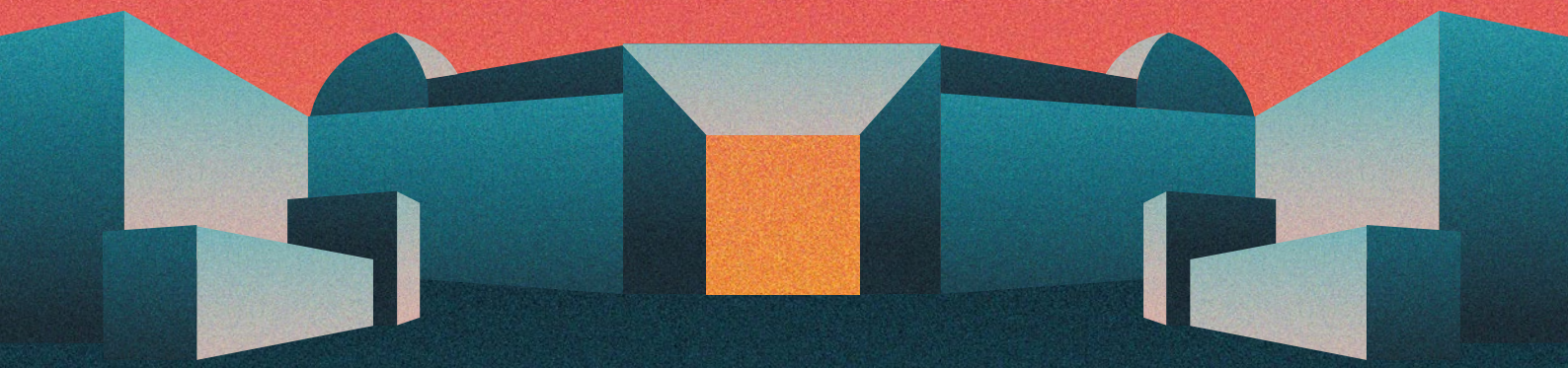
FUTURE UNIVERSITY

HIGHER EDUCATION AND RESEARCH IN THE 21ST CENTURY



W.I.R.E.
[WEB FOR INTERDISCIPLINARY RESEARCH & EXPERTISE]
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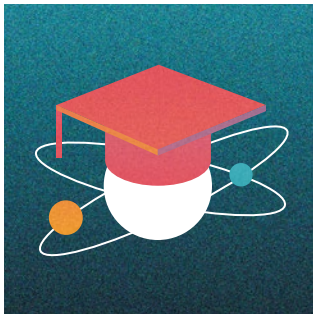
THINK TANK FOR BUSINESS, SCIENCE & SOCIETY

SWITCH

ON THE FUTURE OF EDUCATION AND RESEARCH

Higher education institutions stand as a guarantee of education and prosperity – for the knowledge economies above all. Switzerland, poor in natural resources, has only innovation and education to safeguard its prosperity. Since the first university in Switzerland was founded in Basel in 1460, more than half a millennium has passed. Across those years, the universities have been important drivers of change and new intellectual perspectives, stimulating movements from the secularisation of knowledge and advancement of industrialisation to the social transformation that was carried from the lecture rooms to the heart of society in 1968. The Bologna process adopted in 1999 was merely a brief highlight in a constantly changing higher education landscape. At the same time, the reforms subscribed to by 29 European countries (including Switzerland) were the start of a continuing transformation in higher education in Europe and beyond.



These days, the digital transformation with the actual and assumed disruptions dominate the conversation on higher education policy. Big data and virtual reality, cybersecurity, machine learning and cloud computing represent the new fundamentals of a data-based world. Yet the more terms we invent to describe tomorrow's world, the less we understand the core of digitalisation. Digitalisation is rooted on technology – the university context, however, inevitably centres on people: digital technologies open up new areas of application, but these have to be aligned with the benefit to and needs of higher education, society and industry. We often overlook the fact that the digital transformation is not taking place in a vacuum.

BETWEEN IVORY TOWER AND INNOVATION

Individualisation, economisation and internationalisation – to name but three drivers of change – have featured largely throughout the education sector for some time now. However, due to digitalisation they are most sharply marked in the universities. The old but currently very relevant conflict rises to a new height: on the one hand, the university has to be a place where people can devote themselves to fundamental questions and pursue research, free and detached from the transient happenings of the day. On the other, society and industry have a legitimate claim to a supply of specialist workers trained by these establishments, and to be presented by them with solutions to current problems.

The broad consensus is that the overriding and noble mission of higher education is to educate people, to challenge and extend existing knowledge and to constantly venture new explanations of ourselves and our environment. At the same time, these institutions are now intertwined with the world "outside" to an almost unprecedented degree. As a result, universities are perceived more and more as part of society, and at the same time a larger and more diverse range of actors is making increasing and ever more diverse demands on them. Businesses want specialised skilled employees who can be set to work quickly and flexibly, society needs critical minds that plumb the world's depths independently, within and across the boundaries of their disciplines, politicians want as many STEM graduates as possible (for the moment, at least), and the individual student wants to realise the potential of his or her personal inclinations and abilities.

NEW UNDERPINNINGS FOR EDUCATION AND RESEARCH

So far, Switzerland as an important teaching and research centre has responded well to these goal conflicts. Universities of applied sciences and traditional universities offer a wide range of educational opportunities that incorporates and reflects these divergent requirements. However, this solid foundation is being transformed and, in some instances, increasingly eroded by a number of change drivers. There is the individualisation of education – as witness not only decentralised teaching, but increasingly also individually customised learning environments, and in more extreme cases specific nutrition or even neuro enhancement. In addition, more and more new players are crowding into the education sector. They offer accelerated qualifications in specific courses, known as microdegrees or nanodegrees. These are not true substitutes for academic programmes, they teach the skills required for professions such as data analyst or VR developer in the shortest possible time. In Switzerland, such microdegrees are a marginal phenomenon. However, the development behind them has to be taken seriously: companies that offer specific qualifications, as well as the now-improved corporate universities, challenge the role of the universities: in the long term, they could undermine higher education's role as the gatekeeper of tertiary qualifications. Whatever the case, digital technologies are enabling the entry of new players into the education sector. Which, in turn, could transform tertiary education as a whole, because the conventional higher education institutions will align themselves more with short-term market trends. However, we are already saying today that we do not know where primary school students will seek their professional fortunes in the future. Given that fact, it makes sense not to focus current syllabuses too rigidly on fixed, contemporary skills. Instead, educational curricula based on a bedrock of critical thinking, empathy and imagination should be strengthened. These will be founded on a systematic and holistic confrontation with the consequences of digitalisation and other forces at work on the tertiary education landscape. And on firm decisions about the areas for action which will shape the future of teaching and research for the 21st century.

DRIVERS OF CHANGE

GLOBALISATION

INDIVIDUALISATION

DEMOCRATISATION

MEDIALISATION

BACKGROUND
What challenges universities today

INCREASING FUNDS WITH RISING COST PRESSURE

FIERCER COMPETITION FOR TALENTS

CREDIBILITY LOSS

FUTURE UNIVERSITY

GROWING IMPORTANCE OF INTERNATIONAL COOPERATIVE PROJECTS

ACCELERATED TECHNOLOGICAL CHANGE

CLOSER NATIONAL COLLABORATION

DRIVERS OF CHANGE

ECONOMISATION

DIGITALISATION

FLEXIBILISATION

AGING

THESES
What drives universities tomorrow

NEW DIVISIONS IN EDUCATION
Content and methods of teaching are becoming more individual. This lays the foundations for more effective, high-quality education. However, the wide array of different qualifications may threaten to make them less meaningful, and increase the pressure on the individual to deliver more specific proof of his or her educational achievements. At the same time, increasingly individual education undermines society's base of common knowledge.

THE END OF MASS LECTURE HALLS
With the digital transformation and the growing demand for decentralised learning opportunities, virtual learning is rapidly gaining significance. At the same time, real education depends on human interaction. The future of learning therefore requires virtual and analogue teaching formats to be linked.

THE LIMITS OF SPECIALISATION
The pressure to specialise in a small number of research disciplines is increasing. This opens up opportunities in top-flight research, but at the same time poses a threat to the diversity of disciplines and reduces the potential for trans-disciplinary dialogue and therefore for holistic education.

EMPOWERMENT TO SHAPE
New competences will be demanded of graduates in the future, competences that are not reflected in the current syllabuses. Universities face the challenge of teaching these competences. This demands a more practical orientation – yet at the same time, the universities' primary purpose is to provide a solid basic education coupled with critical thinking skills. This is what ultimately enables students not only to analyse the future, but also to shape it.

RETURN TO THE AVANT-GARDE
Building a digital infrastructure forms the basis for networking the university landscape. Universities and libraries can occupy a pioneering role in securing, developing and managing knowledge databases. In addition, the importance of universities as platforms of the new and places of wonder will grow.

LIFE-LONG LEARNING
With increasing life expectancy, the importance of life-long learning is also increasing. So far, however, there are no working examples of how life-long learning functions, including at universities. Prerequisites to achieve them will include involving business and aligning education with the different life models.

QUALITY BEYOND QUANTITY
Because of the increasing international rivalry between universities, the pressure to publish will continue to mount. This will lead to research topics becoming more focused on rankings. However, it may also negatively affect the quality of research. A departure from quantitative growth will require new evaluation models and long-term financing of research projects.

UNIVERSITIES AS ECOSYSTEMS
The university landscape of the future will be shaped by new actors who focus on leading-edge, specific content – these will bring about a greater diversity of educational opportunities and step up the pressure on existing educational institutions to further differentiate their offerings, while at the same time contributing to the new educational ecosystems.

ECONOMISATION OF THE SCIENCES
With the increasing focus on cost and the spread of digital platforms, pressure on the public financing of research and teaching disciplines will increase – particularly for those disciplines which deliver no immediately obvious concrete benefit. Overall, the debate about public service contributions will raise the pressure on educational institutions to justify their existence – calling for a more active dialogue between the universities and the public and political spheres.

QUANTIFICATION OF KNOWLEDGE
The advance of data-based research methods opens up the opportunity for new insights in all disciplines. On the other side of the coin, a one-sided focus on the analysis of large data volumes could undermine the share of qualitative approaches and observations of individual cases in obtaining scientific insights.

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AREAS FOR ACTION

ROLE OF THE UNIVERSITY

In view of the various medium- and long-term trends, from digitalisation and increasing life expectancy to globalisation, the role of the universities has to be adapted to future environmental conditions. This will centre on the conflict between complying with society's need for an independent chamber of reflection on the one hand and adopting more responsibility for the concrete challenges of business and society on the other. This also entails clarifying the tasks and competences of the different higher education institutions and managing these tasks, either by even clearer demarcation or by a model of open competition that could allow for the integration of new providers.

TEACHING

Teaching faces several challenges due to the changing requirements of business and society. On the one hand, models for imparting information on the required fields of knowledge and competences have to be developed faster and dynamically adapted. On the other, the lack of certain knowledge about what content will actually be relevant in the future is a problem area. Added to these factors, there is a need for sustainable and functioning approaches to virtual and decentral forms of teaching that can be combined with a direct two-way communication between teachers and students.

RESEARCH

Research will continue in future to play a central role in ensuring the success of a knowledge- and innovation-based economy and society. On the one hand, information transfer and applied research have to be designed in a way that enables and supports changes. On the other hand, however – particularly in light of the growing importance of practically-oriented research – there will still be a need for free scope to conduct research into fundamental gaps in our knowledge, independently of interests and the key issues of the day. In parallel, digitalisation will create a new basis for incorporating large data volumes. And at the same time, the relationship has to be preserved between a high level of specialisation as the basis for top-flight research and a diversity of research fields as the basis for a holistic perspective.

KNOWLEDGE TRANSFER

Universities have always had an important role as an objective source of information and as independent experts providing the basis for decisions by enterprise, in social debates or by policy-makers. Alongside research and teaching, this function also has to be reinforced against the background of the breathtakingly fast increase in data volumes and the accompanying inability of many people to cope as a consequence of fake news. This third role entails a continuous dialogue between society, industry and the universities beyond the presentation of new findings to a lay audience. In this function, the public and businesses depend on the universities to play a more active role in which they also have to build new communication channels for knowledge transfer in both directions, in view of the communication behaviour described.

ORGANISATION

Over the past decades, universities have undertaken only marginal developments in their organisational structures; to remain relevant to society and industry, however, they have to adapt their structures and frameworks. In particular, higher education institutions have to make themselves more attractive to academic talents. Universities can increasingly be regarded as part of the extended ecosystem, which they will develop further in alliance with other partners from the field of education, civil society and industry.

INFRASTRUCTURE

A complex world demands networked universities. Therefore, the importance of dialogue between the universities and other educational institutions, society and industry will increase. This growing exchange between the individual actors demands more intensive development of a secure and user-friendly infrastructure for collaboration. The aspect of data security is underestimated today, but in view of its rising significance – above all in the research infrastructure for enormous data volumes – and growing networking (including of equipment) it is becoming ever more important. When a larger proportion of learning takes place individually and ceases to be location-dependent, this opens up an opportunity for the universities to reconsider physical teaching and learning space and find a creative way of dealing with the existing hard architectural infrastructures.

FINANCE

With persisting cost pressure, universities are faced with the challenge of sustaining long-term sources of finance and developing new ones. This requires them to communicate the value added more clearly to policy-makers, while at the same time obtaining new external funding resources without compromising their independence. In parallel, digital platforms such as crowdfunding also open up financing opportunities for universities. In this area also, nothing can be achieved without systematic and target group-specific communication.

SECURITY

The security of digital infrastructures, scientific data and (im-)material cultural goods will become a core strategic challenge for universities and libraries. These institutions will be required to think comprehensively and integrally about the reliability of their physical and virtual facilities. This aspect of protection touches all levels and all dimensions. On the one hand, it means paying attention right from the start to safety by design in research and teaching projects or in collaborations with private enterprise. On the other, it means protecting existing infrastructures with state-of-the-art tools. This latter point refers to cybersecurity and data protection – for example, keeping students' data private – as well as to the risk of physical force. In the final analysis, universities and libraries are the central brains of society responsible for the integrity of knowledge. They guarantee the running of the knowledge society and therefore of democracy by mounting defences against manipulation and misuse.

The analysis of the higher education landscape is based on a collaboration between the Think Tank W.I.R.E. and the SWITCH foundation. The challenges currently facing higher education institutions were analysed and the key drivers of change identified. The landscape presented was developed on the basis of the above collaboration and in a large number of interviews with experts from the field of tertiary education. It is intended to provoke ideas for the future of the universities and outline areas in which action can be taken to actively shape the landscape of higher education.

W.I.R.E. is one of the leading interdisciplinary think tanks. In ten years of engaging with global trends in business, science and society, the Swiss idea laboratory has focused on identifying new trends early and translating them into strategies and areas for action by private companies and public institutions.

At the interface between academia and practical application, W.I.R.E.'s critical mindset and political neutrality mark it as distinctive. Its key topics are the digital economy, social innovation and future-proofing. The think tank places its expertise at the service of the general public, private enterprise and public agencies, in fields ranging from life science, financial services and media to food and industry.

W.I.R.E.'s document- and experience-based knowledge transfer formats are notable for their harmony of form and content and the outstanding quality of their aesthetics and design. The think tank boasts an international network of experts, thought leaders and decision makers. www.thewire.ch

SWITCH stands for greater capability, convenience and security in the digital world. As an independent partner, SWITCH connects and aggregates the know-how of all stakeholders in and beyond the academic world. SWITCH works with them to develop and enhance comprehensive ICT solutions that add value for everyone involved.

Based on their core competencies in networks, security and identity management, SWITCH offers collaboratively developed ICT solutions that empower users to achieve leading edge results in a globally competitive environment.

SWITCH is unique in three ways: its collaborative partnership with the university and Internet community, its integrated all-in-one offering and its legal form as a foundation. www.switch.ch

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"THE MIND ONCE ENLIGHTENED CANNOT BECOME DARK."

THOMAS PAINE
