TRAMES, 2008, **12**(**62**/**57**), 1, 95–109

DOCTORAL EDUCATION IN TRANSITION TO KNOWLEDGE-BASED SOCIETY

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Abstract. The paper deals with the transformation of a transition society (using Estonia as an example) into knowledge-based society, and developing doctoral studies as its key element. Doctoral studies gained impetus from the second half of the 1990s and in conformity with the Bologna process, principles applied in European universities infrastructure, doctoral study programmes and a new paradigm of supervision are developed. To improve cooperation of numerous new supervisors and doctoral students it is necessary to rely more on the international experience in organising modern research-based studies, applying supervision methods and research collaboration of different sectors of society. The core problems discussed in the paper include the institutional organisation of doctoral studies, cooperation of students and supervisors, and the collaboration of academia and industry in training and using top level specialists.

DOI: 10.3176/tr.2008.1.06

Keywords: knowledge-based society, doctoral curricula, doctoral supervision, quality, Estonia

1. Introduction

By the time Estonia regained its independence at the beginning of the 1990s the world had reached the period of postmodernism and globalisation. The Estonian state had to plan an accelerated development in order to leap into a new economic, cultural and educational era. The stabilisation of democratic social order during the transition period may last 3–15 years or even more. In 1994 Zbigniew Brzezinski considered Estonia to be in the second stage of the transition period, or in the period of laying foundations of the new political, economic and judicial system. In the case of transition societies it has been noted that they try to force the attitudes and values of a post-socialist society into the institutional context characteristic of developed (Western) countries (Lauristin and Vihalemm 1997: 36). In higher education, institutional developments proceeded at a fast pace.

It is characteristic of science in technologically developed countries and countries with strong R&D that international/national science systems are transformed into international/global science networks; scientific knowledge is transformed by industry into capital and academic labour is integrated into the industrial economy (Jacob and Hellström 2000) whereas in a transition society there is a need to make a great effort in order to attain as quickly as possible the aspired level of knowledge-based society and to cooperate as an equal partner with developed countries. This is a complex task. The problems that need continuing analysis, acknowledgement and solving are numerous both in strengthening the research activities underlying doctoral studies as well as in training the next generation of researchers, including

- insufficient interest of society to use top specialists outside the academic environment, especially due to the low science-incentive production of the manufacturing sector
- too small number of doctoral scholarships and financial difficulties in the creation of research grants for post-graduate (PhD) students;
- limited resources for upgrading research and technological innovation;
- using the potential of R&D institutes outside universities for training new PhDs;
- inadequate international mobility of researchers: international cooperation on the part of our scientists is relatively high while the interest of scientists and PhD holders from other countries is low;
- harmonization of Estonian science and higher education with the European research and higher education area;
- and against the above-mentioned background:
- raising the motivation of all doctoral studies' stakeholders – doctoral students, their supervisors and the whole academic community in increasing the quality of both research and studies and improving their efficiency.

The present paper discusses the needs and possible models of development of doctoral education in the transition period society, using Estonian doctoral studies as an example. First of all, the article focuses on the issues of how the level and organisation of the doctoral study programmes and doctoral students' supervision meets the needs of building a knowledge-based society and the expectations of the stakeholders in doctoral studies. The discussion and conclusions in this paper heavily draw on the studies carried out in the framework of the projects 'Development of a complex of measures for strengthening doctoral studies in Estonia', 2003–2004 (Puura et al. 2004), and 'Assurance system for quality, effectiveness and sustainability of doctoral studies in Estonian universities', 2005–2008 (Puura et al 2005, 2006, 2007).

2. Some key issues in Estonian doctoral education

In 1990, the Estonian Government's regulation 'The Statutes of Research Degrees' established the Doctor of Philosophy degree as the highest academic

degree. The Candidate of Science degree of the former Soviet Union was equalled to a PhD. However, starting from 1991, many degrees were defended again at Estonian universities.

At the same time doctoral students with highly varied educational backgrounds were admitted to the newly opened doctoral study programmes: a) people who had prepared to defend their candidate thesis in the 'aspirantur' of the Soviet era; b) graduates from a 5-year university course who had received a 'specialist' diploma; c) those who had obtained a (research) masters degree (in the new system) after having already completed a full 5-year university course (in the old system), d) starting from 1995, people after the 4-year bachelor +2- year master's studies, and finally, starting from 2002 people with a 3-year bachelor +2-year master's degree. The latter as prospective candidates for doctoral studies have considerably lower research experience than the former, and therefore the contents of doctoral studies programmes should include many more subjects to improve students' basic knowledge.

Studies demonstrate that there is a constant need for new PhD holders in Estonia. According to the calculations of Eamets and Masso (Puura et al. 2006: 169), the total need for new doctorates in the academic sector in Estonia alone is in the range of 220–260 PhDs per year, while in 2005 the total number of graduates was only 138 (see also Table 1). As Kristjan Haller, Deputy Secretary of the Ministry of Education and Research stated in his presentation at the conference of doctoral education, compared to the developed countries in Northern Europe, the number of top intellectuals in Estonia is low. The low demand for PhDs in the manufacturing sector is due to the fact that the hi-tech sector is at the beginning of its development and the share of such companies so far has been well below 10% (Puura et al. 2006:34).

Taking into consideration the fact that PhDs are also needed in various governmental agencies and in the private sector, it is evident that there is currently and in the following development stage of the innovation-based economy a considerable gap between supply and demand.

We estimated the demand for the increase in research-based degrees in comparison to the increase in PhDs in the Nordic countries per 1 million population. In order to reach their annual increase of 250–300 new PhDs per 1 million population, Estonia with its 1.34 million population should 'produce' 325–400 new PhDs annually.

Table 1. PhD degrees awarded by 6 Estonian public universities 1991-2005

	1991–1995	1996–2000	2001–2005
PhD students' defences	16	230	512
Externals' defences	118	82	66
Total	134	312	578

Source: Data from the project 'Assurance system for quality, effectiveness and sustainability of doctoral studies in Estonian universities'

The development of doctoral studies in Estonia proceeds under complex economic conditions. The salaries of researchers and academics are way below the salaries in the booming business sector. Research infrastructure did not get investments for a long time and great additional means are required to bring it to the international level. The cooperation between the research and business communities is in general insufficient. There are few registered patents. Applied sciences have ample room for improvement. Consequently there is little quantity and in the government' opinion as stated Prime Minister Ansip, this is due to deficiencies in quality (Puura et al. 2006:28). The state calls for guaranteeing internationally competitive salaries and work conditions for researchers in those research areas which already possess certain competitive capacity and which also attract private sector funding. At the same time all the universities of the world are interested in top scientists by attracting highly qualified staff from poorer countries with higher salaries and better working conditions (Jarvis 1999:250). It is yet not enough acknowledged that in the 21st century jobs will dominate which deal with problem solving, identification and strategic mediation. Besides other methods and arguments these activities involve also scientific principles that will enable to solve conceptual puzzles (Reich 1991:179). Therefore the universities have a task to train this ever widening contingent in a non-standard way, individually, via scientific supervision. The question remains whether by putting stakes only on certain research domains the state will be able to build knowledge-based economy and to organise a social environment to its citizens characteristic of developed countries?

The existing state regulation of research degrees has also caused dissention. According to the 1995 University Act a doctor's degree was divided into PhD and professional doctorate. In connection with the Bologna reform in 2002, the scientific degree system was simplified and only one research degree, that of a doctor of philosophy (PhD) remained. During the last few years, an understanding has emerged in the domains of technology, teacher training, etc that transposing unified requirements to all research domains will work against the needs of society. For example, the higher education standard stipulates that only people possessing a PhD may take part in implementing a doctoral study curriculum. Under the present conditions this is overdoing a bit because it makes it hard, for example, to train industry-related PhDs as most of the highly-qualified specialists in industry do not possess a PhD degree. A necessary partnership and balance between needs and possibilities should be found.

In addition to other difficulties there are also problems related to graduates who would like to start a research career. This raises a very significant task to purposefully involve schoolchildren but also bachelor and master's level students in order to build up a contingent of talented young people interested in doctoral studies, providing them skills required for research already in their early stages of study.

The age range and preceding study experience background of the new doctoral students varies a lot depending on the research area. Remarkably noticeable are social sciences and humanities, especially educational sciences where the age of doctoral students is highest, close to 40 years (Puura et al. 2004). Teaching and

supervising the so-called 'untraditional'" doctoral students should also presuppose an untraditional approach. First, the older research students are closely tied to their profession and their research topics are also often related to their professional activities. Secondly, these *de facto* part-time doctoral students carrying out their doctoral research projects are mostly practitioner researchers in their area who need a completely different type of supervising than that to which university professors are accustomed (Jarvis 2000:348). Independent of their speciality these practitioner researchers as doctoral students connected with universities and the research world play an especially significant role as liaison persons between research and higher education sector, on the one hand, and private, public administration and the public sector outside the university, on the other hand.

3. Method and participants of surveys about Estonian doctoral studies

This article treats the problems of doctoral studies in the context of the studies carried out within the framework of two doctoral studies projects. We used statistical data about participants of doctoral studies, comparative analysis of doctoral curricula and questionnaires administered to various doctoral studies' stakeholder groups. A variety of interpretive research methodologies appropriate for a phenomenological approach, included the triangulation of perspectives to disclose different aspects and point of views were used. Personal and group interviews represent qualitative research that is by its very nature an inductive process, collecting details of the data to analyse interrelationships (Best and Kahn 1998).

15 new PhD holders were interviewed between 2002 and 2004 at the University of Tartu. The interviewees had obtained their doctorate either the same year the interview took place or the year before and represented various research fields.

The interviews based on a semi-structured questionnaire were conducted in person. The questionnaire was divided into three parts: 1) questions about the interviewees' motivation for obtaining a doctoral degree; 2) questions about the process of doctoral study, including supervision issues; and 3) questions about the economic status of the interviewees during the study period.

To direct discussion about the development of Estonian doctoral education on more important and urgent problems, focus group interviews with PhD students and supervisors were carried out in early spring 2006. We proceeded from the fact that a focus group is the explicit use of group interaction to produce data and insights that would be less accessible without the interaction found in a group (Morgan 1988).

First, 17 PhD students from 6 Estonian public universities took part in 2 focus groups. The doctoral study experience of these students ranged from one year to four years and covered a wide variety of research domains.

Secondly, 13 academics participated in the supervisor focus group interviews from 5 universities who represented the research areas of medicine, biosciences,

science, agricultural, technical, social and educational sciences and arts. By professional experience, the group represented associate and full professors who had supervised a different number of doctoral students.

Thirdly, just before the focus group interviews a DELPHY approach took place among the rectors, vice-rectors and deans of the 6 public universities. In addition to that, we use the published opinions of top managers and scholars and materials from the projects targeted at strengthening doctoral studies.

Based on these data, we shall next analyse different aspects of doctoral studies' curriculum design and supervision.

4. How to define a doctoral curriculum

The process of developing doctoral study curricula started in the early 1990s together with the evaluation of Estonian science by Swedish experts. It was unthinkable at that time to proceed from the objectives and learning outcomes of curricula (Moon 2002), the focus was set on deciding which university units would have the right to open doctoral curricula proceeding from the requested high level of research. Generally, no taught courses were prepared.

The Berlin statement (Realising the European Higher Education Area 2003) announced a third cycle of higher education in Europe, and the 'Doctoral Programmes Project' of the European University Association (EUA) elaborated not only lucid guidelines for the training and support of young doctoral researchers but also enabled institutional developments in a number of European universities and strengthened the efforts of the reform forces (Doctoral Programmes for the European Knowledge Society 2005).

Estonian universities are taking part in these processes while restructuring doctoral programmes and developing accountability in doctoral supervision and more systematic communication between 'early stage researchers' and their mentors in research.

Until now a situation dominates where the main goal of Estonian doctoral studies is preparing new researchers and teaching staff. Still, the understanding of the much wider need for PhDs is penetrating society in general. But it's a problem that in both cases the need for developing generic skills of top specialists is not acknowledged. Doctoral studies should be considered as *professional practice of research, which includes issues such as professional ethics, public accountability, changing nature of work and the future of professionals in society* (Pearson 1999: 276). Unfortunately, the opinion that research itself teaches to find the problem, to analyse it, etc still prevails. What is lacking is the understanding that doctoral studies are not only 'training for research' but also 'training by research' (Doctoral programmes for the European Knowledge Society 2005). Nevertheless, during recent years a number of university teaching courses have taken place and they have proved quite popular, especially among junior academics. But universities do not systematically perform training for the academic staff and have not set the corresponding pedagogic skills requirements for supervisors.

Universities stress first of all the importance of research. A narrow understanding of doctoral studies whereby the task of a researcher is to create new knowledge and the task of the teacher is to spread it is still very widely spread. But the relationship between these activities remains weak as argued by Harland and Plangger (2004:82). In other words, a researcher supervises a student in the strictly limited research within the doctoral research project and the mastering of the methods and the wider context of the speciality are left aside. Quite often it is hoped that research skills, methods, management and teamwork experience will arise as a side-product or will be mirrored on the good example of a member of the research team (Puura et al. 2006:141).

A deeply rooted tradition in Estonia is evaluating the quality of doctoral studies on the basis of publications and the quality of doctoral dissertation which is fixed on the scale 'appropriate – not appropriate' by the dissertation reading committee. Such an approach differs widely from the positions of acknowledged social scientists who have profoundly dealt with doctoral studies (c.f., for example, Kendall 2002, Leshem and Trafford 2007) and who consider the quality of research-based study process as the indicator of the quality of doctoral studies, or what (general, area and narrow speciality related knowledge and skills), how (use of interactive study forms, etc) and with which competence the teaching is carried out, and with which intellectual (supervisors, research group, academic standards – seminars, etc) and material infrastructure a student's doctoral project is realised.

A prerequisite for defending one's doctoral thesis is the presence of international peer-reviewed publications. This request is argued to derive from the threat that science in Estonia as a very small country will otherwise become 'provincial', and it has a fundamental importance for the quality of doctoral studies. Publishing mainly in English is contested by the mainly Estonia-oriented research areas where it is claimed to be difficult to publish research results that use predominantly local empirical data and local topics in international journals. At the same time this research is progressively important for local economy, education and culture.

Questionnaires administered at Estonian universities and the analysis of the outcomes of the discussions at inter-university seminars revealed that the stakeholders of the doctoral study process have not yet reached deep understanding of the emerging processes. Arguments were presented against taught subjects by claiming that a prerequisite for a successful doctorate is publishing the articles, and thus the studies do not have a major importance.

The basics of research-based top education, i.e. how to prepare a publication by proceeding through the whole cycle from mastering the theoretical foundations of the doctoral research, gathering empirical data and their analysis, finding one's own concept and finally writing the article, remain mostly on the level of *learning by doing* method and 'first aid' from supervisors. The quality of the publications presented for doctoral thesis quite often reflects a great share of authorship of the supervisor as well as other members of the working group which seemingly compensates and hides the deficiencies of the student's education, i.e. the sometimes low quality of doctoral studies.

Generalizing from the results of the analyses and practical experience, which has been concluded in the article by S. Rutiku and A. Kärner (Puura et al. 2005:88–89), we can put forth the main difficulties in the process of curriculum design and preliminary recommendations for its considerable improvement:

- curriculum design is carried out by a limited circle of people;
- faculties perceive the task of setting curriculum objectives as a tiresome obligation enforced by bureaucrats that is carried out superficially and without much thought;
- the developers of doctoral curricula, mostly academics responsible for the curricula perceive the directions coming from outside the faculty or speciality as an unwelcome interference in their competence;
- bringing out *transferable skillls* and designing the corresponding courses at universities as well as including supervised university teaching practice into curricula have met particular resistance.

In order to improve the situation, universities should innovatively set the tasks for the institution of supervisors and curriculum administrators, as well as carry out trainings in international theory and practice, involving in this process the competent specialists in education.

Taking Brentel's *spider web* (Puura et al. 2006:58) as an example we provide an assessment of the present level of Estonian doctoral studies from the point of view of institutional organisation, assessing it from the recruitment of doctoral students and the level of research environment through to the level of self-organisation of doctoral students (see Figure 1).

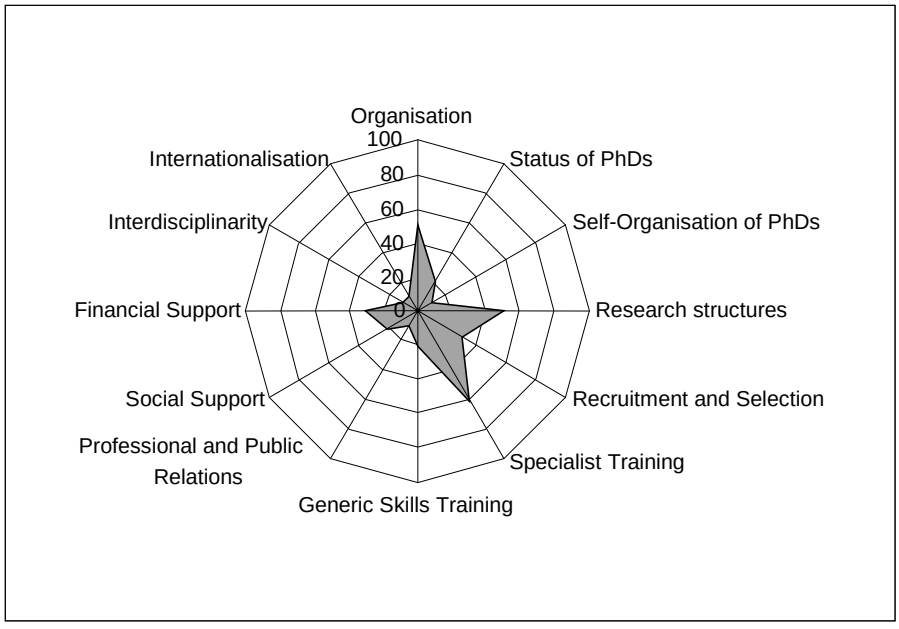

Figure 1. Assessment of Estonian doctoral studies organisation on a 100% scale.

From the doctoral studies' point of view the highest ranking is given to *research structures and specialist training*, whereas a specialist in this context is a narrow research field expert on the PhD level in the academic sphere. Here, the cooperation between the supervisor and a doctoral student mostly proceeds well. But it cannot be ranked even higher because the survey revealed that there are also numerous less active and simply overburdened supervisors. The lowest rankings were attributed to interdisciplinarity and professional relations, also to self-organization and social support of the PhD students.

From the above-said it may be concluded that the development of doctoral studies curricula has proceeded at a certain level of incompetence without having involved the whole mental potential of the universities, and irrespective of the trends taking place in the world.

5. Developing the principles of supervision

Research done on the frameworks of doctoral projects has shown that one of the key problems in achieving good results in doctoral education concern supervision. Our studies confirm Delamont's et al. (2001) claim that supervisors rely too much on their own experience and too little on general principles, and that supervision is a skill, or set of skills that must be learnt and improved with practice. A critical attitude prevails in the Estonian educational and research community towards the skills of supervisors notwithstanding the fact that the number of doctorates is constantly increasing and the share of successful graduates of doctoral studies has risen to about 60%. It takes mostly 5–7 years from admission to doctorate. A great majority of doctoral students have carried out their doctoral studies besides their everyday jobs. Obtaining a PhD under such conditions demands a great effort both from the students and their supervisors who are criticised for a prolonged period of obtaining a doctorate and the great number of dropouts.

The efficiency of supervisors is first and foremost assessed on the basis of successful PhD degrees awarded to their students, whereas negative opinions are related to overdue dissertations or drop-outs. A relatively small group of supervisors can be distinguished in the research community who have supervised 5 or more dissertations from the total amount of about 1000 dissertations so far. There are a great number of academics who have not supervised any doctoral students. In the future, young PhDs must be engaged as supervisors due to the need of a more even spread of supervising duties and rising volumes of doctoral studies.

Discussions are held in universities concerning the means of making doctoral students' supervision more efficient. Contradictory points of view are put forward in mass media by public figures as well in discussions involving doctoral studies' stakeholders (Puura et al. 2005, 2006). Different understandings reflecting different stances in the doctoral study process are presented in Table 2.

Table 2. Views of doctoral studies' stakeholders on improving supervision

University leadership	Supervisors	Doctoral students and new PhDs
University has to create the academic environment necessary for doctoral studies	To reduce the amount of administrative work of supervisors	Supervisors also need to be trained
To elaborate indicators for assessing the supervisors	To create a proper working environment that would enable to invite doctoral students from abroad	The supervisor has to be an expert in his/her research area and possess supervision skills
To create an independent monitoring mechanism of the supervision process	To recruit doctoral students with best abilities	Supervisors should 'think along' with a student, stay on the same wavelength
To set unified requirements for dissertations, including supervision	To finance research projects on a consistent basis in order to secure financing of a doctoral research project until its completion	To create synergy, a bigger group of doctoral students engaged in the same topic is necessary
	To finance universities in a stable way so that the career path of young researchers could be planned in a longer perspective	To encourage the cooperation of multiple supervisors (from the university and from outside in order to guarantee interdisciplinarity)
		Supervisor as employer may play a decisive role in motivating a student and his/her career upon having obtained the PhD degree

University leaderships consider general organisational, regulative and monitoring activities most important. Supervisors stress their excessive (work) loads and the need to get better candidates for doctoral studies and more financial means.

Doctoral students are interested in improving the study process. They demand well-trained and perceptive supervisors who would constantly think along with the students starting from compiling the research project to publishing the results, an openly interacting environment of numerous researchers, academics and doctoral students, interdisciplinary and international relations, and assistance of the supervisor in opening up perspectives for the future career path design.

It is characteristic that the opinions of high-ranking university officials did not touch upon the need to examine the study process which so far has been considered unsatisfactory by all the stakeholders, and the need to improve it on a scientific basis. Until now the attention of higher education top administrators with regard to foreign experience has been limited to its organisational and regulating aspects, especially to the schemes and volume of financing.

Almost no attention has been paid to the issue of supervisors' professional mastery of commanding and using the supervising methods. As in other countries (Geiger 1997:247), an understanding dominates in Estonian universities about the quality and ranking of research activities whereby basic research is considered more valuable than applied.

In order to launch cooperation with private business, the traditional mindset must be overcome and new challenges must be faced. When economy advances, doctoral education and the preparation and supervision of PhDs will be under pressure from various changes deriving from the new relationship between research and industry as in other developed countries with advanced hi-tech industry (McWilliam et al. 2002), and we have to admit that the training of doctoral students by the apprenticeship model does not prepare them for the labour market outside universities and research institutions (Kendall 2002:133). So far Estonia lacks sufficient drive from outside universities to make changes in doctoral students' supervision. Rather we share common features with other countries in training doctoral students according to the outdated master-apprentice model where doctoral students are used as cheap labour for the task of teaching assistants. Positive tendency is nevertheless apparent. During the last conference on doctoral studies in 2007, leaders of some bigger Estonian companies emphasized the need for managers and developers with PhD degree and interest in cooperation with universities to prepare "industrial doctorates"(Puura et al. 2007).

As Estonia is a small country with a small population, it is understandable that there are no highly qualified experts for all research areas. The lack of supervisors had been overcome in various ways. The supervisor's international contacts are extremely helpful and the experience with supervisors from abroad is mostly positive.

The cooperation between supervisors and its fostering through financial means is an important issue in the further discussion about the developments in doctoral studies. Estonian universities have started forming bigger inter-departmental units in order to create a more favourable environment for doctoral research.

Relying on the logics of the Bologna process, tri-partite doctoral studies agreements between students, their supervisors and the university are being implemented. Currently, this implementation has caused a lot of resistance from both students and supervisors who are afraid of the increasing bureaucracy and wider administrative control over doctoral studies and supervising. There are difficulties in finding financial support for doctoral research projects accompanied by the fear of some supervisors to be left without doctoral students. Administrative pressure also causes insecurity in the faculties.

Discussions on the changes in doctoral education management have sometimes been very heated and even controversial. Some university professors remain convinced that a full university professor is endowed with all the skills and rights to define outstanding quality in doctoral candidates education absolutely on his/her own. As in other countries (see German example in: Puura et al. 2006:54) they

consider additional support as centralistic intervention in their freedom of teaching and research.

Assessing the doctoral students' progress is also a possibility to 'push' the supervisor for an improved cooperation with the student. When assessing the progress of a student it is also worth considering it from the perspective of supervising in order to change the still existing situations where the supervisor reviews and assesses only the finished parts of the draft of the dissertation. As stated by Holligan (2005:270) the efficiency of supervising may become problematic if a student's preferred learning styles and pre-existing levels of expertise are not found out at the very beginning. We agree with Leshem and Trafford (2007) that the task of a supervisor is to guide students to independent critical thinking until they clarify the conceptual framework of their dissertation.

Based on the outcomes of doctoral students' interviews we can confirm that PhD students need more pushing, guidance toward the 'right way' and control over the progress of a student's research. In their opinion the supervisor has a duty to motivate the student, to suggest a well-defined topic, to open up perspectives on and opportunities concerning the topic. They expect to meet their supervisor every time it is needed. Doctoral students see a good supervisor as a working partner, colleague, guarantor of subject, emotional supporter, sometimes also a controller. The worst is a supervisor who is a disparaging critic.

On the other hand, supervision is greatly influenced by doctoral students' motivation, their devotedness to research. The most personal motive to start doctoral studies has been a deep interest in research as a profession and the potential for an academic career (Kärner et al. 2005:32). At the same time supervisors are worried by a trend that the majority of doctoral students are off-campus students which profoundly changes the existing perception of doctoral studies as full-time research work in cooperation and in interaction with his/her supervisor and other researchers.

6. Conclusions

Estonia has defined itself as a transition society from centrally planned socialism to knowledge-based free market and welfare society. Preparing top specialists with PhD degree is a key issue of that change and development. Doctoral studies are in full swing and despite the shortage of human and material resources the annual increase in students taking up and finishing their doctoral studies is a promising reality. But the existing expansion rate is not sufficient in order to reach the required level of preparing specialists with doctoral degrees quickly enough. The number of doctoral students and researchers/academics supervising them will continue growing fast in the future as well.

At the same time the existing doctoral studies methodology which is based on the cooperation of a cohort of small-numbered strong supervisors and young talented doctoral students is losing its grounds. Therefore the aspirations of numerous new supervisors and doctoral students should get much more support

from modern international research and experience, flexible organisation of studies and research, teaching and learning by the stakeholder groups, developments in the cooperation between academia and other sectors of society. The core issues seem to be

a) stipulating the work contents, rights and responsibilities of the institution of doctoral programme managers and supervisors;
b) decision making within that institution concerning the development of the organisation and contents of doctoral studies;
c) training the main stakeholders – programme managers, supervisors and doctoral students on the basis of local and international theory and practical experience;
d) talented young people's involvement in the research and doctoral education.

Further,

e) in order to raise the motivation of doctoral students and researchers/ academics the state needs to elaborate and implement a competitive researcher career model.

A development plan for higher education internationalisation and strengthening doctoral studies supported by both the state and EU structural funds should create a favourable basis for all that.

Acknowledgements

The authors are grateful for the financial support of the PHARE project "Development of a complex of measures for strengthening doctoral studies in Estonia", 2003–2004, and the project "Assurance system for quality, effectiveness and sustainability of doctoral studies in Estonian universities", 2005–2008 supported by the European Social Fund which has enabled them to make a profound study of Estonian doctoral studies and together with the Estonian public universities to work out measures for their further development. We thank our colleagues from Estonian universities, who have participated in the mentioned projects by collecting and analyzing data and discussing the problems of Estonian doctoral studies.

We would also like to express our gratitude to our colleagues whose presentations and discussions at the Stellenbosch conference in April 2007 provided stimuli for us to think about problems related to doctoral studies and supervising in a wider context.

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