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TRANSFORMATION OF DOCTORAL EDUCATION IN THE EHEA: TWENTY YEARS OF THE SALZBURG PROCESS

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INTRODUCTION

With the transformation of the European doctoral training into the third educational and scientific cycle of higher education in the context of the development of the European Higher Education Area, it has undergone structural and cultural transformations that have acquired a systematic dimension (such concepts as "transformation", "changes", "reforms" are used hereunder as synonymous). The process of development, adoption and implementation of doctoral training transformation programs, in which key institutional actors of the EHEA have been involved over the past decades, is called the Salzburg Process, which is associated with the adoption of the so-called Salzburg Principles and Recommendations developed by the European University Association (EUA). The key factors leading to the onset and development of this process, its main stages, current state and further prospects have become the subject matter of our analysis.

The immediate occasion for our scientific intelligence is the 20th anniversary of the Salzburg Principles as the program basis for the transformation of doctoral education in Europe. These principles, adopted in the realm of the Bologna Process, have laid the foundation for a common vision of structured doctoral training, focused on expanding the quantitative and changing qualitative characteristics of doctoral programs, their focus on training PhD students in the process of preparing for scientific and professional careers both within and outside of academia.

We believe that a systematic, diachronic-comparative and structural-logical analysis of the processes of transformation of doctoral training in the EHEA will contribute to a deeper awareness of the expediency of European integration transformations of the doctoral training system in Ukraine, which has become a component of the Bologna Process since 2005 – the year of approval of the Salzburg Principles and the onset of the Salzburg Process, by the domestic educational, political and academic communities.

1. Factors of transformation of European doctoral education

In identifying the factors that have led to the urgency of a significant transformation of doctoral training in the EHEA, we will highlight the geopolitical, economic, environmental, scientific and technological, social

and academic aspects of consideration, which are closely interrelated and intertwined. Commenting on the *geopolitical aspect* of the consideration, the point to be emphasized is that at a time when the international community is going through difficult times of political, economic and even military confrontation, doctoral education is more important than ever to protect a democratic, innovative, inclusive society and ensure that Europe is prepared for the upheavals that the global economic crisis, Brexit, the COVID-19 pandemic, and the war in Ukraine have become over the past decades. Europe's geopolitical interests require ensuring the continent's global competitiveness, which cannot be achieved without the joint efforts of the European educational and scientific community. It is worth pointing out that the political unity of Europe is achieved due in no small part to the long-term rewarding experience of cooperation in the field of higher education and science within the span of the development of the EHEA and ERA.

In the *economic aspect*, we should nevertheless point out the significant impact of the doctoral research findings on the innovative development of the European economy. The modern university, in which doctoral research is mainly conducted, has become a significant force producing new knowledge, which, as is known, is the primary resource for the development of knowledge in Europe. Doctoral programs significantly contribute to the implementation of the double transition of the European economy based on the principles of green and information technology. Therefore, the transformation of doctoral programs, doctoral training, and doctoral education in accordance with the current needs of the European economy is under the constant scrutiny of a wide range of stakeholders, including research clients and employers of future PhD.

The environmental aspect of considering the urgency of transforming doctoral training leads to an appeal to the problem of ensuring the sustainable development of the European economy and society. Sustainable development is a fundamental principle of the functioning of the European Union, and the achievement of the UN Sustainable Development Goals is a priority task of the EU's domestic and foreign policy. By combining actions in a number of areas of modern social and economic life, including energy, environment, agriculture, and social policy, the EU is committed to a green transition that is fair and inclusive. Like all other sectors, doctoral education is currently making efforts to respond to a climate emergency as a planetary crisis from the perspective of its own capabilities and, most importantly, to prepare young scientists for future risks. The current EU strategy for developing

environmental cooperation in the field of education is reflected, first of all, in the Communication on Achieving the European Education Area[1].

The scientific and technological aspect of the transformation of doctoral training is becoming increasingly significant in the remit of the development of such phenomena as digitalization of information and scientific space, open science, artificial intelligence, interdisciplinarity and transdisciplinarity of scientific knowledge, etc., at an explosive pace. The impact of the above-mentioned and other breakthrough scientific and technological phenomena on doctoral education is of paramount importance. Without prejudice to the above, such an impact can be quite contradictory, which requires studying, clarifying and regulating many specific issues, in particular in the field of organization and ethics of scientific research, copyright, etc.

Consideration of the *social aspect* of the transformation of doctoral education enables to emphasize that the process of change mentioned in the study is aimed at full-fledged ensuring the social rights of young scientists. The social dimension of the Bologna Process is increasingly being transformed from the category of non-binding wishes to a norm, a standard similar to the requirements for ensuring the quality of the educational process. This is how a concern of the social dimension of higher education is raised in the Rome Communiqué (2020) and Tirana (2024) Communiqué of the BFUG Ministerial Conferences.

Regarding the *academic aspect* of consideration of the problem, it should be noted that the reform of doctoral training is largely in its transformation into the final third cycle of higher education, which is carried out by transforming scientific doctoral programs into educational and scientific ones. This transformation means the incorporating of a certain range of academic disciplines in the doctoral training programs that makes it possible to form not only research competencies, but also a wide range of others, which are generally called transversal or transferable. To develop the competencies, which are essential for successful academic activities, employment, and further professional careers, PhD students need access to high-quality, student-centered and innovative learning and teaching according to their needs and interests.

Along with the educational component, doctoral programs include a significant scientific component, which provides for conducting scientific research and achieving an original scientific outcome. The point is that transformational changes in doctoral training occur in conjunction with the subjects of the European Research Area (ERA), the development of which is

[1] Communication from the Commission to the European Parliament, The Council, The European Economic And Social Committee and the Committee of the Regions *on achieving the European Education Area by 2025.* COM(2020) 625 final.

the focus of the EU's attention, as evidenced by the provisions of a number of relevant EU documents[2].

Thus, the transformation of doctoral training takes place during the development of the EHEA in the context of geopolitical uncertainty, economic instability, social fragmentation, explosive development of breakthrough scientific technology, environmental crises, innovative development of educational technology. In such unstable times, doctoral training should be more focused than ever on the sustainable development of a society based on knowledge, critical thinking and innovation.

2. Stages of transformation of doctoral training in the EHEA

Since the transformation of doctoral training is a component of two processes: the Bologna Process, which marks changes in the systems of higher education in the EHEA in general, and the Salzburg Process, which determines changes in the systems of doctoral training within the EHEA in particular, the authors have made a diachronic comparative analysis of the BFUG policy documents and individual subjects of the Bologna/Salzburg Processes, primarily the European Commission and the European University Association, as well as the subjects of the EHEA. The diachronic comparative analysis of the content of the above documents has enabled to determine the stages of development of the transformation of doctoral training in the EHEA, which is reflected in chronological Table 1.

A description of the stages of development of the transformation process, carried out on the basis of a diachronic comparative analysis of the content of the documents given in Table 1, the most significant events resulted in adoption of these documents, as well as reports of EUA-CDE projects, which describe changes taking place in the national systems of PhD training of the EHEA participating countries is given below.

The first stage (2003–2005) is a *preparatory stage*, during which the purpose of transforming doctoral training is determined to ensure that the quality of training of young scientists meets the requirements of European knowledge. The 2003 BFUG Berlin Communiqué called for increased mobility at the doctoral and postdoctoral levels and encouraged universities to strengthen cooperation in the implementation of doctoral programs and in the training of young scientists.

[2] European Commission. European research area policy agenda: overview of actions for the period 2022–2024. Directorate-General for Research and Innovation, 2021. URL: https://commission.europa.eu/ system/files/2021-11/ec_rtd_era-policy-agenda-2021.pdf

European Commission. Implementation of the European Research Area (ERA). Strengthening Europe's Research and Innovation: The ERA's Journey and Future Directions. COM(2024) 490 final

Table 1

Main stages of the transformation of doctoral training in the EHEA

Stage	BFUG measures and adopted policy documents	Stage content
1. Preparatory stage (2003–2005)	Berlin Conference of Ministers (2003) Berlin Communiqué[3]	Defining goals and developing principles for transforming doctoral training into the third cycle of higher education
	Salzburg I Bologna Seminar (2005)[4]	
2. Stage of organizational change (2005–2007)	Bergen Conference Bergen Communiqué[5]	Preparation for the full accession of the doctoral level to the EHEA qualification framework based on a results-based approach
	London Conference of Ministers London Communiqué[6]	Introduction of a three-cycle system of academic degrees in EHEA member countries. An increase in the number of structured doctoral programs.
3. Stage of cooperation institutionalization (2008–2009)	Creation of a specialized structure – the Council for Doctoral Education within the EUA (EUA-CDE)[7]	Transformation of doctoral training has become more systematic and consistent thanks to EUA-CDE initiatives, since all aspects of change are constantly analyzed within the implementation of large-scale monitoring programs.
4. Stage of deepening transformations and their political support to the EC (2010–2015)	Development of recommendations for the implementation of the Salzburg Principles – Salzburg II by EUA-CDE experts (2010)[8] Approval of the principles of innovative doctoral training in the EC document "*Principles for Innovative Doctoral Training*" (2011)	Recommendations for effective implementation of the principles of transformation of doctoral training in the EHEA in the context of a diversified landscape of doctoral programs and doctoral schools Ideas reflecting the EUA Salzburg Principles, best practices in the EHEA participating states have received political support in the EC document "Principles for Innovative Doctoral Training" (2011)[9]

[3] Realising the European Higher Education Area. (2003). Communiqué of the Conference of Ministers responsible for Higher Education in Berlin on 19 September 2003. URL: https://www.ehea.info/pid34363/ministerial-declarations-and-communiques.html

[4] Bologna Seminar (2005) on "Doctoral Programmes for the European Knowledge Society" (Salzburg, 3–5 February 2005). Conclusions and recommendations. Retrieved from: www.eua.be/Libraries/cde/Salzburg_Conclusions.pdf

[5] The European Higher Education Area – Achieving the Goals. (2005). Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen, 19–20 May 2005. URL: https://www.ehea.info/pid34363/ministerial-declarations-and-communiques.html

[6] Towards the European Higher Education Area: responding to challenges in a globalised world. Communiqué of the Conference of European Ministers Responsible for Higher Education, London, 18 May 2007. URL: http://www.ehea.info/cid101763/london.html

[7] EUA-CDE (European University Association – Council for Doctoral Education). Who we are. EUA-CDE, 2025. URL: https://eua-cde.org/who-we-are.html

[8] EUA (European University Association). Salzburg II Recommendations. European Universities' Achievements Since 2005 in Implementing The Salzburg Principles. Berlin, 2010. URL:www.eua-cde.org/reports-publications.html

[9] EC (European Commission) Principles for Innovative Doctoral Training. Directorate-general for research & innovation. Brussels, 27.06.2011. URL: https://euraxess.ec.europa.eu/sites/default/files/policy_library/principles_for_innovative_doctoral_training.pdf \

Continuation of table 1

5. Stage of development of a culture of scientific integrity and quality (2016–2019)	Salzburg III Recommendations (2016) developed by EUA-CDE experts[10]	Understanding new challenges in the doctoral training system and formulating proposals for overcoming them.
6. Stage of further development of doctoral training in an inclusive, innovative and interconnected EHEA (2020–present)	Rome Ministerial Conference. Rome Communiqué (2020)[11] Tirana Ministerial Conference. Tirana Communiqué (2024)[12]	Declaration of values of respect for quality, mobility and transparency of the EHEA. Commitment to develop a more inclusive, innovative, interconnected and sustainable EHEA
		Refining of the values of further development of the EHEA: academic integrity, institutional autonomy, participation of students and employees in the management of higher education, public responsibility for higher education. The commitment to continue implementing the three-cycle system of educational programs and academic degrees has been formulated.

In 2004–2005, in order to ensure the achievement of the objectives of the Berlin Summit, the EUA implemented the project "Doctoral Programs for the European Knowledge Society" with the involvement of 48 universities from 22 countries of the Bologna Area. The project materials described a variety of organizational approaches to doctoral training, analyzed a number of other *key aspects of doctoral training*, namely: scientific supervision, monitoring and evaluation of doctoral research findings, scientific mobility of PhD students, international cooperation in the field of PhD training, career development of future PhD students and training under Joint/Dual Doctoral Programs. Based on the project materials, the first conclusions were drawn about the peculiarities of the landscape of doctoral training in Europe[13].

[10] EUA-CDE (European University Association – Council for Doctoral Education). Doctoral Education – Taking Salzburg Forward: Implementation and new challenges. EUA-CDE, 2016. URL: https://eua-cde.org/reports-publications/51:doctoral-education-taking-salzburg-forward-implementation-and-new-challenges.html

[11] Rome Ministerial Communiqué. EHEA Ministerial Conference, Rome, November 2020. URL: https://ehea.info/Upload/Rome_Ministerial_Communique.pdf

[12] Tirana Ministerial Communiqué. EHEA Ministerial Conference, Tirana, May 2024. URL: https://ehea.info/Download/Tirana-Communique.pdf

[13] EUA (European University Association) (2005). Doctoral Programmes for the European Knowledge Society. Report on the EUA doctoral programmes project 2004–2005. https://eua.eu/component/publications/publications/79-report/659-doctoral-programmes-for-the-european-knowledge-society.html

The results of this project were presented in February 2005 at the EUA seminar "Doctoral Programs for the European Knowledge Society" in Salzburg (Austria). The seminar documents focus on formulating the ten fundamental principles of doctoral training in the EHEA, which are called the Salzburg Principles or Salzburg-I, in the expert community. The principles that have determined the priorities of the process under investigation for the next decades are as follows:

1) scientific research is a key component of a doctoral program. At the same time, doctoral training should be aimed at ensuring the employment of PhD students, and not just at satisfying academic interests;

2) doctoral programs are an integral part of the university research programs and strategies, in which PhD students are directly involved and receive career opportunities;

3) the University is held liable for implementing a variety of doctoral programs, including joint (international) doctoral programs, through achieving high quality and gaining positive scientific experience;

4) recognition of novice researchers (PhD students) by the University as professionals who make a key contribution to the acquisition of new knowledge, and granting them appropriate rights;

5) advising and evaluating the results of each applicant's work is based on a transparent agreement (contract), which establishes the overall responsibility of applicants, academic supervisors and institutions;

6) creation of a critical mass of intellectual resources at the University for opening doctoral programs, which provides an opportunity to obtain maximum results, taking into account the peculiarities of the external and internal context, opportunities for international cooperation (scientists, universities, scientific networks);

7) ensuring sufficient duration of doctoral programs: three to four years of full-time study in most cases;

8) the University is responsible for the development of innovative organizational structures that will provide interdisciplinary training and the formation of universal competencies of PhD students;

9) ensuring geographical, interdisciplinary and intersectoral mobility of PhD students;

10) adequate and sustainable funding of doctoral programs to ensure their quality implementation (Bologna Seminar, 2005).

To complete the consideration of the first stage of development of the process under investigation, it should be noted that the approval of the principles of doctoral training in the EHEA at the Bologna Conference held in Salzburg have systematically determined all the priorities for further transformation of the third cycle of European higher education, which are still of immediate interest today.

The second stage (2005–2006) is the *stage of structural changes*. The beginning of the stage of active structural changes in doctoral training can be synchronized with the holding of the Bergen Ministerial Conference of the Bologna Process in May 2005. In the Communiqué of this Conference, the tasks of developing doctoral training has turned from an "additional action" planned for the future (Berlin Communiqué, 2003) to a priority conditioned by the "the need to increase synergy between the higher education sector and the research area, that is, between the EHEA and ERA.

The first results of the implementation of the Salzburg Principles in the practice of doctoral training were summed up at the Ministerial Conference of the Bologna Process in London (2007). In the Communiqué of the London Conference, the transformation in the field of PhD preparation was defined as "Achievements of the EHEA". Such achievements are as follows: introduction of a three-cycle system of academic degrees in the EHEA participating countries; an increase in the number of structured doctoral programs; changes in curricula in order to bring qualifications in line with the needs of the labor market. The Communiqué emphasizes that closer cooperation between the EHEA and ERA remains an important goal. It emphasizes the importance of developing and maintaining a large number of different doctoral programs based on a common qualification system in the EHEA, while avoiding excessive regulation[14].

Therefore, the second stage of transformation of doctoral training in the EHEA is characterized by important structural changes in the introduction and innovative development of structured doctoral programs, the development of doctoral schools and innovative models of supervision of doctoral research, the development of interdisciplinary doctoral research.

The third stage (2008–2009) is the stage of *cooperation institutionalization in the field of doctoral training* in the EHEA. In 2008, a specialized structure – the Council for Doctoral Education (EUA-CDE) was created under the auspices of the EUA, which turned into the largest specialized network representing the interests of universities as the providers of doctoral programs. The main goals of EUA-CDE were to promote the strengthening of the research potential of doctoral programs of European universities, attract talented young researchers and their successful preparation for work in a global competitive environment, develop cooperation and exchange of best practices among network members (in 2025 – more than 260 universities in 36 European countries) (EUA-CDE, 2018)[15]. In modern conditions, EUA-CDE formulates

[14] Towards the European Higher Education Area: responding to challenges in a globalised world. Communiqué of the Conference of European Ministers Responsible for Higher Education, London, 18 May 2007.URL: http://www.ehea.info/cid101763/london.html

[15] EUA-CDE. Doctoral Education: Why it matters for Europe. EUA-CDE, 2025. URL: https://eua-cde.org/downloads/publications/cde_mar-18_de_leaflet_web.pdf

the following priorities of its activities that determine the meaningful context of reforms in doctoral education:

- *Promotion of digitalization of doctoral education*. Doctoral training is a leader in European digital transformation not only in the context of mobilizing, training and raising the skills and awareness of researchers with digital thinking, but in promoting key open science policies and practices that are revolutionizing Europe's scientific potential.
- *Ensuring the integrity of research*. Doctoral studies are at the center of global confrontations to ethical challenges that affect information, knowledge, and research. Doctoral studies serve as a moral compass in Europe, which is vital to ensuring the integrity of research in the digital age.
- *Combination of innovation and public interests*. Doctoral education is defined in the Updated EU Higher Education Program as a meeting place for higher education, innovative research and society. It trains researchers who are able to interact with society and provide innovative solutions for European industry and other sectors of the economy.
- *Promotion of international cooperation*. Future PhD students connect universities and promote international cooperation. This pool of talents is one of the foundations for the development of European inclusive cooperation within the EHEA and ERA, with EU partner countries and the world as a whole (EUA-CDE, 2025).

The most important areas of activity and agenda that reflect the transformation of European doctoral training (New Skills Agenda for Europe, EU Research Integrity Initiative, Open Science, Marie Skladowska-Curie Actions, Horizon 2020, European Neighborhood Policy, Erasmus+, Digitalisation) that are in the scope of EUA-CDE projects and coordinated by this structure are shown in Figure below (see Fig. 1).

It should be noted that EUA-CDE regularly initiates and monitors achievements, shortcomings and prospects for further transformation of doctoral training. The organizational approaches of EUA-CDE are based on an open method of coordination, which consists in a pan-European expert and broad professional discussion of conceptual approaches, policy decisions, dissemination of positive experience, promotion of mutual learning and cooperation between higher education institutions within the EHEA.

The fourth stage (2010–2015) is the stage of *deepening transformations and their political support to the EC and Council of Europe.* The first significant document of the EUA-CDE of this stage is the EUA Recommendations of the 2010 Berlin Conference. The document adopted at the end of this conference, called "Salzburg II", contains a number of guidelines for achieving the success of doctoral programs and removing obstacles in their way. The three main provisions of the Salzburg II document are as follows:

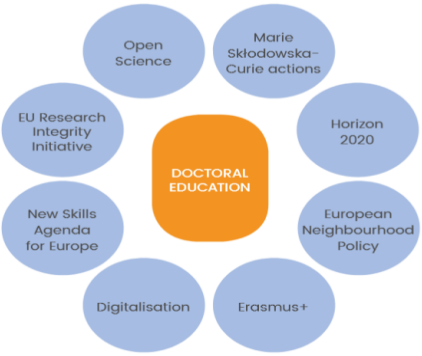

Fig. 1. EUA-CDE areas of activity reflecting the transformation of European doctoral training[16]

1) doctoral education occupies a particular place in the EHEA and ERA. It relies on the practice of research, which makes it fundamentally different from the first and second cycles of higher education;

2) doctoral candidates must be allowed independence and flexibility in personal and scientific development. Doctoral education is to a large extent individual and by definition original. The path of progress of the individual is unique, in terms of the research project, as well as in terms of the individual professional development;

3) doctoral education must be developed by autonomous and accountable institutions taking responsibility to cultivate the research mindset. Institutions need flexible regulation to create special structures and instruments and continue advancing European doctoral education (Salzburg II, 2010).

Thus, the main message of this document is that the transformation into the third cycle of higher education should not deprive doctoral training of its essential specifics, ensure excessive regulation of the activities of institutions, scientific structures, researchers. We can characterize "Salzburg II" as a call to abandon excessive regulation of the doctoral candidates' activities, to establish synergy between the educational and scientific components of doctoral programs.

In 2011, the documents developed by EUA experts, known to the academic community as "Salzburg I" and "Salzburg II", received the political support of the European Commission important for the further development

[16] Survey – Report I. Doctoral education in Europe today: enhanced structures and practices for the European knowledge society. By Simon Marti and Ana-Maria Peneoasu, June 2025 URL: https://www.eua.eu/publications/reports/doctoral-education-in-europe-today-enhanced-structures-and-practices-for-the-european-knowledge-society.html

of the Salzburg Process. We are talking about the adoption of a document called "Principles for Innovative Doctoral Training"" (Principles for Innovative Doctoral Training – Principles-2011). The principles formulated in the document reflect the essence of the EUA Salzburg Principles, best practices of doctoral training in the EHEA participating states, and the experience of the Marie Skladowska-Curie Action Program. These principles include: striving for research excellence; creating an attractive institutional environment; interdisciplinary nature of research; cooperation with industry and other employment sectors; creating international networks; training in transversal skills; quality assurance (ES, 2011).

Comparison of the content of the documents "Salzburg I" and "Principles-2011" enables to speak about the proximity of approaches to determining the principles of implementing changes in the documents that have become the subject of consideration.

Among other documents of the period under consideration, which determine the essential characteristics of the transformation of doctoral training, it should be noted, first of all, the EC report "Europe's Universities: Main Drivers in Achieving the European Research Area (ERA)", which serves as a significant confirmation of the European Commission's support for EUA initiatives in the research area. The document refers to the development of cross-border and regional cooperation, innovative partnership of research centers with universities, innovative practices and lessons for universities that they can learn for further use of EU regional funds in the field of research and innovation, for the economic and social development of countries and the region as a whole[17] (EC, 2014).

Thus, the considered stage of development of the process under study is characterized by the deepening of transformations as the result of closer trilateral interaction of stakeholders: from politics (EC, CoE), education (EUA, universities), science (ERA, scientific institutions and associations), business (Business Europe, national business stakeholders).

The fifth stage (2016–2019) is the stage of *development of a culture of scientific integrity and quality*. The beginning of the stage is marked by the publication of the report "Doctoral Education – Taking Salzburg Forward: Implementation and New Challenges" (2016) (hereinafter – "New Challenges – 2016"), which received the name "Salzburg III" in expert circles. Comparison of this report with the first two "Salzburgs" indicates that it contains important conceptual foundations determining the further development of the process under study.

[17] EC (European Commission). Europe's Universities: Main drivers in achieving the European Research Area (ERA). 2014. URL: https://eua.eu/resources/publications/376:europe%E2%80%99s-universities-main-drivers-in-achieving-the-european-research-area-era.html

The starting point of the document "New Challenges – 2016" is to state that "doctoral training occupies an important place in the mission of universities. It is this attitude that helps attract young researchers to doctoral programs who are able to produce original knowledge and create an environment that is critically necessary for the knowledge society. Universities should formulate a holistic vision of ways to provide doctoral education, covering the internal context of the institution, the role of doctoral education in society as a whole, and the international perspective of its development. The main challenges facing the system of doctoral training in the EHEA in the document "New Challenges – 2016" are as follows: 1) digitalization of the educational and scientific area, which makes it possible to conduct open research, provide open education and develop social media; 2) solving the need to create standards of academic integrity and research ethics; 3) globalization of research.

All of the above challenges require HEIs to align previously developed approaches, principles and recommendations in order to prepare future scientists for activities in a research environment that will be significantly different from the environment of their managers.

The main aspects of doctoral training being the subject of consideration in the document "New Challenges – 2016" are as follows:

1. *Institutional structures of doctoral training*. Such structures were, or have been as a result of organizational changes, doctoral schools. There are various organizational models of institutional structures for doctoral training in the EHEA. This diversity, according to EUA-CDE experts, should be cultivated while maintaining the overall goal of doctoral education. It is important that organizational structures are supported by the governance bodies of institutions and integrated into the overall doctoral education strategy that defines their goals and boundaries. Institutional governance bodies should allocate adequate resources and ensure the sustainability of structures in terms of funding and personnel.

2. *Creating a space for dialogue*. Top-down management in a doctoral school through strict rules or mandatory courses for doctoral students will not promote high-quality and open research. This can only be achieved by an open and critical research culture, and such a culture should be formed during PhD preparation. Doctoral schools should develop an ongoing dialogue with researchers and PhD students in such a way that the doctoral training process is compatible with the existing national and institutional research culture. Special attention should be paid to the systematic involvement of doctoral students in the dialogue. This means taking the initiative to conduct systematic consultations of academic supervisors, institutionalizing communication in addition to special meetings and random

surveys. Therefore, it is important that these activities are systematic, broad and comprehensive, going beyond episodic activities for small groups.

3. *Development of the university research potential*. In the context of growing competition for finance and scientific talents in Europe, the task of developing the university research potential is of paramount importance. This situation requires strong institutional leadership capable of making strategic decisions, prioritizing and supporting bottom-up initiatives, providing opportunities for excellence in both basic and applied research. Doctoral education should be a central part of research strategies.

4. *Talent development*. Doctoral students have become more diverse in terms of background, age, and experience. HEIs should implement a consistent and transparent admission policy that recognizes various aspects of research talent. It is essential to develop the talent of researchers and integrate research-based learning across all cycles of university education, so that PhD candidates are ready for independent research after entering the doctoral program. An important task of conducting doctoral research should be to develop a research culture characterized by perseverance, resilience, originality, critical thinking, independence, and the ability to create new knowledge. This culture should be developed by engaging future PhD candidates in the use of various disciplinary approaches and research environments in their field. Future PhD candidates should be informed of the diverse career opportunities that require acquiring a research culture; they should be actively supported in professional development.

The challenges discussed in the "New Challenges – 2016" document have been addressed by a number of documents jointly developed by the collective subjects of the EHEA and ERA. The most significant in the context of our consideration is the *European Code of Conduct for Research Integrity* (2017), being the result of active cooperation between numerous stakeholders from the educational, scientific, political and economic spheres of the European region. The Code was initiated by the European Federation of Academies of Sciences and Humanities (all European Academies) uniting more than 50 scientific organizations from more than 40 countries, including the National Academy of Sciences of Ukraine. The fundamental principles of scientific integrity, on which successful research practice is based, are named in the Code as follows:

• reliability in ensuring the quality of research, which is reflected in the structure, methodology, content and methods of using research sources;

• integrity in the design, implementation, analysis, reporting and publication of research results in a transparent, fair, complete and unbiased manner;

• respect for research colleagues, society, ecosystems, cultural heritage and the environment;

• reporting for the research conduct and findings from the moment the idea is created to the publication of the research findings, for administration and organization, for staff training, leadership and mentoring, for the broad consequences of the research.

The Code defines the requirements for good scientific practice in the following aspects: research environment; training, supervision and mentoring; research procedures; security tools; data management; scientific cooperation; publication and dissemination of research results; review, evaluation and editing of research[18].

Thus, the second half of the 10s of the 21st century, as the fifth stage of the development of the process of transformation of doctoral training in the EHEA under study, is a time of priority attention to the formation of a culture of scientific integrity and quality of research.

The sixth stage (2020 – present) is the *stage of further development of doctoral training in an inclusive, innovative and interconnected EHEA*

The current extreme context of the functioning of doctoral training systems in the EHEA, due to acute political and environmental crises, the Covid-19 pandemic, etc., has a significant impact on the procedural features of doctoral training in the EHEA. These crises have significantly exacerbated the challenges and contradictions that the activities of the academic and scientific community have been aimed at overcoming and resolving during the previous stages. The main events of the stage were the Rome (2020) and Tirana (2024) Ministerial Conferences of the Bologna Process. The Conferences have resulted in the adoption of the Communiques identifying the current state and prospects for the development of European higher education and, in particular, doctoral training for the next decades.

3. Current state and prospects of further transformation of doctoral training in the EHEA

The transformation processes of doctoral training in the EHEA are the subject of constant monitoring by EUA-CDE experts. The subject of our consideration was, in particular, the report "Survey – Report I. Doctoral Education in Europe Today: Enhanced Structures and Practices for the European Knowledge Society, which in the year of the 20th anniversary of the Salzburg Process brought up certain results of a long process of changes in the field under investigation. Significant results of transformations have been achieved, according to the Report, in the following aspects:

1. *Organizational structures of doctoral training*. The study of the 2025 EUA-CDE Report shows that European universities have achieved over the past 20 years in the field of doctoral education a high level of

[18] ALLEA (All European Academies).The European Code of Conduct for Research Integrity. ALLEA, 2017. URL: https://allea.org/code-of-conduct/

institutionalization and progress in the key practices of doctoral training, especially in supervision, providing research courses and offering transferable skills. A comparison of the data with the previous surveys, especially the 2017/2018 EUA-CDE Survey[19], show that progress has also continued in recent years. The share of institutions, where doctoral schools or similar structures are established at the university level, has reached 89%. The Bologna third cycle is increasingly becoming the sphere of activity of universities, which is controlled at the general institutional level. This demonstrates the impressive growth and consolidation of institutionalization in doctoral education over the past two decades (a key objective of the Salzburg second and sixth principles, which focus on university-wide recommendations for doctoral studies and achieving a critical mass of change through the development of new doctoral program structures).

The development of a doctoral school as a university-wide structure is observed both in terms of quantity and quality. Their share among universities has achieved a new peak. However, the higher degree of institutionalization of doctoral education also has an important qualitative component, which is reflected in a wider range of core functions: quality assurance, university supervisory functions regarding doctoral education, offering training courses for PhD candidates, and core administrative functions. The roles of doctoral school principals reflect a wide range of functions of doctoral schools or similar structures, including when it comes to the strategic development of doctoral studies. More than three-quarters of all universities indicate that this is a key task for their doctoral school principals.

2. *Funding*: As for the funding of doctoral programs, the universities' own finances are listed as the most important source, followed by state funding at the national level (state funding for research). Funding sources such as the EU Framework Program for Research and Innovation and the private sector are important as well.

3. *Quality assurance*: The most common indicators used by institutions to determine and evaluate the quality of doctoral education include staff qualifications, academic publications of doctoral students, quality indicators (e.g. peer review, evaluation boards), completion rate and satisfaction of doctoral students. Major changes since 2017/2018 regarding the indicators used include a decrease in the importance attached to doctoral academic publications and completion rates, and an increase in the importance of PhD student satisfaction, quality indicators, and relevance of research to society. Thus, these latest trends fit into the current debate and changing practices

[19] Hasgall A., Saenen B., Borrell-Damian L. Survey. Doctoral education in Europe today: approaches and institutional structures, European University Association Council for Doctoral Education. Geneva, 2019.

around research evaluation reform, which focuses more on qualitative rather than quantitative criteria.

4. *Scientific supervision*. Although the status of future PhD candidates varies from country to country, there are significant general changes when it comes to supervision. A comparison between the results of the EUA-CDE 2017/2018 and 2025 Survey shows that the share of supervisory committees with academicians of their institution or with members of other universities has increased significantly. An equally significant change concerns increased responsibility at the institutional level when it comes to supervision. The results of the 2025 Survey show that more universities have created rules or guidelines on key aspects of supervisor responsibilities and aspects related to supervision in general than in 2017/2018. This aspect of change is consistent with the Salzburg fifth principle.

5. *Career development opportunities for doctoral students*. The results of the 2025 Survey highlight the important contribution of doctoral students to the overall research activities of universities: about a third of all researchers at universities are doctoral students. The impact of doctoral students at universities is also highlighted by the fact that they focus on original research, pushing the boundaries of research. Thus, even when most doctoral students leave academia after graduation, their contribution to university research efforts is significant only during their doctoral studies.

The results clearly confirm the provisions stated in the Salzburg first principle: the labor market for most doctoral students will be outside of academia. The vast majority of universities offer their doctoral students access to this labor market, and more than 70% of institutions offer the opportunity to collaborate on a doctoral project with sectors outside academia. Universities actively support career opportunities for doctoral students within and beyond academia in accordance with the four Salzburg principles (1, 2, 8, 9), although there is still great potential in preparing for career opportunities outside academia. In the case of courses provided to doctoral students, the most frequently suggested topics focus on enabling doctoral students to succeed in their doctoral research. Compared to research training, fewer universities also provide general transferable skills that are useful for doctoral students both in academia and when looking for career opportunities outside academia. Universities are very active when it comes to promoting interdisciplinarity, which is an important approach to social issues within and beyond academia.

In conclusion, we would like to emphasize that the analyzed Report and our description of its materials do not have exhaustive data on the phenomenon of transformation of doctoral training in the EHEA under consideration. The ongoing transformations are more extensive and systematic, which will be reflected in future EUA-CDE reports.

To find out the prospects for further changes in the phenomenon under consideration, we will turn to the most relevant political document of the Bologna Process – the Tirana Communiqué of the EHEA Ministerial Conference, held in 2024. The Communiqué describes the essential processes of changes taking place in the higher education systems of the EHEA participating countries and the further commitments of the international academic community until 2030.

The key characteristics of the current state of the EHEA and, in particular, doctoral training, according to the materials of the Tirana Conference, are its *inclusive, innovative and interrelated nature*.

The document declares that by 2030, the creation of an *inclusive EHEA* enabling to become the foundation of a cohesive, sustainable and peaceful Europe, where students receive full support at all stages of their educational trajectories through policies on access to and completion of higher education, regardless of their background or starting point. It is expedient to emphasize the significant increase in attention to the social dimension of higher education resulted in the adoption of the document "Indicators and Descriptors for the Principles of the Social Dimension of Higher Education in the EHEA"[20] as the first comprehensive and consolidated framework for the social dimension in the EHEA.

The development of the *innovative EHEA* provides for an adequate response of the higher education system in general and the doctoral training system in particular to constant changes caused by the social, economic, geopolitical, environmental and technological development of society. Green and digital transformation requires unprecedented innovation, where new technology, processes and practices will drive positive change, as well as more advanced and expanded knowledge and skills, increased awareness, engagement and responsibility of education seekers.

The EHEA member countries have committed themselves to supporting higher education systems in strengthening their contribution in line with the Sustainable Development Goals (SDGs) and green transformation, digitalization, and a combination of physical and online learning and teaching. It is time to strengthen synergy with the European Education Area (EEA) and the European Research Area (ERA).

The EHEA as an innovation area involves building flexible educational trajectories and developing academic inclusion, providing access to high-quality, student-centered and innovative learning and teaching in accordance with the needs and interests of students. To develop the competencies needed to overcome global challenges, students need to develop

[20] BFUG. Indicators and Descriptors for the Principles of the Social Dimension of Higher Education in the EHEA. BFUG, 2024. URL : https://ehea.info/Immagini/BFUG_BE_VA_88_9_5_2_WG_SD_Indicators_and_Descriptors.pdf

transversal/general and forward-looking competencies, creative and critical thinking abilities, and civic competencies that will facilitate their active participation in a democratic society and in a rapidly changing labor market. Against the backdrop of these developments, the EHEA member countries should ensure that student-centered learning becomes a reality for all students by empowering education seekers through research-based learning, effective support, and interdisciplinary approaches to teaching.

The document under study also notes such a tool for innovative development in the EHEA as Artificial Intelligence (AI), which affects society and the economy, as well as training, teaching, evaluation and research. This requires adapting existing and developing new practices and policies at the institution and system level, taking into account opportunities, risks and challenges. In particular, ethical considerations are mandatory in the development and effective application of AI. Its use should be free from prejudice, prioritize human decision-making, maintain ethics and data confidentiality, and protect academic integrity.

Another fundamental characteristic of the EHEA in the Tirana Declaration is *its interconnected nature*.

The above document confirms the commitment of the EHEA member countries to provide an opportunity for all students to acquire international and intercultural competencies. Since the distinctive feature of the interconnected EHEA is the unhindered mobility of students and employees, it is worth pointed out that it is essential to strengthen efforts to identify and remove barriers and promote physical mobility in order to reach the benchmark of at least 20% of mobile students. The BFUG is committed to promoting mobility and internationalization of higher education, as well as supporting measures to achieve more environmentally friendly, inclusive and balanced mobility.

It is also noted that while all students and employees of HEIs should be able to take advantage of physical mobility in accordance with the conceptual framework for the development of the EHEA, HEIs should make efforts to explore the practices and benefits of mixed mobility and virtual exchanges, as well as promote the internationalization of educational programs, support transnational cooperation, in particular with regard to joint programs and degrees, by fulfilling principal obligations and removing excessive administrative and legal barriers in a proper manner. In this regard, the deepening and institutionalization of transnational cooperation with the support of the Erasmus+Programme is desirable, based on and respecting the Bologna instruments and commitments.

The Bologna community insists on the need for all EHEA member countries to create and disseminate knowledge, engage in dialogue and cooperation in the transformation of all three cycles of higher education in

order to ensure a more effective link between the needs of society and the training of specialists of tomorrow. This may also include the creation of international and national expert networks, support for cross-border cooperation and cooperation with the BFUG.

CONCLUSIONS

1. The study provides a systematic analysis of the factors of transformation of doctoral training in the EHEA, namely geopolitical, economic, environmental, scientific and technological, social and academic, which are closely interrelated and interdependent. The combination of these factors, being continuously transformed, deepened, multiplied, acquiring in some places the character of regional and global crises and even catastrophes, led at the beginning of the 21st century to significant transformations of the organizational foundations, structure and culture of the process of educational and scientific preparation of PhD students in European universities. The transformation of PhD preparation into the third cycle of higher education required fundamentally new approaches, the development and implementation of which within the EHEA enabled to organize the process of changes on a common fundamental basis for the entire space, called the Salzburg Principles.

2. Based on the diachronic-comparative and structural-logical analysis of the documents of the Bologna Process, we have identified the stages of transformation of doctoral training in the EHEA as follows: 1) preparatory stage (2003–2005), consisting in defining the goals and developing the principles of transformation of doctoral training into the third cycle of higher education; 2) stage of organizational changes (2005–2007), providing for the transformation of doctoral training into the third cycle of higher education in the EHEA member countries; 3) stage of institutionalization of international cooperation in the field of doctoral training (2008–2009), carried out through the creation of a specialized structure of the EUA – Council for Doctoral Education; 4) stage of deepening the transformations of doctoral training and their political support to the EC (2010–2015) implemented through the introduction of the Recommendations developed by EUA-CDE experts on the use of the Salzburg Principles – Salzburg II (2010) and the adoption of a political document supporting doctoral transformations in the EC Communiqué "Principles for Innovative Doctoral Training" (2011); 5) stage of development of a culture of scientific integrity and quality (2016–2019) based on the implementation of the Recommendations of EUA-CDE experts – Salzburg III (2016), which represent understanding of new challenges in the doctoral training system and formulating proposals for overcoming them; 6) stage of further development of doctoral training in an inclusive, innovative and interconnected EHEA (2020 – present), which

is determined by the declaration of values of further development of the EHEA (academic integrity, institutional autonomy, participation of students and employees in the management of higher education, public responsibility for higher education, public responsibility for higher education) and obligations to continue the introduction of a three-cycle system of programs and academic degrees.

3. The transformation of doctoral training has gained the most significant results during the twenty years of development of the Salzburg Process, according to the 2025 EUA-CDE Report, in such aspects as *organizational structure* (an impressive increase in institutionalization in doctoral education); *funding* (finances of universities, the national state, the EU research and innovation framework and the private sector as the most important sources); *quality assurance* (an increase in the importance of quality indicators of results); *scientific supervision* (introduction of practice of shared responsibility, an increase in the importance that universities attach to the training of doctoral supervisors); *career development opportunities for doctoral students* (universities' active support of career development opportunities for doctoral students within and beyond academia in accordance with the relevant Salzburg Principles, although there is still a lot of potential in the field of preparing for career opportunities outside of academia).

In general, we note the emergence of a new culture of doctoral training – a culture of shared responsibility and constant adaptation to the growing needs of society. It reflects not only how universities respond to challenges, but also how they actively shape the future of European research and higher education. These changes occur in the broader context of geopolitical uncertainty, economic instability, and social fragmentation. In such volatile times, universities have a crucial responsibility to build a society based on knowledge, critical thinking and innovation, investing in doctoral studies means investing in Europe's ability to respond to current and future challenges.

SUMMARY

The training of PhD students in the context of the development of the EHEA has undergone systemic changes over the past two decades, due to such factors as geopolitical, economic, environmental, scientific and technological, social and academic. The changes in PhD training under consideration have gone through a number of stages in its development (preparatory, organizational changes, institutionalization of cooperation, deepening of transformations and political support of the EC, development of a culture of scientific integrity and quality, further development of doctoral training in an inclusive, innovative and interrelated EHEA) and include the following areas: transformation of PhD training goals, principles

and structure of the educational process organization, content, forms and methods of training; updating the methods and criteria for involving applicants in PhD programs, defining criteria, ways to ensure the quality of the process and results of program implementation; developing relevant requirements for scientific supervisors and universities as providers of educational and scientific programs, etc. There is a growing institutionalization of doctoral education and strengthening its quality, improving the practice of supervision, expanding training in transferable skills, strengthening career support and expanding international cooperation. These processes reflect compliance with the Salzburg Principles. Within the EHEA, universities have adopted the above goals and implemented significant transformations that contribute to creating a more supportive and responsive environment for researchers early in their careers.

The implementation of these and other relevant steps to reform doctoral training is based on a certain set of conceptual approaches formulated jointly by the supranational educational, political, academic and scientific communities in a number of documents, primarily, Doctoral Programmes for the European Knowledge Society (Salzburg Principles – Salzburg 1, 2005), European Universities' Achievements since 2005 in implementing the Salzburg Principles (Salzburg II Recommendations, 2010), Doctoral Education – Taking Salzburg Forward: Implementation and New Challenges (Salzburg III Recommendations, 2016).

A new culture of doctoral education – a culture of shared responsibility and constant adaptation to the growing needs of society – has emerged. It reflects not only how universities respond to challenges, but also how they actively shape the future of European research and higher education. These changes occur in the broader context of geopolitical uncertainty, economic instability, and social fragmentation. In such volatile times, universities have a crucial responsibility to build a society based on knowledge, critical thinking and innovation, and investing in doctoral studies means investing in Europe's ability to respond to current and future challenges.

REFERENCES

1. Communication from the Commission to the European Parliament, The Council, The European Economic And Social Committee and the Committee of the Regions *on achieving the European Education Area by 2025.* COM(2020) 625 final.

2. EC (European Commission). European research area policy agenda: overview of actions for the period 2022-2024. Directorate-General for Research and Innovation, 2021. URL: https://commission.europa.eu/system/files/2021-11/ec_rtd_era-policy-agenda-2021.pdf

3. EC (European Commission). Implementation of the European Research Area (ERA). Strengthening Europe's Research and Innovation: The ERA's Journey and Future Directions. COM(2024) 490 final

4. Realising the European Higher Education Area. (2003). Communiqué of the Conference of Ministers responsible for Higher Education in Berlin on 19 September 2003. URL: https://www.ehea.info/pid34363/ministerial-declarations-and-communiques.html

5. Bologna Seminar (2005) on "Doctoral Programmes for the European Knowledge Society" (Salzburg, 3-5 February 2005). Conclusions and recommendations. Retrieved from: www.eua.be/Libraries/cde/Salzburg_Conclusions.pdf

6. The European Higher Education Area – Achieving the Goals. Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen, 19-20 May 2005. URL: https://www.ehea.info/pid34363/ministerial-declarations-and-communiques.html

7. Towards the European Higher Education Area: responding to challenges in a globalised world. Communiqué of the Conference of European Ministers Responsible for Higher Education, London, 18 May 2007. URL: http://www.ehea.info/cid101763/london.html

8. EUA-CDE (European University Association – Council for Doctoral Education). Who we are. EUA-CDE, 2025. URL: https://eua-cde.org/who-we-are.html

9. EUA (European University Association). Salzburg II Recommendations. European Universities' Achievements Since 2005 in Implementing The Salzburg Principles. Berlin, 2010. URL:www.eua-cde.org/reports-publications.html

10. EC (European Commission) Principles for Innovative Doctoral Training. Directorate-general for research & innovation. Brussels, 27.06.2011. URL: https://euraxess.ec.europa.eu/sites/default/files/policy_library/principles_for_innovative_doctoral_training.pdf

11. EUA-CDE (European University Association – Council for Doctoral Education). Doctoral Education – Taking Salzburg Forward: Implementation and new challenges. EUA-CDE, 2016. URL: https://eua-cde.org/reports-publications/51:doctoral-education-taking-salzburg-forward-implementation-and-new-challenges.html

12. Rome Ministerial Communiqué. EHEA Ministerial Conference, Rome, November 2020. URL: https://ehea.info/Upload/Rome_Ministerial_Communique.pdf

13. Tirana Ministerial Communiqué. EHEA Ministerial Conference, Tirana, May 2024. URL: https://ehea.info/Download/Tirana-Communique.pdf

14. EUA (European University Association) (2005). Doctoral Programmes for the European Knowledge Society. Report on the EUA doctoral programmes project 2004-2005. https://eua.eu/component/publications/publications/79-report/659-doctoral-programmes-for-the-european-knowledge-society.html

15. Towards the European Higher Education Area: responding to challenges in a globalised world. Communiqué of the Conference of European Ministers Responsible for Higher Education, London, 18 May 2007.URL: http://www.ehea.info/cid101763/london.html

16. EUA-CDE. Doctoral Education: Why it matters for Europe. EUA-CDE, 2025. URL: https://eua-cde.org/downloads/publications/cde_mar-18_de_leaflet_web.pdf

17. Survey – Report I. Doctoral education in Europe today: enhanced structures and practices for the European knowledge society. By Simon Marti and Ana-Maria Peneoasu, June 2025 URL: https://www.eua.eu/publications/reports/doctoral-education-in-europe-today-enhanced-structures-and-practices-for-the-european-knowledge-society.html

18. EC (European Commission). Europe's Universities: Main drivers in achieving the European Research Area (ERA). 2014. URL: https://eua.eu/resources/publications/376:europe%E2%80%99s-universities-main-drivers-in-achieving-the-european-research-area-era.html

19. EUA-CDE (European University Association – Council for Doctoral Education). Doctoral Education – Taking Salzburg Forward: Implementation and new challenges. EUA-CDE, 2016. URL: https://eua-cde.org/reports-publications/51:doctoral-education-taking-salzburg-forward-implementation-and-new-challenges.html

20. ALLEA (All European Academies).The European Code of Conduct for Research Integrity. ALLEA, 2017. URL: https://allea.org/code-of-conduct/

21. Hasgall A., Saenen B., Borrell-Damian L. Survey. Doctoral education in Europe today: approaches and institutional structures, European University Association Council for Doctoral Education. Geneva, 2019.

22. BFUG. Indicators and Descriptors for the Principles of the Social Dimension of Higher Education in the EHEA. BFUG, 2024. URL: https://ehea.info/Immagini/BFUG_BE_VA_88_9_5_2_WG_SD_Indicators_and_Descriptors.pdf

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