

An open discussion on digital

What are the effects of Digitalisation on education, learning and the world of work today and how will they evolve in the near future? Speakers at the two universities of Italian-speaking Switzerland, Usi and Supsi, among the protagonists of the “#digitale21” conference organized by the Swiss Academies of Arts and Sciences at the Supsi Trevano Campus from 11th to 13th April.

#digitale21

The Effects of Digitalization on Training, Learning and Working in the 21st Century

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SUPSI TREVANO CAMPUS
www.digitale21.ch

Youth Parliament | Bellinzona | 8 – 9 March 2018 | upon invitation
 Experts in education event | 11 April 2018 | for teachers with advanced registration
 Symposium | 12 April 2018 | free admission | aperitif and dinner by invitation
 Symposium | 13 April 2018 | free admission

Everyone calls for it, everyone searches for it: Digitalisation is in fact taking over the role of ‘factotum’ of our reality increasingly pervaded by technology, altering products, services and processes, disrupting entire sectors, with new occupations emerging and many others retiring. Given the complexity of the ongoing process, it is difficult, however, to limit its current impact and, even more so, to anticipate its long-term consequences. Planning as of now the best strategies to exploit the opportunities that will be offered and to contain the negative repercussions is imperative for a country like Switzerland, which, not having any particular natural resources, requires it to combine with foresight the extraordinary know-how accrued in the various disciplinary fields of which it is a leader, with the capacity for innovation which is one of its undeniable strengths. With this in mind, the Swiss Confederation has already developed an action plan for a sector of the

Actors from the educational, research, innovation and economic spheres come together to discuss the ways to prepare the Swiss workforce for the challenges of the 21st century at the “#digitale21” conference, organized between 11th and 13th April at the Supsi Trevano Campus by the Swiss Academies of Arts and Sciences in collaboration with national partners, including Usi and Supsi.



economy, that of training and research, identifying specific areas of involvement. Among these, education is a key tool for assisting the professional world in this transition and to prepare young people for the challenges of the future. This will be the theme at the centre of the “#digitale21” conference, organized by the Swiss Academies of Arts and Sciences between 11th and 13th April at the Supsi Trevano Campus (see Box).

In view of this interesting event, one of federal importance, *Ticino Management* met the Rector of the Università della Svizzera italiana (Usi) Boas Erez and the Deputy Director of research and innovation at the University of Applied Sciences and Arts of Southern Switzerland (Supsi) Giambattista Ravano: both partners of the event, the two institutions are on the front line in addressing this epochal transformation. Beyond the common concern accompanying the change by updating the skills provided to their students, the courses offered, the teaching methods and research activities, the perspective from which both universities and universities of applied sciences look at the phenomenon in respect of its specific mandate is different, the first oriented to the development of new knowledge, the latter instead strongly anchored to the practical dimension and to the employment market.

A qualified algebraist but one open to

the humanistic vision of those who are called to manage a university with many faculties, ranging from economic to biomedical sciences, the Rector of Usi, Boas Erez, immediately expands upon digitalisation in a broader perspective: «My mathematical point of view allows me to qualify the innovation of technological progress: digitalisation largely bases its foundations on theoretical acquisitions from the last century and not only on the latest innovations in information technology. On the other hand, as an academic, whose life today is made up of study, conferences and lectures - and teaching prior to this assignment - I have come to believe that more importantly than progress in individual sectors, what really matters for our society is, simply, being able to live together in harmony. The new knowledge acquired should allow us to solve more problems than we create. I would reduce the importance of digitalisation: of course, we must take it into account, but much more revolutionary than technological development in itself seems to me the challenge of global interconnection. »

Undeniably there are fields today more touched by the digital transformation: first of all, trade, education and scientific research with the total paradigm changes of “disruptive innovation”, «instead on the purely industrial level of production, although it is precisely in this context that we have started to talk about “4.0”, com-

On this page, above left, the Rector of the Università della Svizzera italiana (Usi) Boas Erez. Above right, Giambattista Ravano, Deputy Director of research and innovation at the University of Applied Sciences and Arts of Southern Switzerland (Supsi).

panies are transforming themselves in a much more gradual way, increasing step by step digitalization solutions related for now to certain phases of their activity,» observes Giambattista Ravano.

And while in the face of automation and the descent into the field of robotics and artificial intelligence spreads the apprehension for the fate of many professions, the Deputy Director of research and innovation at Supsi warns us that it is essential to realise the crossroads at the what is now the development of digitalisation: «On the one hand we have the possibility to completely replace the algorithms of free will: one of the most immediate examples is that of autonomous vehicle driving, but already more advanced applications are being tested, for example in the military sector, from which many innovations come and then are transferred to other fields, helmets with sensors able to influence the emotions of the soldiers are tested, stimulating certain neurons. The other direction is instead to preserve the decision-

making capacity of mankind, using the new possibilities to increase the knowledge, analytical skills and evaluation tools at our disposal. »

To the image of the crossroads, the Rector dell'Usi prefers the concept of incremental progress: «Nothing seems ineluctable, we can always intervene and direct events, because each step is the consequence of a sequence of decisions taken previously. Focusing on the issue of jobs that will be lost creates only fear that, as we know, is a bad counsellor. » Rather, on a case-by-case basis, it is about determining what the technology offers us: «For example, when the electronic voting system is proposed, since no computer expert can rule out the risk of it being manipulated, we should ask ourselves whether, in order to benefit from the advantages of digital, we are willing to accept that democracy is endangered. Or, digitalization could allow us to move towards personalised medicine, hypothesised by Hippocrates, which would actually avoid abuses in prescribing drugs or identify the most suitable therapies for cohorts of even very small patients. However, there is a risk of exacerbating privacy control ... » questions Boas Erez.

But, coming back to topical events, what is the current climate in our Canton? A reality such as Supsi, thanks to the intense collaboration with about 500 companies in the territory, provides a privileged observatory, allowing the monitor of how the business fabric is reacting to pressures: «In general, we find a 'healthy' critical interest in the situation. We note a certain concern, not prevalent but understandable, by the smaller companies, confronted with the need to invest to change the business model, to update the processes and skills of their employees, » notes Ravano, «I can therefore say that Ticino it is not behind the rest of Switzerland. »

The rapidly evolving scenario has pushed Supsi to further enhance its traditional role of interface between the professional universe - whatever the economic or productive activity in question, including in a broad sense urban services - and the new ideas to be implemented. «On this front, thanks to our pragmatic approach, we are in the field: all our research institutes are reflecting on how to change their guidelines to meet the needs raised by digital transformation. Our delicate task is also to understand

what it is the right moment to develop and what should have to wait, finding the balance that allows us to be proactive without imposing on the companies that turn to us for strategic decisions that belong to them», notes the Supsi representative head of research and innovation; «However we still have a long way to go at the speed with which we can adapt our training proposals to changes that no longer occur at the pace of generations but every two years.» A recently launched project like DigiLaF confirms Supsi's renewed effort

in this direction, aiming to define a model for monitoring and analysing the effects of Digitalisation on work, processes, skills and, consequently, on training in three very demanding sectors such as industry, health and construction. «Since we are going through a phase in which the various professions are redefining and it is still uncertain what skills will be needed in the future and what tools we will have available, the dialogue between the world of work and that of training must be even closer and involve the whole educational

system to teach the critical use of the new means and understand what added value we can bring with respect to the digital world, » observes Giambattista Ravano.

For its part, small, flexible and still young, the Università della Svizzera italiana has the flexibility and quality to intercept the newly developed sectors by enriching its degree programs: it did so at the beginning of this academic year, in particular with the Master in Software & Data Engineering and, a first in Switzerland, the Master in Financial Technology and Computing

and one in Artificial Intelligence, created thanks to the collaboration between institutes and professors of excellence headed by the university. «Moreover, our Faculty of Communication Sciences, founded more than twenty years ago, when the web was also born, wants to respond to the challenge of global interconnection, taking an interest in social change and, in particular, in all aspects related to evolution of media and marketing, » underlines Boas Erez. «Since no profession will no more be acquired 'for life' and it will be necessary

for everyone to continue updating their skills and retraining, rather than a notional teaching we will have to focus on 'discipline' in the sense of learning to do things in a certain way, for example working autonomously, as required by those who taking a Master's degree,» the Rector continues.

Usi is also preparing to introduce an interdisciplinary course across the different faculties, in order to make all its students aware of the problems of algorithmic thinking, to enable them to understand the different value in the mechanical approach, from which it is required to start from a mass of unstructured data to extract information or correlations, compared to an expert who bases his conclusions on a physical theory or an economic model. At an educational level, the eLab platform is active, which aims to facilitate communication between teachers and students through the integration of digital technologies, for example by allowing the sharing of documentation of individual courses. «We have also created some Mooc, large scale online open courses, but only in very specific areas, while what could be more systematically developed are the so-called "flipped classroom", a didactic approach that turns learning upside down, demanding individual study, supported by technology, the acquisition of basic knowledge, to then enhancing the subsequent personal meeting between teacher and students, giving a central dimension to dialogue. This is in line with the fact that our university favours direct exchange, preferring a campus life to distance teaching, in the belief that one of the most appreciated aspects by those attending our university is the opportunity to meet professors able to transmit their passion for their field of research,» concludes Rector Boas Erez.

It will therefore be necessary that the interactions between companies, universities and universities of applied sciences intensify because, as Giambattista Ravano observes, «if previously we did not sufficiently discuss between ourselves it was a venial sin, in the face of current changes it becomes a cardinal sin»: an indispensable premise to grasp the opportunities that scientific and technological progress can offer, integrating them in today's economy and society.

Susanna Cattaneo

Digitale21: Lugano hosts the conference of the Swiss Academies of Arts and Sciences

The educational sector was among the first to deal with the impact of the digital revolution, questioning its scope and mobilising itself to better prepare young people and active professionals to the challenges of the 21st century. It is with this same objective that the Swiss Academies of Arts and Sciences, in their function as a link between society and the scientific world, have decided to dedicate a conference to the effects of Digitalisation on training, learning and work, calling upon education, research, innovation and economic experts to participate in a wide and in-depth interdisciplinary reflection on the issue. «Since I took office at the beginning of 2016, Digitalisation has been included among our strategic development themes», underlines the President of the Swiss Academies of Arts and Sciences Maurice Campagna. «In January of that year I took part in the World Economic Forum in Davos, the programme of which leaned towards the 4.0 revolution, asking how to manage the impact of digitalization on the economy and on society. On that occasion, together with the State Secretariat for Education, Research and Innovation Mauro Dell'Ambrogio, we focused on the consequences of employment and education, trying to understand how the whole school supply chain could draw inspiration from the unique Swiss dual system of vocational training, which is envied by many. A discussion that is particularly true for universities, more unbalanced on the theory, taking into account the strengthening of the Mint disciplines, namely mathematics, computer science, the natural sciences and technology, » recalls Maurice Campagna. Profiled in this context, the idea of offering a symposium on the theme is expressed today in the «#digitale21» conference, organised by the Swiss Academies of Arts and Sciences in collaboration with national partners, including Usi and Supsi. The venue of the event, scheduled from 11th to 13th April, the Supsi Trevano Campus, on which the choice fell for a number of factors, starting from the observation of the pioneering role played by Canton Ticino, which boasts a centre of international renown, such as the Dalle Molle Institute of Studies on Artificial Intelligence (Idisia), the Swiss Center for Scientific Computing (Cscs), the Research Institute in Biomedicine (Irb), along with both Usi and Supsi. Another point in favour of Ticino marked the possibility of hosting thanks to contacts with the International Balzan Foundation, founded in Lugano in 1956, a Lecture by the 2016 winner of the renowned Balzan Prize, Federico Capasso. Ordinary Professor of Applied Physics at Harvard University, on 12th April, Capasso will talk about his pioneering work in the field of quantum design of new materials that led to the realisation of the revolutionary quantum cascade laser, as well as his important contributions in the field of photonic science and technology in plasmonics and metamaterials. Another eminent speaker will be Peter Voser who, having arrived at the position of Chairman of the Board of Abb following a degree in Business Administration at the University of Applied Sciences of Zurich, will explain the importance of lifelong learning to



Above, the President of the Swiss Academies of Arts and Sciences Maurice Campagna.

adapt to a world in ever more rapid evolution. «On the final day we then decided to organise parallel sessions of workshops that will analyse the interactions of digitisation respectively with education, society and creativity, with the aim of obtaining recommendations from the participants as objective as possible and precious input for the future», explains the president of the Swiss Academies of Arts and Sciences, anticipating the intention to re-propose, probably every two years, the conference «choosing other Swiss locations and always involving new participants to overcome the fears of digitalisation found in the different 'backyards' and make ensuring collaboration with confidence, exploiting the synergies between industry and academy. »

There are many fields in which we must intervene to metabolise the changes promoted by technological development, in line with the 17 objectives of sustainable development (SDGs) defined by the UN in its 2030 Agenda, to which the Swiss Confederation is also urged to align itself. The Swiss Academies of Arts and Sciences - an association which brings together the four Swiss natural sciences academies (Scnat), humanities and social sciences (Sagw), medical sciences (Samw) and technical sciences (Satw) and also includes the Ta-Swiss the Science et Cité platform - are ready to make their contribution, taking into account both the economic and the social and ecological aspects. «In fact, one of our main goals is to succeed in demonstrating a new perception of the importance of science and technology into society with respect to a core of universally shared ethical and philosophical values, even with the local facets descending from the culture of belonging, » concludes Maurice Campagna.