

PREFACE

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Institutions of higher education, especially the universities, are undoubtedly undergoing an exceptional transformation. The great global upheavals and changes that are shaping today's world are driving the fourth industrial revolution onward. The changes of a present that is dramatically accelerating, the growing demands that society is placing on tertiary educational institutions, an increased (and desired) influx of new students, and, not least, technological change based on revolutionary communications and information technology all pose significant challenges for higher education. In light of these global trends, the classic and future tasks for higher education are increasingly under discussion. These tasks have to be adapted to fit the processes of development, and they must be redefined and re-assigned to meet the global challenges.

Education, science and research are the capital of a functioning, knowledge-based society; and will undoubtedly remain key tasks for universities, even in the future. However, it is not the only task of institutions of higher education to enable and support top-class university education. The necessary renewals, processes of reform and of further development in the higher education sector have to be re-thought and set in motion at all levels of education, politics and society in order to meet existing and new challenges, and to find new solutions.

One dimension for meeting these challenges has been opened up by the new communications and information technologies that have enabled rapid exchange of scientific papers and findings. Further, this global exchange of research results is no longer limited to researchers at universities and other research institutes. The entire (interested) public is included in the knowledge process. The universities are increasingly active in introducing society at large to questions about the use of results, and thus enable cooperation and "co-research". The role of students is changing. They are no longer exclusively consumers of knowledge, but are also increasingly active producers of knowledge and actors in, for example, peer learning. The term "third mission" of the universities encompasses this additional reach of universities, and the definition of the term ranges from engaged to entrepreneurial universities, networking with non-university and regional actors, as well as exchanges and coordination between institutions and society.

The Austrian Council for Research and Technology Development – the Austrian government's advisory board for topics of education, science, research and innovation policy – has in recent years increasingly engaged with the significant questions of the future of higher education and its tasks for the 21st century. For this collection

of essays, the Council invited experts from various educational cultures to discuss future tasks of higher education, to describe the future of higher education and its tasks from their experiences, and thus to illuminate the range of topics from a variety of perspectives.

The goals of this publication are to take up current national and international trends in the development of higher education, and to discuss possible future scenarios for the higher education landscape in Austria. The starting point for the volume was asking questions about the tasks of universities in the technologically advanced societies and economies in the early 21st century, and about the role of universities in solving the global grand challenges. Digitalization, internationalization and differentiation are inherent in these processes.

This anthology consists of four parts. In the first part – development, importance and tasks – the various positions of the universities are taken into consideration. The individual essays debate the tasks of today and in the future. Proven systems and vital changes in cultural, socioeconomic and sociopolitical aspects are discussed. Changing structures are discussed and possible solutions are proposed. In the second part – management, organization and governance – the focus is mostly on the framework conditions for higher education systems. How much autonomy does a university need, and how far can or should the interests and influences of the state go?

The third part – global knowledge and digitization – focuses on internationalization. The essays give external perspectives, and position the universities within a global knowledge space, that, due to digital technologies, opens new possibilities of knowledge production and even new information, and thus also will change the future of university teaching. The fourth part draws a picture of diversity and differentiation of the higher education sector. The authors call for attention to alternative developments and necessary changes in the academic sector.

All these changes bring about a transition, which is comparable to that of a complex organism, adapted to an ecosystem but, with spontaneous mutations, able to settle in new habitats. Possibly, new “species of education” will arise from this differentiation. We remain curious to find out which developments will shape our higher education in the future.

SHORT BIOGRAPHIES

HANNES ANDROSCH, born 1938 in Vienna, former Vice Chancellor and Federal Minister of Finance of the Republic of Austria, former Director General of the Creditanstalt, is today an industrialist. He holds several honorary doctorates and is regarded as Elder Statesman in Austria. Hannes Androsch is author and editor of numerous publications. In his self-understanding as a citizen, he is committed to social, economic and scientific policy. Among other things, he is initiator of a petition for a referendum on education, President of the Supervisory Board of Austrian Institute of Technology (AIT) and Chairman of the Austrian Council for Research and Technology Development (www.androsch.com).

MARKUS HENGSTSCHLÄGER, born 1968 in Linz, studied genetics and is expert in human genetics. He worked at Yale University and in 2003 he was appointed Professor of Medical Genetics at the Medical University of Vienna.

Since 2009, Hengstschlager chairs the Institute of Medical Genetics and since 2011, he is Director of the Center for Pathobiochemistry and Genetics at the Medical University of Vienna. He is active in basic research, teaching students, patient care and in the field of human genetics diagnostics and innovation consulting. Hengstschlager is a deputy chairman of the Austrian Council for Research and Technology Development, the Austrian Bioethics Commission, a member of the University Council of the Johannes Kepler University Linz, and Scientific director of the think tank "Academia Superior". He is also member of the board of trustees of the Vienna Science and Technology Fund (WWTF).

ANTON GRASCHOPF is scientific advisor of the Austrian Council for Research and Technology Development since 2009. His fields of activity cover the university development and university policy, life sciences, the promotion of basic research funding and open access strategies. Anton Graschopf holds a PhD degree in molecular biology. As a postdoctoral fellow, he was principal investigator in several research projects at the Research Center Max F. Perutz Laboratories (MFPL) of the University of Vienna and the Medical University of Vienna, between 1999 and 2009.