APPLYING THE TUNING APPROACH TO THIRD CYCLE STUDIES

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Introduction

What is a doctorate in a knowledge society? What should it be? These are questions that Universities and societies are now facing, looking for new and better answers. The third or doctoral cycle is the crowning phase of higher education. Universities are known by the quality of the research their 'doctors' are able to perform. They regularly mention the famous people – if possible Nobel prize winners – who are products of their doctoral programmes. The image of a University is tightly linked to the attractiveness of its doctoral studies at a national, European and global level. Excellence is sometimes measured in terms of quantity, quality and visibility of each University's doctoral 'product'.

Is this metre appropriate? Is it sufficient? The context of higher education is changing rapidly, in the world and particularly in Europe and the Bologna process area. At present the third cycle is becoming part -- the final part -- of a newly structured educational offer which is being implemented in many countries. Does this evolving context impact on doctoral studies? Can its impact be positive? What are Universities' responsibilities in this process?

From the European point of view there are specific challenges. Some of these have been formulated in the Lisbon objectives, which focus on achieving a more competitive role for our continent. It has been realised that Europe has an enormous patrimony of culture, knowledge and research capacity which is not developing its full potential. The European Commission has identified in a number of studies the fact that Europe produces a much lower percentage of PhDs than countries such as USA and Japan, and worse, many of these are destined to be unemployed or employed in jobs not related to their expertise; furthermore European PhDs tend to take more time to receive their doctoral degree than their US or Japanese colleagues.[2]

According to 'Lisbon', there should be a new connection and synergy between education, research and innovation. The third cycle is the most evident means for Universities to enter the process in a direct and meaningful way. Indeed, universities are now attempting to redefine their role in this context; they are reacting to perceived and real threats. They are founding graduate, research or doctoral schools; they look for new forms of collaboration with industry, and for new ways of financing their research programmes. They are concerned by the shift of major research funding opportunities away from academia; they

[2] Communication from the Commission – mobilising the brainpower of Europe: enabling universities to make their full contribution to the Lisbon Strategy (2005); Commission Communication on the role of universities in the knowledge society. See European Commission Website: http://ec.europa.eu/education/index_en.html

are founding research parks; they are investigating the potentialities of joint doctorates and doctoral networks.

In their associations and organisations (such as Rectors' conferences, the European University Association and other networks) universities have clearly identified the necessity of finding new approaches, identifying obstacles and giving examples of good practice. The attention of academics so far has largely focussed on highly significant issues regarding such matters as structures, funding, career possibilities, recruitment, the characteristics of doctoral projects, models of supervision and the potentiality of inter-university networks.[3]

In final analysis, however, the essence of the problem is how young researchers can be prepared well for their future roles. What competences should PhDs have in order to be able to take a responsible place in a knowledge-based society? Looking at the question from this point of view implies a shift in perspective, which challenges some basic premises of existing programmes but also provides powerful tools for reformulating them. If we accept that the third cycle – just as the other two – should be learner centred, what consequences does this have for the design and delivery of doctoral programmes? First, that the programmes should be organised with reference to what the learner will know, understand and be able to do at the end of the process. It means that the learners' time input will be carefully considered and used effectively. It means that the abilities the learner will have at the end of the process must be suitable for employment as well as personal satisfaction and citizenship.

As the reader will have noticed, the expression 'student' has been avoided so far when referring to third cycle 'learners'. The authors are well aware of the debate about the status of doctoral 'students'. On the one hand doctoral 'students' are active participants in a learning process, and may even take classes; on the other hand they should also be executing original research as junior researchers, although this will take place under the supervision of one or preferably more than one senior staff member. Their status could be reflected by the word 'student'. However, in some countries research 'students' are actually members of staff. Thus the status of a third cycle student is considerably different from that of a first or second cycle student. If first cycle students or bachelor students might be called undergraduate students or junior students and second cycle or master students graduate, post-graduate students or senior students, it seems suitable and desirable to designate third cycle students in a different way. In this article we use the term "doctoral candidate". This choice reflects the fact that third cycle 'students' are both as students and as young researchers -- in differing proportions -- at the same time.

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[3] EUA Bologna Seminar: "Doctoral Programmes for the European Knowledge Society ". Salzburg, 3-5 February 2005. General Rapporteur's Report Professor Kirsti Koch Kristensen, Rector of the University of Bergen.; Bologna Seminar on Doctoral Programmes "Matching Ambition with Responsibilities and Resources" (Nice, 7-9 December 2006) Final Conclusions – Preparing Recommendations for the London Communiqué. See EUA Website: http://www.eua.be/index.php?id=97 as well as an article in the EUA Handbook written by Sandra Bitusikova and Lesley Wilson, entitled 'Doctoral Programmes in Europe''. Section: Implementing Bologna in your institution, C4.4-3.

It is true that 'research' in the broadest sense is at the heart of most doctoral programmes, although today we include very advanced professional studies in the third cycle as well. The role of the doctoral candidate however does not end with the collection of data, its analysis and the elaboration of a text. The successful doctoral candidate will need to be able to continue to elaborate new knowledge and also to disseminate it and to show how it is useful to society.

Universities and the higher educational community as a whole must reflect on the needs of society and on what it will require in the future from our most highly educated people. In other words what tasks will they be called on to perform? It is universally accepted and unquestioned that society needs people who are capable of carrying out specialised research. This is something that doctoral programmes today certainly prepare for. But are there not other undeveloped potentials and unrecognised needs – essential for a knowledge-based society – which are not provided for to the same degree or not even taken into consideration at all?

In the framework of the Bologna process, as is well known, Ministers of Education of the signatory countries accepted that doctoral studies – both research-oriented and professional – are to be considered the final sequential step in higher education. In their Bergen meeting in May 2005, they accepted a framework for qualifications of the European Higher Education Area[4] and invited all countries to draw up their own National Qualifications Framework including the third cycle.

For the third cycle, the agreed level indicators or features are described as follows:

"Qualifications that signify completion of the third cycle are awarded to students who:

1. have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;

2. have demonstrated the ability to conceive, design, implement and adapt a substantial piece of research with scholarly integrity;

3. have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication;

4. are capable of critical analysis, evaluation and synthesis of new and complex ideas;

5. can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise;

6. can be expected to be able to promote, with academic and professional contexts, technological, social or cultural advancement in a knowledge based society."

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[4] Bologna Working Group on Qualification Frameworks, *A Framework for Qualifications of the European Higher Education Area. Copenhagen* (Ministry of Science, Technology and Innovation) February 2005. The report can also be found on the Bergen-Bologna website: http://www.bologna-bergen2005.no/

As can be seen, this formulation is "student-centred" and takes into account areas which are not traditionally considered in third cycle studies, such as professional doctorates in Health and Social Care, in Design, in Library and Information Science, in Clinical Pharmacy, etc. How far, though, does it correspond to present practice? By definition doctoral training will cover items 1, 2 and 3: in completing the doctoral dissertation or project, the doctoral candidate will demonstrate ability to carry out original research of substantial size. Providers need to ensure, however, that doctoral candidates achieve their potential in the other areas and in most cases this will require further reflection and innovation.

In any case, these indications are very general – as they are meant to be. Translating them into concrete reference points or features of real programmes, in the Tuning view, must be done at the subject area level.

It is here that the actual need for a programme and its precise characteristics (or academic and professional profile) can be established. It is at this level that societal needs, through consultation with stakeholders and the academic community, can be registered, conceptualised and transformed into relevant doctoral programmes. It is at this level that the key competences (appropriate knowledge, broad and high level understanding, relevant skills and abilities) can be defined and strategies for developing them designed. At this level, the consistency and coherence of all elements can be best monitored, and calibrated in the international context.

In the Tuning view, quality programmes in today's world must take into account internationally agreed reference points. The Tuning project, thanks to a consortium of 150 European Universities, has been able to develop such reference points for 9 pilot subject areas. In collaboration with Tuning, a growing number of thematic and subject area networks have developed similar reference points and indicators. The Tuning approach has been taken up by other countries and regions, in Latin America (19 countries, 186 Universities), in the Russian Federation, and Central Asia; it is being prepared in Georgia and in other regions.

The Tuning approach seems fully in line with the European Commission Green Paper 'The European Research Area: New Perspectives'[5], published in April 2007, whose objective is to launch "a broad institutional and public debate on what should be done to create a unified and attractive European Research Area, which would fulfill the needs and expectations of the scientific community, business and citizens". One of its aims is to open the ERA to the world. A careful look at the paper and its accompanying background document show us that the consultation does not focus very much on development of infrastructural measures to develop the ERA, and even less on the actual preparation of future researchers as high level employees in society and business.

According to Tuning the learning process of doctoral students requires a structural approach in terms of planning, designing, implementing, delivering and enhancing programmes of studies, which is not much different from the

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[5] The text of the Green Paper can be found on the website of the Directorate General for Research http://ec.europa.eu/research/era/pdf/era_gp_final_en.pdf

approach which has been developed for the first two Bologna cycles. The backbone of the Tuning methodology is to distinguish five lines: these are 1) generic competences or 'transferable skills'; 2) subject specific competences (that is, knowledge understanding skills and abilities that are relevant for the subject area); 3) student workload expressed in time (through ECTS credits); 4) approaches to learning, teaching and assessment (in a competence-based context); 5) quality enhancement of competence based programmes. Each of these elements requires separate attention.

The work on the first two cycles has been published in book form and on-line.[6] The objective of this contribution is to explore the general meaning and applicability of each of these lines to the third cycle.

1. Generic competences

In order to investigate the importance of generic competences Tuning developed a list of thirty one of these competences which became the object of consultation with academic employers and graduates[7]. The extent to which and the way in which each should be developed, depend on the level and kind of studies.

Some are clearly at the centre of doctoral training. Examples might be "ability to abstract thinking, analysis and synthesis"; "ability to be critical and self-critical" and "ability to undertake research at an appropriate level". If we look at these in a concrete situation, "capacity for abstract thinking, analysis and synthesis" might include being able to look at a research area identifying problems, identifying the relevant literature; identifying ways of gathering appropriate data, choosing appropriate theoretical and practical analytical tools; applying them, describing results and explaining conclusions. As to "critical and self-critical abilities", whether or not they are successful, doctoral programmes certainly accept that one of their central aims is to foster these capabilities, which depend on developing the ability to understand critically the formation and the specificity of the disciplinary area and the ability to reflect on the interpretations made by oneself or others on data or theoretical assumptions, identifying strengths and weaknesses. "Research skills" – a very generic label – at the third cycle level should be seen in relation to the skills already developed at first and second cycle level. In the third cycle, specific analytical techniques will normally be used, while hopefully the research problem will continue to be seen as multifaceted and subject to alternative approaches.

One might expect that such an important generic competence as the "ability to apply knowledge in practical situations" would also be explicitly developed in third cycle programmes. This might be true for certain doctoral programmes of a scientific or technological or applied nature -- although even that is

[6] Julia González and Robert Wagenaar, eds. *Tuning Educational Structures in Europe. Universities' contribution tot the Bologna Process. An introduction.* Bilbao and Groningen, 2007. This publication has also been published in French, German, Italian, Polish, Russian and Spanish. Other translations can be found on the Tuning website: http://tuning.unideusto.org/tuningeu.

[7] 2008 Tuning Europe survey on generic and subject specific competences. The 2001 Europe survey contained 30 competences. 25 of the competences used in the 2008 survey are similar or comparable to the ones used in the 2001 survey.

questionable. It is certainly not the case for other fields of study. The Tuning consultation regarding generic competences has shown us in general that the competence 'applying knowledge in practical situations' is less well developed than would be desirable in first and second cycle degree programmes.[8] Why should this be different for third cycle programmes?

Such competences as "capacity to generate new ideas (creativity)", "ability to work autonomously", "ability to communicate both orally and through the written word in native language" and "ability to identify, pose and resolve problems" may be fostered to a greater or lesser extent in existing programmes, but there should be a greater awareness of their importance and a more structured approach to developing them. "Creativity" can mean many things, not only artistic or literary creativity, but also seeing new dimensions and new connections in one's own field or in other fields, creating strategies, finding solutions and foreseeing future development and their implications. "Capacity for generating new ideas" can of course be developed within the limits of one's own research area or project; on the other hand it can also involve interaction with neighbouring disciplines or in depth discussions with colleagues or mentors. "Ability to work autonomously" (which includes time management, self direction, discipline and capacity to focus on a topic for prolonged periods of time) is an extremely important competence quite explicitly developed in the case of many doctoral dissertations or research projects -- sometimes even to an excess, when doctoral candidates are left to themselves and not given adequate outside supervision and input. "Communication skills" are developed insofar as doctoral candidates – theoretically -- must write their dissertations according to academic standards and present their findings in seminars or to a doctoral committee. Nonetheless, in the majority of cases, little or no attention is given to developing skills such as those necessary for communicating with a broader scholarly public or with the public at large. Experience also shows that many doctoral candidates are unable to do effective academic writing, suggesting that the sink-or-swim method of teaching communication skills is not sufficient. Effective academic writing requires, of course, correct data organisation and manipulation and a real understanding of the genre as well as linguistic knowledge and the ability to write clear and correct prose.

"Problem solving" can be understood on many levels from the simplest and most technical to the highest and most general – or most specialised. Obviously any dissertation or research project presented for a doctorate must demonstrate the ability to identify and solve problems of many different kinds. Nonetheless "problem solving" at the highest level implies the ability to identify, define and conceptualise problems of relevance to society, asking appropriate questions, finding paths for research, finding and proposing effective solutions.

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[8] Outcomes of Tuning Europe Surveys 2002 and 2008. The Tuning 2008 survey outcomes show us for instance that when a comparison is made between perceived importance and perceived achievement of the identified competence there is more than one point difference on a scale of 4; for graduates: importance 3.676 against achievement 2.536. This outcome is comparable for another stakeholder, the employers. Also the surveys for Tuning América Latina (2006), Russia (2006) and Georgia (2008) show comparable results.

This brings us to a number of competences, vital for society and the role that young researchers will be expected to play, which are not always clearly described in outlines of and provided by third cycle programmes. Many of these correspond to or could be explicitly or implicitly included in points 5 and 6 of the qualification framework for higher education, quoted above. For example we refer to such 'generic competences' as "ability to design and manage projects", "ability to work in a team" and "ability to motivate people and move towards common goals (leadership)". Today research -- within or outside of academia -- usually requires large scale integrated efforts.

This implies that it is often organized as projects which have to be executed within a specified timeframe using limited financial and other resources. It seems obvious that the competences needed to participate in or to manage such projects need to be fostered in any third cycle programme. Of course anyone who writes a proposal for a doctoral dissertation, in practice, designs a project; when that individual receives his or her degree, he or she has demonstrated the ability to complete a project. But during doctoral studies this competence needs to be broadened and deepened so as to be functional in future employment situations.

Such competences inevitably must also include the ability to work with others toward common goals. We can include them under the label of "teamwork": at the doctoral level, though, this competence needs to be understood at a high level. Not only does it mean carrying out a specific task with others as is often done in the previous two cycles: it means the realisation that solving relevant problems requires the input of people coming from different backgrounds and traditions (intellectual, disciplinary, linguistic, national and so forth). It means acquiring the abilities of collaboration: listening to and appreciating a diversity of experiences, arguments and insights, fostering positive dynamics in groups. In the third millennium, the only way that many relevant problems can be approached and solved is through the coordinated effort of many people in different roles and the substantial investment in the necessary structures. The fact that a doctoral candidate may collaborate in such an effort does not necessarily mean that he/she will acquire the competence of designing or managing such an effort. Designing and managing competences need to be explicitly taken into account and developed.

Society quite reasonably expects that people who have completed third cycle studies will have the capacity to take high responsibilities in the context in which they work. This can be associated with the competences of "leadership". In our view, at this level, leadership implies the acceptance of responsibility, the ability to facilitate others in reaching general objectives, open-mindedness, the ability to take initiatives and decision-making. It also means being recognised by others as competent.

A further area of competences which are relevant to many or even most doctoral candidates are those associated with teaching, or transmitting knowledge and competences in their turn. The idea that teaching and research must be closely connected in Universities (in substance carried out by the same individuals with give and take in both directions) is axiomatic in most European countries. Many PhDs in practice find employment in teaching in secondary schools; almost all hope that their third cycle degree will

eventually allow them to teach and to do research in an academic setting. But even those who will be employed in industry or elsewhere in the private sector will certainly be called upon to contribute in a more or less structured way to the formation of colleagues, assistants, co-workers and other people. This means that teaching competences must be developed; something of the teaching mindset must be part of the intellectual and practical patrimony formed in third cycle studies. The word 'doctor' itself means one who teaches: but how often and how effectively are teaching competences developed in doctoral studies?

All the generic competences we have discussed above are connected and necessary for an individual to take on high responsibilities. We must investigate how their development can be better fostered in third cycle training. Third cycle training implies a huge investment in money, time and effort of society and the individuals themselves; after finishing their doctorate, individuals should be more prepared to be able to take up responsibilities consonant with their knowledge, and to continue building up their experience during their lifetime.

2. Subject specific competences:

The heart of the Tuning methodology is at the subject area level. Tuning is a large-scale international project based on the work and the findings of 'Subject Area Groups', working groups in which academics from a particular subject area, coming from many different countries, work together to develop agreed reference points, competence lists, level descriptors and terminology for their field. For doctoral studies as for the previous two cycles this has been the case. Tuning subject area groups have prepared the contributions which form the bulk of this publication.

Subject specific competences are those that must be developed by students / candidates engaged in a certain disciplinary or thematic area. It is the subject area -- working in an international collaborative context -- which can set up key learning outcomes for any degree.

We have discussed under the preceding point the generic competences. We do not propose for example or believe that it would be beneficial, to organise a specific course on, say, 'leadership'. Rather, in any third cycle, the organisers of a doctoral programme would plan activities appropriate to the subject area in question to develop the competences discussed above as necessary for "leadership". These should be developed in the course of performing the required research or taught work. The same is true for all the key generic competences.

In addition, naturally, doctoral programmes must be designed to ensure the development to a high level of all the relevant subject specific competences. These are not only instrumental or technical competences needed to carry out a specific research project. They also include knowledge of the key techniques of the field which may be useful in future projects. In addition, they must include knowledge of the field: the doctoral candidate will need to have a clear and complete overview of the epistemological bases of his/her field – what might be described using the words of the first of the qualification

framework third cycle descriptors, that is the candidate must "have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field."

We sometimes find that doctoral studies are conceived according to an idea of level or progression in which candidates build on the very general or even elementary knowledge obtained in school or in the first two cycles, coming to develop very detailed knowledge of a very specialised area. It is doubtful that this kind of programme will serve their needs. In this first place, in future employment, doctoral candidates will often be required to have an overview of the developments, theoretical and technical of their subject area. To teach, to communicate, to plan, to manage projects in our day, 'doctors' must have high level knowledge of their own field and related ones.

A range of knowledge concerning the general area in which one chooses to carry out one's research will be essential for those holding a third cycle award. Only thus, in the words of the qualification framework for higher education, will they be able to "communicate with their peers, the larger scholarly community and with society in general"; or "to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge-based society". Such concerns are not related to 'communication' in a banal and elementary "PR" sense, but rather to achieving new knowledge and understanding in one's research field: broad and high-level knowledge will be essential for "critical analysis, evaluation and synthesis of new ideas".

Recently there has been growing concern that some doctoral programmes in the end yield very profound knowledge of an extremely restricted field – what can be described as knowing practically everything about nearly nothing. When this is the case, those holding doctoral awards are not easily employed (except in their own restricted area) and may not have the ability to develop their competences – including knowledge – in other useful areas. Also, the imaginative, creative aspects of research, which entail such competences as 'judgement' (making a reasonable guess about things about which one possesses only partial information) will suffer if the knowledge base is not adequate.

In other words, Tuning suggests that elementary knowledge of a broad field, such as may be acquired in the first two cycles, is not enough. There must be awareness that the 'doctor' will need deeper – or higher, according to the metaphor used – knowledge of his or her own field and neighbouring fields. If this is to be self-taught, as today it often is, the very least that can be expected of programme organisers is that they make this requirement explicit, stimulate the candidate's own curiosity, and provide opportunities for broadening their range of interests.

3. The use of ECTS in the third cycle

There has been a certain amount of debate about using ECTS credits in the third cycle. There is some agreement that credits can be used for the taught part of programmes; there is more uncertainty about using them to design or to regulate activities associated with the dissertation or doctoral research

project. We observe, however, that in a number of countries, ECTS is applied in third cycle studies.

We posit that -- as for the first two -- ECTS credits, correctly understood, can provide a very useful planning and management tool for the third cycle. In its essence, ECTS is a learner-centred tool for measuring the time – in absolute terms – that the student / candidate will normally need to employ in order to reach this or that learning outcome. Seen in this way, credits are simply a handy tool for measuring the realism of what we ask students or doctoral candidates to do.

A common complaint, and a nearly universal conclusion, is that today's doctoral candidates require much more than the specified legal time to complete their studies. Programmes which nominally or legally should take three, or a maximum of four years, tend to take much longer to complete, and third cycle candidates frequently drop out, overwhelmed by the difficulties of completing their projects without an organised structure.

The reason perhaps for the uncertainty about the usefulness of ECTS in the third cycle is that it is associated in the minds of many with a rule of thumb measurement made on the workload of small modules in the preceding cycles. Also, the mystique associated with the doctoral dissertation as the fruit of sacrifice and burning the midnight oil for years and years might disappear if proper planning is carried out, based on respect for candidates, staff and the time and effort of both.

If we take each credit as indicating about 25-30 hours of students' or candidates' work, we can reasonably use the general indication that it should be possible to carry out three year doctoral programmes in the time equivalent to 180 ECTS credits and four year doctoral programmes in the time equivalent to 240 ECTS. It has been recommended by the Ministers in Bergen not to make the third cycle too rigid: this is certainly a necessary caveat, but at the same time, the learner has the right to enrol in a programme which he/she can in practice carry out the necessary activities in the allotted time. If this is not possible for the normal candidate, accepted in the programme, it means that design is faulty.

On the other hand, credits are normally used for fairly small modules, in an accumulation system. It can well be argued that most doctoral programmes entail only a small number of such modules, if they include any at all. The award of ECTS credits comes about only when assessment has taken place, and for the classical doctoral dissertation, assessment is completed only after the final public defence.

So how can ECTS credits be useful?

As mentioned above, they can be used in the usual way to give credits for any taught components of the doctoral programme: courses, laboratory, seminars, workshops, exercise courses or the like. In some subject areas, the dissertation itself, or the research project, may be broken down into smaller units, such as – in the case of Medicine – a number of published papers in peer reviewed journals. In this case for example it would be reasonable and justified to award a number of credits corresponding to the time necessary to write such an article, since assessment would indeed have taken place, in the

broader scholarly community and not only according to the personal knowledge and judgement of direct supervisors.

In other subject areas the dissertation itself may require a long and complex process of gathering data, analysis and the elaboration of an extended monograph. In such a case, credits for the dissertation will probably most often be awarded only when the defence is concluded, and hence when the degree is awarded (although doctoral candidates are now asking to be allowed to publish chapters of their dissertations as articles in journals or other collective works before the final defence).

But in this case too, credits as a measure of time can be used to ensure that the demands made on candidates are reasonable; that the amount of research and analysis that they are asked to do is consonant with the legal length of studies, and to help to organise the stages in the elaboration of their doctoral project.

It is a fiction that greater length means greater quality or greater competences. For researchers today, the competences of organising their time and their work rationally according to set deadlines are usually more important than limitless exploration of their research topic. Doctoral candidates themselves are torn between the enjoyment of freedom and the negative elements of lack of guidance. Not being held to carrying out certain activities according to an agreed timescale is certainly a cause of many drop-outs – an unfortunate waste of human time and effort.

In order to remedy such a situation, milestones or -- more modestly -- signposts can be set up along the three or four years of a doctoral programme. Credits, although not finally awarded until the piece of learning can be finally assessed, can nonetheless be an effective tool in planning how much can be asked of the candidate and when.

To give a concrete example, we might imagine a history candidate in a three year doctoral programme. The three year programme is in its way a 'project' which should be organised more rigidly at the beginning and give more autonomy at the end, but always keeping to an agreed series of deadlines. The candidate will have prepared a presentation of his/her research project in order to be accepted for doctoral studies. Using credits as a measure of time, we might hypothesise a programme such as the following:

Phase	Credits or equivalent in time	'taught' or credited components (40 credits)	Individual research project or dissertation (140 credits)	Signposts
First semester	30	5 credits (125 to 150 hours) for a technical seminar (e.g. palaeography) 5 credits (125 to 150 hours) for a	The equivalent of 20 credits (500 to 600 hours) of which half devoted to producing a complete and	By end of semester: Bibliography and map presented to,

		high level methodological workshop	up to date review of bibliography and published sources; and one half to mapping useful archival materials:	discussed with and approved by a supervisory committee.
Second semester	30	5 credits (125 to 150 hours) for attendance at and preparation of a doctoral seminar for a cohort or a school	The equivalent of 25 credits (500 to 600 hours) devoted to gathering material and reading sources accordingly; preparation of draft outline	By the end of semester: Review of archival work done and approval by committee of draft outline of the dissertation
Third semester	30	5 credits for participation in methodological seminar	The equivalent of 25 credits (500 to 600 hours) devoted to continued gathering of data, analysis and organisation of results	By end of semester: analytical table of contents presented and approved by committee
Fourth semester	30	5 for the preparation of a brief publishable article or book review	The equivalent of 25 credits (500 to 600 hours) devoted continued gathering of data, writing of one chapter in final form	By end of semester: completed chapter presented and approved by committee
Fifth semester	30	5 credits for helping in organisation of methodological seminar	The equivalent of 25 credits (500 to 600 hours) devoted to writing and necessary further controls and checks	By end of semester: majority of chapters complete and presented in pre-final draft to committee
Sixth semester	30	No 'taught' part, all time to be	The equivalent of 30 credits	By middle of semester

		devoted to final elaboration of text	(750 to 900 hours) for work on and checks on dissertation	written text entirely completed in pre-final form; archival checks and polishing of prose, work ready for defence.
		40 credits accumulated	140 credits for dissertation, awarded when assessment is complete	Defence complete, degree awarded (180 doctoral credits)

Milestones and signposts can be set up for any third cycle programme. The details are of course dependent on the subject area, the definition of the learning outcomes and the strategies chosen to reach them.

4. Approaches to Learning, Teaching and Assessment

Since the middle ages, the main teaching-learning strategy in university education has been the thesis and then the dissertation, prepared or written under the direction of one mentor. Assessment took place through a public discussion, often carried out according to elaborate rituals of presentation, opposition and defence. In the surveys we have carried out on doctoral programmes in Europe today, it is striking to see how much attention professors still reserve for the detail of this part of the process, which normally does not affect the contents or the quality of the dissertation except possibly as a deterrent. More recently the limitation of the dissertation as a single strategy useful in all cases and in all subject areas has been recognised and has led to the formation of more structured programmes, which include various activities, and the widespread creation of research institutes and doctoral schools.

To form the competences considered under points 1 and 2 above this seems to be advisable, in practice necessary. Even the most brilliant and the attentive mentor will not be able to foster development of all the necessary competences to the level required. It is evident that the social and collaborative competences must be formed with others, through various types of active learning. But this is also the case today for many knowledge based competences, which are developed in academic teams and international networks.

According to the Tuning methodology the learning outcomes of programmes are defined in terms of key competences and the most appropriate approaches to learning, teaching and assessing them be identified and implemented. In the case of doctoral studies too this general method can be

utilised. Candidates and professors today in most cases agree that doctoral studies should have a structured learning element in which high level methodological and theoretical knowledge can be acquired.

In many subject areas it is usual to hold 'doctoral seminars' in which eminent guests in the field are invited to present their ideas, especially about emerging or debated topics. In other cases doctoral candidates themselves, as they begin to obtain results, present and discuss with their peers and mentors what they have done. It is possible in such an environment to develop a number of competences, and – optimally – to put candidates into contact with cutting edge research, not only in their own city or institution. To do so means giving careful thought to organising the 'seminar' so as to obtain the desired result: coordinating the presentations of the guests, so that they are not simply invited when they happen to be available, but rather according to criteria of spread and progression; the 'student' driven part as well can be developed in different ways to foster various competences: presenting complex topics effectively in oral and written form; chairing meetings; listening and understanding; discussing in a structured, output oriented context; reporting; organising; working in teams and so forth. In all these cases, it must be clear to the professors and candidates alike that these competences are important, and need to be formed and assessed according to clear criteria.

Such 'seminars' in one form or another, can be powerful tools for the formation of researchers and teachers that have an up to date understanding of the innovative potential of their field: unfortunately – according to widespread experience – often such activities are organised in a haphazard fashion, leading to candidate's complaints that their time is being wasted and 'taken away' from their research.

Other forms of 'taught' or structured activities which are used in doctoral studies are, for example, workshops or tutorials on specific specialised techniques - which may not have been acquired in the previous cycles - or interdisciplinary seminars (a request by candidates).

In all these cases, the use of competence based learning outcomes and credits to calculate necessary time input will help to ensure that the activities planned are effective and give a positive input instead of being a useless burden. Cooperative problem-based learning in a seminar or laboratory context seems a good way to form such competences at the doctoral level.

A more debated topic is whether there should be activities in third cycle programmes whose aims are to give high-level systematic knowledge which candidates may not, in fact, have obtained at that level in the previous cycles. There is resistance in Europe to the inclusion of taught courses at the doctoral level, and certainly the classical lecture form seems not to represent a positive environment for active learning for budding researchers who are also under considerable pressure to complete their own work. Nonetheless, for various reasons – including the fact that students may enter doctoral studies with differing knowledge patrimonies; and that in any case the degree of complexity with which they will have dealt in the first two cycles will not be equivalent to the one required at the third level – their knowledge base must be developed in the third cycle as well. As stated above, under point 1, this kind of high-level broad knowledge of one's field is necessary for the role of

leadership and responsibility that PhDs should be able to take in whatever their future employment will be.

Each subject area has its own experience in dealing with this need, and can share insights and solutions from different universities and national systems. It is at the subject area level that specific approaches can be elaborated and evaluated. In all subject areas, however, it seems reasonable to emphasize active learning strategies, combining the development of high-level systematic knowledge with other competences. Traditionally, doctoral candidates were required to do extended disciplinary reading on which they were examined; today, in order to use their time effectively it is suggested to design 'doctoral seminars' in a systematic way, requiring scheduled reading and discussion of recently published papers and research contribution that may have impact on the future of the discipline.

Another commonly used approach in third cycle studies is to programme periodic meetings of the candidate with mentors or supervisory committees. These meetings normally have the aim of checking on how individual research and the elaboration of a final text or other work leading up to the final thesis or dissertation is proceeding. As mentioned under point 3 above, it seems useful to clarify a general structure of intermediate deadlines or signposts which must be clear to the candidate and to the teacher / supervisor, in order to accompany the candidate in a context of increasing autonomy, to the final award. This may already be current practice in some countries; it is still not so in many others.

Experience indicates that it is advisable to have at least two supervisors per doctoral candidate – whether or not the candidate must also discuss his/her work periodically with a doctoral committee or board -- in order to ensure active input on a range of issues, a variety of points of view and fields of expertise.

The dissertation or project itself is of course an example *par excellence* of a powerful active learning strategy. We might consider it an example, perfected over centuries, of task based learning. The doctoral candidate learns to do original research by doing it. In many subject areas it is now recognised that it is useful to identify stages and 'signposts' as we have suggested under point 3, in order to be sure that the candidate is not lost along the wayside, disoriented by the seemingly limitless scope for exploration and new discovery. Since the aim of the dissertation is to foster a high level of research skills and related high-level competences such as critical and self-critical abilities, capacity for analysis and synthesis and the like (but also organisational abilities such as project design and management, and responsibility in the organisation time in order to meet one's commitments) it must be decided how much time is necessary to achieve those learning outcomes and with only reasonable flexibility, hold the candidate to his-her part of the agreement. This is even more important in view of the trend towards limiting the length of study and the growing number of part-time students, both factors which put even more emphasis on time management, organisational and planning skills.

Further general indications that apply to all subject areas are the following: the dimension and the definition of the structure where the learning process is

organised needs careful consideration. Some 'doctoral schools' are actually little more than administrative boxes in which a wide variety of subject areas are lumped together, whether or not this represents a heuristic or didactic benefit. According to the case (University organisation, numbers of candidates, subject specific competences, teaching and learning methods) it may be that the Faculty or Department level is the most appropriate one for organising a doctoral programme. On the other hand, it can be very beneficial to organise programmes that bring together Departments or Faculties from different institutions, cities or even international Networks. The level of awareness and interaction which must be developed in third cycle studies today makes it important to look outside any single institution.

Finally, it must be emphasised that the aims of programmes must be explained clearly to candidates: the competences to be formed, how this is to be done and how they will be assessed should be clearly stated. Usually today they are *arcana imperii*: staff do not often bother to share the secret of why certain activities are planned and candidates frequently consider pure waste of time activities which they could benefit from better if they were aware of the goals set and the reasons for them. Transparency, showing clearly how competences, learning environments and assessment methods and criteria fit together is useful not only for doctoral candidates but also for the organisers of third cycle programmes.

5. Applying the Tuning Quality tools to doctoral programme design and delivery

Doctoral studies today are still organised according to national traditions, many of which are effective in a certain kind of preparation of new generations of researchers -- and some of which remain unquestioned whether or not they are functional for present needs.

In other words, it seems that to a large extent the academic staff is still attempting to reproduce itself by producing university researchers while the trend should be towards setting up doctoral programmes in which doctoral level competences are developed by the doctoral candidates to prepare themselves best for other roles in society then that of the traditional researcher. This means that the concept of doctoral programme should replace the idea that each candidate has his or her own 'programme'. To develop such doctoral programmes requires a well-structured approach.

Tuning has developed a procedure and practical tools for evaluating and designing or redesigning quality programmes. Originally developed for the first two cycles, they are equally suitable to the third cycle. The "Tuning Quality Circle" is a positive feed-back cycle which includes design, implementation, monitoring and evaluation and fine-tuning programme design and delivery.

THE TUNING DYNAMIC QUALITY DEVELOPMENT CIRCLE
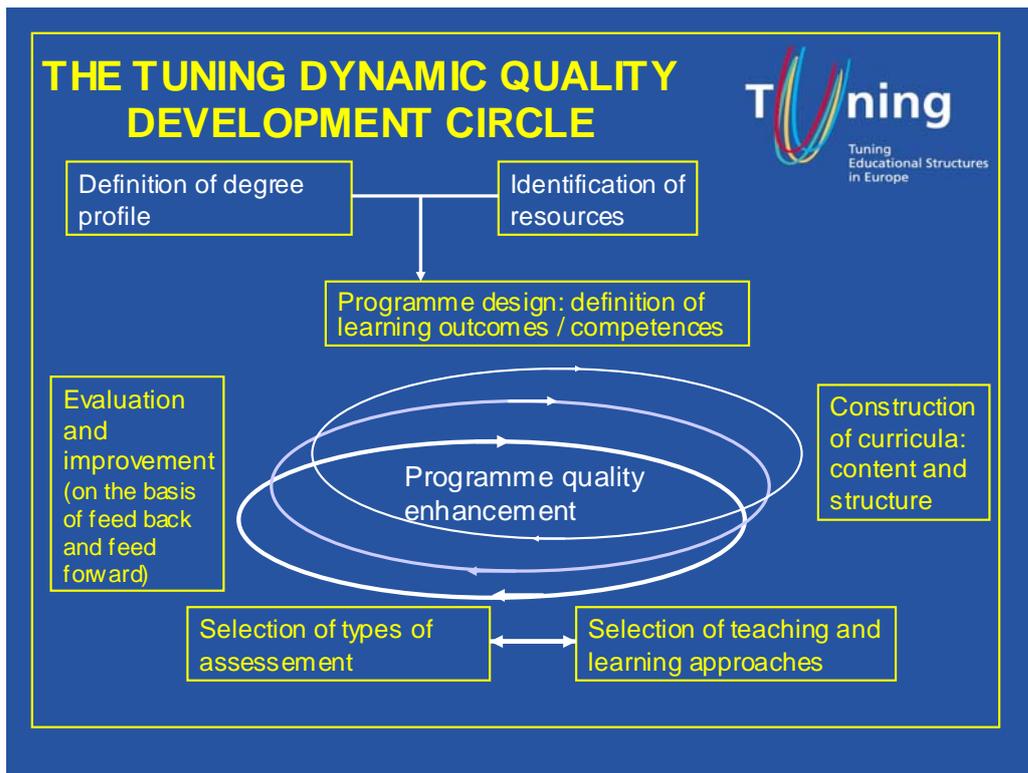
In order to design third cycle programmes effectively, one can follow these steps, adapting and applying them to the specific situation and using the Tuning subject area recommendations.

1. Is there a need?

The first step is to establish whether there is a need for a certain doctoral programme, and if so, to determine what characteristics it should have. This is to be done in consultation with academics, employers, the candidates themselves, and other stakeholders. It is essential to know what the present situation is of our PhDs: are they employed? Where? What competences do they need?

In countries where there is little financial support for doctoral candidates it may actually be difficult to prepare a sufficient number of expert teachers and researchers to staff university departments, as some of the present staff retires. Much more common though is the situation where universities for one reason or another are encouraged (or find it beneficial) to enrol a much larger number of candidates than will ever be able to enter academia, too great to be absorbed by related research centres and organisms. University administrators and staff must evaluate carefully what the opportunities of the doctoral graduates will actually be, before they create new programmes, or in order to redesign programmes that are already implemented

2. Define the profile and the key competences

The second step is to define the academic and professional profile of the future doctor. In what domain of knowledge will his/her expertise be located? The programme will have a name: in many cases this is still a rather generic

name, coming from the medieval tradition: A *Philosophiae doctor* today most often will cultivate a branch of knowledge which only in a few cases will be what at present we call Philosophy. Whatever the legal denomination of the title eventually to be awarded, the programme will usually be planned at the subject area level, or at the level of a subdivision of the subject area (e.g. Physics; Astrophysics; Acoustics).

In any case, when the area and degree of specificity of the programme has been decided and the need for it established, both the academic characteristics of the programme and the type of professions that those awarded it will be able to engage in must be described -- thus creating the academic and professional profile which provides an overall element of clarity and transparency for candidates and staff alike.

In fact, on the basis of the profile, it will be possible to identify and define the key competences which the candidate should have at the end of the third cycle. These will be both generic and subject specific competences, on the model of those discussed above, taking into account the national and international context (and hence in many cases the Tuning subject area results described below, in this publication or published on the Tuning website). An important point is that experienced supervisors often hold strong but unstated ideas about what competences need to be developed although this is not always made explicit to the candidates in advance. The new professional doctorates can provide inspiration and examples of good practice how these competences can be identified[9].

3. Define the learning outcomes indicating the most important competences

Taking into account the key competences identified in the preceding step, define the general learning outcome in terms of what the PhD will know, understand and be able to do at the end of the programme. This means making explicit and clear what today is usually assumed to be well known to all, but which often remains in fact obscure – especially to the doctoral candidates, who are those with the greatest reason for understanding clearly what is expected of them and what they are expected to achieve.

4. Decide on the structural elements of the degree programme

For the first and second cycles, this step requires deciding how to distribute the available credits into course units. For the third cycle, the primary issue will usually be deciding how much time of the candidate's time is to be devoted to the dissertation or doctoral project and how much to the 'taught' part of the programme (where this is provided), and planning the elements of the 'taught' part so as to foster the formation of all the key competences identified in the previous steps.

5. Define the learning outcomes and the key competences to be achieved

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[9] Examples of new professional doctorates can easily be found on the Internet by searching for 'new professional doctorates'.

For each 'taught' module and for each 'signpost' in the elaboration of the dissertation or research project define what the candidate should have achieved, and which competences in this way will have been formed and to what level.

6. *Look at how those competences can be best formed and assessed, using a variety of formats (approaches to learning/teaching/assessment)*

Decide how each activity can be best organised: for example, will 'communications skills' be a particular objective of a 'doctoral seminar'? Will that be sufficient? Or will the candidate be encouraged or required to present his or her work at a scientific conference? Should other activities be planned which will contribute to this competence? And will 'project management' be a competence measured only on the candidate's own project? Or will the candidate be given clear responsibilities for organising one or more phases of a larger project involving more people? How will these (and the other) competences be assessed?

7. *Check that all the key generic and subject specific competences have been taken into account*

When step 6 has been completed, an overall check of the required and desired competences should be made to make sure that in completing the planned activities the candidate will acquire all the necessary competences and be assessed on them in a clear way.

8. *Describe the programme and the course units, indicating the learning outcomes in terms of competences*

Describe clearly the various activities which the candidate will be asked to carry out, explaining the activity in terms of output (competences of the candidate to be acquired or enhanced), method (description of the learning environment and the assessment methods and criteria); demonstrate that the whole has been distributed over the total available time in a rational manner, leaving enough time to the candidate to develop their research independently, but also indicating signposts to check whether things are proceeding and to ascertain whether the necessary research skills have been developed.

9. *Check for balance of activities and time frame*

Check that all the activities indicated fit together harmoniously; adapt the whole so that there are periods when there are more structured activities and others when the candidate has more freedom: for example, leave space for the candidate to go abroad, for example, to do research in foreign libraries and archives, and to attend conferences on their specialty.

10. *Implement, monitor and evaluate results, change as needed.*

The essence of the exercise is to give the candidate the best and clearest possible course of study. Monitoring and evaluation of the programme and its

outputs will of course be fundamental, and the candidates should have a role in evaluation. The whole should be adjusted according to experience, in order to 'fine-tune' the doctoral programme.

Conclusions

To sum up, let us briefly review what we have said from three points of view: that of the Universities, that of society, and -- most importantly -- from that of the doctoral candidate.

From the University's point of view, there are pressures to attract doctoral candidates. Doctoral programmes mean prestige – in particular when a reasonable number of doctoral degrees can be awarded. Doctoral programmes are also part of Universities' core business. At the same time, Universities have responsibilities regarding the future careers of the candidates. Universities can not simply bank on their present fame or 'rest on their laurels'. The laurel wreath is the symbol of completion of the third cycle degree, but many have to hide it. The PhD should be a ticket for obtaining employment appropriate to the third cycle level of education. This is not always the case though: in quite a number of academic fields and countries PhDs find it difficult to get a job because employers think them unsuited to available employment and potentially too demanding in terms of pay. In other words, it is often thought that PhDs cannot really contribute to the working process because they lack the right attitude and do not have the necessary competences looked for. Whether these opinions reflect reality or mainly reflect prejudice is an open question.

This said, universities have the obligation to set up up-to-date doctoral programmes and run them responsibly. It is not enough to allow candidates to enrol by contacting a tutor and eventually – in the best of cases -- presenting a dissertation. In this way, there is too much waste of human time and effort; and in the end, however original and extended the dissertation, often merits accrued will not be recognized and will not benefit the candidate in his or her future personal and professional life.

This implies that doctoral programmes should be designed, implemented and delivered so that they not only contribute to the research agenda of the institution but also take into account the needs of society and lead to suitable employment for those that obtain the doctoral degree. This means, among other things, that doctoral programmes should develop generic competences, as well as subject specific research-related competences, at an advanced level.

At the same time, society needs doctoral graduates, persons that are highly trained in the complex and specialised fields of knowledge that today are essential for the functioning of society. Not only must they be able to create, develop, preserve and transmit knowledge – a very large task in itself – they must also have the research capabilities necessary to extend and develop that knowledge further, taking the necessary responsibility towards society and being able to organise and participate in large projects which require the coordinated effort and combined intelligence of many people with many and varied competences.

For the doctoral candidate, clearly and rationally organised programmes, focussing on a broad set of relevant competences to be obtained, will give enormous benefits. The candidates will have the thrill of doing original research, exploring unknown territory, using and putting to the test all their competences -- of knowledge, understanding and skills -- without being forced in the end to realise that their accomplishments are not recognised by society and perhaps are not really of use to it. At the same time candidates must be aware and accept from the very start that they will not only be prepared for a job an academia but probably most of all for a leading role outside academia or research related organisations.

These are all very cogent reasons for developing quality doctoral programmes according to the new perspective.

Bilbao, Groningen and Pisa, 2008

Annex 1:

Template for Third Cycle programmes:

Item	Suggestions of elements to be considered	To be filled in according to needs of the specific institution, taking into account the legal framework and the Tuning Subject Area reference points.
1. Introduction to the doctoral programme:	How does the programme fit into the profile and the mission of the individual institution? What are its strengths and areas of particular excellence? Consider what are the main research groups, the main topics cultivated, the gaps – if there are international networks, joint degrees etc. Consider where young 'doctors' are employed, and in what capacity.	
2. Degree profiles and occupations:	Academic definition of degree; occupational functions that graduates will be able to perform and degree of responsibility that they will be able to take	
3. Learning outcomes and competences – cycle level descriptors	EQF in general: 1. have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field; 2. have demonstrated the ability to conceive, design, implement and adapt a substantial piece of research with	Tuning generic competences to appropriate levels plus subject specific competences

	scholarly integrity;	
	3. have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication;	
	4. are capable of critical analysis, evaluation and synthesis of new and complex ideas;	
	5. can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise;	
	6. can be expected to be able to promote, with academic and professional contexts, technological, social or cultural advancement in a knowledge based society.	
4. Workload and ECTS	180 to 240 credits (25-30 hours of student work per credit) of which a specified part to be awarded on approval of the dissertation or project; a specified part to the various modules or planned activities when they are assessed and the student / candidate has demonstrated that he/she possesses the required competences	
5. Learning, teaching and assessment	Definition of the learning environments and assessment methods	

	(e.g. weekly seminar with other doctoral candidates, organised in turn by groups of candidates who carry out the logistic organisation, chair the meeting, guide discussion, report; or laboratory session in which certain techniques are demonstrated and repeated; etc.)	
6. Quality enhancement	What procedures (self evaluation, external evaluation, candidate participation etc.) are in place to guarantee quality	