

# UNIKE NOTES on Doctoral Education No. 1

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## History of Policy Debates about Doctoral Education

By Corina Balaban and Susan Wright

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## THE UNIKE PROJECT

The UNIKE project (an initial Training Network funded by EU FP7 – Marie Curie Actions) trains a networked group of critical researchers who are examining the changing roles of universities in the global knowledge economies of Europe and the Asia-Pacific Rim. The UNIKE project aims to generate potential research leaders who are equipped to develop doctoral education in their own institutions and internationally.

Many governments have embraced international agendas for university reform (put forward by the European Union, Organisation for Economic Cooperation and Development, World Economic Forum, UNESCO and the World Bank) on the understanding that the future lies in the development of an ideas-driven competitive global knowledge economy. By arguing that the two ways to compete successfully in this economy are through transfer of research findings into innovative products and through a higher education system that can attract international trade and produce a highly skilled population, universities are placed at the centre of strategies to prosper in this new economic regime. The European approach to competing in the global knowledge economy is to create a European Research Area (ERA), a European Higher Education Area (EHEA), and a Europe of Knowledge. Other kinds of strategies have formed in other world regions. These strategies have to be understood within a geographic shift in emerging centres of power from Europe to the Asia Pacific, and particularly East Asia.

The UNIKE project aims to generate new perspectives on the transformation of an institution central to policy projections of the future.

The project explores these issues through regular workshops, which are designed to cover different aspects of the debate. Each UNIKE workshop has a part dedicated to Aspects of Doctoral Education, covering the following topics:

- a) History of policy debates about doctoral education
- b) Governance narratives and the reshaping of doctoral education
- c) Specificity of social science doctorates
- d) Partners' own practices of doctoral education
- e) Working for/researching in other organisations
- f) Academic freedom

**From each of these events, a *Note on Doctoral Education* will be generated.** The current *Note* outlines the presentations and discussions that took place at the first UNIKE workshop held at the Department of Education, Aarhus University on 14-18 October 2013. The focus was on the history of policy debates about doctoral education in the EU and the U.S., and offered an opportunity to compare and contrast the flagship models used in these two geo-political regions.

The main intended audience for this *Note* is composed of UNIKE fellows, full and associated partners and their networks, and other institutions and individuals who are interested in the subject.

## HISTORY OF POLICY DEBATES IN EUROPE: UP TO THE SALZBURG PRINCIPLES AND BEYOND

Pavel Zgaga, Professor at the Centre for Educational Policy Studies, University of Ljubljana

The aim of this session was to outline the key elements that have contributed to the changes in the theory and practice of doctoral studies across European universities over the past 15 years. These changes were observed from the perspective of *European integration*, which, in the context higher education, mainly refers to the *Bologna Process*.

Higher education at the end of the 20<sup>th</sup> century in Europe was very diverse and in certain aspects even incompatible; this was creating problems for universities in terms of mobility and the mutual recognition of degrees. It was concluded that cooperation between countries could not be improved unless the national systems of higher education were reformed. The Bologna Process emerged as a result of this. It initially aimed at implementing a two-cycle system that comprised of Bachelor's and Master's degrees and marked the start of continuing attempts to make higher education systems in Europe more compatible. This period is considered to be the 'early stage' of the Bologna Process (1998-2003), and is defined by its aim to introduce a new 'order' in Europe after the fall of the Berlin Wall.

However, the process encountered numerous challenges, since big structural changes like

these needed to reconsider the whole system of higher education in Europe. The Bologna Process proceeded through meetings of Education ministers every two years. The first big flame of the Bologna Process, and also the most productive period, took place between the 2<sup>nd</sup> conference (2001) and the 4<sup>th</sup> conference (2005). The Process included 'members' (national ministries) and 'partners' (associations like EUA – European University Association, ESU – European Students' Union, and others). The partners were coming in with a variety of ideas and forming different working groups. This period marks the starting point of the history of debates on reforming doctoral studies in Europe; before this, the debates were held mainly at national level.

Doctoral education was initially left outside the Bologna debate. National ministers did not get involved in this area at all and left the debate to the partners. Student organisations in Europe were also more focused on Bachelor's and Master's degrees, and left doctoral education in the hands of the EUA. Doctoral students were largely absent until EURODOC was formed (European Council of Doctoral Candidates and Junior Researchers) in 2002 (see Garattini, below).

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*“The ‘Europe of Knowledge’ brought doctoral education onto the agenda”*

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In 2003, a confluence of different strategies brought about a political will to make changes. The Bologna Process was originally an initiative of national ministers, not of the EC (European Commission). From its origins in 1998 and 1999 it aimed to create a European Higher Education Area (EHEA). On the other hand, in 2000, the European Commission's Lisbon Strategy aimed to construct a European Research Area (ERA)

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related to industry and the economy, and linked to universities. Equally, the EHEA could not exist without a research dimension. The two agendas overlapped in the idea of a 'Europe of knowledge'. This brought doctoral education onto the agenda.

### Factbox

1998-2003: Doctoral education is not included in Bologna Process.

2003: Bologna Communiqué (Berlin) includes doctorate as 3<sup>rd</sup> cycle in Bologna Process and emphasises its importance for the 'Europe of Knowledge'.

2004-5: European Universities Association's (EUA) project 'Doctoral Programme for the European Knowledge Society' funded by EC.

2005: Salzburg. Ten basic principles of doctoral education.

2005: Conceptualisation. Long disputes over definition of 'European doctorate'.

2005: Bologna Communiqué (Bergen) aligns '3<sup>rd</sup> cycle' with EHEA's outcomes-based framework; calls for increased numbers of 'Early Stage Researchers' trained in interdisciplinarity and skilled for labour market.

After 2005: Implementation. EUA's Council for Doctoral Education. EC's 'modernisation of universities' and funding of joint European projects.

The first political statement that was made on doctoral education was the Communiqué from the Berlin meeting of the Bologna Process (2003). The Bologna Communiqués are relatively loose documents that are not legally binding; however, over the last ten years they have

influenced national higher education reforms strongly.

The Berlin Communiqué (September 2003) addressed the issue of research and doctoral training as follows:

Conscious of the need to promote closer links between the EHEA and the ERA in a Europe of Knowledge, and of the importance of research as an integral part of higher education across Europe, Ministers consider it necessary to go beyond the present focus on two main cycles of higher education to include the doctoral level as the third cycle in the Bologna Process. They emphasise the importance of research and research training and the promotion of interdisciplinarity in maintaining and improving the quality of higher education and in enhancing the competitiveness of European higher education more generally. Ministers call for increased mobility at the doctoral and postdoctoral levels and encourage the institutions concerned to increase their co-operation in doctoral studies and the training of young researchers.

(Bologna Process 2003: 7)

At the Berlin conference, the EUA was encouraged to continue working in the area and was given money by the European Commission to run a project called *Doctoral Programme for the European Knowledge Society* (2004-2005) which included 48 universities from 22 countries. An 'Official Bologna Seminar' in Salzburg (February 2005) discussed the project's results. The most important results were summarised in a document known as *Ten Basic Principles*.

'Ten basic principles':

1. The core component of doctoral training is the advancement of knowledge through original research. At the same time it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia.
2. Embedding in institutional strategies and policies: universities as institutions need to assume responsibility for ensuring that the doctoral programmes and research training they offer are designed to meet new challenges and include appropriate professional career development opportunities.
3. The importance of diversity: the rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice.
4. Doctoral candidates as early stage researchers: should be recognised as professionals – with commensurate rights – who make a key contribution to the creation of new knowledge.
5. The crucial role of supervision and assessment: in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners).
6. Achieving critical mass: Doctoral programmes should seek to achieve critical mass and should draw on different types of innovative practice being introduced in universities across Europe, bearing in mind that different solutions may be appropriate to different contexts and in particular across larger and smaller European countries. These range from graduate schools in major universities to international, national and regional collaboration between universities.
7. Duration: doctoral programmes should operate within appropriate time duration (three to four years full-time as a rule).
8. The promotion of innovative structures: to meet the challenge of interdisciplinary training and the development of transferable skills.
9. Increasing mobility: Doctoral programmes should seek to offer geographical as well as interdisciplinary and intersectoral mobility and international collaboration within an integrated framework of cooperation between universities and other partners.
10. Ensuring appropriate funding: the development of quality doctoral programmes and the successful completion by doctoral candidates requires appropriate and sustainable funding.

(Bologna Process 2005a)

The publication of the Salzburg Principles and in particular its *Conclusions and Recommendations* influenced the draft of the communiqué of the Bologna Process meeting that followed (Bergen, May 2005). The Salzburg 10 principles prompted a more comprehensive overview of the doctoral level of qualification and for it to be aligned with the EHEA's overarching framework. This gave rise to long disputes about the definition(s) of the 'European doctorate'. One of the main challenges was finding a common 'structure' for the doctorate. Until that moment, doctorates in European countries used to be mainly a one-to-one collaboration between a student and a professor, with the student free to develop his/her own thesis. For them, the idea of taught courses was a huge challenge. Some countries (e.g. Denmark) had developed professional doctorates, whereas other countries considered only 'scientific doctorates' to be acceptable. The need for a common European framework also demanded time requirements to be formalised: it was decided that the completion of the

doctorate should take 3-4 years full-time. Other goals of the doctorate were then established, for instance that it should be centred on interdisciplinary, transferable skills and preparation for the labour market. The communiqué also outlined the aim to increase the number of doctoral degree holders. Arguably, the increase in the number of doctoral degrees gave rise to a transition from elite to mass doctoral education. Yet attempts were also made to improve the status of doctoral candidates by calling them 'early stage researchers'.

The Bergen Communiqué (May 2005) re-stated nine of the ten Salzburg Principles. 'Ensuring appropriate funding' was left out because Ministers were not empowered to make domestic financial decisions at an international forum. However, Ministers in the Bergen Communiqué stated clearly:

... doctoral level qualifications need to be fully aligned with the EHEA overarching framework for qualifications using the outcomes-based approach. The core component of doctoral training is the advancement of knowledge through original research. Considering the need for structured doctoral programmes and the need for transparent supervision and assessment, we note that the normal workload of the third cycle in most countries would correspond to 3-4 years full time. We urge universities to ensure that their doctoral programmes promote interdisciplinary training and the development of transferable skills, thus meeting the needs of the wider employment market.

We need to achieve an overall increase in the numbers of doctoral candidates taking up research careers within the EHEA. We consider participants in third cycle programmes both as students and as early stage researchers.

(Bologna Process 2005b: 4)

That 40 ministers could reach agreement in this document was a huge step.

After 2005, the process lost some of its dynamism; the process shifted from conceptualisation to implementation. The two main actors who continued to carry forward the European doctoral project were, first, the EUA and its series of 'Doctoral projects' (financed by the European Commission) which in 2008 resulted in the creation of the 'Council for Doctoral Education' (EUA-CDE). With participation from 200 universities, it developed a detailed work plan. Second, the impetus was kept up by the EC and its strategic documents on the 'modernisation of universities', as well as its financing of joint European projects.

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*There was a "transition from elite to mass doctoral education" and attempts "to improve the status of doctoral candidates"*

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The important question that should be asked in this context, therefore, is: what does internationalisation – and Europeanisation as 'the regionally oriented version of either internationalisation or globalisation' (Teichler 2004) – mean for doctoral education? There is still a series of issues open for discussion. It could be argued that the transition from 'elite' to 'mass' doctoral education might lead to a decrease in quality standards and as well as to major financing problems. However, the reform has also greatly expanded access to doctoral studies and thereby increased the number of PhD holders and new researchers. Similarly, there is the issue of reimagining the status of doctoral candidates – in their universities and in society at large.

# EURODOC'S CONTRIBUTION TO EUROPEAN DEBATES

## Ludovic Garattini, Former President of EURODOC

Prof. Zgaga's presentation was complemented by Ludovic Garattini, who represented EURODOC. EURODOC was established as a non-profit organisation in 2002 for doctoral researchers to participate in the Bologna Process. They are now registered as lobbyists in the European Parliament.

EURODOC is a gathering of early stage researchers which comprises 34 member states. It has an interdisciplinary orientation and it is tackling shared problems. It has no political orientation. It advocates the importance of gaining professional experience while doing the doctorate, and sees the doctorate as the first stage in a professional career.

This is also in line with the goals proposed by the European Commission, which aims to promote professional opportunities for early stage researchers:

By the end of 2011, Member States should have strategies in place to train enough researchers to meet their national R&D targets and to promote attractive employment conditions in public research institutions.

(European Commission 2010: 9)

The general issues for the doctorate are common to the entire community of early stage researchers across the EU, and beyond (Russia, Azerbaijan, Serbia, Norway, Ukraine, Switzerland etc.). No one knows how many doctoral candidates there are in Europe. It is estimated that there are around 600,000.

The EURODOC vision for a career in research is based on four progressive stages:

- First stage researcher (doctorate)
- Recognised researcher
- Established researcher
- Leading researcher

EURODOC has a number of working groups and one concerns gender equality. Members from one country presented figures that show whereas there is a 50-50% enrolment rate, there is only a 28% female graduation rate, which means there are issues arising throughout the doctorate that sometimes prevent women from graduating – these could be maternity, gender discrimination etc.

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*“No one knows how many  
doctoral candidates there are in  
Europe”*

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Another central aspect to EURODOC discussions has been the status of doctoral candidates within the university and the name they are addressed by. EURODOC thinks the word 'student' should be replaced by 'early stage researcher', to better reflect the autonomy that doctoral candidates should have. This was also extended to doctoral candidates having employee status within their respective universities. This means they should have the full health, social and unemployment benefits of salaried workers. This was a particular issue for some countries/ institutions where the structure of the higher education system did not permit candidates to have employee status and insisted they were students.

EURODOC conducted the first survey about the situation of doctoral candidates and junior researchers in 12 European countries during 2008-9 (Ateş et al. 2009). The aim of the survey

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was to identify important issues affecting doctoral candidates – working conditions, employment, access to social benefits, as well as to investigate the different models of doctoral education across Europe.

Existing good practices are outlined in the European Charter and the Code of Conduct for the Recruitment of Researchers (European Commission 2005); they are:

- Transparency in recruitment processes
- Contracts for ALL researchers
- Attractive working conditions
- Mobility (geographic, inter-sectorial and interdisciplinary)

An example of the above is the Marie Skłodowska Curie Actions programme.

EURODOC's recommendations are to have the Charter and Code implemented (in state regulations, in institutions and in Horizon 2020) and encourage institutions to participate in the HRS4R scheme (Human Resources Strategy for Researchers). They see this as the way to improve Europe's global competitiveness for knowledge, its attractiveness, productivity and influence.

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## EUROPEAN DOCTORAL EDUCATION – DISCUSSION

Many participants were interested to know more about EURODOC's resistance to the word 'education' and preference for 'training'. It was argued that 'education' had a developmental aspect that was lost when using the term 'training'. EURODOC's approach, however, is that 'education' is often associated with the

term 'student' and when they replaced 'student' by 'early stage researcher', they had to find an equivalent for 'education' that would reflect the employee status of the doctoral candidate – and that was 'training'. It was then suggested this could also be a conceptual problem, given that the word 'education' had different connotations across languages. For instance, it is fine to use it in English but in other European languages it may sound a bit patronising, being mainly used in relation to early schooling. Another approach to the topic was that the use of the word 'training' is an invitation for the EU to transform doctoral education into a preparation for the labour market and that could pose an enormous challenge to balancing scholarly enthusiasm with the skills and activities on the EU agenda. It was later added that 'training' in the U.S. context was vocational.

Another issue discussed was the nature of the relationship between the European Commission and the national governments in the context of the Berlin and Bergen communiqués. Prof. Zgaga explained that the relationship had been quite a complex one: at the initial meeting of the Bologna Process in Bologna in 1999, the national ministers were reluctant to let the representatives of the European Commission sit with them; in the end they agreed to let them in but not to decide on the Declaration. In the Bologna Declaration that followed, there was no mention of the EC; the declaration was signed as a typical multi-lateral document. By 2001, however, the EC had got voting powers in the so-called Bologna Follow-up Group. And its influence within the Bologna Process started to grow. However, it should be noted that the Bologna Process includes not only the EU member states, but also twenty other countries, among them for example the Russian Federation. Therefore, the Bologna Process cannot be equated with the EU higher education strategy.

A second reason for expanding the EC's influence in the Bologna Process is finance. The

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EU programmes like Erasmus, Tempus, Erasmus Mundus etc. have made possible a growing number of consortium projects among universities in EU countries as well as in 'third countries'. These projects have greatly accelerated the development and integration of European higher education and the EC still continues with this approach today. All of this, of course, also contributed to strengthening EU's influence in the process.

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## HISTORY OF U.S. POLICY DEBATES OVER GRADUATE EDUCATION WITH A FOCUS ON IGERT

Maresi Nerad, Professor at University of Washington, Seattle

Prof. Nerad's presentation outlined the main features of doctoral education in the U.S.. She described the wide-ranging policy debates about doctoral education, and provided a focused discussion of the IGERT – the U.S. National Science Foundation's flagship model of doctoral education.

### Context/ Features of U.S. doctoral education

As a general trend, doctoral education in the U.S. has steadily expanded since the Second World War. The approximate number of students undertaking a doctorate in the U.S. in 2011-2012 is 461,000 (Patton 2013, Council of

Graduate Education 2013). This figure includes first-time enrollment in graduate certificate, education-specialist, master's, and doctoral programs students. Doctoral education is largely concentrated in over 60 research universities, which are members of the American Association of Universities. In 2012, U.S. universities awarded 51,008 doctorates (National Science Foundation 2013). Throughout time, despite the generally increasing enrollment trend, there have been fluctuations in the number of PhD students, depending on particular historical and social circumstances. For example, during the Vietnam War, in the late 1960s, many young American men deferred going to war by enrolling in graduate schools, which led to an increase in the number of doctoral students. Then, in 1989, at the end of the Cold War, there was a drop in the number of doctoral students, due to the increased job possibilities for science and engineering graduates with bachelor of science or master of science degrees, especially in the IT sector.

One of the main distinctive features of the American doctoral education system is that it is decentralised, meaning that it is not regulated by a national or federal ministry of education, like it is in European countries, for example. This is the reason why, historically, one cannot talk about 'reform' in American doctoral education, since initiatives have never been taken at ministry level, but at institutional and departmental level; so a more appropriate term to describe transformations would be 'change'. At present, a PhD programme typically spans across 5-7 years, and it is relatively structured, including coursework and exams, centering on the dissertation research. The structure seeks not to be restrictive, and is designed with developmental learning principles in mind. Students are encouraged to be autonomous and pursue self-directed inquiries; in fact, doctoral programmes are seen as 'socialising agencies', and increasingly as communities of practice,

which aim to transform students into independent researchers.

In the present context of globalisation and the knowledge economy, doctoral education in the U.S. has become increasingly market-driven. In the U.S. as elsewhere, innovation is seen as a means to achieve economic prosperity, and doctoral education as a way to train innovators for various sectors. Doctoral education is therefore subjected to both external and internal forces that link it to the demands of the labour market. Students are prepared for future employment by being taught transferable/professional skills – skills that are considered relevant for the labour market, especially for sectors outside academia. In this context, research production has also switched from Mode 1 (the traditional apprenticeship model) to Mode 2 (the interdisciplinary, theme-driven research mode of researchers who work in multiple settings and with multi-disciplinary approaches) (Nowotny et al. 2001; Gibbons et al. 1994). Doctoral education is generating revenues and the degree has become a commodity that has value beyond knowledge production.

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*“The doctoral degree has become a commodity that has value beyond knowledge production”*

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The market-driven, demand and supply orientation encourages competition between various doctoral programmes and thus also creates the need for comparison between them. In order to be comparable, doctoral programmes use similar systems of quality assurance. This phenomenon has led to a greater standardisation of doctoral education and has linked it to broader processes of

accountability. Quality assurance in American doctoral education has existed for many years and has been mostly initiated by the universities themselves. This doctoral programme review process is also an engine for change. There were arguably many reasons – extrinsic and intrinsic – why the quality of doctoral education in the U.S. (and increasingly worldwide) should be assessed: it provides greater transparency and accountability, it enables comparisons with other programmes and it may serve as a means to improve the existent quality of doctoral programmes. Because the doctoral education system is not centralised, the assessment is undertaken locally by a university’s Graduate Council, coordinated by the University central Graduate School, with the help of external peer reviews in a cyclical period of 5-7 years.

## Policy Debates and Criticisms

The context described above – affected by globalisation and supply and demand aspects – has generated a wide range of policy debates around doctoral education. These have included the over-under production of PhDs (in relation to the needs of the labour market), the quality and effectiveness of doctoral programmes, and their ‘relevance’ for society and the labour market. This has also prompted discussions about the development of professional skills throughout the doctorate to prepare students for a career. Mentoring, going beyond mere advising between student and supervisor, has also received a lot of attention.

In the mid 1990s, there were criticisms of the ways in which doctoral education was organised and performed. These have mainly stemmed from the expectations about what a market-driven system of doctoral education should do. It has been argued that doctoral students are trained too narrowly in their field and that they lack the professional skills required for employment outside academia. The

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effectiveness of doctoral programmes has also been challenged, based on the long time that students take to complete their doctoral degrees, and that it takes additional years in postdocs and visiting instructor positions to gain stable employment.

There have been various national initiatives aimed at changing doctoral education in recent years:

- The National Science Foundation has initiated an interdisciplinary training programme called IGERT (Integrated Graduate Research and Traineeship). Since 2014 a new similar program, the NRF Research Traineeship Program (NRT) has succeeded the IGERT.
- The Council of Graduate Schools has initiated a few programmes targeting doctoral education, preparation for professional work, and research conduct.
- The Carnegie Foundation for the Advancement of Teaching has had an initiative on the doctorate.
- CIRGE (the Centre for Innovation and Research in Graduate Education) has addressed issues like including student voices; researching students' satisfaction of their doctoral education and training; assessing career path information with an emphasis on the transition from education to career; and program feedback.

## The IGERT – the American Flagship Model of Doctoral Education

The IGERT in particular has become a successful model. It consists of 5 years' funding from the National Science Foundation for doctoral programmes. Over 278 grants at over a 100 universities have been awarded since the program was established in 1997, funding over

6,500 graduate students. IGERT awards are approximately \$3.0-3.2 million for a 5 year program, with the major portion of the funds being used for PhD graduate student stipends of \$30,000 a year and training expenses (IGERT Resource Center, <http://www.igert.org/>, see also NSF [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=12759](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12759)).

The funding is awarded to highly selective research doctoral programmes that are:

- Engaging novel research themes
- Inter/multi or transdisciplinary
- Team-based
- Building professional and personal skills into the curriculum
- Preparing students for academic and non-academic careers, via connections to the outside world
- Encouraging international components.

One key goal of the programme is to catalyse cultural change in graduate education through 'collaborative research that transcends traditional disciplinary boundaries' (National Science Foundation, 2005: Synopsis of Program <http://www.nsf.gov/pubs/2005/nsf05517/nsf05517.htm>).

The main challenges for the IGERT are: to find a balance between disciplinarity and interdisciplinarity; to fit within the traditional university structure; and to sustain funding once the NSF grant has ended.

## Factbox

2012: 44,328 doctoral students in 60 U.S. research universities.

Decentralised and market-oriented system – doctoral programme reviews are engine for change.

Policy debates: How many doctorates needed in the economy; relevance to society; transferable skills?

Criticism: Narrow training; takes too long.

National initiatives: Carnegie Council of Graduate Schools, Carnegie Foundation, CIRGE.

National Science Foundation's IGERT model of doctoral education: 278 five-year grants at 98 institutions, fund 6,500 doctoral students.

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# AMERICAN DOCTORAL EDUCATION – DISCUSSION

Q: To what extent is the IGERT a globalising force for doctoral education worldwide?

A: Agencies orient themselves to the American mode of doing things. Countries should, however, be careful not to adopt something without adjusting it first. South Korea, Japan, Australia, Europe, Saudi Arabia, China are only some examples of countries – or regions – that have at least thought about the ways in which the U.S. is doing things. International meetings are constantly organised where one country presents its own model, therefore the exchange

of ideas is inevitable; the extent to which these ideas are then implemented in other countries is a different question, and depends on many situational factors.

Q: Policy-discourse often presents a dichotomy between 'academic' and 'professional' skills. However, it could easily be argued that what is currently defined as 'professional' skills – critical thinking, originality etc. – are in fact standard 'academic' skills. 'Academic' skills may be the ones that are most important for employment but they have been made to look as if they are not the skills that employers are looking for. How is this dichotomy explained in the context of the knowledge economy?

A: I do not agree with the dichotomy, at least in the U.S. it does not play out this way. Critical thinking, originality, analytical thinking etc. are academic skills. Professional skills are mostly seen as being able to work in teams, being able to present complex issues in an easy to understand way, managing people and budgets. Public media are often good perpetrators of generalisations and incorrect information. Many of the skills are important for a variety of employment sectors (Rudd et al. 2008).

Q: The EU insists that people doing a doctorate are called 'early stage researchers'; in the U.S., the term used is 'students'. Does the term used reflect deeper ideas embedded in the two models or is this just a linguistic preference disconnected from status issues?

A: 'Student' is just a term that is being used, it does not have deeper implication for the status of the person in question. These words are used differently in different languages. For example in Germany, the word 'student' is mostly associated with children and is therefore seen as unsuitable to describe people pursuing graduate studies. However, in the U.S., the term 'student' does not have this connotation and it is therefore appropriately used in the context of graduate schools. It is not making people look infantile; it is just a language terminology that

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doesn't have an impact on autonomy etc. In fact, the majority of doctoral students are also working as teaching/ research assistants throughout their degrees, which are positions of high responsibility. Professors see themselves also as learners. We constantly learn and thus are students of some kind.

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## CONCLUSION

### Corina Balaban and Susan Wright

The two models of doctoral education – the 'European doctorate' and the American IGERT – have many areas of convergence, as well as differences.

To use Gibbons et al.'s (1994) terminology, both the European and U.S. debates focus on a shift from 'mode one' knowledge production (traditionally known as the 'apprenticeship' model) towards 'mode two', which places a much greater emphasis on interdisciplinary, transferable skills and collaborations with industry as ways of preparing doctoral students for the labour market. In this context, the question is what is happening to the academic focus on equipping researchers theoretically and methodologically to think critically and independently and explore a problem they are 'burning' with enthusiasm to solve?

The concept of 'mass doctoral education' was raised in both discussions – PhD production is increasing in many countries, but are the career opportunities following? The over/under-production of PhDs has always been a concern in the U.S. (not a planned economy). Universities try to respond to predictions about the labour market as well as to students' interests. However, they are always running behind, and there is never a one-to-one match. There was a time when people were talking

about the 'birth control of the PhD', referring to the concern over the growing number of PhD graduates. This was also discussed in the context of the EU's goals of raising the number of doctoral candidates and the impact that this could have on the quality of doctoral education in Europe. In the European context, it was argued that the standards were dropping. In the U.S., the discussion was not about decreasing quality, but about an increase in time to degree, and about students having to find too many and too long postdoc positions as holding patterns. Massification happened in patches, so one could witness a scattered distribution of expansion depending on local politics. For example in Denmark, the goal was to vastly increase the number of doctoral candidates. But these were distributed unevenly between faculties and departments.

One obvious difference between the two models is related to the structure of doctoral degrees, and another one may refer to the centralised versus decentralised approach. This is mainly due to the differences in history between the two regions, as well as the different backgrounds and frameworks they had for implementing the models. In Europe, it can be argued, there has been a growing sense of Europeanness in the last 23 years, yet the ITNs are still based in national legislations, while degrees are awarded by institutions. In the U.S., the National Science Foundation wants to create changes in doctoral education at universities by funding grants that allow for IGERTs; it is thus introducing national changes through the backdoor via a national funding agency.

## Questions for further consideration

The above discussion prompted the need to talk about issues affecting the university at a deeper level, and thus connecting the doctoral models to wider processes of transformation.

- How have the models come about – in what context (political, economic, social)? Can they be linked to wider processes of change taking place in each particular society at the time?
  - Who are the people behind the concepts for the models and how have they decided what doctoral education should be about? Have the ideas behind the models ever been challenged or have they been taken for granted?
  - Through what mechanisms have the models been implemented? Has there been shift in discourse since?
  - What have the reactions been to the implementation of these models – from administration, faculty and students?
  - What are the wider consequences of using these particular models, rather than other models? How do they fit in with larger processes of transformation?
  - What sort of person are these models trying to create? Has the discourse of the knowledge economy become too hegemonic? Is doctoral education becoming too market-oriented, or pushed too far to produce employment-ready researchers?
  - Universities now have a dual mission – that of providing an academic education and that of equipping students with ‘professional’ skills. The latter used to be the responsibility of industry. Has this new approach become too strenuous for universities? Has it diverted their focus?
  - Is the market-driven approach to doctoral education more natural and appropriate in the context of some disciplines and less so in the context of others (sciences versus humanities)?
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