutions and other partners in doctoral study;
- Development of a concept for doctoral schools;
- Stimulation of the role and funding of doctoral schools;
- Inclusion of EU structural funds in the development of doctoral studies; and
- Provision of social guarantees to doctoral students.

A number of countries plan to increase the numbers of doctorate holders. Finland, for instance, set a target of producing 1 600 doctorates a year by 2008. Developing economies such as Mexico and South Africa are also expanding their numbers. Korea, Singapore and Thailand have seen spectacular growth. India, similarly, has taken a decision to increase its numbers of doctoral candidates fivefold by 2015 from a base of 65 491 in 2005 (Powell & Green 2007). Brazil aims to award 15 000 doctorates a year by 2010, a huge rise from the figure of 5 000 in 2000. China is expanding with great momentum: in 2003, it had 188 000 doctoral graduates (Eggins, 2008). All of this is accompanied by commitments to increasing expenditure on doctoral education. According to Powell and Green (*ibid.*), Brazil, India, Thailand, Canada, Denmark and Finland can all be counted among those committed to increasing spend on doctoral education. Eggins notes that South Africa has stated that, within the context of its policy objective of increasing spending on research and development from 0.7 to 1% of GDP, there is a pressing need to increase spending on doctoral education by three to four times.

## 3. A typology of models

The overarching question that launched this review was: What are the models available for doctoral studies?

The term *model* can refer to two aspects:

- A literature which examines ways to strengthen or improve the process of the traditional PhD. An example would be a review of forms of supervision in use and presentation of evidence on the effectiveness of these forms of supervision.
- A literature that focuses more on the design of the doctoral enterprise and different routes used to arrive at a doctorate. In this literature, the traditional PhD is but one of many ways to prepare for a doctorate.

We took our primary brief as a focus on the first aspect described above. However, we will briefly look at the second consideration as well in order to give an idea of the models and the literature on this aspect.

A list of alternatives to the traditional PhD in the UK is offered by Park (2007), and it covers much of the ground here. Huisman and Naidoo (2006: 3) speak of “common doctoral programme designs”, and cover practically the same options as Park does.

The increasing diversity of models is one of three common responses to drivers of changes. The other two, according to Park (2007) are:

- Increased formalisation, manifested in new institutional regulations, the development of a national framework and expectations (such as a Quality Assurance Agency), the development of Graduate Schools and the formalisation of supervision; and
- An increasing emphasis on skills development and training, where the development of research training programmes and integration of training and skills development into the overall student experience are typical.

We believe this landscape is well mapped out and that the various options are generally recognised. In the next section, we expand briefly on Huisman and Naidoo (2006) and Park (2007).

### **3.1 The traditional PhD**

This is the best understood version of all pathways to the doctorate, with its roots in European mediaeval universities. It is based largely on a supervised research project and examined through a thesis, which often is defined in terms of an original contribution to knowledge. The mode of supervision focuses on the individual. The student typically works alone on the thesis, under the supervision of one or two senior researchers:

*The objective is to deliver an original and significant contribution to the research literature in the field of study. A broad understanding of the field she/he is working in is often an additional criterion, as well as that the quality should be such that academic publication of the dissertation is likely. (Huisman & Naidoo 2006: 6)*

### **3.2 PhD by publication**

The PhD by publication is based on a supervised research project but is examined “on the basis of a series of peer-reviewed academic papers which have been published or accepted for publication, usually accompanied by an over-arching paper that presents the overall introduction and conclusions.” (Park 2007: 33).

For Huisman and Naidoo (2006), the PhD by publication is:

*... rather similar in terms of objectives and standards as the traditional PhD, but the process is different. The candidate presents a volume of academic publications. In the social sciences, the publications are often accompanied by an introduction and reflection. (Huisman and Naidoo 2006: 6)*

Introduced in the UK in the mid-1960s, this pathway to the PhD has been attractive for a number of reasons. Two major reasons are:

- The implementation of university funding models which reward publication and research student completions; and
- Pedagogical reasons for favouring publication by doctoral students. Kamler (2008) provides evidence suggesting success in publication of PhD work is well-correlated with subsequent scholarly productivity. This comes about as a result of closer institutional attention to the process, and skilled support from knowledgeable supervisors.

Nevertheless, Badley (2009) has found that papers discussing the use and value of the PhD by published work are still relatively rare.

### **3.3 The taught doctorate**

This is the North American doctoral model, containing substantial taught elements, often including research training. The taught elements are formally examined separately from the thesis. The thesis can be shorter than is typically expected in the UK and Europe. According to Park (2007), this model entered the UK in 2001, where it is referred to as the New Route PhD.

### **3.4 Professional and work-based doctorates**

This form of the doctorate also contains a substantial taught element, but:

*... the field of study is a professional discipline, rather than the academic discipline. Quite often, a variety of didactical tools are used in the educational process. Although research-based, the focus is normally more (or also) on application within the student's professional practice (reflexive practitioner). (Huisman & Naidoo, 2006: 7)*

The supervised research project is often smaller than the traditional PhD, is more applied, and is work-based or work-focused (Park, 2007). The research problems investigated often emerge from professional practice and the students are typically experienced professionals. It also covers research in cooperation with enterprises (see Crosier, Purser & Smidt 2007; Costley & Stephenson 2009).

Examples of such degrees include the Doctorate in Education (DEd or EdD) – one of the best developed of the applied or practitioner professional degrees

in the USA and Australia – the Doctorate in Clinical Psychology (DClinPsy) and the Doctorate in Engineering (DEng).

The Doctorate in Business Administration (DBA) is a relative latecomer to the field, but Gill & Hoppe (2009) have shown that its presence at universities is on the increase. These authors identified 16 DBA programmes in the UK by 1999, and the initiation of 20 DBA programmes in Australia between 1993 and 2005.

It appears that the professional doctorate is the most prevalent alternative to the traditional PhD. It has proliferated, especially in the UK and Australia (Bourner, Bowden, & Laing 2001). Although the USA offered its first professional doctorate in 1921, Nerad stresses that:

*... the primary purpose and goal of doctoral education (in the US) has been preparation of the next generation of university professors who will become productive researchers and innovators, and in turn become teachers of the following generation. (Nerad 2008: 279)*

### **3.5 Practice-based doctorates**

For Park (2007: 33), the practice-based doctorate is:

*... based on a supervised research project, usually in the performing arts, where the output involves both a written piece (which is usually much shorter than the traditional PhD thesis, and includes both reflection and context), and one or more other forms, such as a novel (for Creative Writing), a portfolio of work (for art and design), or one or more performance pieces (for theatre studies or music). Both forms of output are examined. (Park 2007: 33)*

Huisman and Naidoo (2006) agree that this PhD is work-based or practice-based, and earned in the creative and performing arts. The exact form of this PhD is still much contested.

### **3.6 Conclusion**

One characteristic of this landscape is the increasing diversity of doctoral education models. Increasing diversity has been accompanied by changes in pedagogy, such as more structured programmes, summer school programmes and intensive weekend training programmes.

## 4. Efforts to improve performance

We now focus on mapping the logical and chronological stages in the PhD process. Our intention is to show where and how efforts have been expended to improve the performance of the system.

### 4.1 A pipeline view or logic model

Borrowing from the programme evaluation field, we present the stages of the process as a type of logic model. This is illustrated in Figure 4.1.

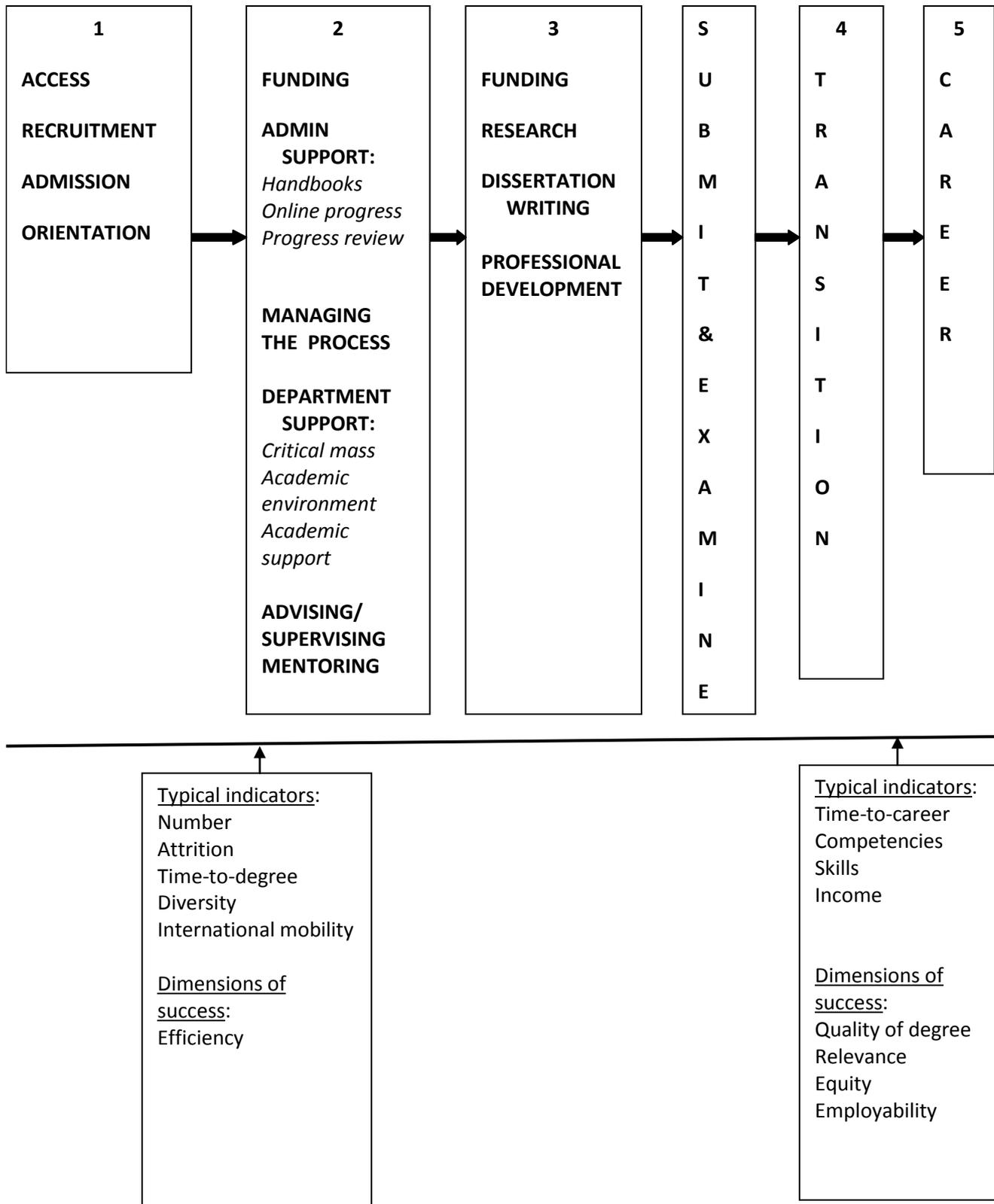
This process starts with questions of access and recruitment, and ends with students in careers. There are indicators of performance that are typical of particular aspects of the process, and different dimensions along which one can judge the success of what is happening.

Various stakeholders operate at different points:

- Students (throughout the process),
- Supervisors (mostly active at stages 2 and 3),
- Academic departments,
- Institutions (such as universities),
- Disciplines,
- Funding bodies,
- Employers (for instance, at stages 4 and 5),
- National departments of education, and
- The nation.

Viewing the process like this has also provided the research team with a range of aspects to probe in the South African case studies.

Figure 4.1 A pipeline view or logic model



## 4.2 Responses to improve success

Using this model, it is relatively simple to map the responses made by various institutions to improve on the indicators of success onto these stages.

### 4.2.1 Stage 1: Student access, selection and admissions

The life cycle of graduate education begins with recruitment and admissions. Many would argue that the secret of success at PhD level lies in who is recruited into the PhD programme. Unfortunately predictors of success at later stages of the PhD process are hard to come by: test scores and more qualitative selection material predict early success better than they do later success, when other factors, such as perseverance, come into play.

Golde (2005) has quoted research that suggests that lack of academic integration into a department, rather than social integration, is the key in doctoral attrition (see also the work of Lovitts 2001). Universities who participated in the PhD Completion Project in the USA developed a variety of mechanisms to ensure a good fit between particular students and specific programmes (Council of Graduate Schools 2008b). These were sometimes as simple as providing more intensive orientation and greater transparency about expectations and outcomes. A consistent theme across each of these areas of intervention in selection and admissions is the recruitment, retention and success of under-represented students.

### **Promising practices**

Promising practices identified within universities taking part in the PhD Completion Project (ibid.) included:

#### *Recruitment*

- Building in pre-admission and pre-enrolment campus visits;
- Making an effort to recruit under-represented students, such as attendance at national conferences, appointment of a diversity coordinator, including alumni into programme recruitment strategies, and developing a university-wide recruitment plan; and
- Using early research as a recruitment practice, such as the Summer Pre-Doctoral Institute for Under-represented Students from the California State university system.

#### *Transparency*

- Improving department websites to enable prospective students to make informed decisions; and
- Making selection processes more transparent and clarifying expectations for students entering doctoral programmes.

#### *Admissions*

- Training admissions committees and programme chairs; and
- Surveying applicants to determine why admissions offers are accepted or declined.

### *Orientation*

- Initiating a comprehensive orientation programme, or reviewing and revising orientation activities for new students per department or programme;
- Preparing incoming under-represented doctoral students for graduate study and their programmes; and
- Conducting a Graduate Student Information Fair to bring together campus resources, as is done at Indiana University.

### 4.2.2 Stages 2 and 3: Financial support

This is frequently cited as being among the most influential factors in PhD completion and attrition. As a result, increasing financial support is regularly mentioned as the silver bullet. This has been the starting premise for the Andrew W. Mellon study (Ehrenberg *et al.* 2010). Sadly, the data does not support this assumption. It may be that some level of funding is required to provide the minimum conditions for a student's degree completion but other factors, such as the number of teaching and research assistantships allocated to students, also interact with financial support. Universities that offer better doctoral fellowships are also often in a position to provide more support and services to students, thereby conflating different contributions.

Eggs (2008) has shown how governments are often involved in funding doctoral studies through grants to institutions and students. In some countries, including Australia, Canada and the Nordic states, doctoral education has no fee. In others, the fees are sponsored by a range of stakeholders: research councils, institutions, employees and individuals. Loans are available in Thailand and Japan. In the UK, doctoral students, particularly those studying on a part-time basis, frequently fund themselves.

### *Promising practices*

The PhD Completion Project (2008c) identified the following promising practices in the area of financial support:

- Guarantee multiyear support by allocation of funding to departments
- Provide competitive travel grants to support students who have been invited to present at conferences.
- Promote graduate student applications for external fellowships and provide staff help for proposal development and submission.
- Hold continuing graduate assistantship positions to strategic performance indicators of satisfactory degree progress.
- Develop best practices for tracking student progress and amount and type of student financial aid.

### 4.2.3 Stage 2: Administrative support

Participants in the PhD Completion Project have indicated that they believed that a profound change in their administrations was the adoption of new university-wide systems – or the enhancement of existing systems – for collecting and using data on doctoral students completing their studies or

exiting due to attrition (Council of Graduate Schools 2008b). This new approach has enabled them to:

- Revise quantitative data collection methods,
- Implement exit surveys for completing and departing students,
- Track student departures from doctoral study, and
- Analyse patterns of attrition for their potential relation to other factors, such as financial support and university policies.

In some cases, universities are experimenting with new organisational models to hold these administrative matters together. Two main models are emerging (Park 2007 and Crosier *et al.* 2007): a Graduate School or a Doctoral/Research School. The former includes doctoral as well as masters students, and provides administrative, development and skills support, organises admission, courses and seminars, and takes responsibility for quality assurance. There is great variability between institutions in the form of Graduate Schools, from the virtual to the physical, and from the institutional to the faculty-based. The Doctoral/Research School includes only doctoral students and may be organised around a particular discipline, research theme or a cross-disciplinary research area. It may involve only one institution or several institutions in a network.

Park (2007) has remarked that these models are not mutually exclusive and often have shared characteristics. Countries – and even individual institutions – may also adopt both models.

#### *Promising practices*

Promising practices identified by participating universities in the area of administrative processes and procedures include the following:

- Regular and uniform progress reviews, such as regular advisor/advisee meetings and progress reports, annual student performance review systems and best practices for tracking student progress in terms of financial aid.
- Create and enhance institutional databases on students via a Web-based system to track student progress, such as online milestone tracking systems and annual progress reports. In future these online resources may also enhance identification of potentially critical times when intervention or communication is needed.
- Monitor and track all students who leave.
- Merge existing hard copy forms into a single Web-based, data-gathering instrument.
- Distinguish the determinants of early versus late attrition.
- Conduct exit surveys of both doctoral recipients and students who do not complete their doctoral work, and use feedback from surveys to develop solutions that will reduce attrition.
- Survey the level of doctoral student engagement in promising practices and professional development activities.
- Test assumptions about admissions and recruitment through data-based evidence.

In terms of curricular processes and procedures, some universities give serious consideration to creating a terminal non-thesis masters programme.

#### 4.2.4 Stages 2 and 3: Departmental and institutional support

The academic environment of a PhD programme contains both formal and informal spaces where support is rendered. Formal spaces include the classroom, the laboratory and the supervisor's office, which are situated within and shaped by department-led and university-wide practices. Many universities recognise the importance of informal spaces as well, such as a graduate student lounge with professional publications, bulletin boards and visible recognition of student achievements. Campus-wide organisations can provide professional development and networking opportunities, and can foster interdisciplinary discussion.

#### *Promising practices*

Promising practices in the area of support networks and support services include:

- Initiating campus-wide efforts to bring students together across disciplines for academic and social interaction;
- Promoting faculty and staff participation in conferences and workshops focused on graduate student services, retention, and development;
- Developing student groups;
- Evaluating, with departments, the services that each provides to graduate students and determining specific needs and appropriate approaches;
- Updating institution and programme Web pages to provide an overview of initiatives; and
- Establishing a graduate student commons.

#### 4.2.5 Stage 2: Supervision

It has become commonplace to say that supervisory models in the humanities and some of the social sciences tend to be individualistic: the so-called apprenticeship model. This has been contrasted with the team model, which is standard practice in the experimental sciences. Under the team model – also referred to as the science or laboratory model – students work on a common research programme together with their supervisor and other senior researchers. What seems likely is that the team approach works well in areas that have robust research programmes, and where the theoretical and methodological protocols are widely shared (such as in some branches of chemistry). This has not stopped a strong lobby from advocating for the team approach across all branches of doctoral study, since it is widely argued that the apprenticeship model has become too costly in time and resources, and because it fails to recognise the benefits that accrue from communities of learning practice. Other proposed modifications include postgraduate schools, doctoral academies and contemporary networking technologies like Skype and Facebook.

In the USA, much is made of the distinction between early advising at the point that the student enters the doctoral programme and thesis supervision that typically appears later in the cycle. The University of Missouri at Columbia

has, for example, created colleague circles in which each new doctoral student receives guidance from a group of more advanced students (Council of Graduate Schools 2008a). New students and peer mentors meet monthly to discuss a range of topics of concern to the new student.

One of the promising practices identified was to clearly articulate programme expectations and academic milestones, requiring completion of all pre-dissertation milestones before the fourth year of study. In the Mellon study (Ehrenberg *et al.* 2010), this factor was unexpectedly found to be the most critical:

*While many program characteristics stand out, Ehrenberg said in an interview that the one that appears to have the greatest impact is simple: expectations .... That means clear expectations about when coursework should be completed, when various exams should be taken, when dissertation plans should be firmly in place and so forth. (Academy of Science of South Africa 2010)*

Promising practices in the dissertation phase include:

- Providing workshops for students to help them get the most out of the dissertation advising process, including selecting a dissertation advisor, configuring a committee, and related topics;
- Ensuring more transparent and more accountable supervision, with clearly defined roles and responsibilities of both supervisors and research students, and clear criteria for defining who is eligible to act as a supervisor;
- Active engagement from supervisors in guiding and helping the personal development and skills training of their research students, in order to enhance their employability; and
- Appropriate personal and professional development of those who supervise. Most institutions face major challenges in encouraging or incentivising supervisors to make use of supervisor development opportunities.

#### 4.2.6 Stage 2: Mentoring

Many universities regard the supervisor as a mentor to the doctoral student, in addition to being a research advisor. In some instances, however, a mentor is regarded as someone in addition to the supervisor: someone who also gives guidance on thesis research, advises on career paths after completion of the degree and provides support and counsel when students are experiencing tough times.

Mentoring is often cited as among the most influential factors in degree completion, but there is very little evidence that assesses this influence. Furthermore, it is not at all clear what the relationship between mentoring and thesis supervision is where both exist. Research supervision is a formal responsibility of academic staff and is recognised as such, but often universities do not have similar formal structures to require and encourage mentoring. It would seem that practices in this regard, certainly in the USA, are very uneven.

Because of this unevenness, the promising practices that universities in the PhD Completion Project have developed vary considerably. Themes that have been developed include:

- Improving the structures of support between research supervisors and doctoral candidates;
- Encouraging more collective responsibility within the programme for the success of doctoral candidates;
- Increasing clarity and transparency about expectations; and
- Enhancing conflict management processes when conflicts arise between students and supervisors.

Improvements in mentoring outnumbered improvements in any other area of activity and innovation in the PhD Completion Project. Participating universities stated that they believe that improvements in the quality, frequency, and uniformity of interaction between students and programme faculty are among the most promising steps that can be undertaken to increase PhD completion.

#### *Promising practices*

Promising practices identified by participating universities in the area of mentoring and advising include:

- Monitoring the process of advisor/mentor selection, especially for minorities and women;
- Increasing faculty contact with students;
- Implementing a compact that outlines the expectations for students and for their advisors;
- Sharing information about Mentornet, an award-winning national programme in the USA that uses the internet to link mentors and mentees, to complement university's existing supplemental campus-wide mentoring.<sup>1</sup>
- Finding ways of pairing mentors so that junior professors can work with senior professors who are successfully mentoring students;
- Rewarding faculty for their performance as outstanding student mentors;
- Establishing peer mentoring programmes for new students, especially women and under-represented groups; and
- Developing alumni mentor opportunities.

#### 4.2.7 Stage 3: Research experience

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<sup>1</sup> MentorNet (<http://www.mentornet.net/>) is a nonprofit e-mentoring network that positively affects the retention and success of those in engineering, science and mathematics, particularly but not exclusively women and others under-represented in these fields. Founded in 1997, MentorNet provides highly motivated protégés from many of the world's top colleges and universities with positive, one-on-one, email-based mentoring relationships with mentors from industry, government, and higher education. In addition, the MentorNet Community provides opportunities to connect with others from around the world who are interested in diversifying engineering and science.

It is at this stage that field differences in conducting research and publishing results emerge. In the laboratory sciences, students often work as members of a research team and joint publication is common. In the humanities, students typically pursue their research individually and collaborative authorship is much less common. The PhD Completion Project considers these differences and their implications for a student's definition of and progress on the thesis as having an impact on both completion rates and time to degree.

Fields also differ in terms of the preparation they provide for thesis research. In countries where the taught doctorate is the norm, students may spend years doing coursework, with little preparation for when they have to move on to thesis research. The sciences have more of an apprenticeship model, where students work in research teams – and often a laboratory setting – which provides a more supportive academic environment which prepares them for thesis research. In the humanities and, perhaps to a lesser extent, the social sciences, the model is much more one of the solitary individual, with more or less frequent contact with supervisors.

As a result, universities in the USA have tried to improve students' early research experiences. Pennsylvania State University at University Park and the University of Cincinnati have reworked their science programmes so that doctoral students get into laboratories faster. Michigan State University's plant-biology department is tracking whether students seem to do better when they work in a single laboratory or when they sample a variety of laboratory experiences early in their graduate-school careers.

#### *Promising practices*

The PhD Completion Project has identified that interventions typically fall into one of two categories:

- (1) early stage research experiences, with an emphasis on students' early introduction to original scholarship and their ability to discern early on whether a PhD in the field is right for them; and*
- (2) advanced-stage research experiences addressing common stumbling blocks in the preparation and completion of theses and dissertations.* (Council of Graduate Schools 2008c)

Thus promising practices in early research are:

- Identifying top students and inviting them to participate in a research institute before they enrol in doctoral studies (partly to recruit them to pursue doctoral studies);
- An intensive eight-week, summer research institute experience; and
- A Pre-doctoral Institute for under-represented students

Promising practices in advanced-stage research are:

- Supporting the beginning of the dissertation research stage;
- Fostering a research environment and a culture of competing for external grants; and

- Providing opportunities for doctoral students to engage in research earlier in their graduate career.

#### 4.2.8 Stage 3: Dissertation writing

The importance of writing as a factor affecting completion rates is widely acknowledged. Many commentators believe that this is where students struggle the most. Students often report that one of the most difficult tasks is to balance competing demands between work, family life and thesis writing as particularly challenging.

##### *Promising practices*

- Work with a graduate writing consultant to craft writing programmes. Yale University has hired and trained five graduate students, one from each academic division (humanities, sciences and social sciences) to work as writing tutors.
- Host thesis boot camps (such as at Marquette University and the University of Maryland-Baltimore County), residencies, and retreats to provide students with focused activities. The University of Maryland-Baltimore states that:

*During a typical Dissertation House, attendees break down the dissertation process into small manageable units. They focus on scenarios and factors doctoral students commonly encounter, and work on setting consistent reachable goals; fostering a productive work environment; overcoming obstacles in the research and writing process; communicating with difficult-to-read faculty; and preparing the thesis for publication. (Howell 2009 per webpage)*

- Develop thesis writing institutes, for instance, in collaboration with university-wide writing institutes, to provide intervention assistance to students in need. The Yale University Graduate School has combined writing interventions with a Dissertation Progress Report Module, an electronic format to capture and file current evaluations of students' writing progress for review by their supervisors and dissertation committees. Students also are able to view and review these comments.
- Discuss characteristics of outstanding theses to inform students about what is expected and required.
- Enhance consultancy through additional writing workshops and one-to-one support.

#### 4.2.9 Stage 3: Professional development

Those providing professional development interventions for doctoral studies acknowledge the importance of some preparation to enable the doctoral student to transition into a career. In some cases, universities have analysed the career and professional development needs of graduate students in order to provide focused interventions. In other instances, departments have signed students up for existing interventions, such as the Preparing the Professoriate programme in the USA (Council of Graduate Schools 2008d). The University

of Missouri established the Griffiths Leadership Society for Women in 2005 to link prominent professional and graduate women with current doctoral students.

Other promising practices include:

- Expanding a professional development workshop series for graduate and postdoctoral students;
- Holding a grants and fellowships proposal workshop; and
- Hosting non-academic and academic job search workshops and resources.

Teichler and Kehm (1995) have made an interesting observation in terms of the advisory and support services students receive – and perhaps expect – in addition to teaching and learning activities: that such support is more highly regarded in the Anglo-Saxon tradition than in the Humboldtian and the French traditions. Nevertheless, Crosier *et al.* (2007) show a growth in the provision of student services over the last four years in Europe as well. Results indicate that many institutions and systems have offered a wide range of services. However, there have been key challenges with professional staffing, adequate resourcing and monitoring of the quality of provision of such services.

## **5. Trends in supervision**

While an account of the functional adaptations in the administration of the doctoral cycle is valuable, such an account can omit the pattern of broader trends over time. The purpose of this section is to step back to delineate such a pattern. This part of the report will be framed by the following two questions:

- What main models of doctoral supervision are in use; and
- How have these been changed over time, if at all?

As we commented above, the work of doctoral supervisors has emerged as an international issue of concern in higher education. In the USA, for instance, the Carnegie Initiative on the Doctorate, led by the Carnegie Foundation for the Advancement of Teaching, identified supervisors as pivotal to any effort to improve doctoral education (Golde & Walker, 2006; Walker *et al.* 2008). As part of the Bologna Process, the role of the supervisor was recognised in a ministerial agreement on the Ten Salzburg Principles on the Doctorate (European University Association, 2008), while at the inaugural meeting of the European University Association Council for Doctoral Education (*ibid.* 2008:1), one of the five identified themes for doctoral training in Europe was “improving the supervision of PhD candidates, particularly through better training and monitoring of supervisors”. The recent Mellon-sponsored report (Ehrenberg *et al.* 2010) has served to sustain this critical attention.

There is a part of the literature on different supervisory models which tries to relate supervision differences to different supervisory styles (Acker, Hill & Black 1994, for example. Others, such as Lee (2007), focus on supervisor intent: if the intent is transformational, supervisors will aim for their students to be successful and to achieve their goals. If the intent is functional, they focus much more on students applying what they have learned. However, this tells us very little about the mechanics of supervision. One appropriate starting

point for considering supervision mechanisms is the fact that there are enduring disciplinary differences between the sciences and the humanities. These have conditioned the social form of supervision in each of the two disciplinary clusters (Neumann 2001; Neumann, Parry & Becher 2002; Parry 1998<sup>2</sup>; Parry 2007). These differences centre on the distinct ways in which new knowledge is produced and grows in the respective disciplines. Simply described, while the process is atomistic in the natural sciences – with discrete accretions of new knowledge possible which can all be integrated into a common programme – the process in the humanities is holistic, such that discrete segments of new knowledge cannot as easily be identified or detached from the overall work. In the sciences, using the laboratory model, a number of students simultaneously work on discrete patches within a larger research programme: here, supervision can be organised collectively. In the humanities, with each student working on his or her own holistic narrative, supervision tends to be far more individual and individualistic. This is known as the lone supervisor model. As Neumann (2007) notes, the principal differences lie in the way a research topic is chosen and in the costs to the supervisor's time.

It is important to see the laboratory model for what it is: a model of supervision that allows for time efficiencies and multiplier effects. Such efficiencies are possible because of the integrative nature of scientific knowledge. The model cannot be dismissed as some peculiarity of the tribe of scientists. Nor is it a model that can be chosen unproblematically by other less integrative disciplines. Where knowledge accumulates but does not integrate to displace previous knowledge, such efficiencies cannot be gained.

It is easy to depict the stand-alone supervisor as an inefficient anachronism. McWilliam, for instance, writes:

*The actual practices of postgraduate pedagogy have been, traditionally, somewhat mysterious and intimate phenomena, particularly within the arts, humanities and social sciences ... Traditionally conducted behind closed doors in spaces remote from either undergraduate teaching or the 'real world' of commerce and industry, the process of academic over-stimulations and scholastic seductions has remained relatively unexamined. (McWilliam 2002: 107)*

This is the voice of the sceptic that would urge us away from the old patriarchal ways to a new world of collaboration and sharing. Our view here is that this is not solely a moral or paradigmatic issue: it is a matter of ring-fencing the shrinking academic time of the professoriate.

The stand-alone model of supervision – let us call it the traditional model – emerged at a time when doctoral study was the domain of only a few: an elite within an elite. The first country to break with the traditional model was the USA, which introduced coursework for its increasingly sizeable doctoral cohorts and a supervisory panel to oversee the thesis of those who had

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<sup>2</sup> For a summary of Parry 1998, see Appendix 1.

passed through that selection barrier. It is true that coursework at the doctoral level is a multiplier pedagogic device, but this is not its primary function in the US system.

The US schooling and undergraduate university education system is a late-specialising system. It is only in graduate school that students begin to specialise. Graduate coursework is thus both a selection device and a means to specialise the knowledge base. This is why the doctoral completion time in the US is so high: in the mid-1980s, the average time to degree (TTD) in US graduate schools was nine years (Ehrenberg *et al.* 2010), while it was six to eight years in Europe in the corresponding time (see Bitusikova 2009b). In addition, the attrition rate is very high. The Mellon-supported Graduate Education Initiative (GEI) had as an explicit purpose of lowering the attrition rate and shortening TTD (Ehrenberg *et al.* 2010). What the GEI found was that guaranteed funding decreased early attrition but increased attrition from the fifth year onwards. In other words, it pushed the dropout point to quite far along in the programme, after significant institutional, personal and financial commitments had been made. After ten years of the GEI, attrition was still fully 40% of the intervention cohort, although at least 50% of these exited with Master's degrees. What this suggests is that guaranteed funding had acted to delay early selection, clearly a perverse effect. By contrast, the South African system and the systems it primarily draws on – the UK and European systems – are early-specialising systems, where selectivity is usually built in well before the doctoral level. While we may thus learn something from the functional tweaks in the American system, we are unlikely to learn anything new from the model.

It would be tempting to say that pressure on the traditional model elsewhere has occurred primarily because of massification. This is partly true in Europe and the UK, but not in South Africa, which shows only marginal growth in enrolments and graduations over the last decade. The truth is that various policy changes have intensified the demands on the supervisor's time, both in South Africa and elsewhere (EUA 2004/5; EUA 2007; Quality Assurance Agency for Higher Education 2004). These policy changes include a shift to new forms of managerial regulation – sometimes called the New Public Management – including regular performance reviews of supervisors, multiple supervision arrangements and requirements for continual professional skilling.<sup>3</sup> Policy changes have also led to output-based funding, which has in turn increased the requirements on supervisors to monitor and report on progress, to curb attrition and to shorten the TTD (Neumann 2007). Demands for satisfactory performance coupled to increased productivity, as well as an effective reduction in staff numbers because of the economic downturn, have made the traditional model increasingly unsustainable.

The quest for multiplier effects in Europe and elsewhere has culminated in a relatively rapid movement towards doctoral, graduate or research schools in Europe and elsewhere (EUA 2007). The Trends V Report (Crosier *et al.*

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<sup>3</sup> See, for example, the UK regulations built into the code of practice of academics (QAA 2004).

2007) estimated that 30% of Europe's universities now have, or participate in, one or other form of doctoral or research schools. There is no standard model emerging and many forms are hybrid. For example, NATED, the National Graduate School in Educational Research in Norway is a national, single-discipline school, very well funded by the state, which runs periodic track seminars which have presentations from national and international academics as well as presentations of students' work. While students incontestably benefit from this broader, multiple exposure, two things are also clear: it has not thus far led to an appreciable reduction in TTD, since it actually increases the requirements placed on students; and secondly, it does not decrease the time commitments of supervisors: on the contrary, it substantially increases them.

This section has developed the following analytical picture: there are two sets of pressures that bear on the traditional – or *Doktorvater* – apprenticeship model in humanities and the social sciences. One set of issues is concerned with changing regulatory and financing regimes designed to improve the efficiency of doctoral education and to increase the number of doctoral graduates, in accordance with the presumed needs of the knowledge economy. This set has intensified supervisory work and consequently eroded valuable academic time, increasingly creating the need for multiplier devices that could conceivably ease the temporal burden.

The second set of pressures relates to the addenda to traditional supervision – seminar programmes, doctoral schools, summer and winter schools and the like. It may be worth speculating whether these multipliers will survive without generous public or private funding, as well as whether the money would not be better spent hiring more faculty. Either way, it is clear that the addenda are just that, addenda to the supervisory relationship. As the ten-year GEI found, providing financial security and accompanying interventions to selected students shortened their coursework time, but not that of the dissertation. Nor did it lessen attrition when compared to control groups (Ehrenberg *et al.* 2010).

We are thus nudged in the direction of concluding that there is no such thing as an alternative supervisory model. What is in place would better be described as a set of commonsense and rather ad hoc technical adjustments that more often than not undercut their own purposes. And insofar as models are constructed and compared, the models themselves show no appreciable differences at all. As a recent UNESCO report into supervision models, this time of trainee teachers, concluded:

*Such a comparison between models almost automatically raises the questions: which model is best? Which model should countries follow? The answer is straightforward: there is no best model. Education systems with very different characteristics have obtained equally good results. (International Institute for Educational Planning, UNESCO 2007: 20).*

## **6. Doctoral education and employment**

One of the factors discussed in terms of dissatisfaction with the traditional PhD, and the subsequent development of different models has been a concern with unemployment among doctorates. Employers have also indicated that doctoral graduates have emerged with a lack of appropriate skills for a modern knowledge economy. In the late 1980s, the OECD commissioned national case studies about the transition from higher education to employment (OECD 1993; Brennan, Kogan & Teichler 1995). The OECD and the Commission of the European Union (OECD, 1995) chose this topic as one of the four major themes of a series of conferences and workshops on future developments of higher education in Central and Eastern Europe. The Trends V report (Crosier *et al.* 2007) suggests that employability is a high priority in the reform of curricula in the European system, across national boundaries. It revealed that:

*... there is still much to be done to translate this priority into institutional practice. This is a paradox for a reform process inspired, at least in part, by a concern that higher education should be more responsive to the needs of a changing society and labour market. (Crosier et al. 2007:7–8)*

The principal response to this in doctoral education has been the growth of professional doctorates and pressure to expand these to new areas. Professional doctorates now include at least education, health (medicine), law, psychology, management, creative arts, science, engineering and business administration (Neumann 2005). There is still much resistance to this, but it is fair to say that the primary battle to be fought here will be on the kind and extent of research to be done to meet properly doctoral requirements. Interestingly, Neumann found that in Australia the requirements for the professional doctorate were no less rigorous than for the PhD and that they merely differed in the purpose of the qualification. We have not explored the professional doctorate in any detail here.

## **7. A concluding comment**

The majority of innovations discussed above represent an inexorable trend in the response to greater numbers of doctoral enrolments or to pressures to increase both enrolments and graduations. This trend is characterised firstly, by a greatly increased regulation of the process of doctoral study, and secondly, by a greater proceduralisation of the various stages of the doctoral cycle. Taken together, these push the procedures and routines into an ever more generic direction (see the Dublin descriptors for doctoral study, JQIA 2004; see Gewirtz 2008 for a critique). This trend towards genericism runs counter to the individualising trajectory of PhD work, where the singular authoritative voice of the new graduate must stand out against that of his or her peers to fulfil the criterion of genuine novelty that is the hallmark of the doctoral thesis.

Related to this, drives for greater structure in the doctoral programme militate against the development of independence and autonomy that doctoral

education seeks to foster. These are essential tensions in doctoral education, a field of study which has yet to outgrow its early phase of common sense and folk taxonomies.

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## **9 Websites referred to in chapter**

Carnegie Initiative on the Doctorate

<http://www.carnegiefoundation.org/previous-work/professional-graduate-education>

Center for Innovation and Research in Graduate Education (CIRGE)

<http://depts.washington.edu/cirgeweb/c/>

EUREDOCS (network of European doctoral students)

<http://euredocs.sciences-po.fr/>

EURODOC Network

<http://www.eurodoc.net/>

Griffiths Leadership Society for Women

<http://griffithsleadershipsociety.com/>

MentorNet

<http://www.mentornet.net/>

National Graduate School in Educational Research in Norway (NATED)

<http://www.nated.uio.no>

NRC review of research programmes

<http://sites.nationalacademies.org/PGA/Resdoc/index.htm>

Preparing Future Faculty Project

<http://www.preparing-faculty.org/>

Quality in Postgraduate Research (Australia)

<http://qpr.edu.au>

Reinvisioning the PhD

<http://www.grad.washington.edu/envision/>

The PhD Completion Project

<http://www.phdcompletion.org/>

The Woodrow Wilson National Fellowship Foundation's Responsive Ph.D Initiative

<http://www.woodrow.org/policy/responsivephd/index.php>

## Appendix 1

### Disciplinary discourse in doctoral theses

Criterion	Natural Sciences	Social Sciences	Humanities
Focus of the discipline	To classify, organise and describe the material world	To describe and explain the world of human experience	To provide an individual interpretation of the world of human experiences
Focus of the thesis	To report what is happening in the physical world To add to existing knowledge  To find an answer to a question	To find an alternative to, or to test, an existing model or construct and sometimes to develop a new theory/framework	To argue for an individual interpretation  To provide new insights
Structures	Report and explanation	Explanation and argument	Argument with recounting and narrative
Characteristics of the language	Technical and concrete  Information is read literally  The emphasis is on reporting Causality is tacitly assumed	Technical and abstract: metaphorical  Information is read metaphorically  The emphasis is on explanation and causality	Highly metaphorical and abstract  Information is read metaphorically  The emphasis is on interpretation and argument
Structure of argument	Argument is mainly analytical, which does not often explicitly challenge existing norms Work mainly within established paradigm: paradigm shift is rare  Argument is seldom qualified	Strong hortatory argument (often, to change the status quo); competing paradigms  Argument is highly qualified, within the main text	Strong hortatory argument (argues for one's own interpretation)  Intellectual fashions substitute for paradigms  Footnoting is a qualifying device
Referencing	Judgement by inclusion or exclusion  Authors are often cited in parentheses	Overtly judgemental  Authors are cited as part of the argument or invoked in the argument	Appraisal varies, from harsh (philosophy) to considerate (history)  Form of referencing mainly footnoting

Adapted from Parry (1998, p 297)